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-LSM-E Series Datasheet



- 25, 50, 100, 150, 200 mm travel
- Up to 104 mm/s speed and up to 55 N thrust
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Built-in controller; daisy-chains with other Zaber products
- Integrated, 200 CPR, motor mounted encoder provides slip/stall detection and recovery
- Custom versions available

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X-LSM-E Series Overview

Zaber's X-LSM-E Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM-E's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. Like all of Zaber's products, the X-LSM-E Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages make excellent microscope stages. Adding an X-JOY3 joystick controller allows manual control of both X and Y or XYZ axes from a single interface as well as allowing microscope stage positions to be saved and recalled at the touch of a button.

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

X-LSM-E Series Part Numbering & Options

X-LSM 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

Options
- **None** — Manual control
- **S** — No manual knob

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

X-LSM-E Series Drawings

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

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X-LSM-E Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	150 N·m/°
Stiffness (Roll)	150 N·m/°
Stiffness (Yaw)	150 N·m/°

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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
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 and M4 threaded centre hole

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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	Manual Control	Weight	Accuracy (unidirectional)
X-LSM025A-E03	25.4 mm (1 ")	Yes	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025A-SE03	25.4 mm (1 ")	No	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025B-E03	25.4 mm (1 ")	Yes	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025B-SE03	25.4 mm (1 ")	No	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM050A-E03	50.8 mm (2 ")	Yes	0.36 kg (0.794 lb)	20 µm (0.000787 ")
X-LSM050A-SE03	50.8 mm (2 ")	No	0.36 kg (0.794 lb)	20 µm (0.000787 ")
X-LSM050B-E03	50.8 mm (2 ")	Yes	0.36 kg (0.794 lb)	25 µm (0.000984 ")
X-LSM050B-SE03	50.8 mm (2 ")	No	0.36 kg (0.794 lb)	25 µm (0.000984 ")
X-LSM100A-E03	101.6 mm (4 ")	Yes	0.39 kg (0.86 lb)	35 µm (0.001378 ")
X-LSM100A-SE03	101.6 mm (4 ")	No	0.39 kg (0.86 lb)	35 µm (0.001378 ")
X-LSM100B-E03	101.6 mm (4 ")	Yes	0.39 kg (0.86 lb)	45 µm (0.001772 ")
X-LSM100B-SE03	101.6 mm (4 ")	No	0.39 kg (0.86 lb)	45 µm (0.001772 ")
X-LSM150A-E03	152.4 mm (6 ")	Yes	0.43 kg (0.948 lb)	50 µm (0.001968 ")
X-LSM150A-SE03	152.4 mm (6 ")	No	0.43 kg (0.948 lb)	50 µm (0.001968 ")

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X-LSM150B-E03	152.4 mm (6 ")	Yes	0.43 kg (0.948 lb)	65 µm (0.002559 ")
X-LSM150B-SE03	152.4 mm (6 ")	No	0.43 kg (0.948 lb)	65 µm (0.002559 ")
X-LSM200A-E03	203.2 mm (8 ")	Yes	0.46 kg (1.014 lb)	60 µm (0.002362 ")
X-LSM200A-SE03	203.2 mm (8 ")	No	0.46 kg (1.014 lb)	60 µm (0.002362 ")
X-LSM200B-E03	203.2 mm (8 ")	Yes	0.46 kg (1.014 lb)	85 µm (0.003346 ")
X-LSM200B-SE03	203.2 mm (8 ")	No	0.46 kg (1.014 lb)	85 µm (0.003346 ")

Part Number	Repeatability	Backlash	Flatness of Travel	Straightness of Travel
X-LSM025A-E03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025A-SE03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-E03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-SE03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM050A-E03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050A-SE03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-E03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-SE03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM100A-E03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100A-SE03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-E03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-SE03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")

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X-LSM150A-E03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150A-SE03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-E03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-SE03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-E03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-SE03	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-E03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-SE03	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")

Part Number	Pitch Error	Roll Error	Yaw Error	Microstep Size (Default Resolution)
X-LSM025A-E03	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025A-SE03	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025B-E03	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM025B-SE03	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050A-E03	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050A-SE03	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050B-E03	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050B-SE03	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM100A-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm
X-LSM100A-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm

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X-LSM100B-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM100B-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM150A-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150A-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150B-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM150B-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200A-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200A-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200B-E03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200B-SE03	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm

Part Number	Peak Thrust	Back-driving Force*	Maximum Speed	Minimum Speed
X-LSM025A-E03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025A-SE03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025B-E03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM025B-SE03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050A-E03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050A-SE03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050B-E03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050B-SE03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

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X-LSM100A-E03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100A-SE03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100B-E03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM100B-SE03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150A-E03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150A-SE03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150B-E03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150B-SE03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200A-E03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200A-SE03	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200B-E03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200B-SE03	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025A-SE03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM025B-SE03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050A-SE03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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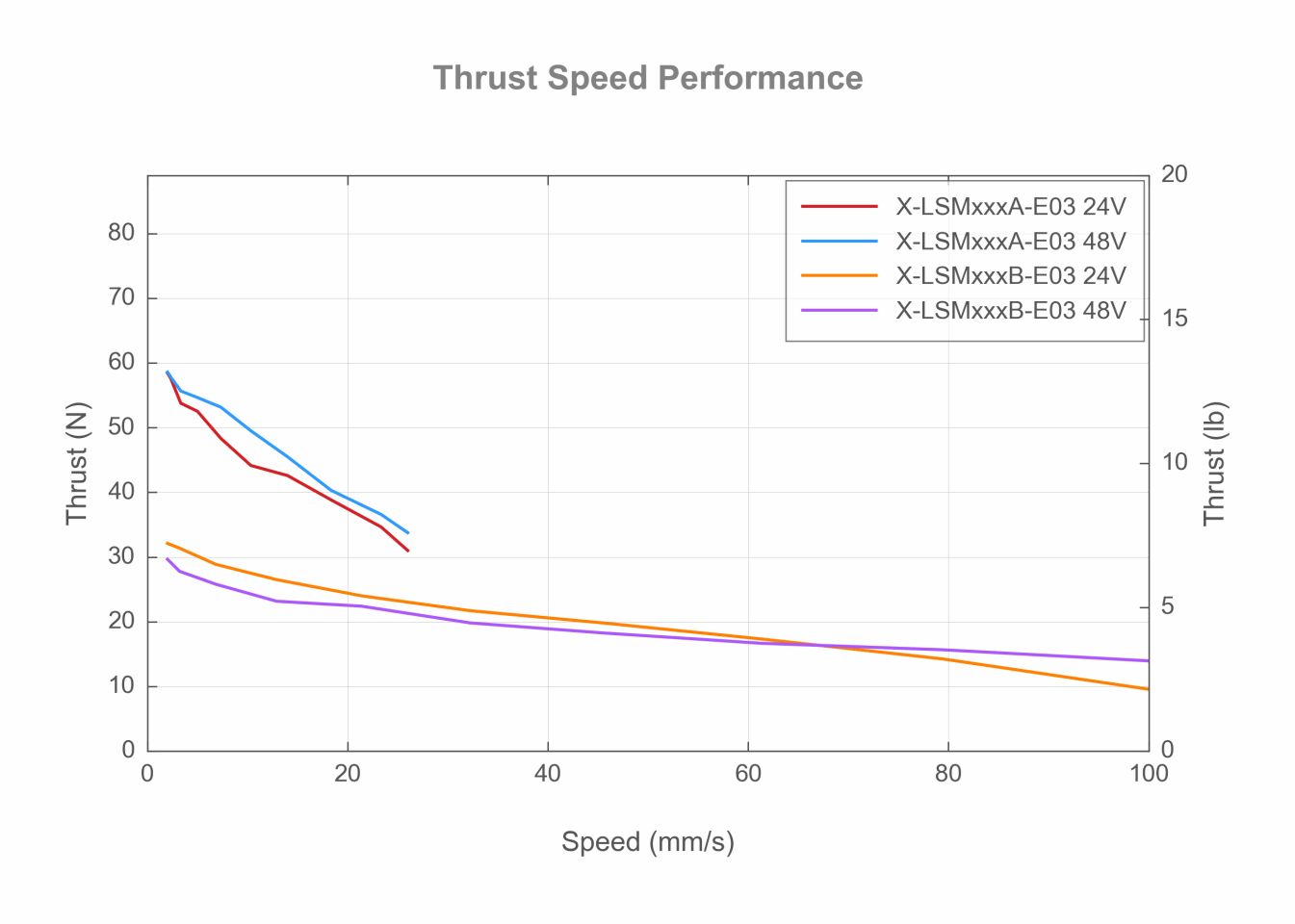
X-LSM050B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050B-SE03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100A-SE03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
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X-LSM150A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150A-SE03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150B-SE03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A-E03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200A-SE03	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B-E03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200B-SE03	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM-E Series Charts

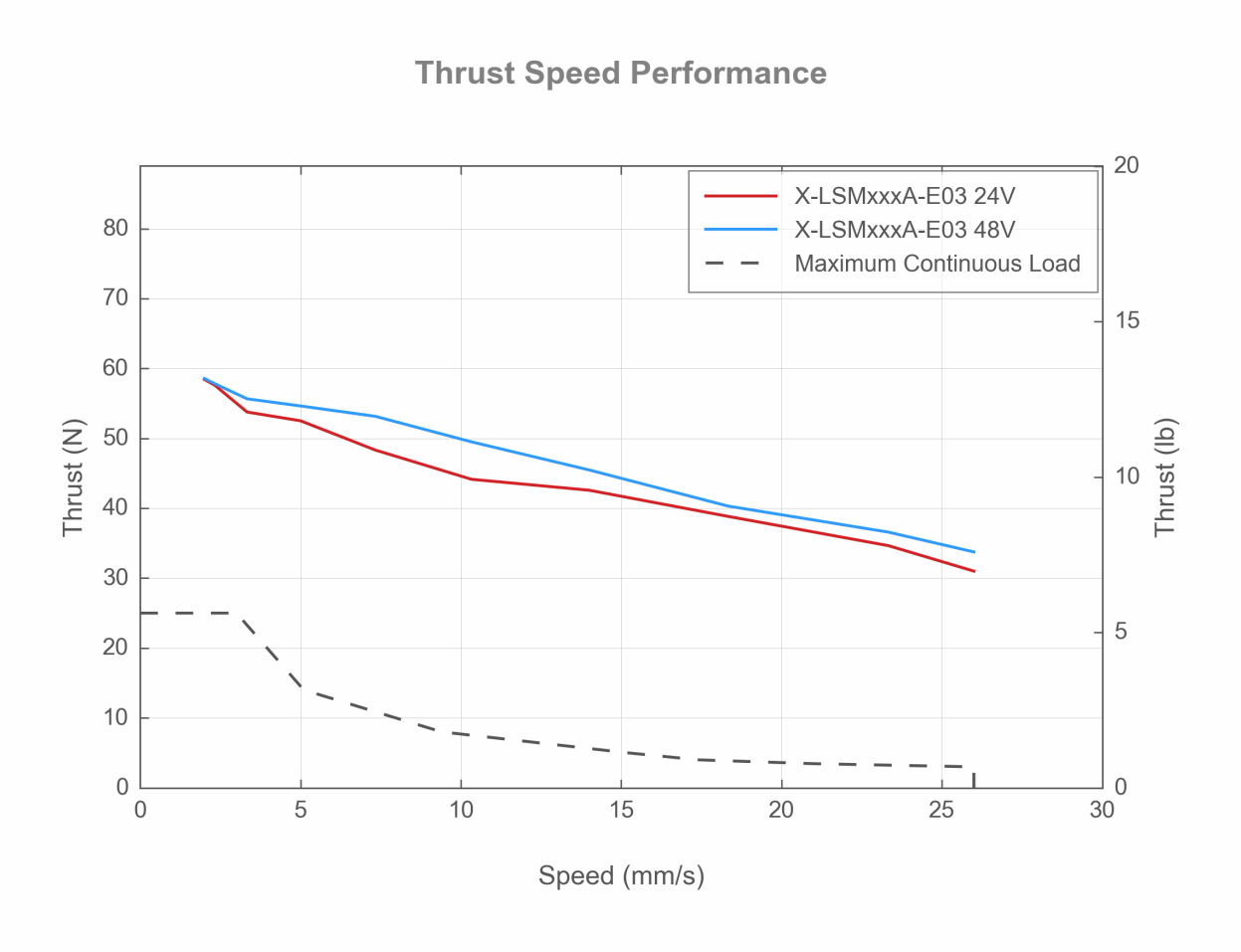
Thrust Speed Performance



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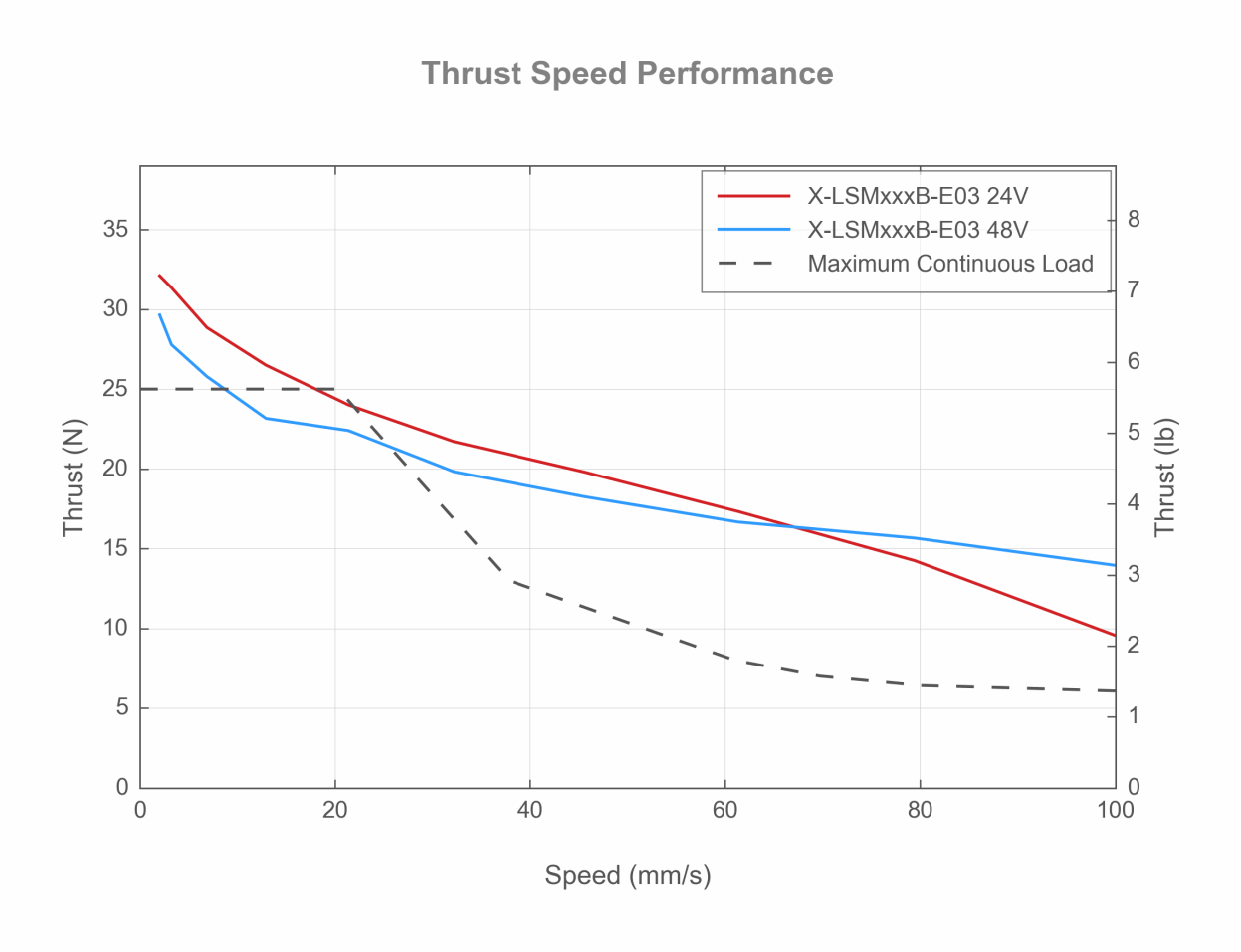
Thrust Speed Performance



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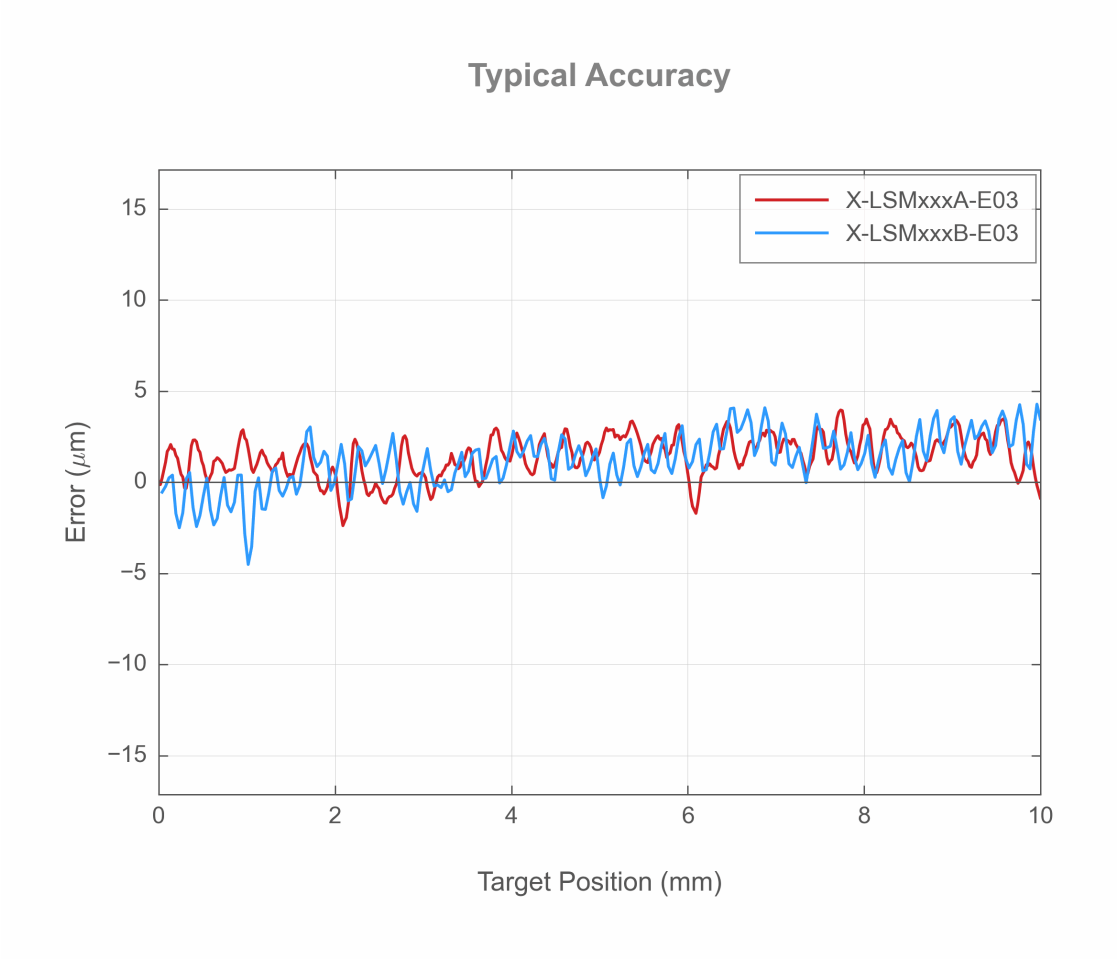
Thrust Speed Performance



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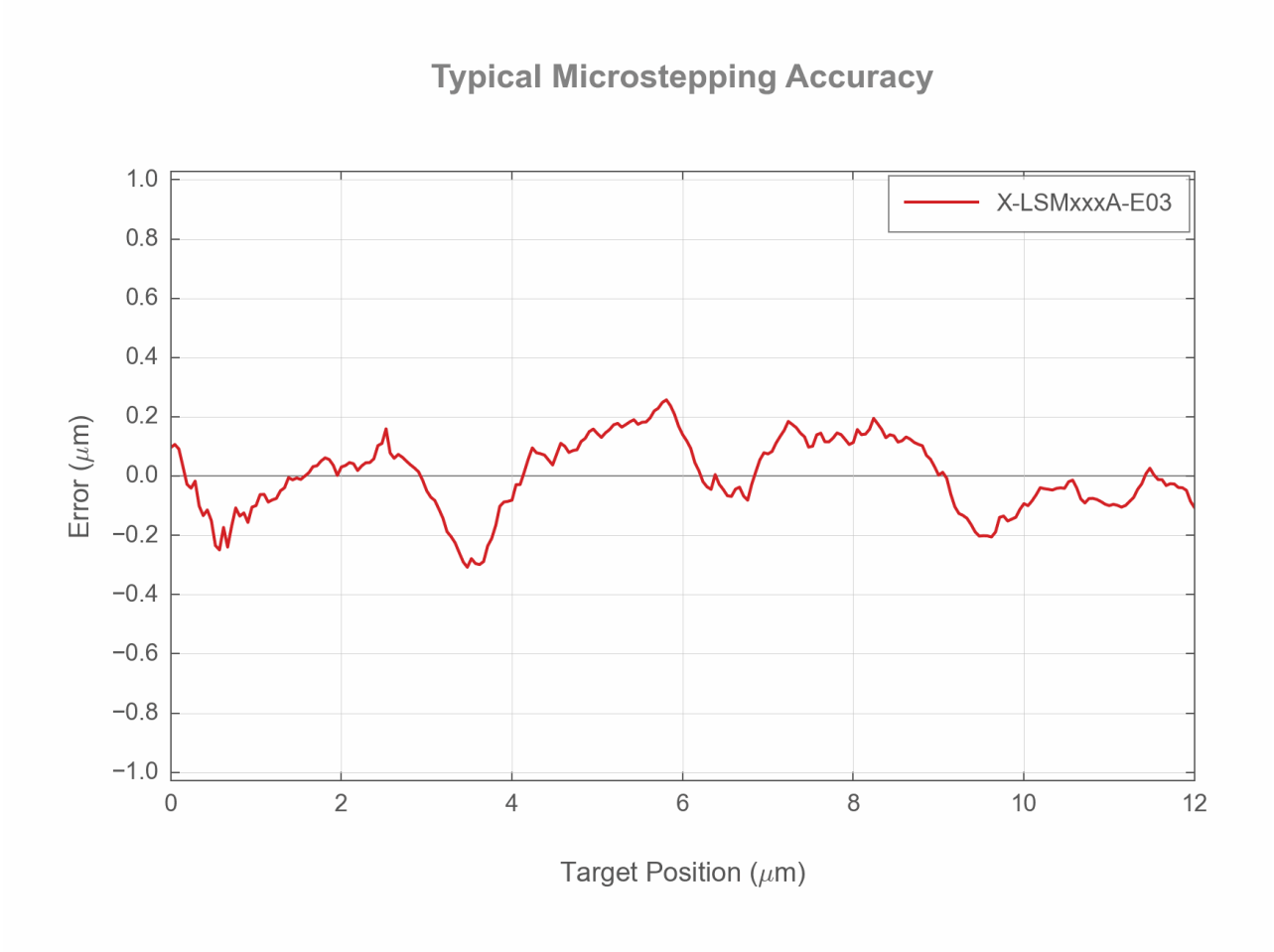
Typical Accuracy



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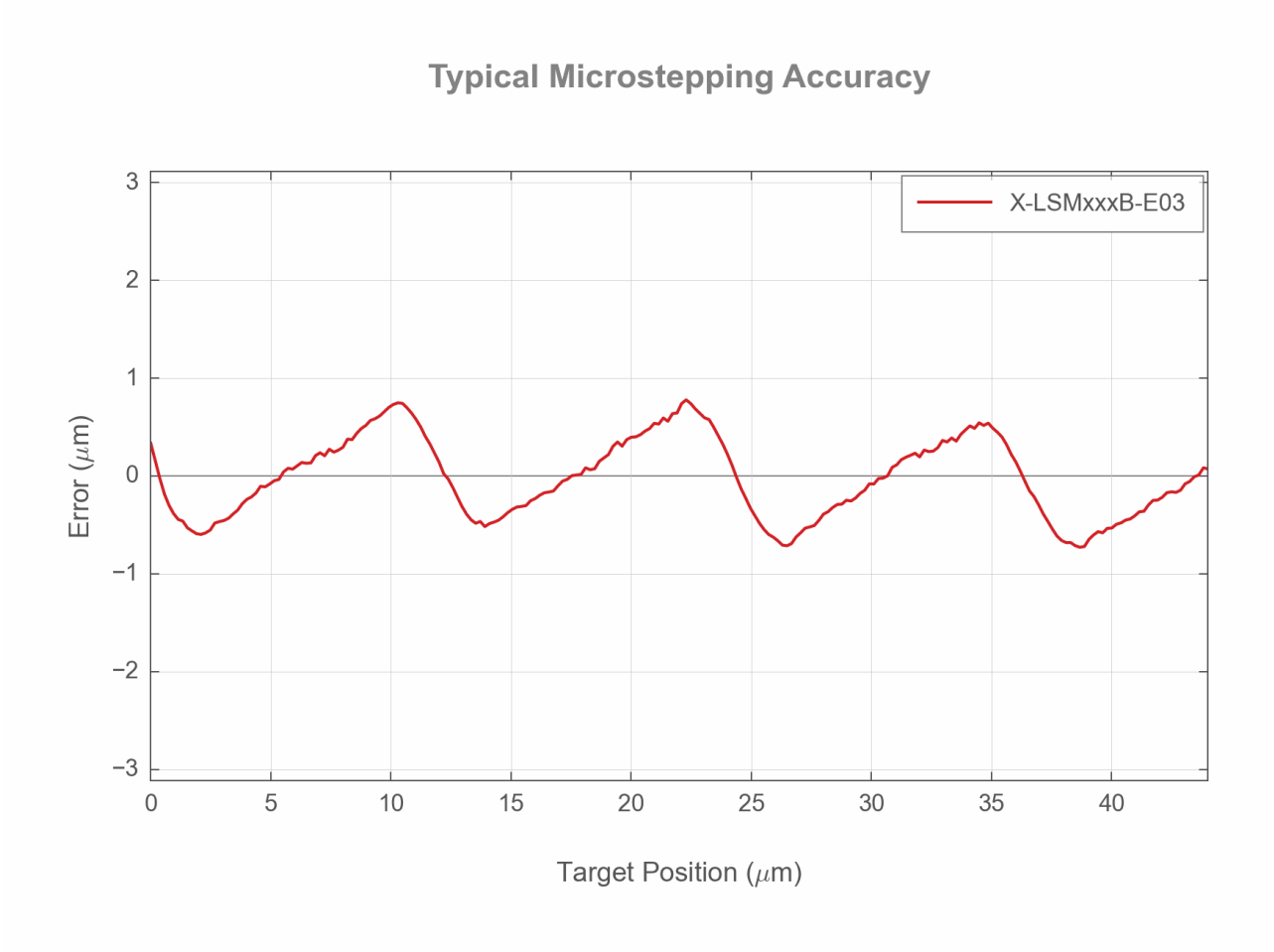
Typical Microstepping Accuracy



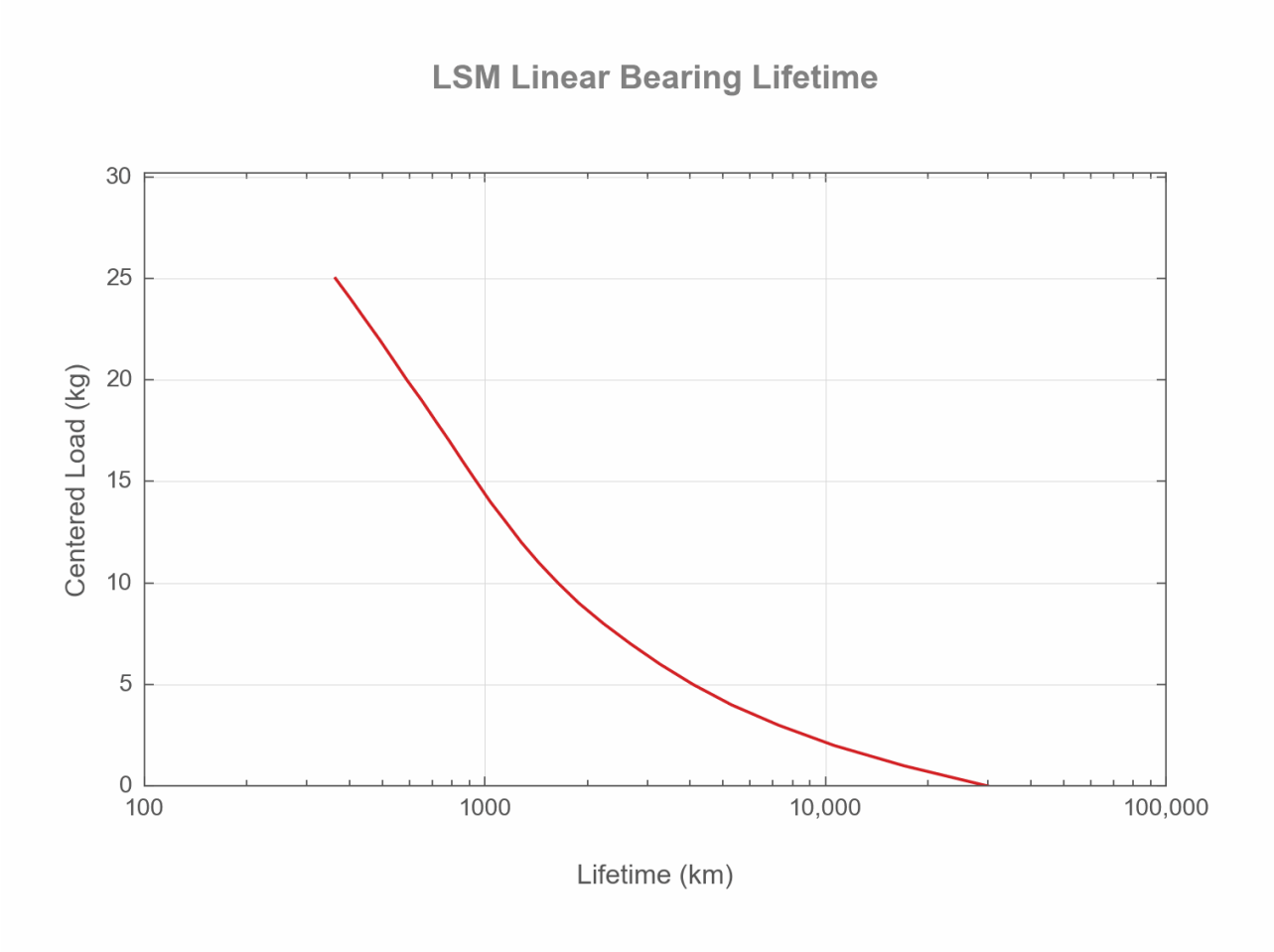
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Typical Microstepping Accuracy



LSMxxx Lifetime



Contact

Email: contact@zaber.com

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X-LSM-EC Series Datasheet



- 25, 50, 100, 150, 200 mm travel
- Up to 104 mm/s speed and up to 55 N thrust
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Includes stainless steel rigid cover
- Built-in controller; daisy-chains with other Zaber products
- Integrated, 200 CPR, motor mounted encoder provides slip/stall detection and recovery
- Custom versions available

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X-LSM-EC Series Overview

Zaber's X-LSM-EC Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. A rigid dust cover prevents contact with the rails and bearing system. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units.

At only 26.2 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM-EC's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. Like all of Zaber's products, the X-LSM-EC Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages make excellent microscope stages. Adding an X-JOY3 joystick controller allows manual control of both X and Y or XYZ axes from a single interface as well as allowing microscope stage positions to be saved and recalled at the touch of a button.

For more information visit: https://www.zaber.com/products/linear-stages/X-LSM-EC

X-LSM-EC Series Part Numbering & Options

X-LSM 025 A - _ E03 C

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

Options
- **None** — Manual control
- **S** — No manual knob

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

Cover
- **C** — Rigid Cover

X-LSM-EC Series Drawings

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

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X-LSM-EC Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	75 N·m/°
Stiffness (Roll)	75 N·m/°
Stiffness (Yaw)	150 N·m/°

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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
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 and M4 threaded centre hole

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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	Manual Control	Weight	Accuracy (unidirectional)
X-LSM025A-E03C	25.4 mm (1 ")	Yes	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025A-SE03C	25.4 mm (1 ")	No	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025B-E03C	25.4 mm (1 ")	Yes	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM025B-SE03C	25.4 mm (1 ")	No	0.35 kg (0.772 lb)	15 µm (0.000591 ")
X-LSM050A-E03C	50.8 mm (2 ")	Yes	0.36 kg (0.794 lb)	20 µm (0.000787 ")
X-LSM050A-SE03C	50.8 mm (2 ")	No	0.36 kg (0.794 lb)	20 µm (0.000787 ")
X-LSM050B-E03C	50.8 mm (2 ")	Yes	0.36 kg (0.794 lb)	25 µm (0.000984 ")
X-LSM050B-SE03C	50.8 mm (2 ")	No	0.36 kg (0.794 lb)	25 µm (0.000984 ")
X-LSM100A-E03C	101.6 mm (4 ")	Yes	0.39 kg (0.86 lb)	35 µm (0.001378 ")
X-LSM100A-SE03C	101.6 mm (4 ")	No	0.39 kg (0.86 lb)	35 µm (0.001378 ")
X-LSM100B-E03C	101.6 mm (4 ")	Yes	0.39 kg (0.86 lb)	45 µm (0.001772 ")
X-LSM100B-SE03C	101.6 mm (4 ")	No	0.39 kg (0.86 lb)	45 µm (0.001772 ")
X-LSM150A-E03C	152.4 mm (6 ")	Yes	0.43 kg (0.948 lb)	50 µm (0.001968 ")
X-LSM150A-SE03C	152.4 mm (6 ")	No	0.43 kg (0.948 lb)	50 µm (0.001968 ")

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X-LSM150B-E03C	152.4 mm (6 ")	Yes	0.43 kg (0.948 lb)	65 µm (0.002559 ")
X-LSM150B-SE03C	152.4 mm (6 ")	No	0.43 kg (0.948 lb)	65 µm (0.002559 ")
X-LSM200A-E03C	203.2 mm (8 ")	Yes	0.46 kg (1.014 lb)	60 µm (0.002362 ")
X-LSM200A-SE03C	203.2 mm (8 ")	No	0.46 kg (1.014 lb)	60 µm (0.002362 ")
X-LSM200B-E03C	203.2 mm (8 ")	Yes	0.46 kg (1.014 lb)	85 µm (0.003346 ")
X-LSM200B-SE03C	203.2 mm (8 ")	No	0.46 kg (1.014 lb)	85 µm (0.003346 ")

Part Number	Repeatability	Backlash	Flatness of Travel	Straightness of Travel
X-LSM025A-E03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025A-SE03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-E03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-SE03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM050A-E03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050A-SE03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-E03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-SE03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM100A-E03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100A-SE03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-E03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-SE03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")

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X-LSM150A-E03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150A-SE03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-E03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-SE03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-E03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-SE03C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-E03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-SE03C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")

Part Number	Pitch Error	Roll Error	Yaw Error	Microstep Size (Default Resolution)
X-LSM025A-E03C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025A-SE03C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025B-E03C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM025B-SE03C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050A-E03C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050A-SE03C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050B-E03C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050B-SE03C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM100A-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm
X-LSM100A-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm

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X-LSM100B-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM100B-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM150A-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150A-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150B-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM150B-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200A-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200A-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200B-E03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200B-SE03C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm

Part Number	Peak Thrust	Back-driving Force*	Maximum Speed	Minimum Speed
X-LSM025A-E03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025A-SE03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025B-E03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM025B-SE03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050A-E03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050A-SE03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050B-E03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050B-SE03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

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X-LSM100A-E03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100A-SE03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100B-E03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM100B-SE03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150A-E03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150A-SE03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150B-E03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150B-SE03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200A-E03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200A-SE03C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200B-E03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200B-SE03C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A-E03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025A-SE03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B-E03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM025B-SE03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A-E03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050A-SE03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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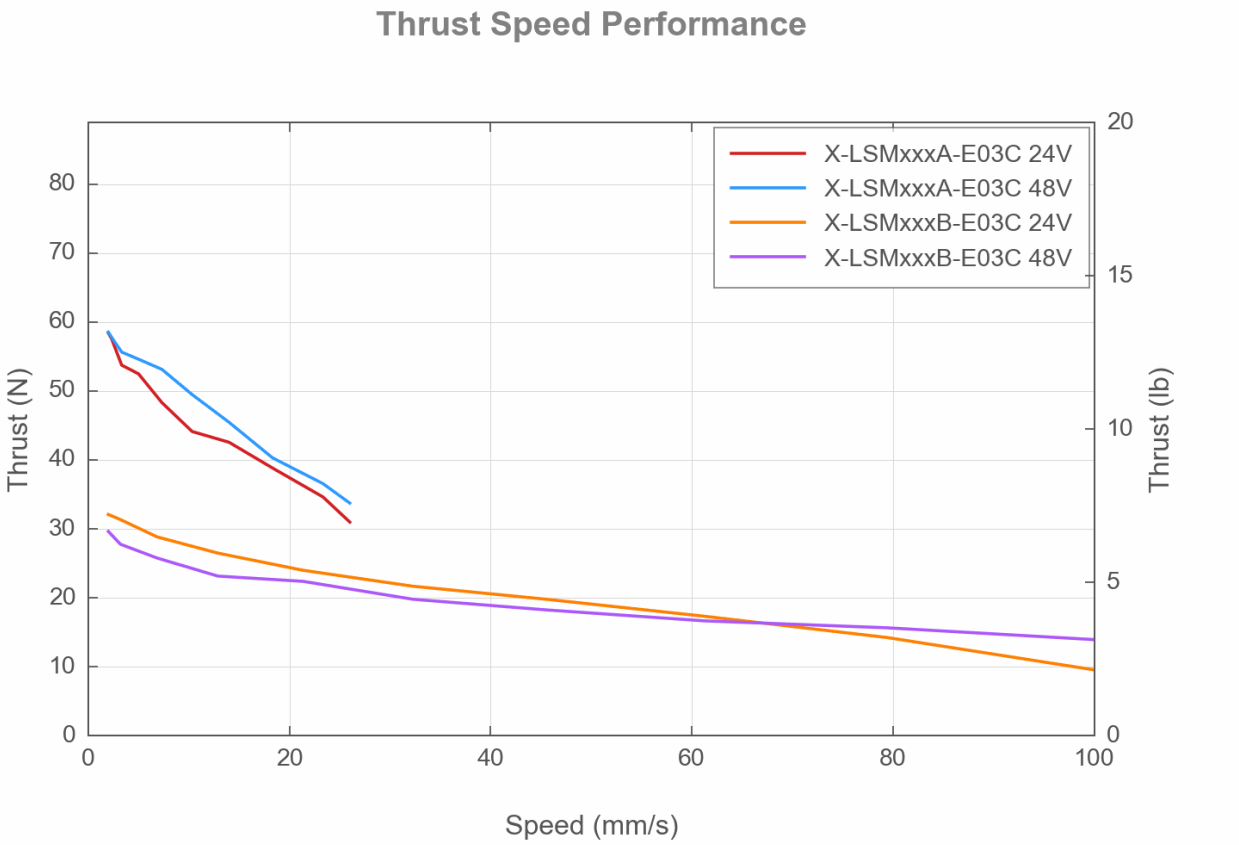
X-LSM050B-E03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050B-SE03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A-E03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100A-SE03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100B-E03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
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X-LSM150A-E03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150A-SE03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B-E03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150B-SE03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A-E03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200A-SE03C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B-E03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200B-SE03C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM-EC Series Charts

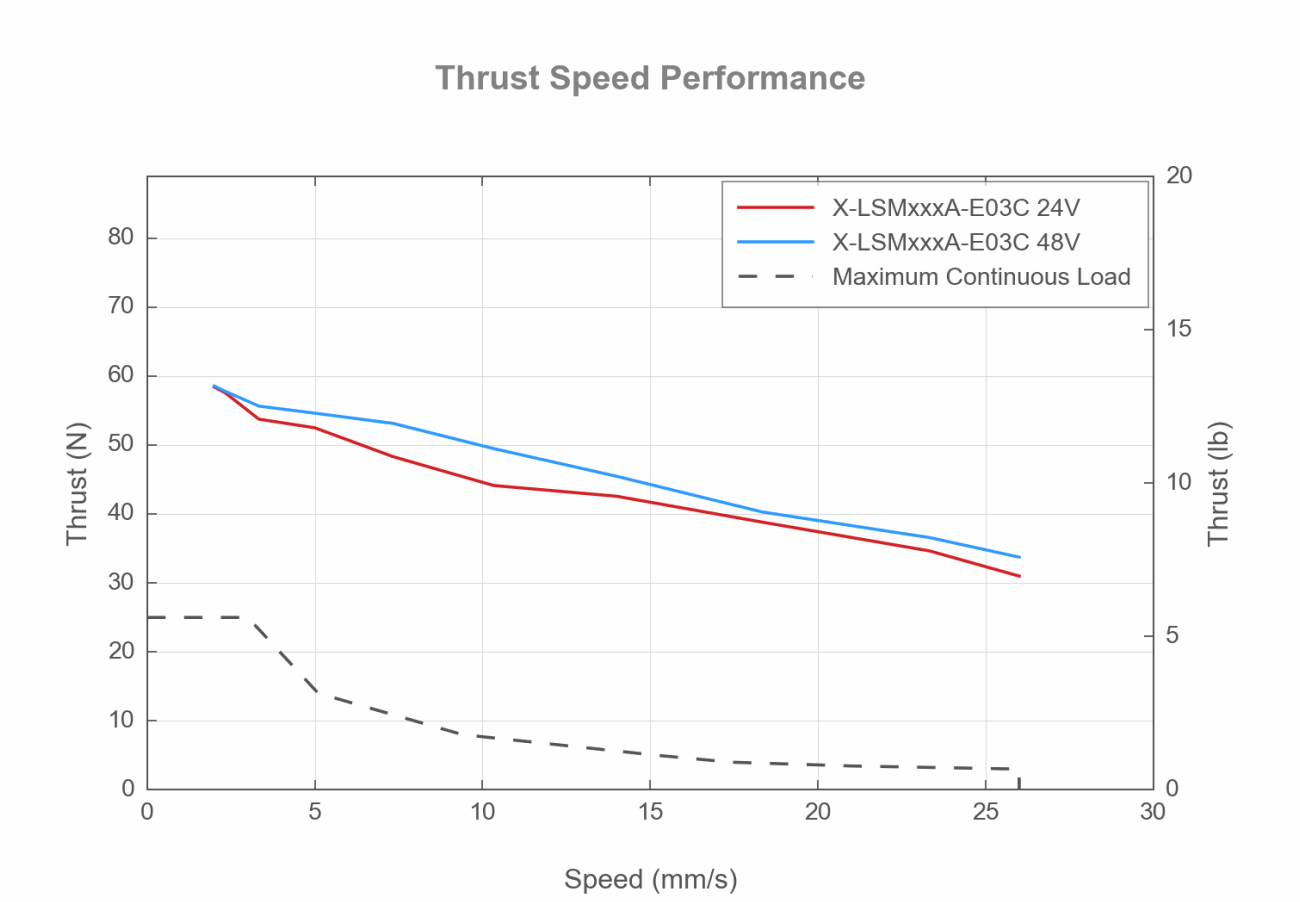
Thrust Speed Performance



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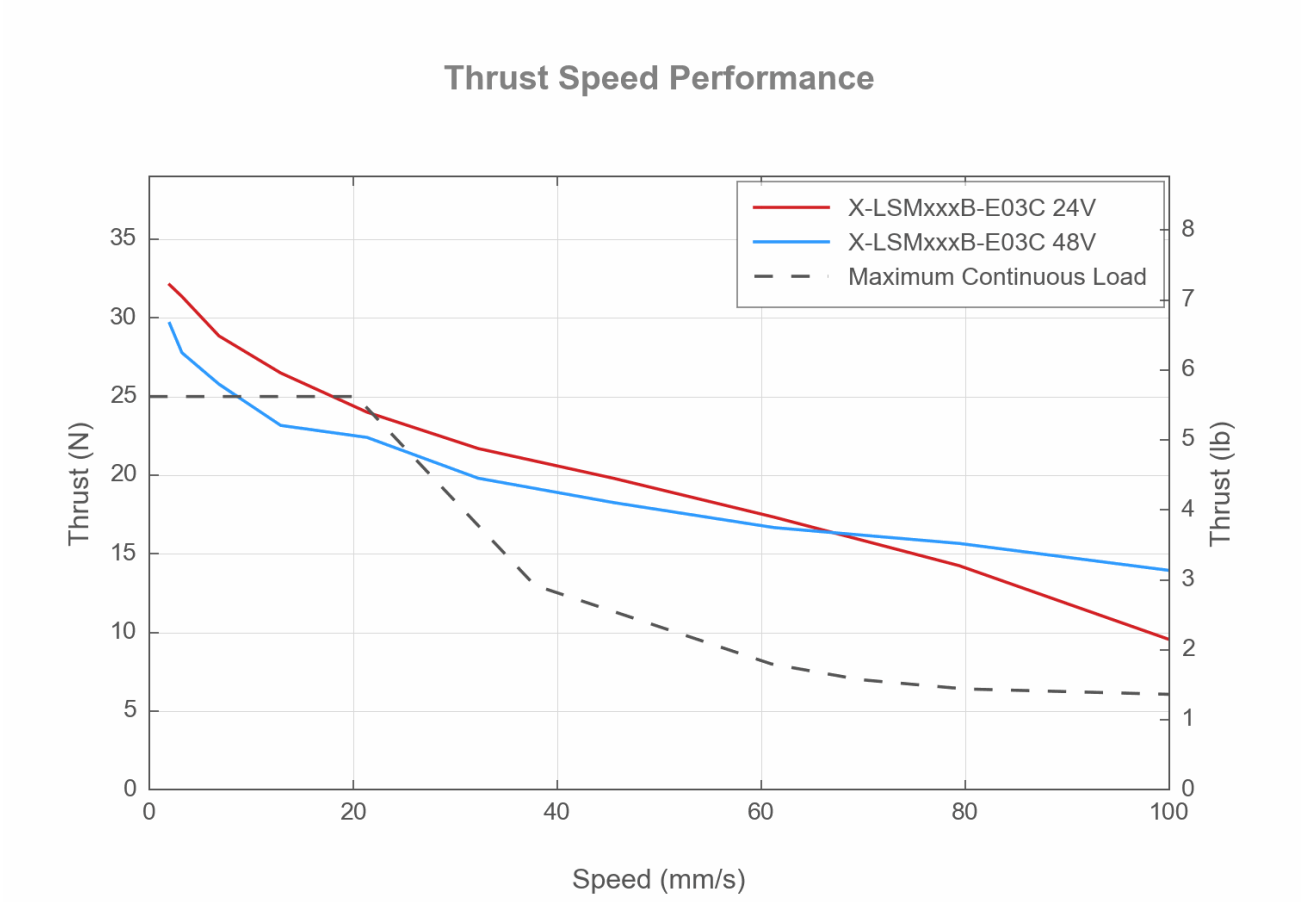
Thrust Speed Performance



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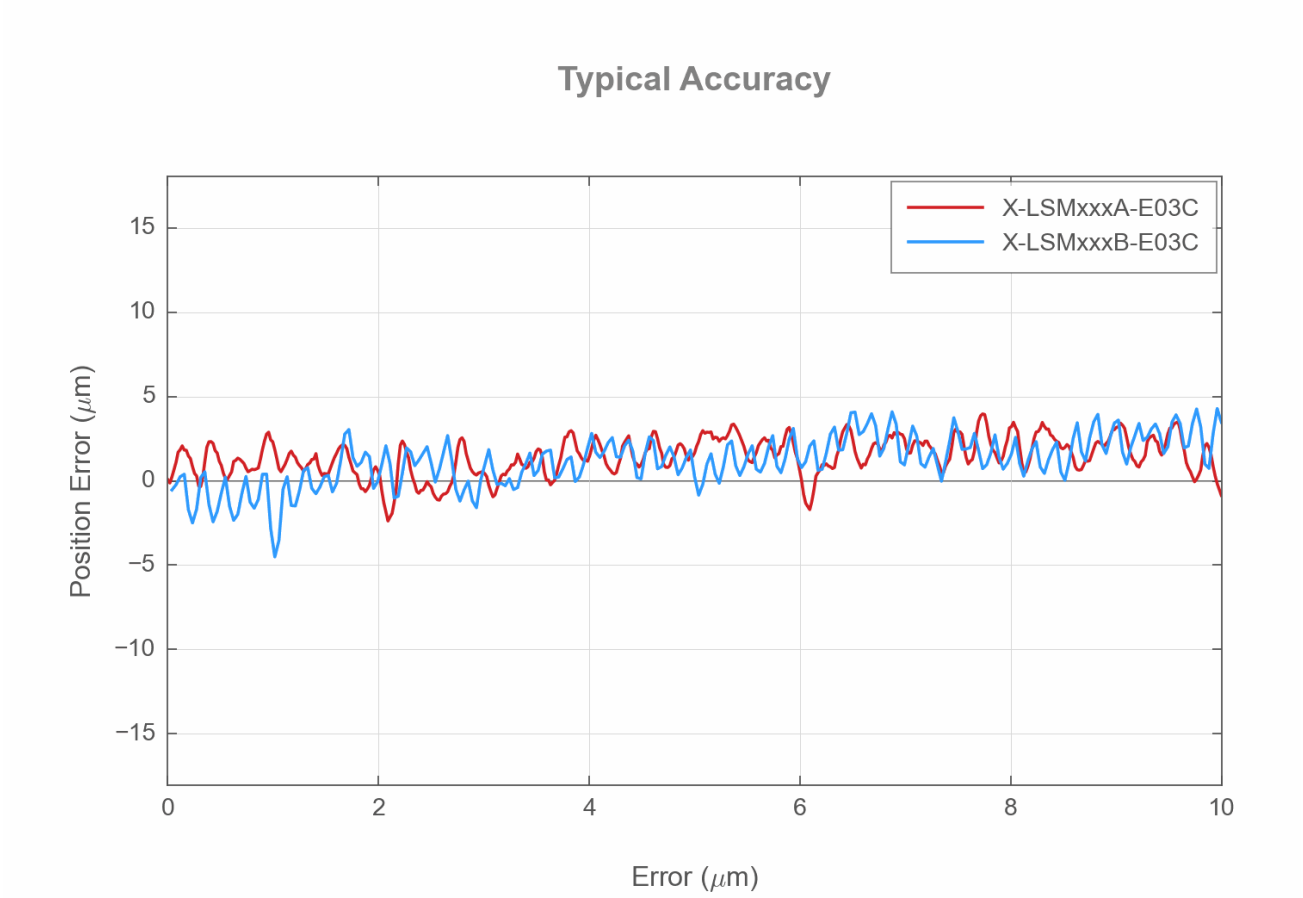
Thrust Speed Performance



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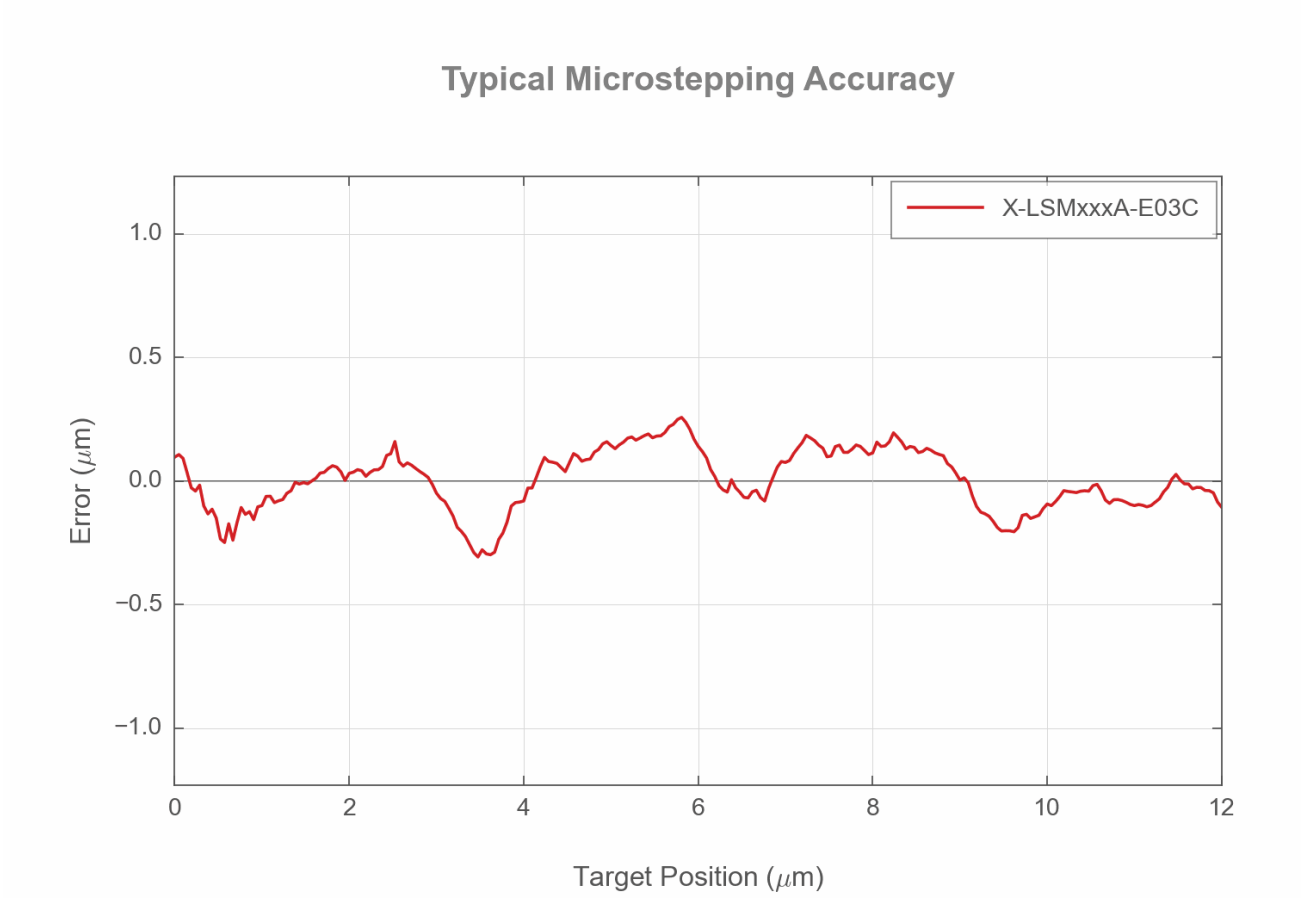
Typical Accuracy



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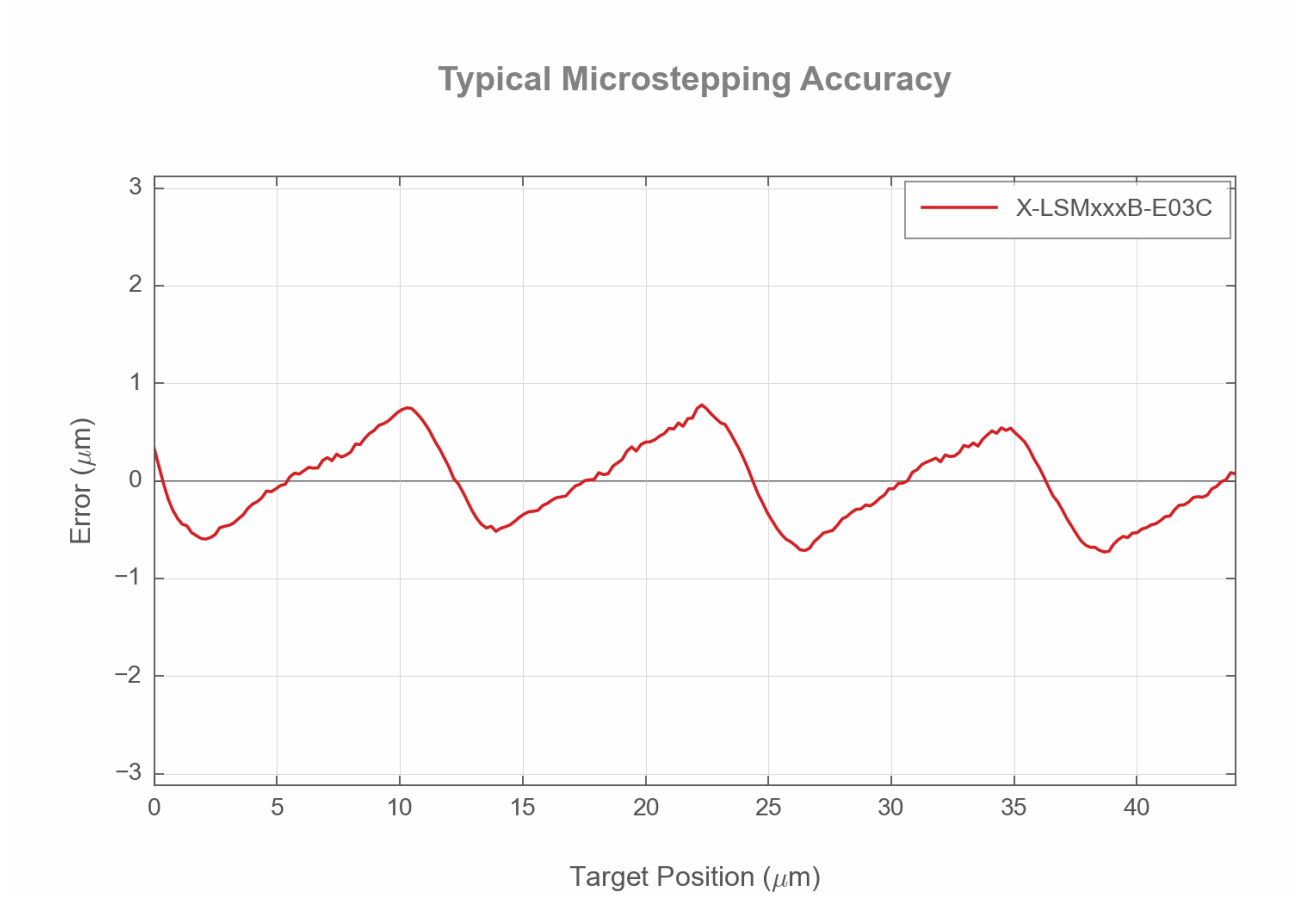
Typical Microstepping Accuracy



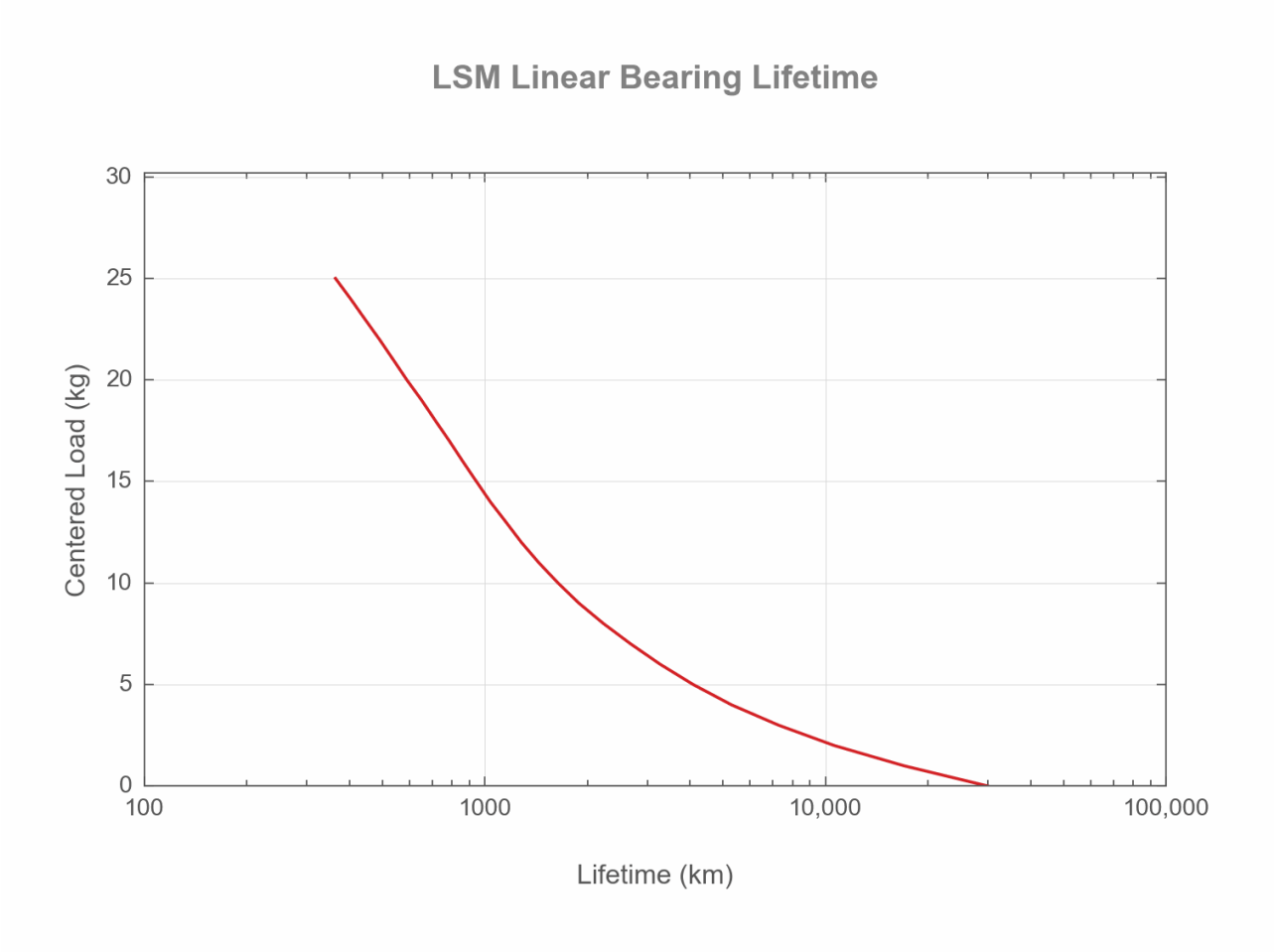
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Typical Microstepping Accuracy



LSM Linear Bearing Lifetime



Contact

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X-LSM Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Up to 104 mm/s speed and up to 55 N thrust
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

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X-LSM Series Overview

Zaber's X-LSM Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. Like all of Zaber's products, the X-LSM Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages make excellent microscope stages. Adding a X-JOY3 joystick controller allows manual control of both X and Y or XYZ axes from a single interface as well as allowing microscope stage positions to be saved and recalled at the touch of a button.

For more information visit: https://www.zaber.com/products/linear-stages/X-LSM

X-LSM Series Part Numbering & Options

X-LSM 025 A _ _

Travel	Lead Screw Options	Options
025 — 25 mm	**A** — Fine pitch lead screw	**None** — Manual control
050 — 50 mm	**B** — Medium pitch lead screw	**-S** — No manual knob
100 — 100 mm		
150 — 150 mm		
200 — 200 mm		

X-LSM Series Drawings

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

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X-LSM Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	150 N·m/°
Stiffness (Roll)	150 N·m/°
Stiffness (Yaw)	150 N·m/°

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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
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 and M4 threaded centre hole

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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	Manual Control	Weight	Accuracy (unidirectional)
X-LSM025A	25.4 mm (1 ")	Yes	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025A-S	25.4 mm (1 ")	No	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025B	25.4 mm (1 ")	Yes	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025B-S	25.4 mm (1 ")	No	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM050A	50.8 mm (2 ")	Yes	0.34 kg (0.75 lb)	20 µm (0.000787 ")
X-LSM050A-S	50.8 mm (2 ")	No	0.34 kg (0.75 lb)	20 µm (0.000787 ")
X-LSM050B	50.8 mm (2 ")	Yes	0.34 kg (0.75 lb)	25 µm (0.000984 ")
X-LSM050B-S	50.8 mm (2 ")	No	0.34 kg (0.75 lb)	25 µm (0.000984 ")
X-LSM100A	101.6 mm (4 ")	Yes	0.37 kg (0.816 lb)	35 µm (0.001378 ")
X-LSM100A-S	101.6 mm (4 ")	No	0.37 kg (0.816 lb)	35 µm (0.001378 ")
X-LSM100B	101.6 mm (4 ")	Yes	0.37 kg (0.816 lb)	45 µm (0.001772 ")
X-LSM100B-S	101.6 mm (4 ")	No	0.37 kg (0.816 lb)	45 µm (0.001772 ")
X-LSM150A	152.4 mm (6 ")	Yes	0.41 kg (0.904 lb)	50 µm (0.001968 ")
X-LSM150A-S	152.4 mm (6 ")	No	0.41 kg (0.904 lb)	50 µm (0.001968 ")

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X-LSM150B	152.4 mm (6 ")	Yes	0.41 kg (0.904 lb)	65 µm (0.002559 ")
X-LSM150B-S	152.4 mm (6 ")	No	0.41 kg (0.904 lb)	65 µm (0.002559 ")
X-LSM200A	203.2 mm (8 ")	Yes	0.44 kg (0.97 lb)	60 µm (0.002362 ")
X-LSM200A-S	203.2 mm (8 ")	No	0.44 kg (0.97 lb)	60 µm (0.002362 ")
X-LSM200B	203.2 mm (8 ")	Yes	0.44 kg (0.97 lb)	85 µm (0.003346 ")
X-LSM200B-S	203.2 mm (8 ")	No	0.44 kg (0.97 lb)	85 µm (0.003346 ")

Part Number	Repeatability	Backlash	Flatness of Travel	Straightness of Travel
X-LSM025A	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025A-S	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-S	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM050A	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050A-S	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-S	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM100A	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100A-S	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-S	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")

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X-LSM150A	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150A-S	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-S	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-S	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-S	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")

Part Number	Pitch Error	Roll Error	Yaw Error	Microstep Size (Default Resolution)
X-LSM025A	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025A-S	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025B	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM025B-S	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050A-S	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050B	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050B-S	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM100A	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm
X-LSM100A-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm

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X-LSM100B	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM100B-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM150A	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150A-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150B	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM150B-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200A	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200A-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200B	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200B-S	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm

Part Number	Peak Thrust	Back-driving Force*	Maximum Speed	Minimum Speed
X-LSM025A	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025A-S	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025B	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM025B-S	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050A	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050A-S	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050B	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050B-S	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

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X-LSM100A	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100A-S	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100B	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM100B-S	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150A	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150A-S	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150B	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150B-S	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200A	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200A-S	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200B	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200B-S	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025A-S	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM025B-S	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050A-S	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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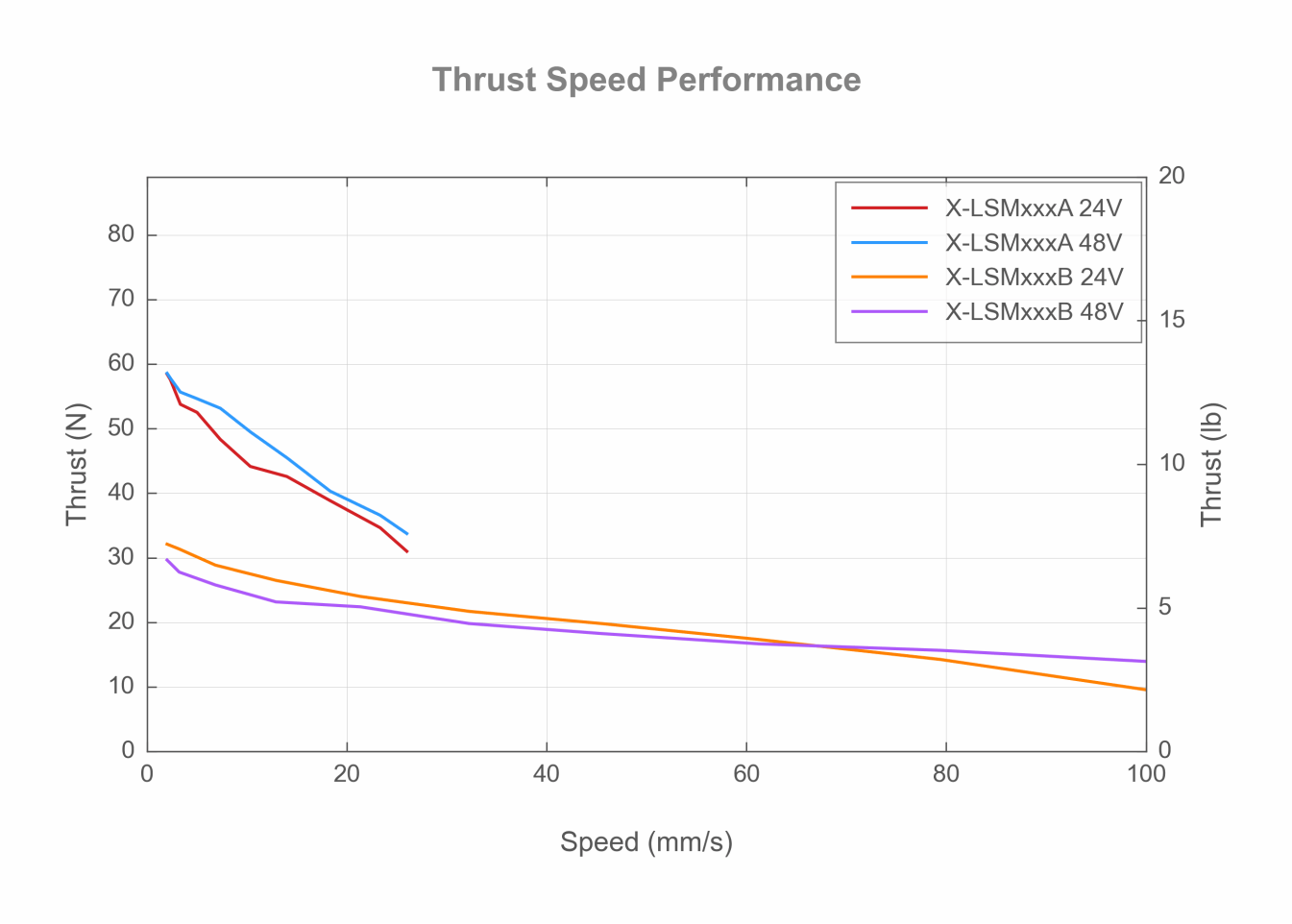
X-LSM050B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050B-S	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100A-S	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100B-S	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150A-S	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150B-S	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200A-S	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200B-S	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM Series Charts

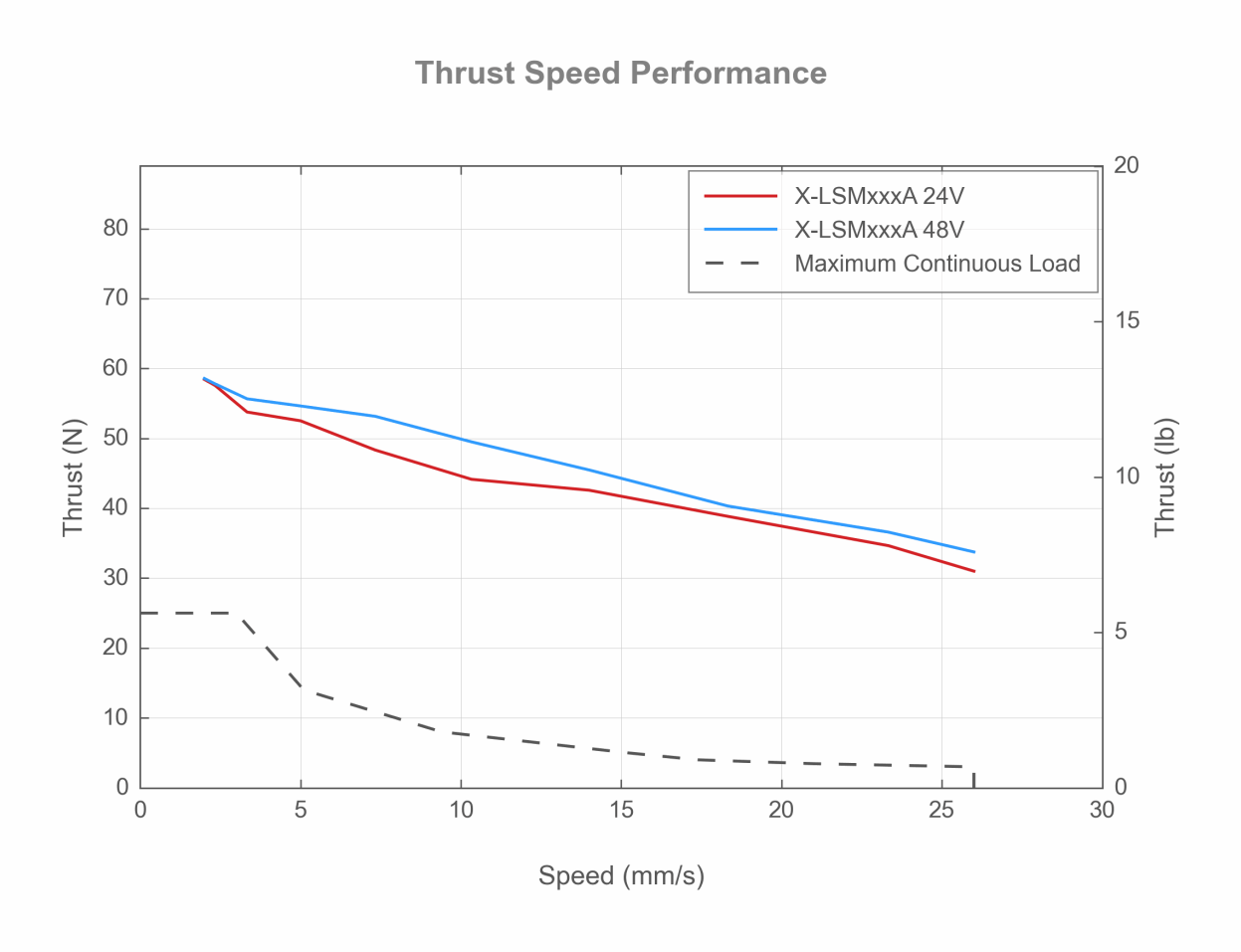
Speed Performance



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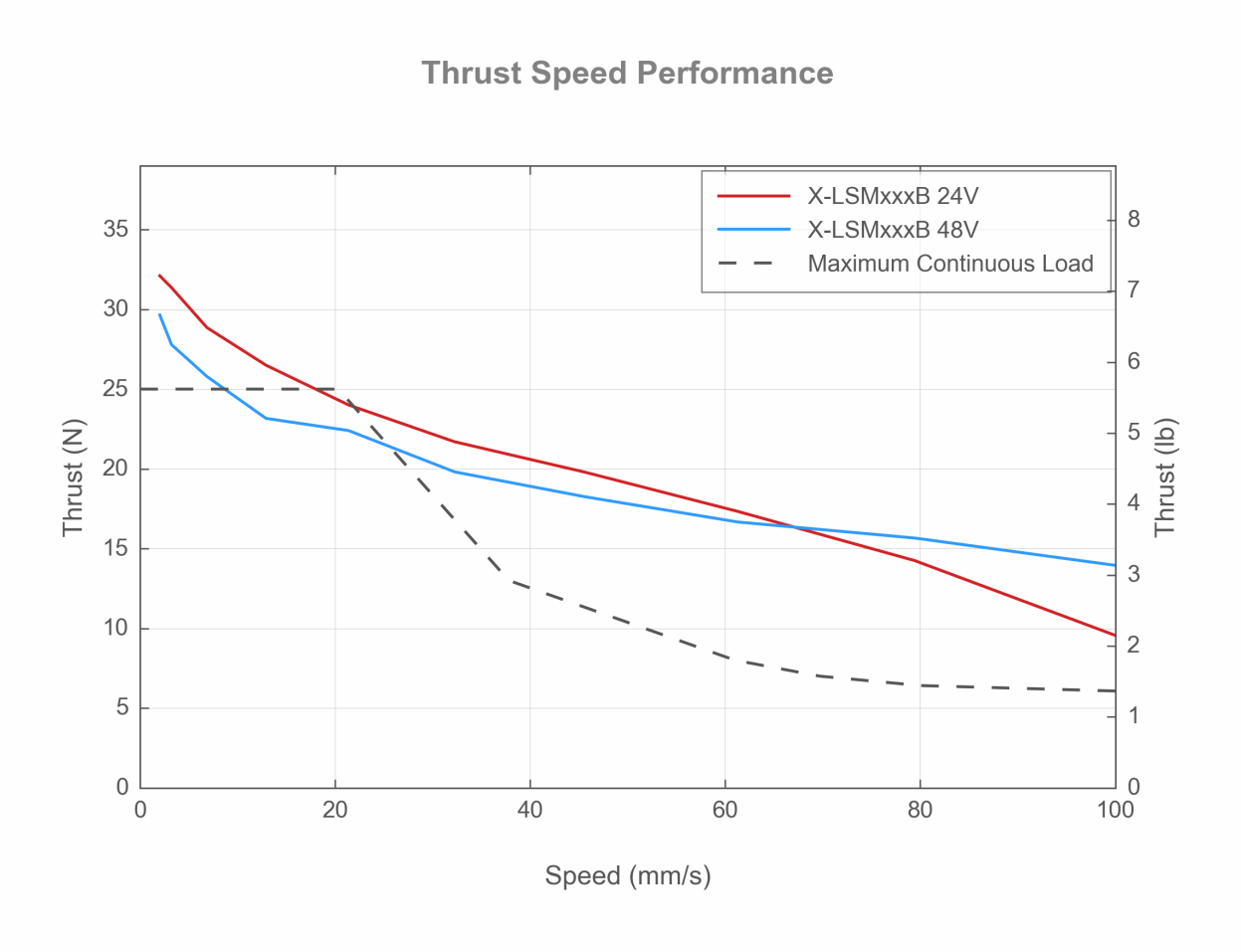
Speed Performance



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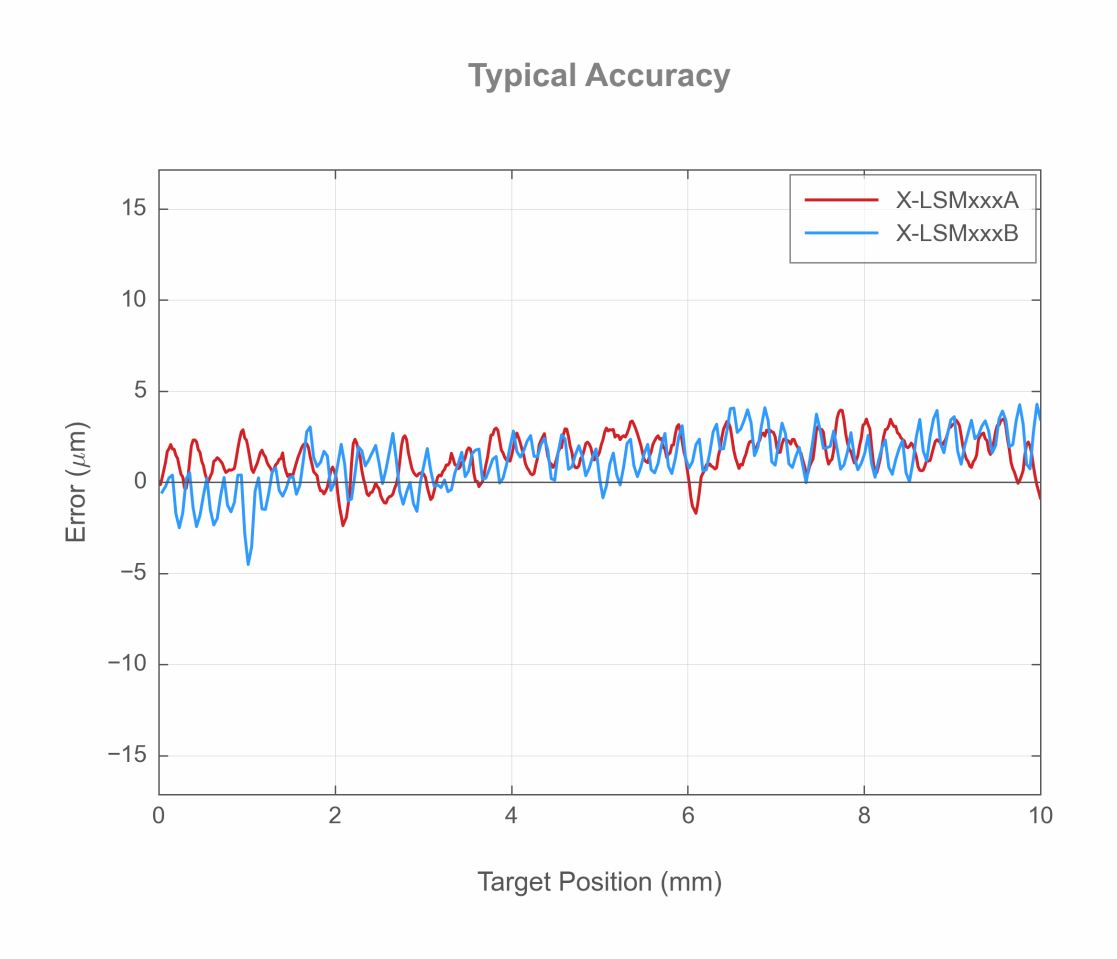
Speed Performance



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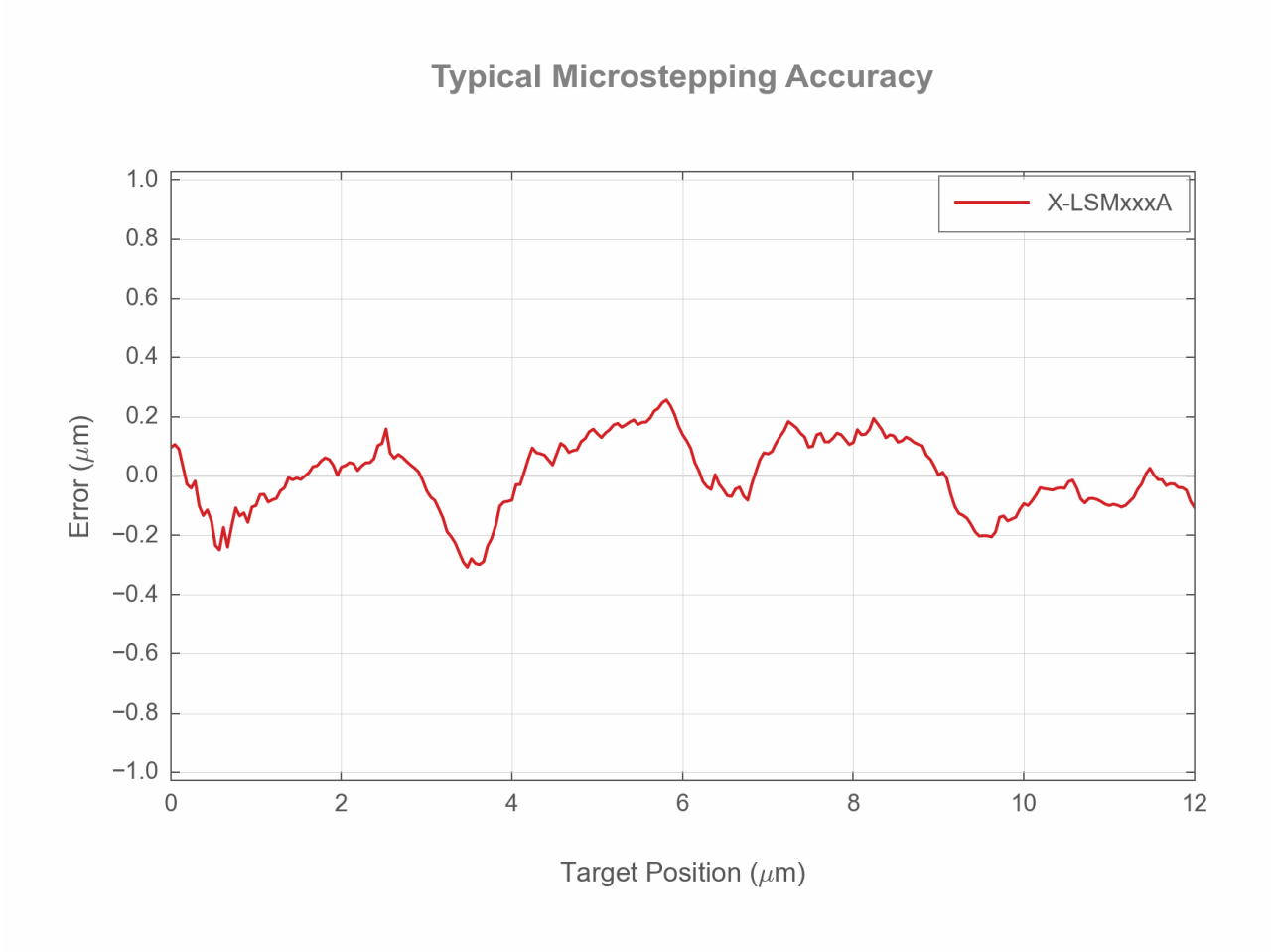
Accuracy



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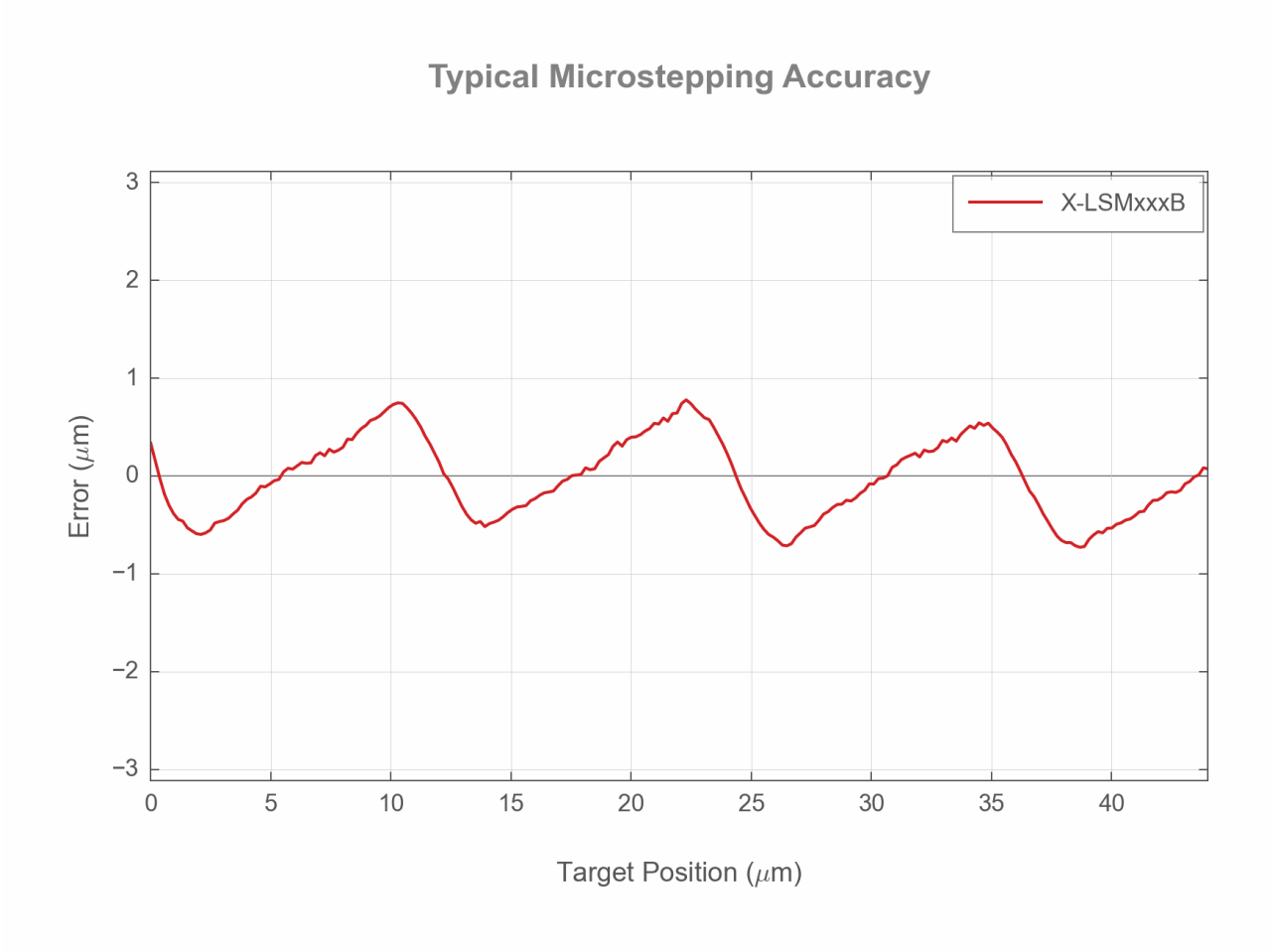
Microstepping Accuracy



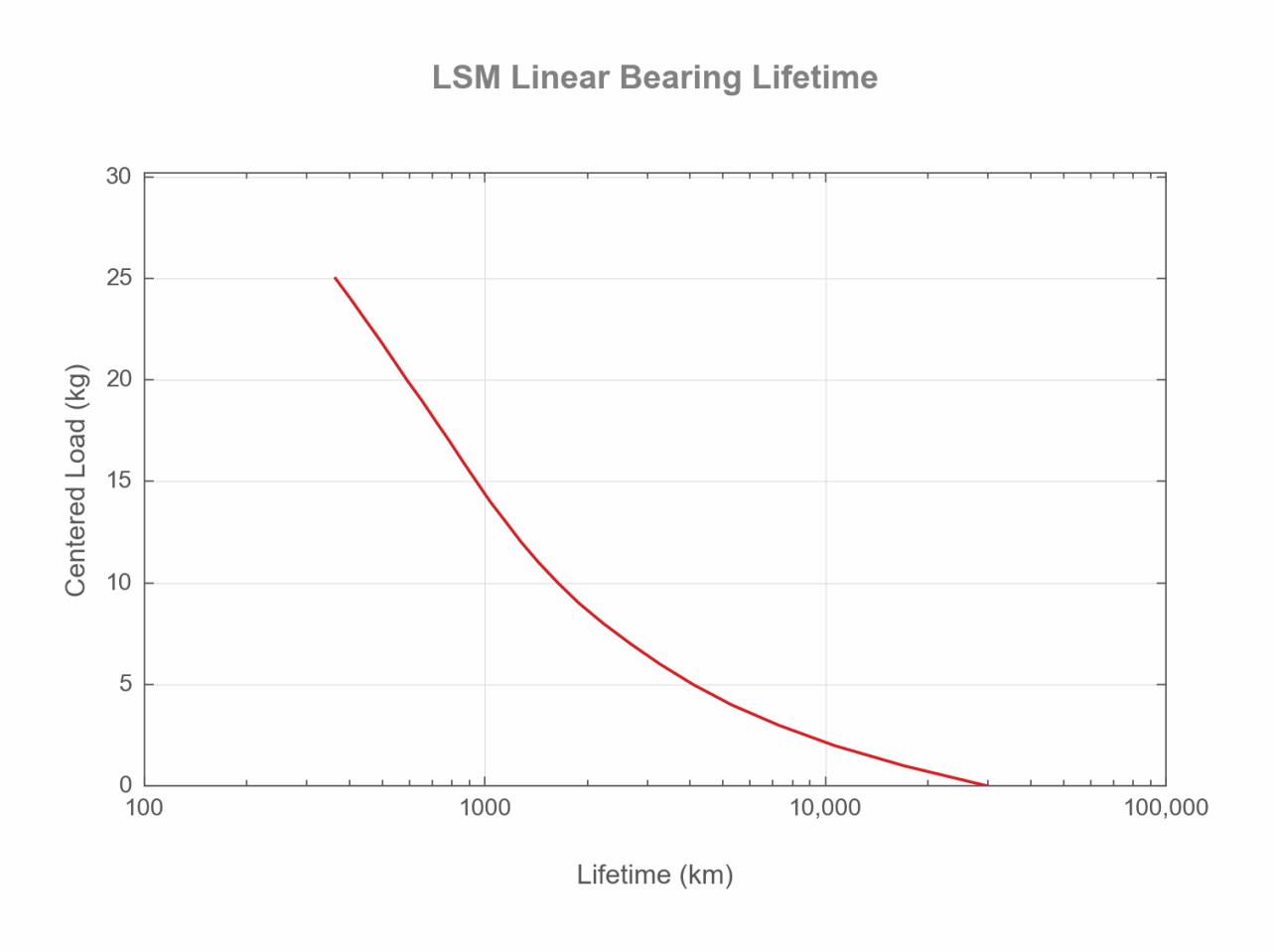
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Microstepping Accuracy



LSMxxx Lifetime



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X-LSM-C Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Up to 104 mm/s speed and up to 55 N thrust
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Includes stainless steel rigid cover
- Built-in controller; daisy-chains with other Zaber products
- Custom versions available

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X-LSM-C Series Overview

Zaber's X-LSM-C Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. A rigid dust cover prevents contact with the rails and bearing system. They are stand-alone units requiring only a standard 24 V or 48 V power supply. An optional indexed knob provides convenient manual control for versatile operation even without a computer.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply. Convenient locking, 4-pin, M8 connectors on the unit allow for secure connection between units.

At only 26.2 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM-C's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. Like all of Zaber's products, the X-LSM-C Series is designed to be 'plug and play' and very easy to set up and operate. If you are considering a multi-axis system, in the XY configuration, these stages make excellent microscope stages. Adding a X-JOY3 joystick controller allows manual control of both X and Y or XYZ axes from a single interface as well as allowing microscope stage positions to be saved and recalled at the touch of a button.

For more information visit: https://www.zaber.com/products/linear-stages/X-LSM-C

X-LSM-C Series Part Numbering & Options

X-LSM 025 A - _ C

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

Options
- **None** — Manual control
- **S** — No manual knob

Cover
- **C** — Rigid Cover

X-LSM-C Series Drawings

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

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X-LSM-C Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	75 N·m/°
Stiffness (Roll)	75 N·m/°
Stiffness (Yaw)	150 N·m/°

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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
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 and M4 threaded centre hole

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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	Manual Control	Weight	Accuracy (unidirectional)
X-LSM025A-C	25.4 mm (1 ")	Yes	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025A-SC	25.4 mm (1 ")	No	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025B-C	25.4 mm (1 ")	Yes	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM025B-SC	25.4 mm (1 ")	No	0.33 kg (0.728 lb)	15 µm (0.000591 ")
X-LSM050A-C	50.8 mm (2 ")	Yes	0.34 kg (0.75 lb)	20 µm (0.000787 ")
X-LSM050A-SC	50.8 mm (2 ")	No	0.34 kg (0.75 lb)	20 µm (0.000787 ")
X-LSM050B-C	50.8 mm (2 ")	Yes	0.34 kg (0.75 lb)	25 µm (0.000984 ")
X-LSM050B-SC	50.8 mm (2 ")	No	0.34 kg (0.75 lb)	25 µm (0.000984 ")
X-LSM100A-C	101.6 mm (4 ")	Yes	0.37 kg (0.816 lb)	35 µm (0.001378 ")
X-LSM100A-SC	101.6 mm (4 ")	No	0.37 kg (0.816 lb)	35 µm (0.001378 ")
X-LSM100B-C	101.6 mm (4 ")	Yes	0.37 kg (0.816 lb)	45 µm (0.001772 ")
X-LSM100B-SC	101.6 mm (4 ")	No	0.37 kg (0.816 lb)	45 µm (0.001772 ")
X-LSM150A-C	152.4 mm (6 ")	Yes	0.41 kg (0.904 lb)	50 µm (0.001968 ")
X-LSM150A-SC	152.4 mm (6 ")	No	0.41 kg (0.904 lb)	50 µm (0.001968 ")

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X-LSM150B-C	152.4 mm (6 ")	Yes	0.41 kg (0.904 lb)	65 µm (0.002559 ")
X-LSM150B-SC	152.4 mm (6 ")	No	0.41 kg (0.904 lb)	65 µm (0.002559 ")
X-LSM200A-C	203.2 mm (8 ")	Yes	0.44 kg (0.97 lb)	60 µm (0.002362 ")
X-LSM200A-SC	203.2 mm (8 ")	No	0.44 kg (0.97 lb)	60 µm (0.002362 ")
X-LSM200B-C	203.2 mm (8 ")	Yes	0.44 kg (0.97 lb)	85 µm (0.003346 ")
X-LSM200B-SC	203.2 mm (8 ")	No	0.44 kg (0.97 lb)	85 µm (0.003346 ")

Part Number	Repeatability	Backlash	Flatness of Travel	Straightness of Travel
X-LSM025A-C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025A-SC	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM025B-SC	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")
X-LSM050A-C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050A-SC	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM050B-SC	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")
X-LSM100A-C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100A-SC	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")
X-LSM100B-SC	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")

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X-LSM150A-C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150A-SC	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM150B-SC	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-C	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200A-SC	<3 µm (<0.000118 ")	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-C	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")
X-LSM200B-SC	<6 µm (<0.000236 ")	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")

Part Number	Pitch Error	Roll Error	Yaw Error	Microstep Size (Default Resolution)
X-LSM025A-C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025A-SC	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM025B-C	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM025B-SC	0.02 ° (0.349 mrad)	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050A-C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050A-SC	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm
X-LSM050B-C	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM050B-SC	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm
X-LSM100A-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm
X-LSM100A-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm

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X-LSM100B-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM100B-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm
X-LSM150A-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150A-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM150B-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM150B-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200A-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200A-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm
X-LSM200B-C	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm
X-LSM200B-SC	0.035 ° (0.611 mrad)	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm

Part Number	Peak Thrust	Back-driving Force*	Maximum Speed	Minimum Speed
X-LSM025A-C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025A-SC	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM025B-C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM025B-SC	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050A-C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050A-SC	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM050B-C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM050B-SC	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

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X-LSM100A-C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100A-SC	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM100B-C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM100B-SC	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150A-C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150A-SC	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM150B-C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM150B-SC	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200A-C	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200A-SC	55 N (12.3 lb)	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)
X-LSM200B-C	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)
X-LSM200B-SC	25 N (5.6 lb)	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)

Part Number	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A-C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025A-SC	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B-C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM025B-SC	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A-C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050A-SC	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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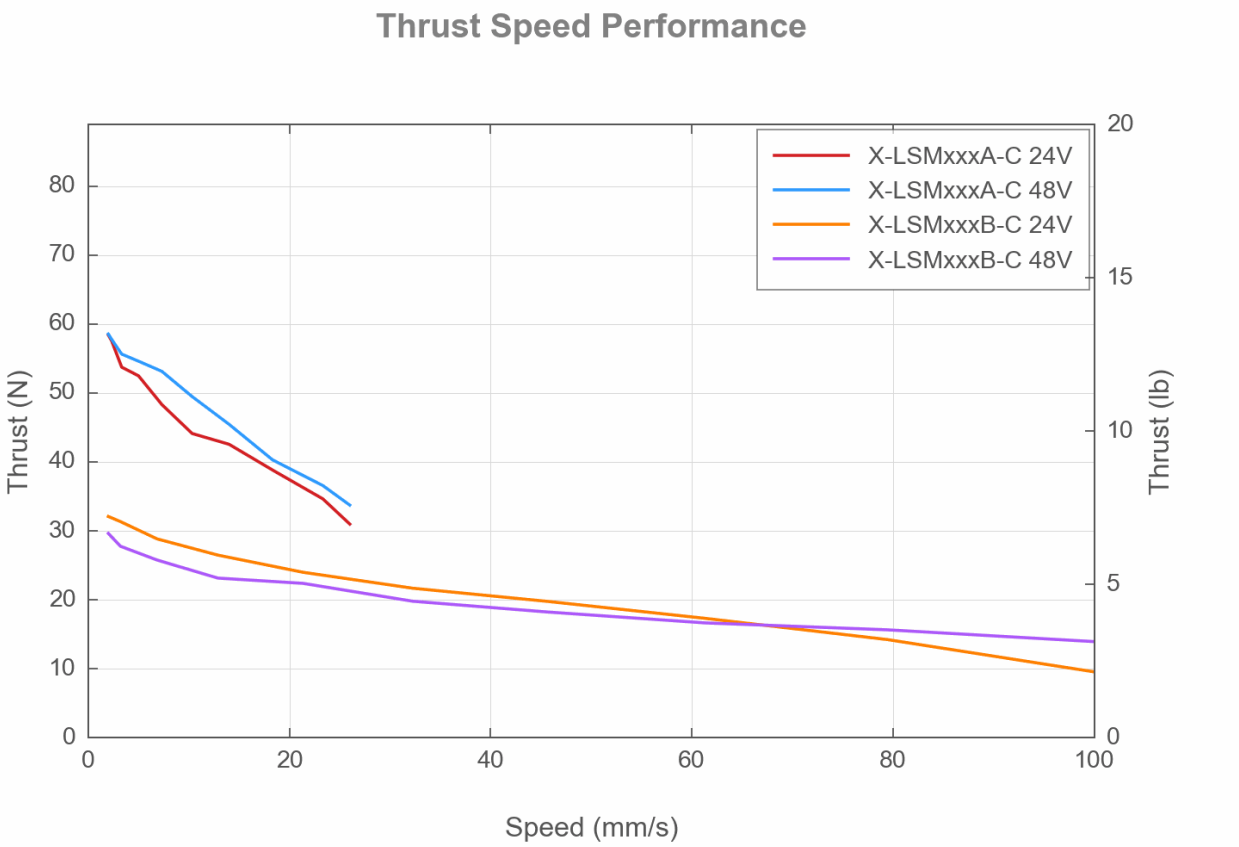
X-LSM050B-C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050B-SC	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A-C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100A-SC	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100B-C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
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X-LSM150A-C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150A-SC	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B-C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150B-SC	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A-C	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200A-SC	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B-C	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200B-SC	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM-C Series Charts

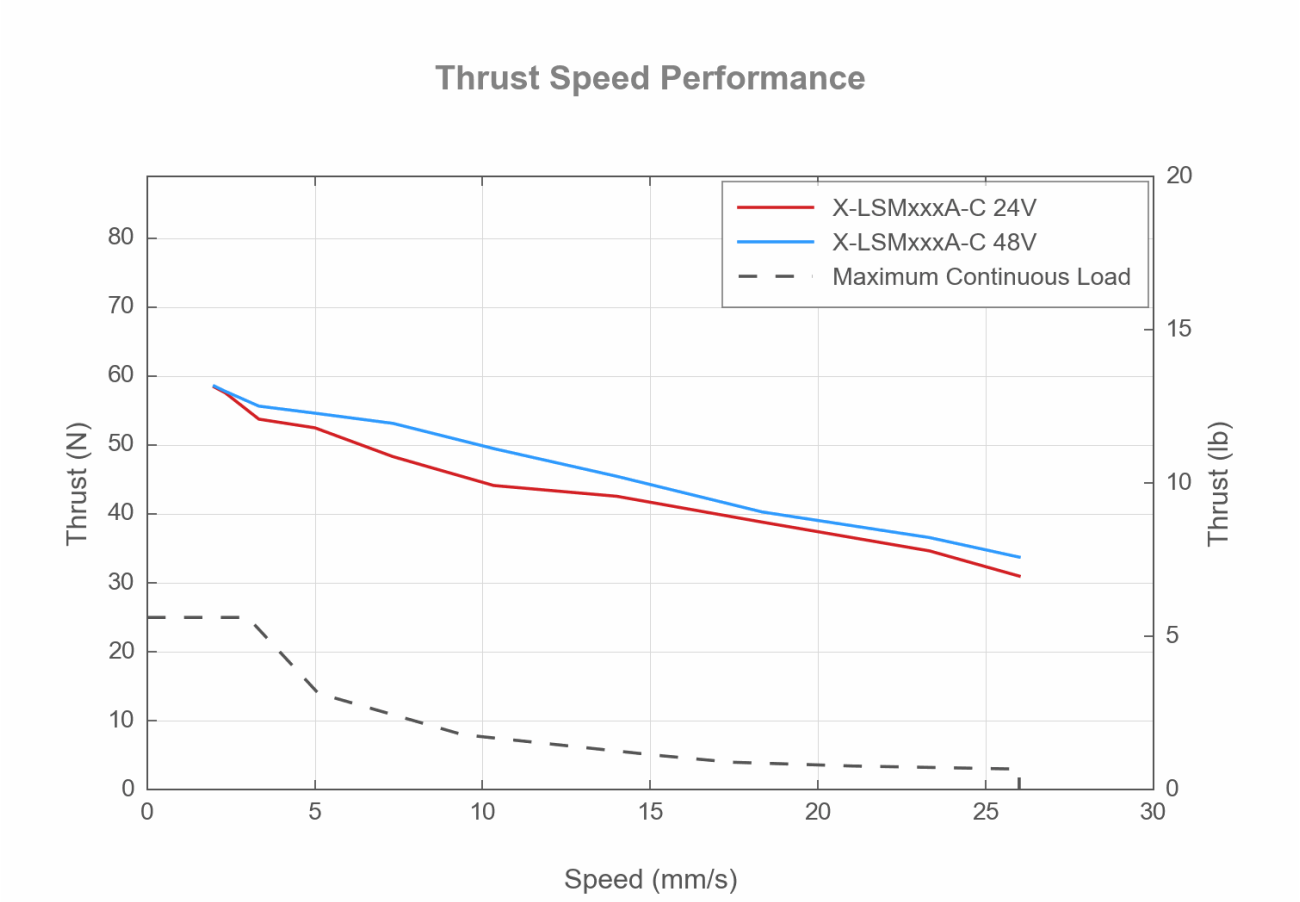
Thrust Speed Performance



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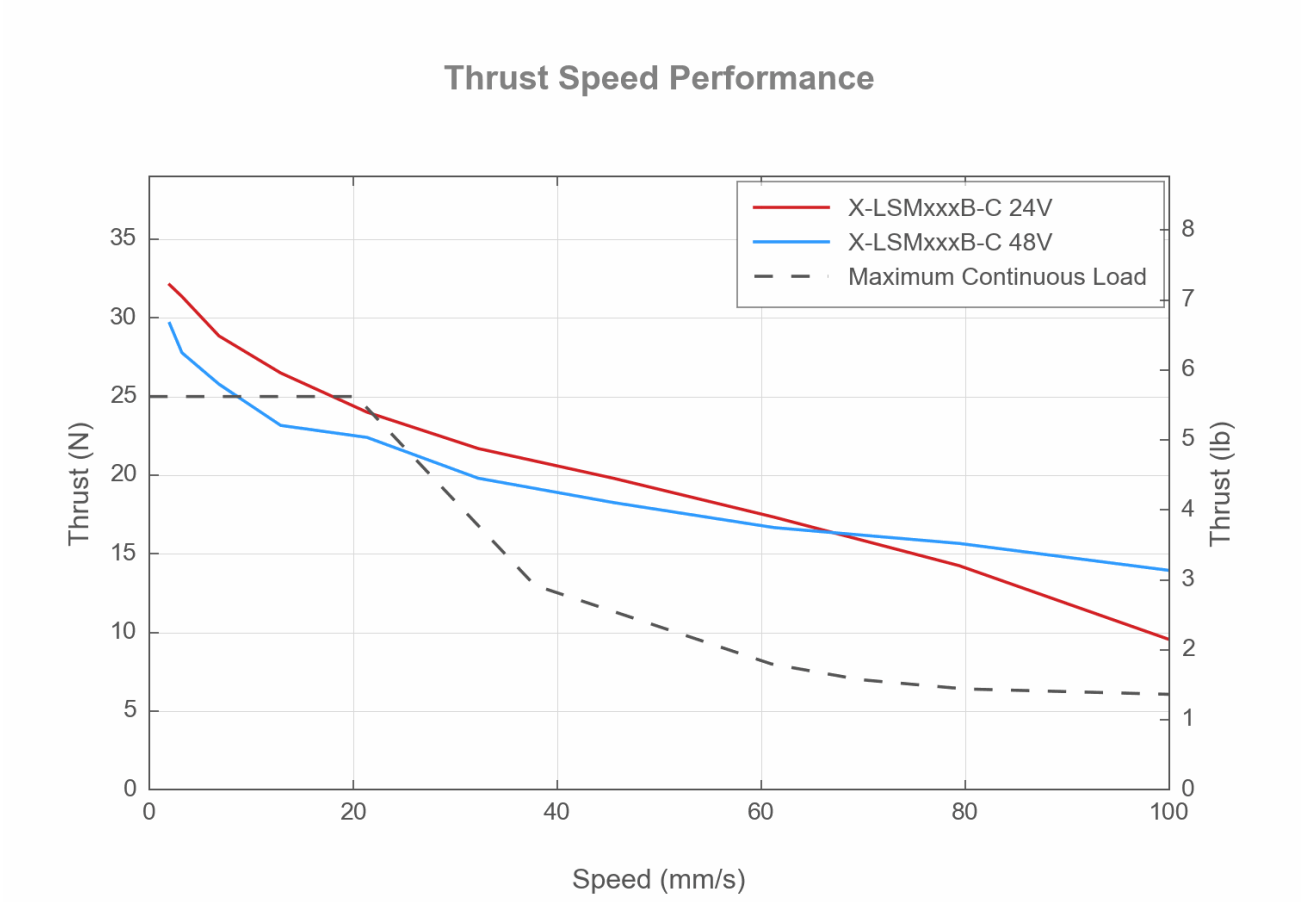
Thrust Speed Performance



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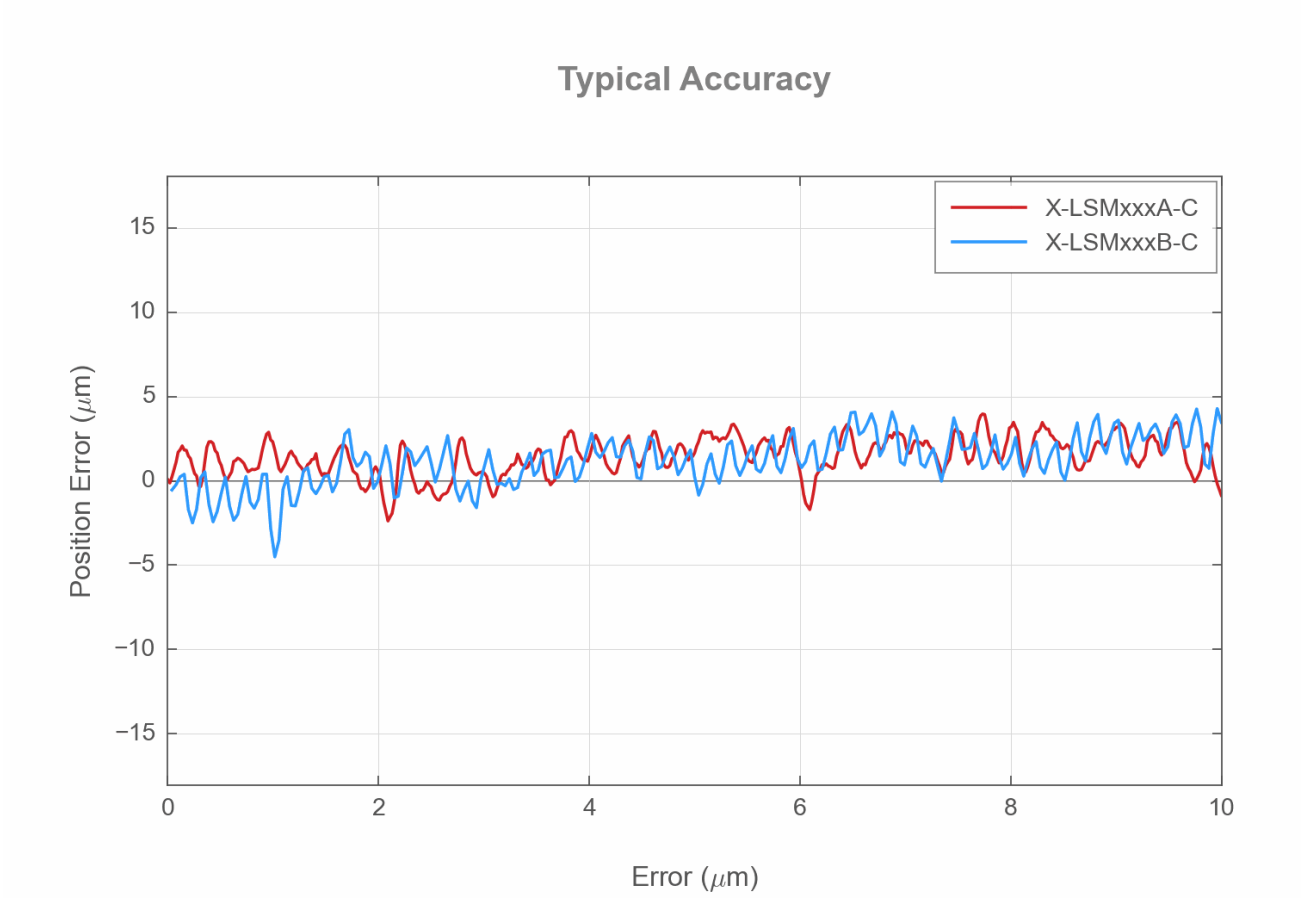
Thrust Speed Performance



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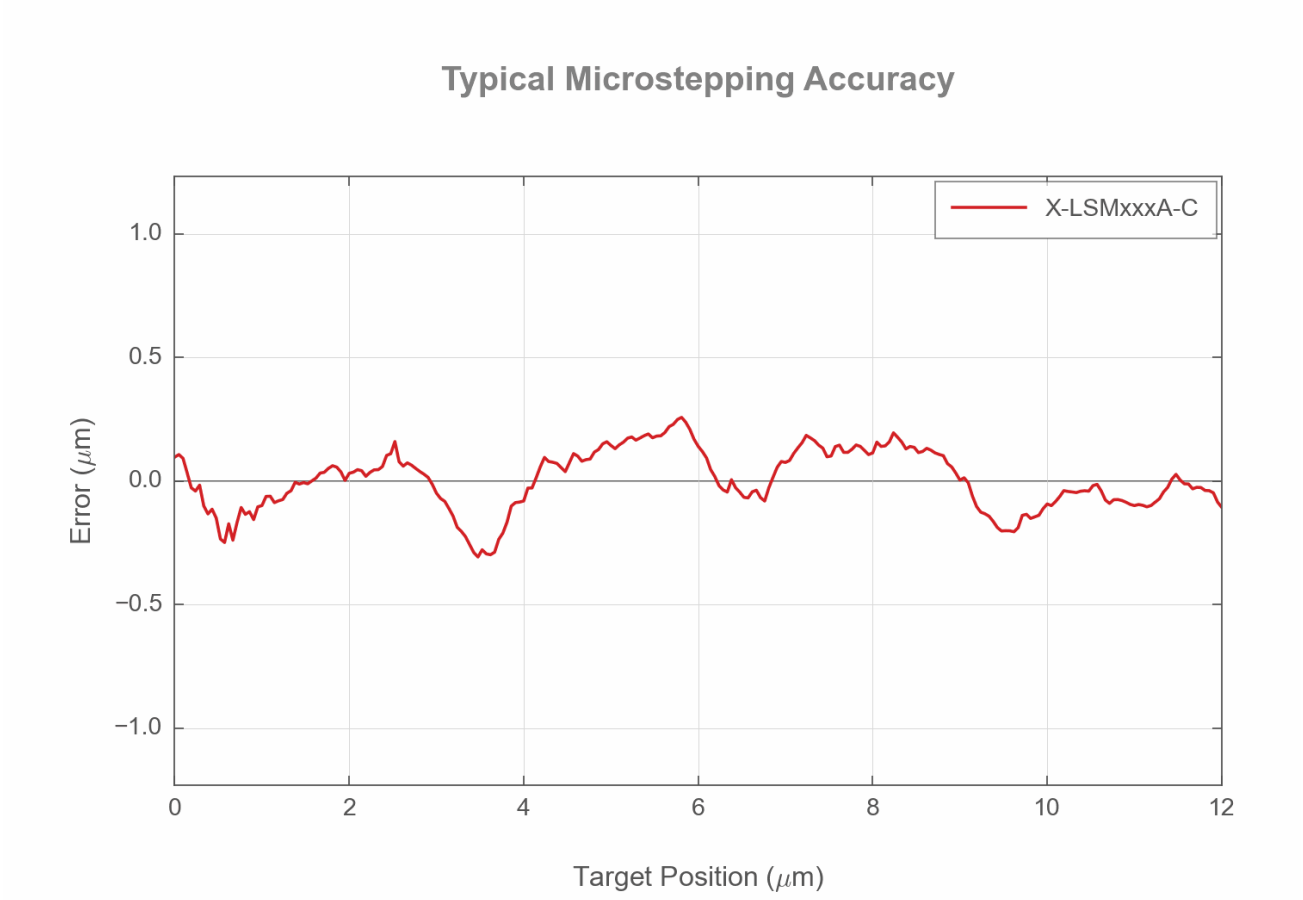
Typical Accuracy



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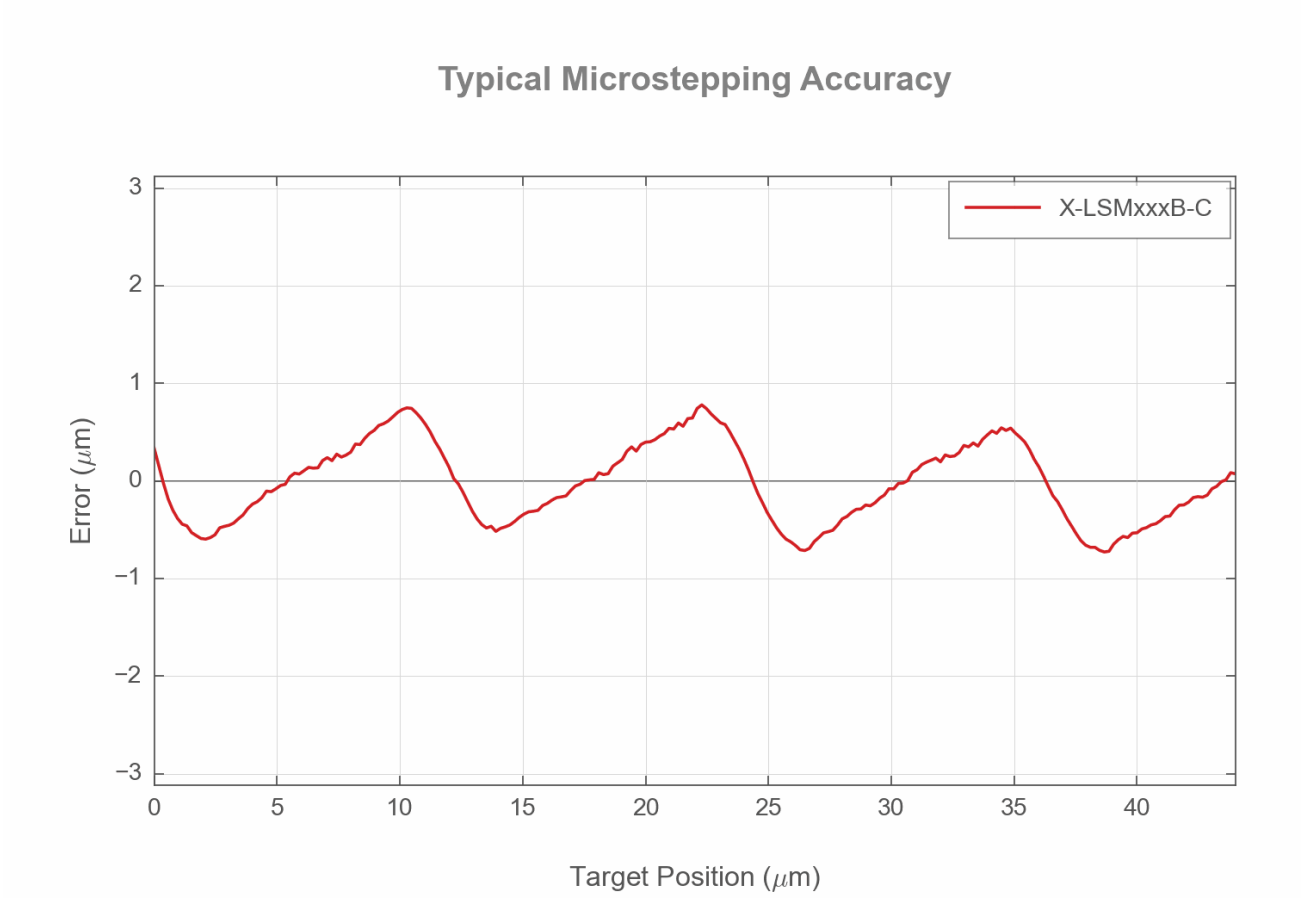
Typical Microstepping Accuracy



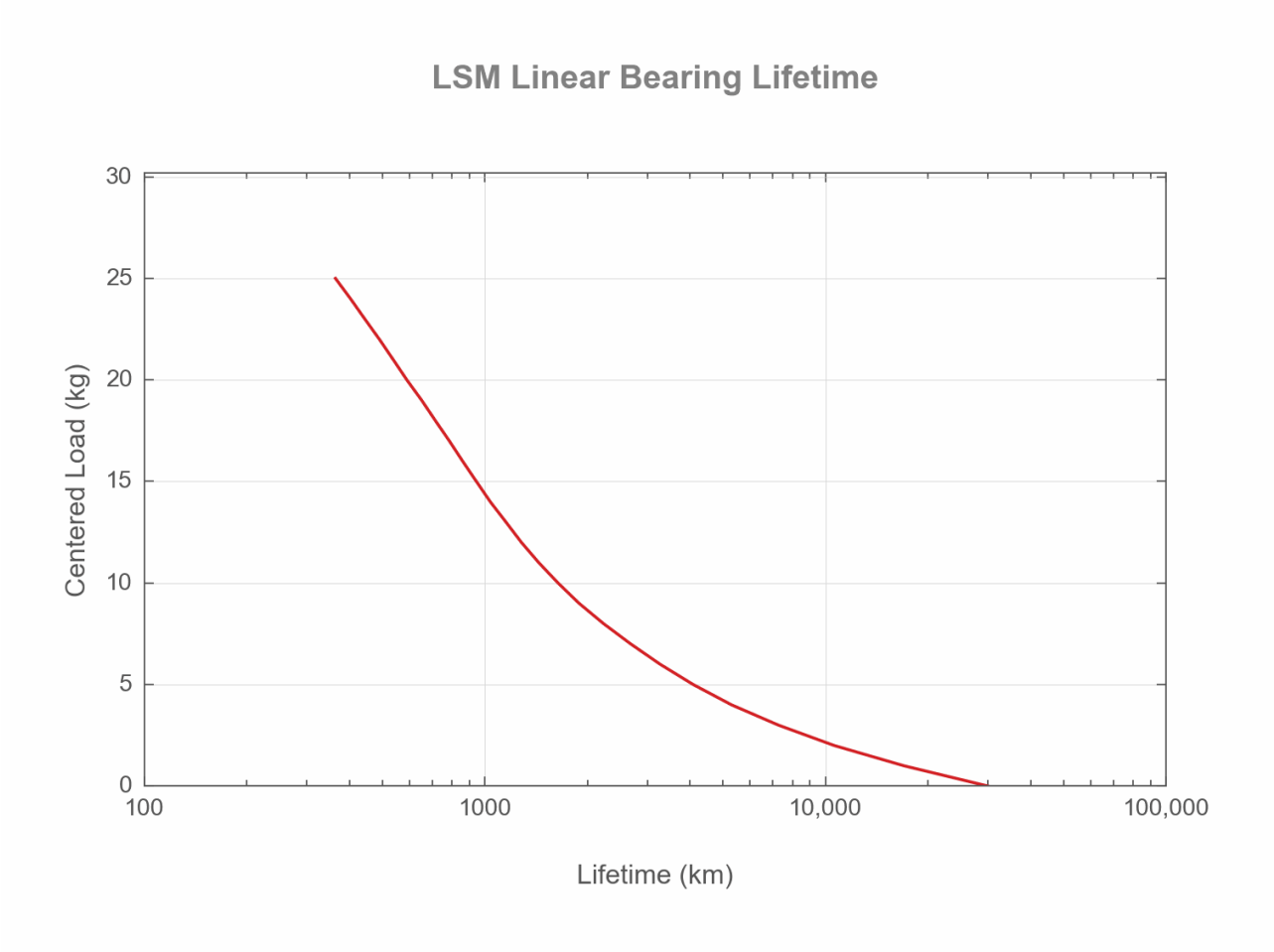
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Typical Microstepping Accuracy



LSM Linear Bearing Lifetime



Contact

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LSM-E Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Encoder position feedback with slip/stall detection and automatic recovery
- Multiple LSM-E stages can be assembled in XY or XYZ configurations without additional hardware
- 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
- Custom versions available

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LSM-E Series Overview

Zaber's LSM-E Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a very compact size. They 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 LSM-E.

The built-in motor encoder allows closed-loop operation and slip/stall recovery features. At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-E's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. The stages can be mounted in XY and XYZ configurations with no additional hardware.

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

LSM-E Series Part Numbering & Options

LSM 025 A - E03 T4A

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
- **T4A** — D-sub 15 inline connector with Auto Detect

LSM-E Series Drawings

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

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LSM-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
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	150 N·m/°
Stiffness (Roll)	150 N·m/°
Stiffness (Yaw)	150 N·m/°

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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 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 and M4 threaded centre hole

Environmental & Compliance

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

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Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
LSM025A-E03T4A	25.4 mm (1 ")	0.26 kg (0.573 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-E03T4A	25.4 mm (1 ")	0.26 kg (0.573 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-E03T4A	50.8 mm (2 ")	0.28 kg (0.617 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-E03T4A	50.8 mm (2 ")	0.28 kg (0.617 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-E03T4A	101.6 mm (4 ")	0.32 kg (0.705 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-E03T4A	101.6 mm (4 ")	0.32 kg (0.705 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-E03T4A	152.4 mm (6 ")	0.37 kg (0.816 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-E03T4A	152.4 mm (6 ")	0.37 kg (0.816 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-E03T4A	203.2 mm (8 ")	0.42 kg (0.926 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-E03T4A	203.2 mm (8 ")	0.42 kg (0.926 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-E03T4A	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-E03T4A	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-E03T4A	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-E03T4A	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-E03T4A	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM100B-E03T4A	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM150A-E03T4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

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LSM150B-E03T4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200A-E03T4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200B-E03T4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-E03T4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM025B-E03T4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM050A-E03T4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM050B-E03T4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM100A-E03T4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	55 N (12.3 lb)
LSM100B-E03T4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	25 N (5.6 lb)
LSM150A-E03T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM150B-E03T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)
LSM200A-E03T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM200B-E03T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)

Part Number	Back-driving Force*	Maximum Speed	Minimum Speed	Speed Resolution
LSM025A-E03T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM025B-E03T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM050A-E03T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)

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LSM050B-E03T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM100A-E03T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM100B-E03T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM150A-E03T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM150B-E03T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM200A-E03T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM200B-E03T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)

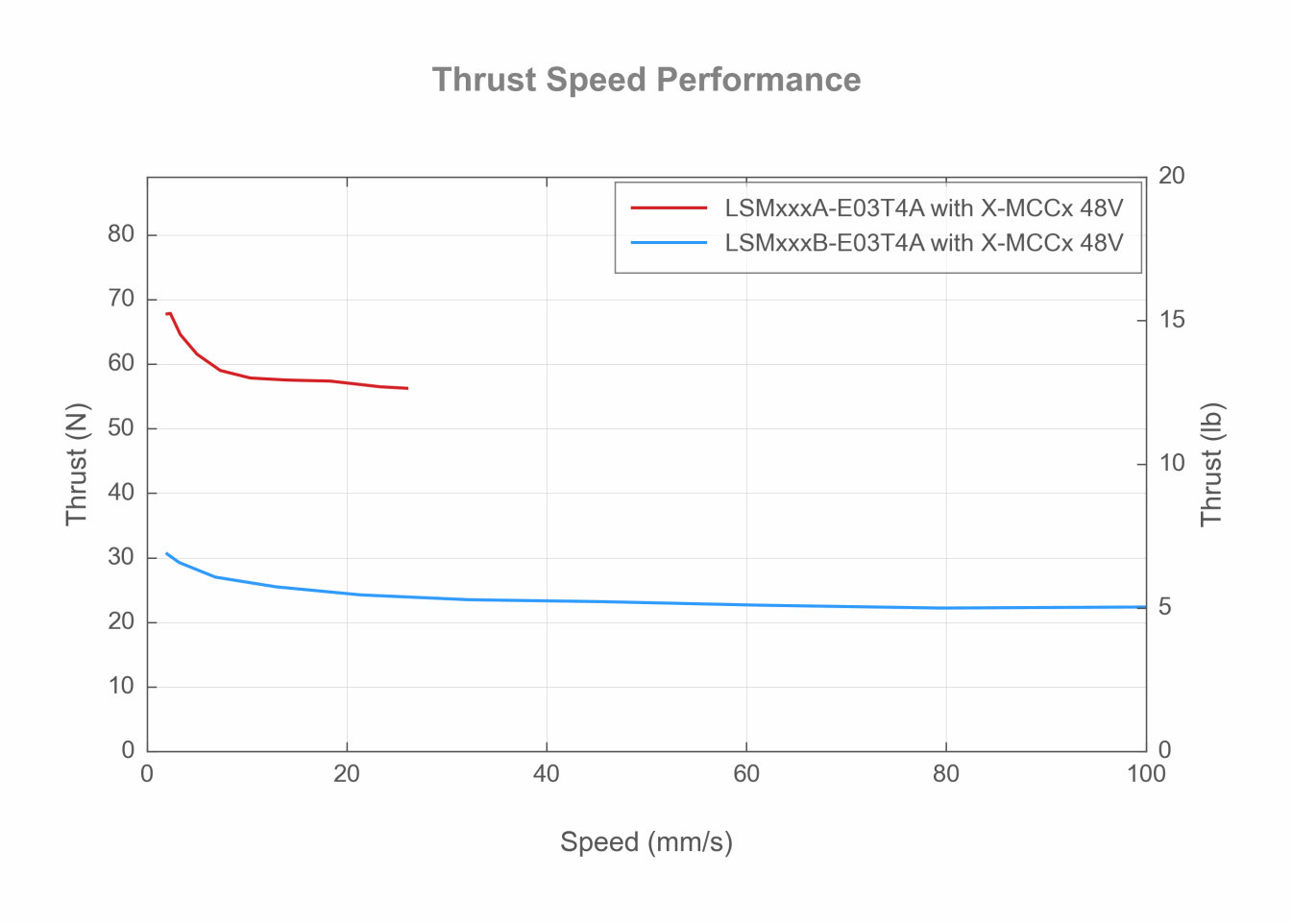
Part Number	Linear Motion Per Motor Rev
LSM025A-E03T4A	0.6096 mm (0.024 ")
LSM025B-E03T4A	2.4384 mm (0.096 ")
LSM050A-E03T4A	0.6096 mm (0.024 ")
LSM050B-E03T4A	2.4384 mm (0.096 ")
LSM100A-E03T4A	0.6096 mm (0.024 ")
LSM100B-E03T4A	2.4384 mm (0.096 ")
LSM150A-E03T4A	0.6096 mm (0.024 ")
LSM150B-E03T4A	2.4384 mm (0.096 ")
LSM200A-E03T4A	0.6096 mm (0.024 ")
LSM200B-E03T4A	2.4384 mm (0.096 ")

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LSM-E Series Charts

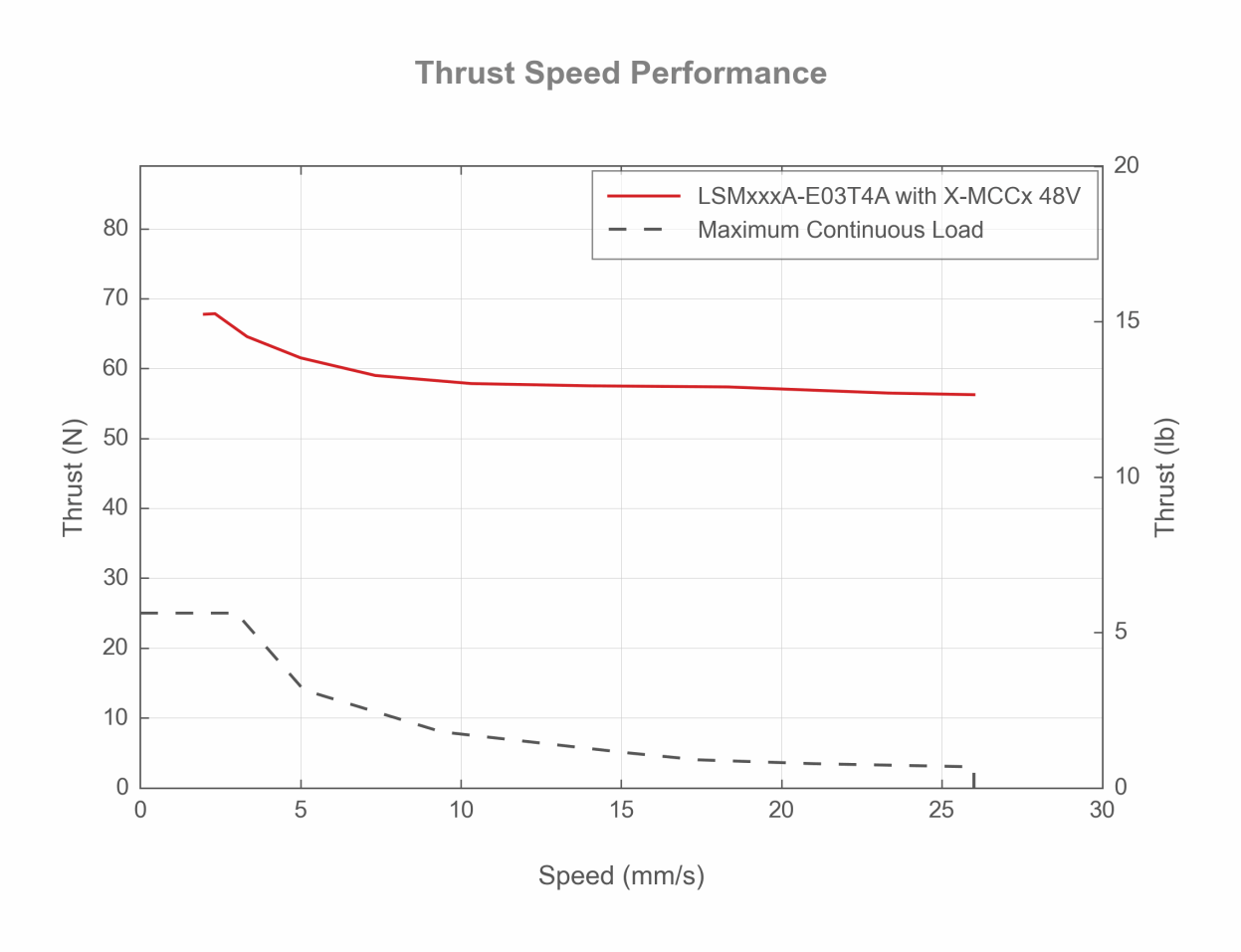
LSMxxxAB E03T4A Thrust Speed Performance



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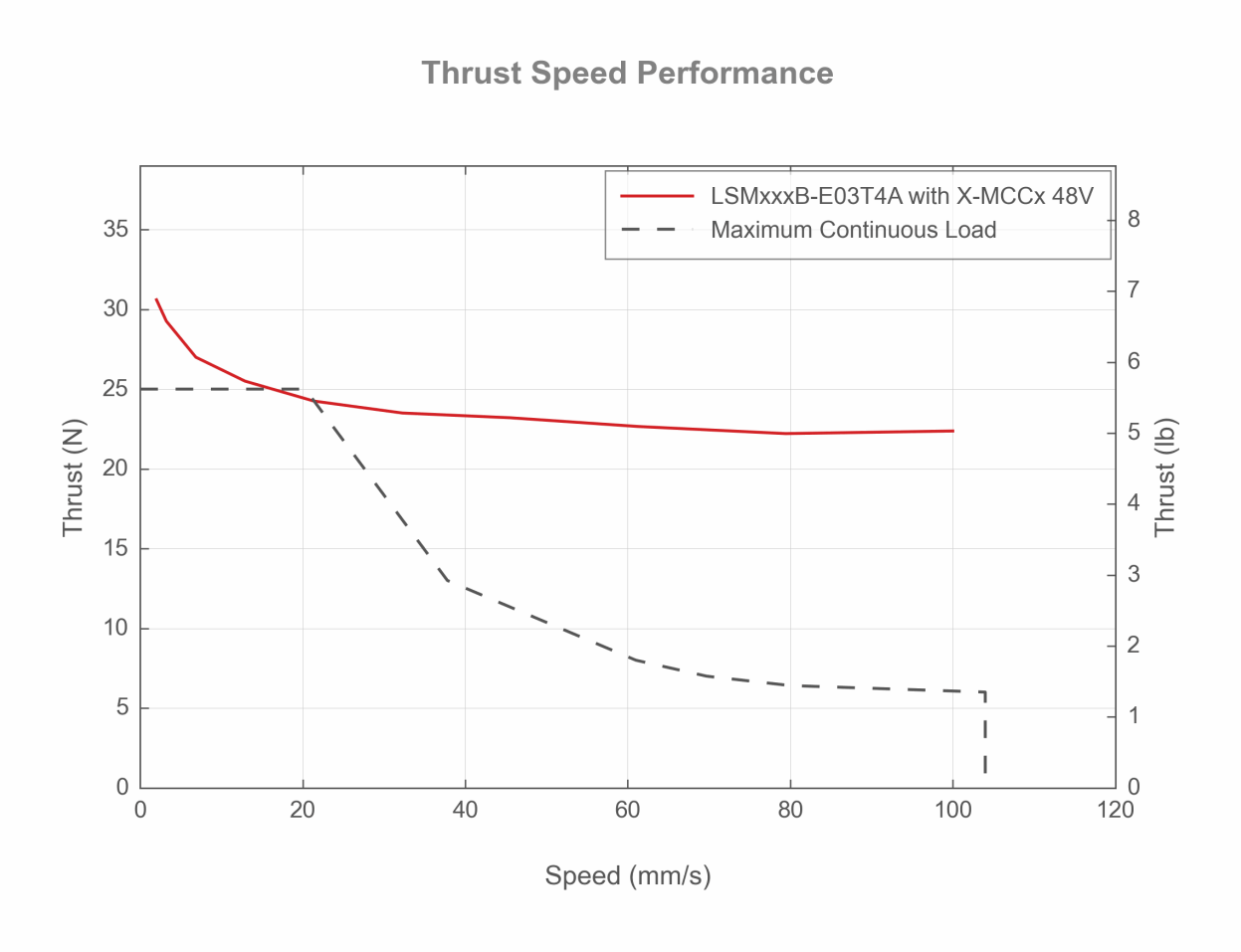
LSMxxxA E03T4A Thrust Speed Performance



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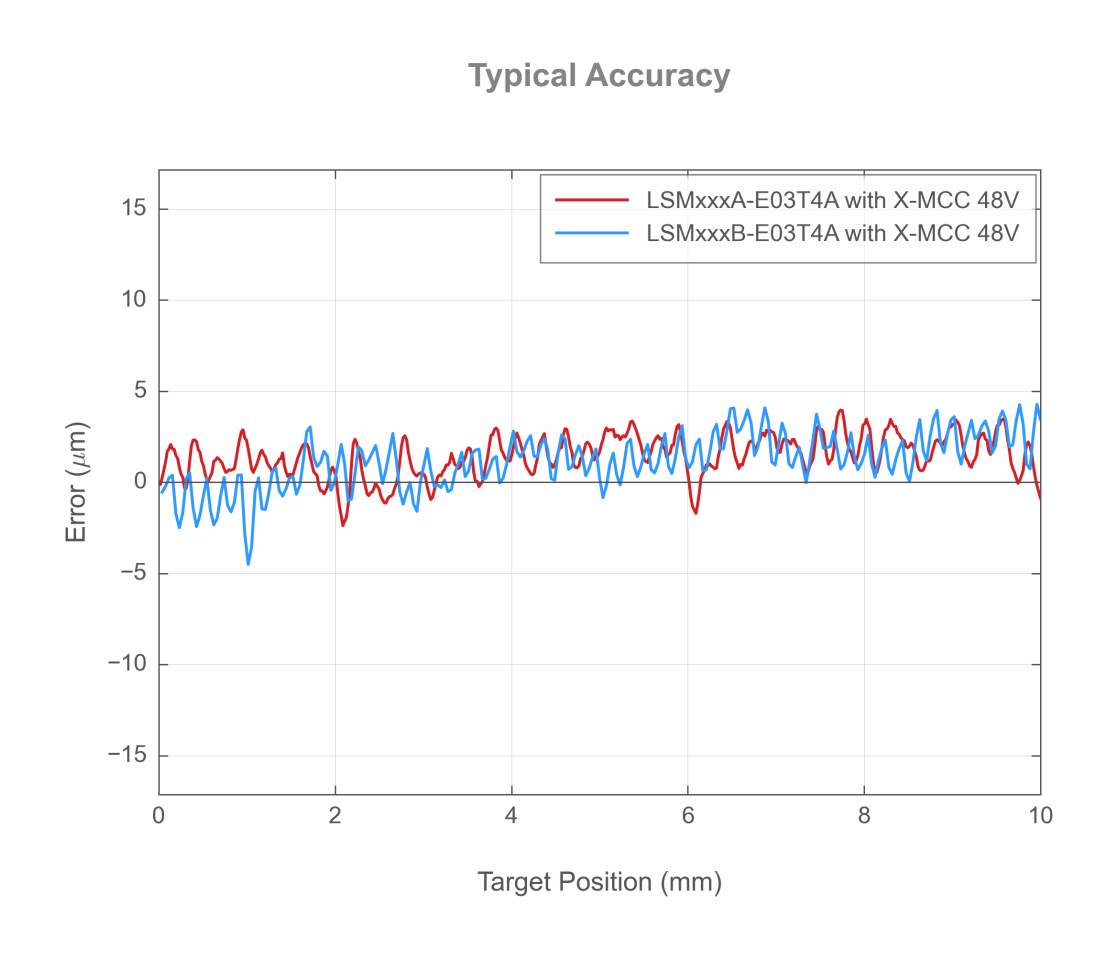
LSMxxxB E03T4A Thrust Speed Performance



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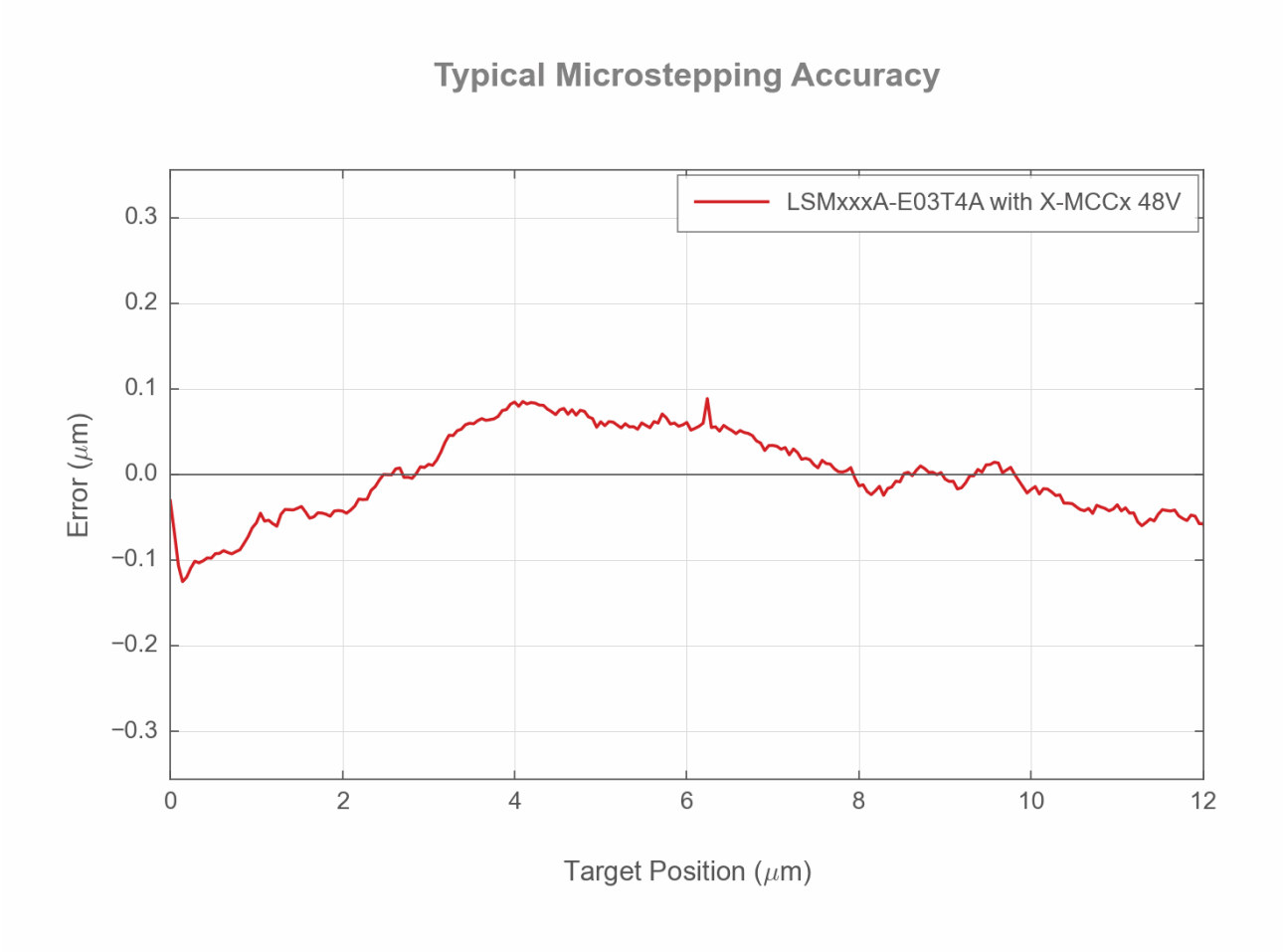
LSMxxxA E03T4A Typical Accuracy



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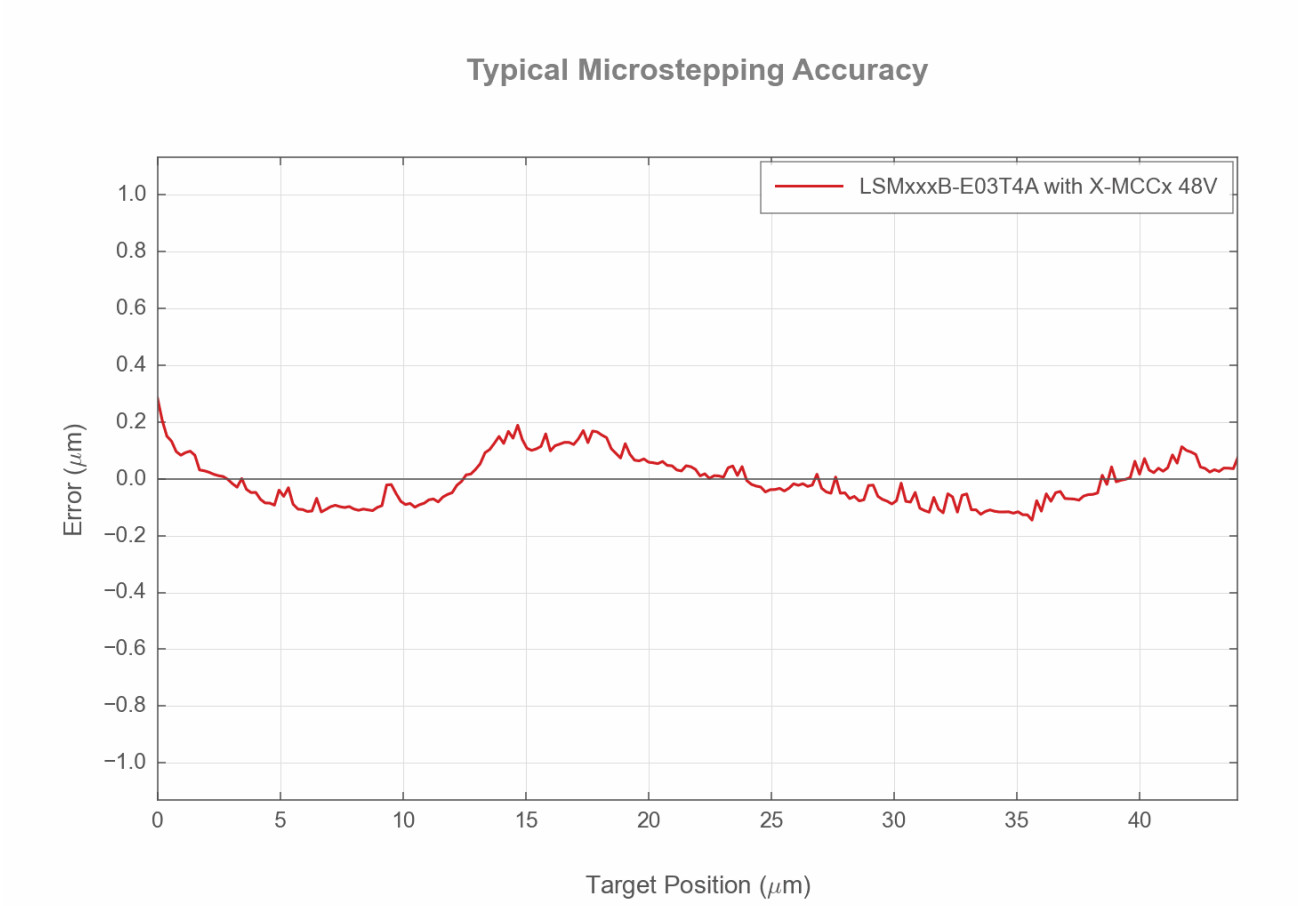
LSMxxxA E03T4A Typical Microstepping Accuracy



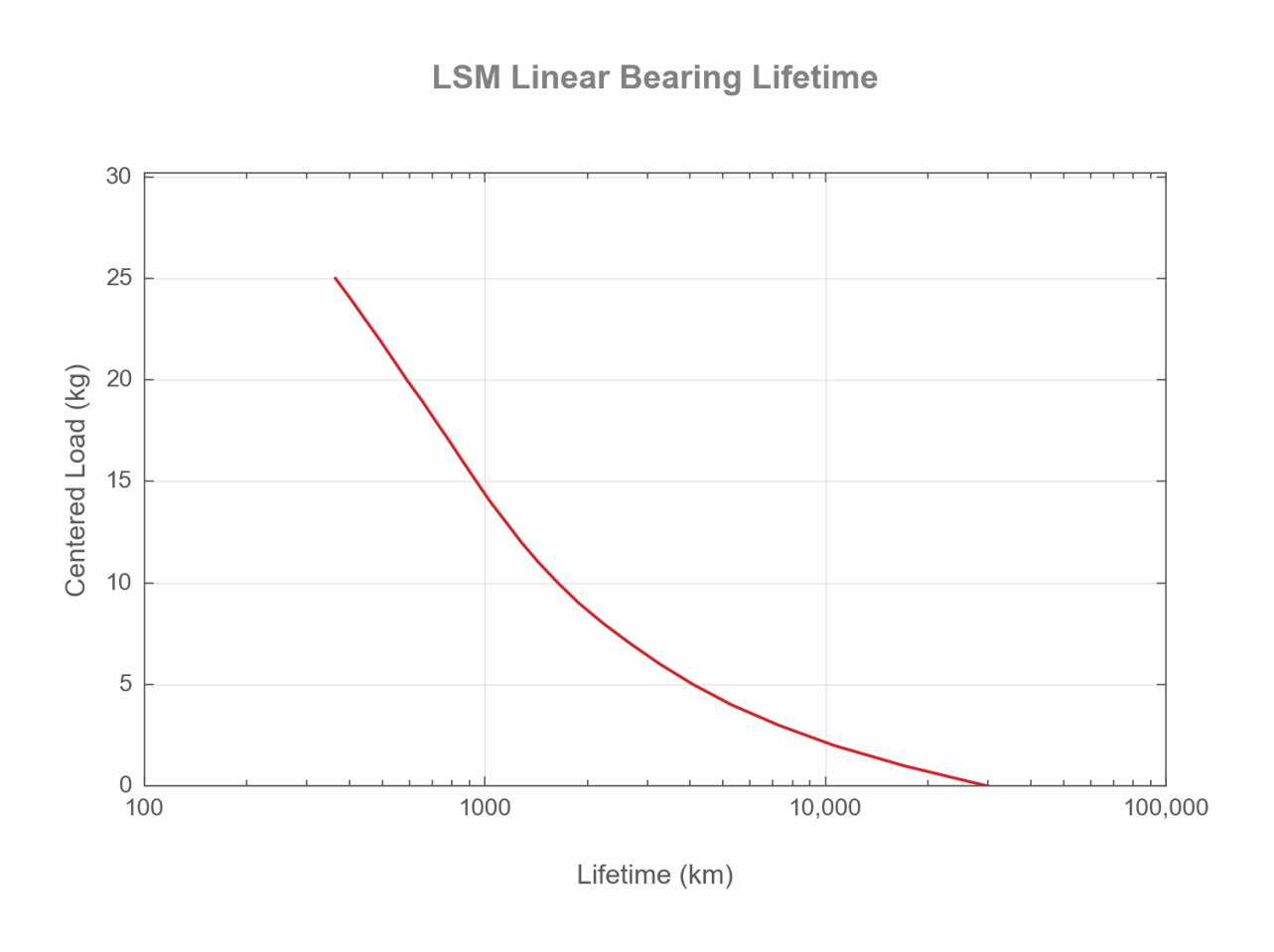
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LSMxxxB E03T4A Typical Microstepping Accuracy



LSMxxx Lifetime



Contact

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LSM-EC Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Includes stainless steel dust cover
- Encoder position feedback with slip/stall detection and automatic recovery
- Multiple LSM-EC stages can be assembled in XY or XYZ configurations without additional hardware
- 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
- Custom versions available

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LSM-EC Series Overview

Zaber's LSM-EC Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a very compact size. A rigid dust cover prevents contact with the rails and bearing system. They 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 LSM-EC.

The built-in motor encoder allows closed-loop operation and slip/stall recovery features. At only 26.2 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-EC's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. The stages can be mounted in XY and XYZ configurations with no additional hardware.

For more information visit: https://www.zaber.com/products/linear-stages/LSM-EC

LSM-EC Series Part Numbering & Options

LSM 025 A - E03 C T4A

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

Cover
- **C** — Rigid Cover

Connector
- **T4A** — D-sub 15 inline connector with Auto Detect

LSM-EC Series Drawings

- LSM-EC (Drawing for the LSM-EC)
- View all drawings and documents at zaber.com

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LSM-EC 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
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	75 N·m/°
Stiffness (Roll)	75 N·m/°
Stiffness (Yaw)	150 N·m/°

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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 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 and M4 threaded centre hole

Environmental & Compliance

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

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Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
LSM025A-E03CT4A	25.4 mm (1 ")	0.26 kg (0.573 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-E03CT4A	25.4 mm (1 ")	0.26 kg (0.573 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-E03CT4A	50.8 mm (2 ")	0.28 kg (0.617 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-E03CT4A	50.8 mm (2 ")	0.28 kg (0.617 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-E03CT4A	101.6 mm (4 ")	0.32 kg (0.705 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-E03CT4A	101.6 mm (4 ")	0.32 kg (0.705 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-E03CT4A	152.4 mm (6 ")	0.37 kg (0.816 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-E03CT4A	152.4 mm (6 ")	0.37 kg (0.816 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-E03CT4A	203.2 mm (8 ")	0.42 kg (0.926 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-E03CT4A	203.2 mm (8 ")	0.42 kg (0.926 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-E03CT4A	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-E03CT4A	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-E03CT4A	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-E03CT4A	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-E03CT4A	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM100B-E03CT4A	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM150A-E03CT4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

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LSM150B-E03CT4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200A-E03CT4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200B-E03CT4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-E03CT4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM025B-E03CT4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM050A-E03CT4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM050B-E03CT4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM100A-E03CT4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	55 N (12.3 lb)
LSM100B-E03CT4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	25 N (5.6 lb)
LSM150A-E03CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM150B-E03CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)
LSM200A-E03CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM200B-E03CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)

Part Number	Back-driving Force*	Maximum Speed	Minimum Speed	Speed Resolution
LSM025A-E03CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM025B-E03CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM050A-E03CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)

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LSM050B-E03CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM100A-E03CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM100B-E03CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM150A-E03CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM150B-E03CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM200A-E03CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM200B-E03CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)

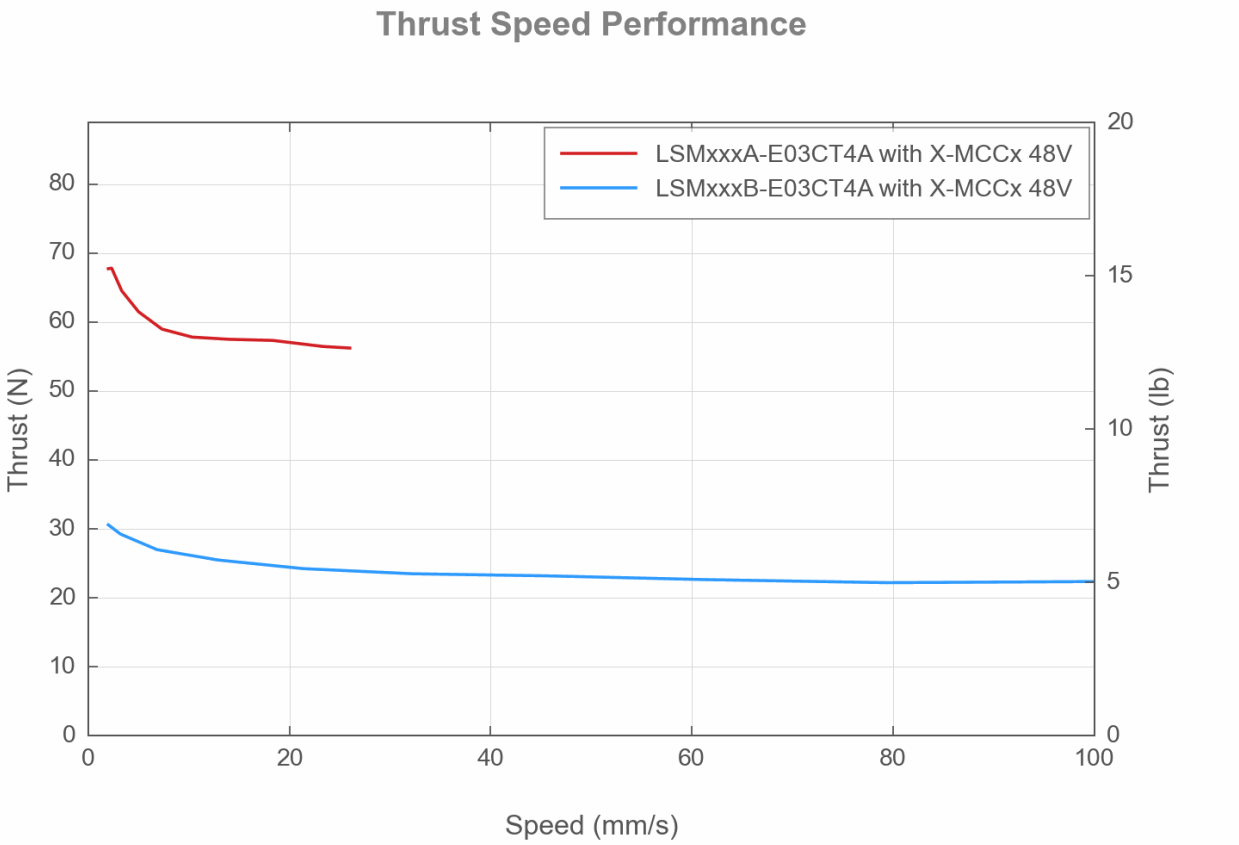
Part Number	Linear Motion Per Motor Rev
LSM025A-E03CT4A	0.6096 mm (0.024 ")
LSM025B-E03CT4A	2.4384 mm (0.096 ")
LSM050A-E03CT4A	0.6096 mm (0.024 ")
LSM050B-E03CT4A	2.4384 mm (0.096 ")
LSM100A-E03CT4A	0.6096 mm (0.024 ")
LSM100B-E03CT4A	2.4384 mm (0.096 ")
LSM150A-E03CT4A	0.6096 mm (0.024 ")
LSM150B-E03CT4A	2.4384 mm (0.096 ")
LSM200A-E03CT4A	0.6096 mm (0.024 ")
LSM200B-E03CT4A	2.4384 mm (0.096 ")

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LSM-EC Series Charts

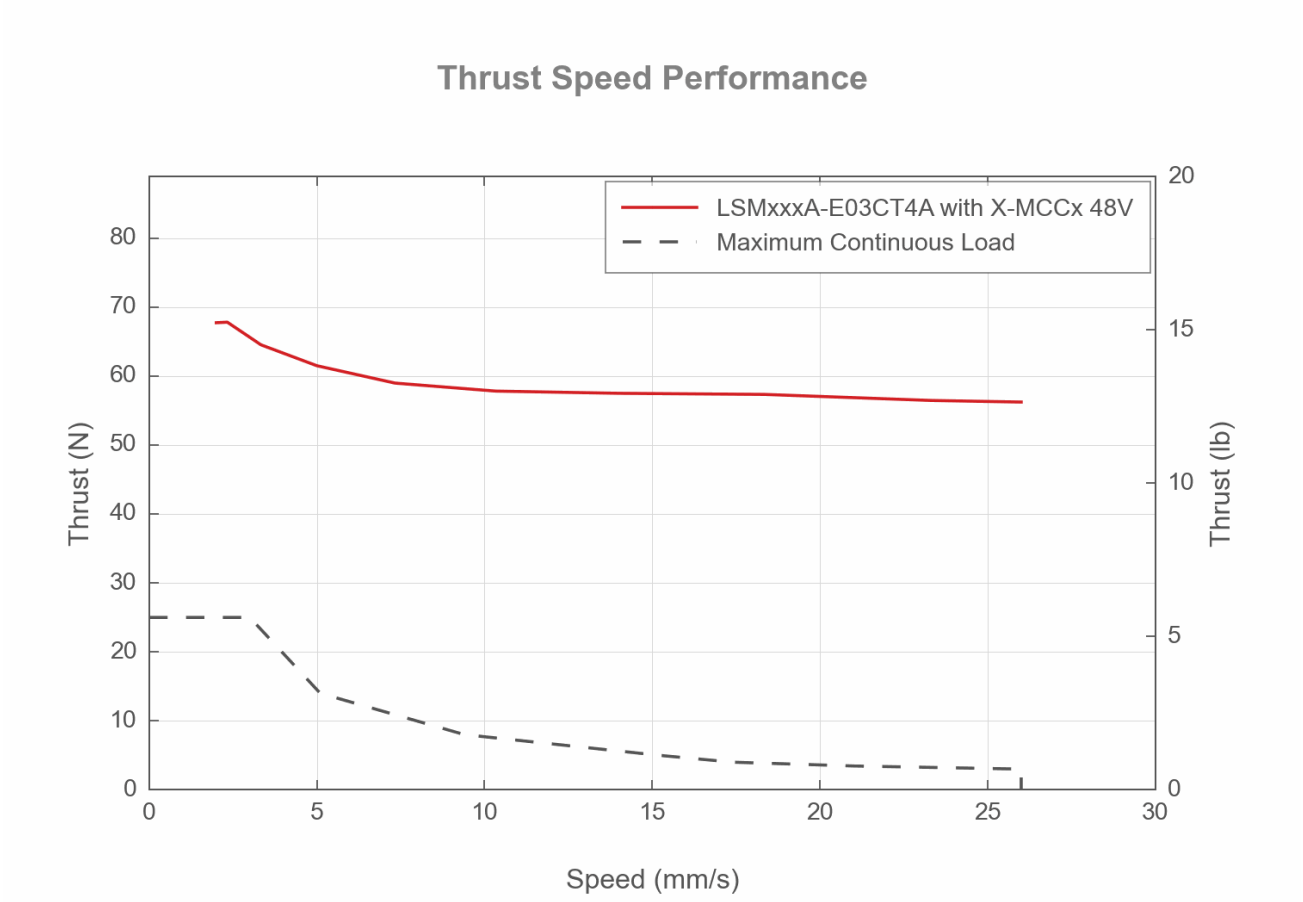
LSMxxxAB E03CT4A Thrust Speed Performance



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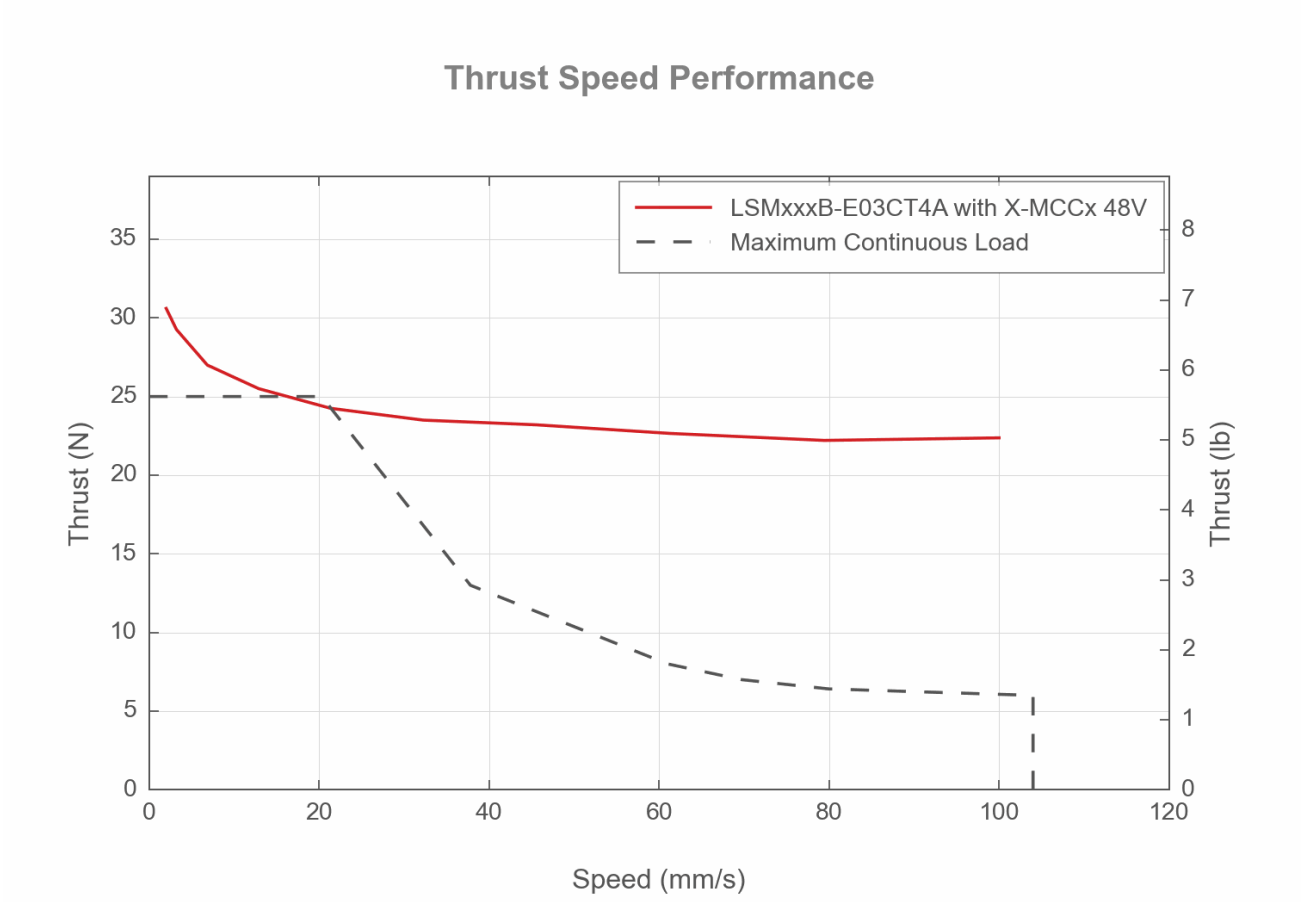
LSMxxxA E03CT4A Thrust Speed Performance



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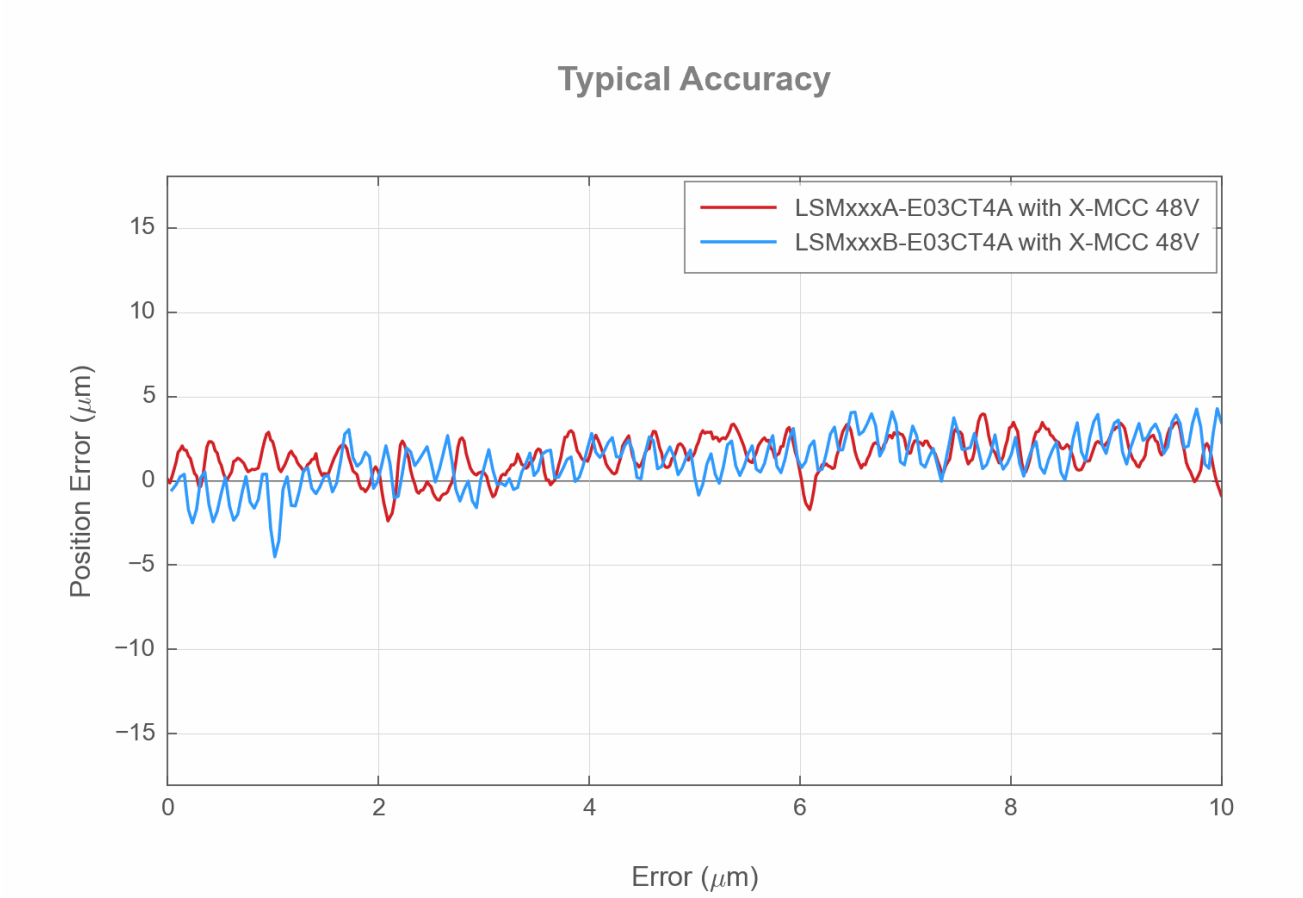
LSMxxxB E03CT4A Thrust Speed Performance



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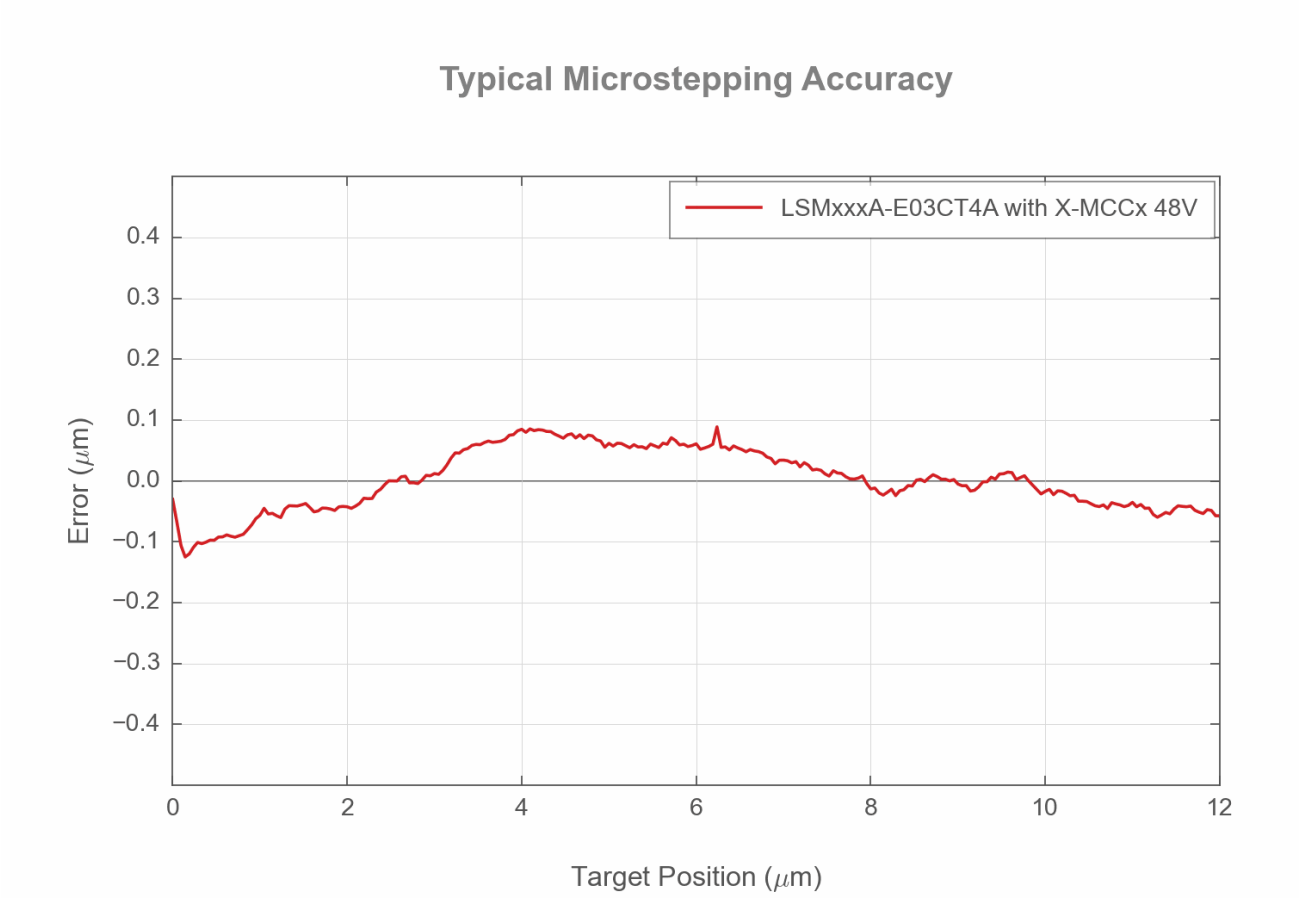
LSMxxxAB E03CT4A Typical Accuracy



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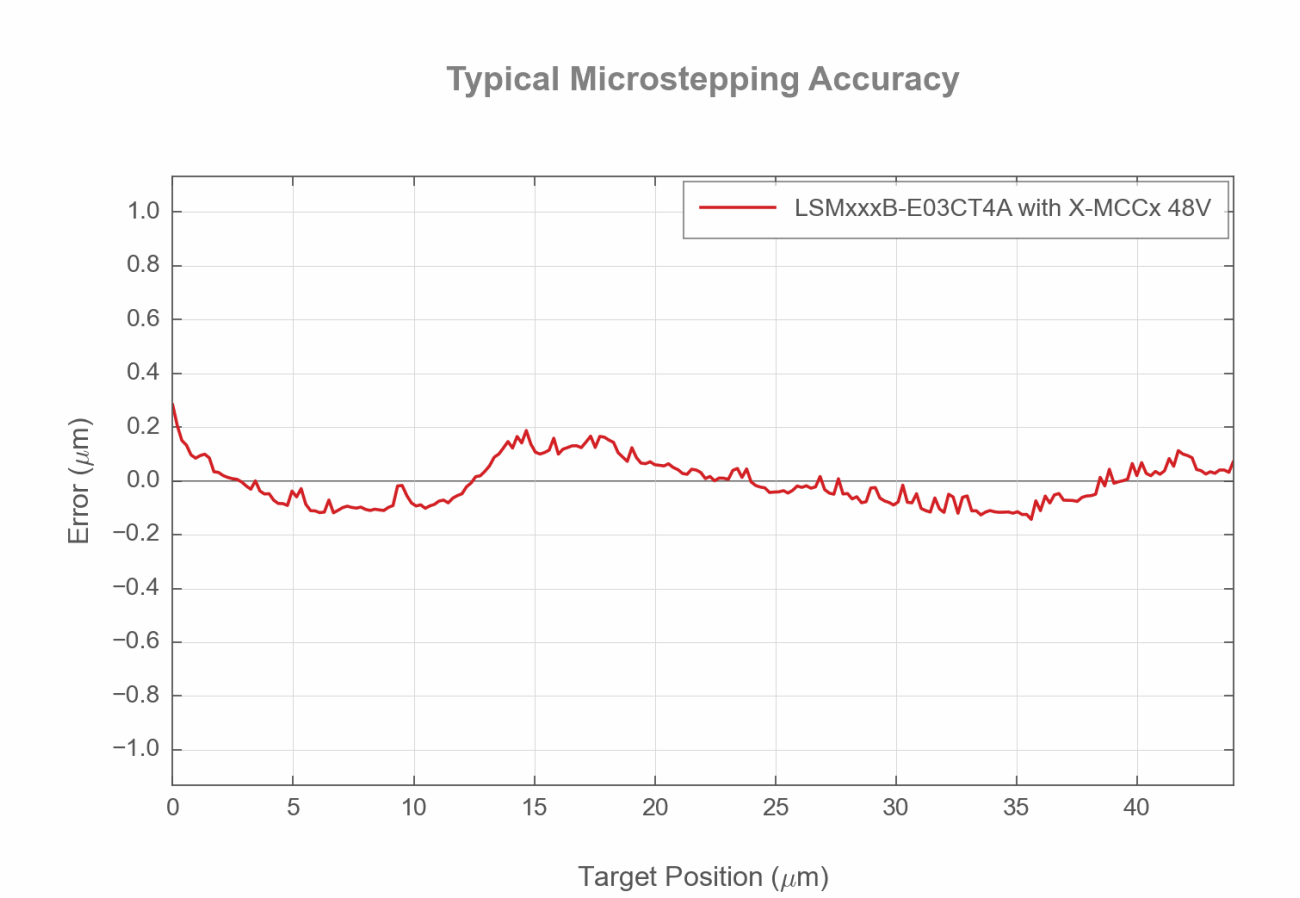
LSMxxxA E03CT4A Typical Microstepping Accuracy



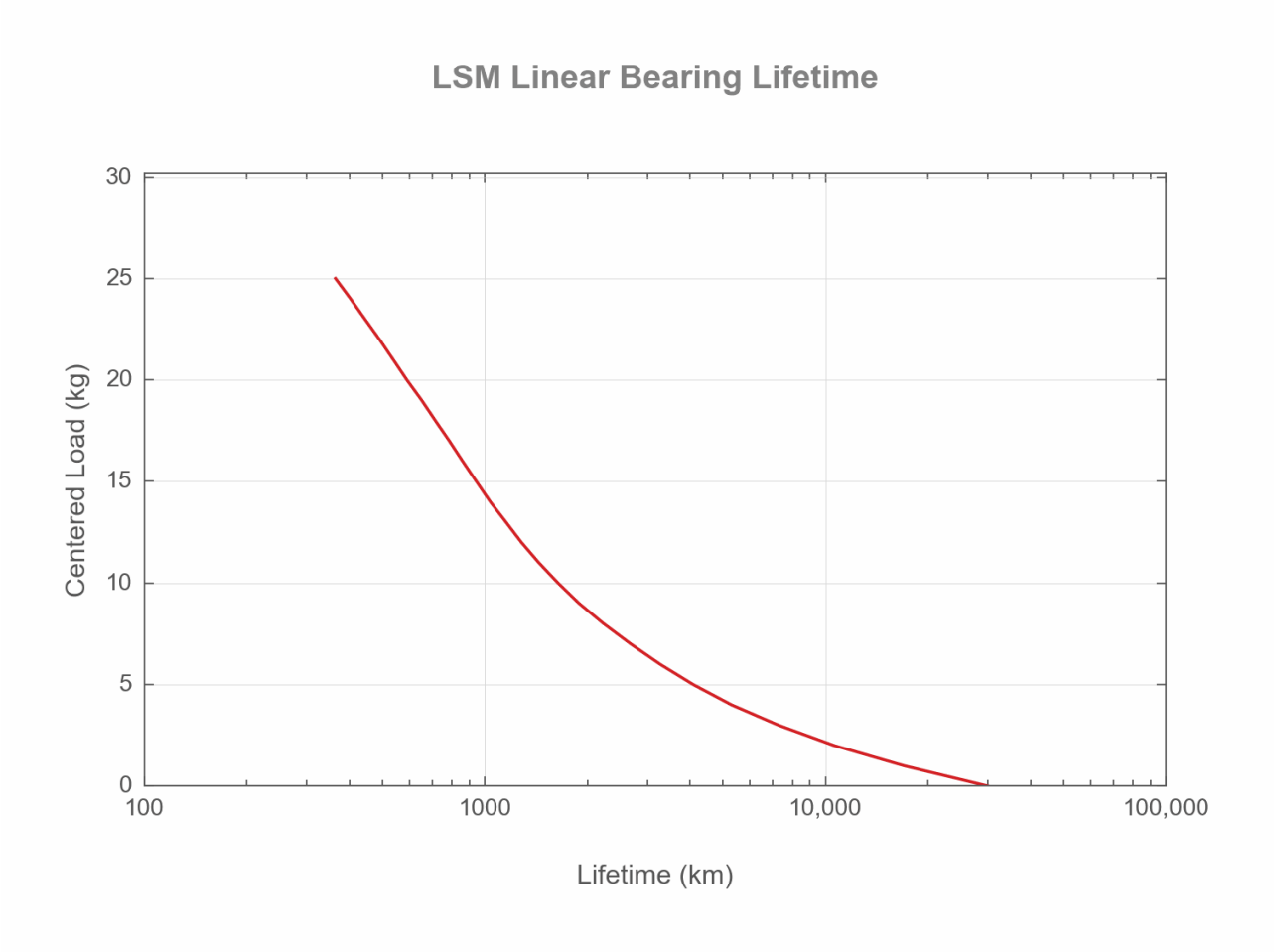
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LSMxxxB E03CT4A Typical Microstepping Accuracy



LSM Linear Bearing Lifetime



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LSM Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Up to 104 mm/s speed
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Very low profile at only 21 mm stage height
- Can be mounted in XY and XYZ configurations
- 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
- Custom versions available

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LSM Series Overview

Zaber's LSM Series devices are motorized linear stages with high thrust and speed capabilities and a very compact size. They 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 LSM.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. The stages can be mounted in XY and XYZ configurations with no additional hardware.

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

LSM Series Part Numbering & Options

LSM 025 A - T4A

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

T4A — D-sub 15 inline connector with Auto Detect

LSM Series Drawings

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

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LSM 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
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	150 N·m/°
Stiffness (Roll)	150 N·m/°
Stiffness (Yaw)	150 N·m/°

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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 and M4 threaded centre hole

Environmental & Compliance

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

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Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
LSM025A-T4A	25.4 mm (1 ")	0.2 kg (0.441 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-T4A	25.4 mm (1 ")	0.2 kg (0.441 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-T4A	50.8 mm (2 ")	0.21 kg (0.463 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-T4A	50.8 mm (2 ")	0.21 kg (0.463 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-T4A	101.6 mm (4 ")	0.28 kg (0.617 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-T4A	101.6 mm (4 ")	0.24 kg (0.529 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-T4A	152.4 mm (6 ")	0.32 kg (0.705 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-T4A	152.4 mm (6 ")	0.28 kg (0.617 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-T4A	203.2 mm (8 ")	0.31 kg (0.683 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-T4A	203.2 mm (8 ")	0.31 kg (0.683 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-T4A	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-T4A	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-T4A	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-T4A	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-T4A	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM100B-T4A	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM150A-T4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

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LSM150B-T4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200A-T4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200B-T4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-T4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM025B-T4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM050A-T4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM050B-T4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM100A-T4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	55 N (12.3 lb)
LSM100B-T4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	25 N (5.6 lb)
LSM150A-T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM150B-T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)
LSM200A-T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM200B-T4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)

Part Number	Back-driving Force*	Maximum Speed	Minimum Speed	Speed Resolution
LSM025A-T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM025B-T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM050A-T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)

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LSM050B-T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM100A-T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM100B-T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM150A-T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM150B-T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM200A-T4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM200B-T4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)

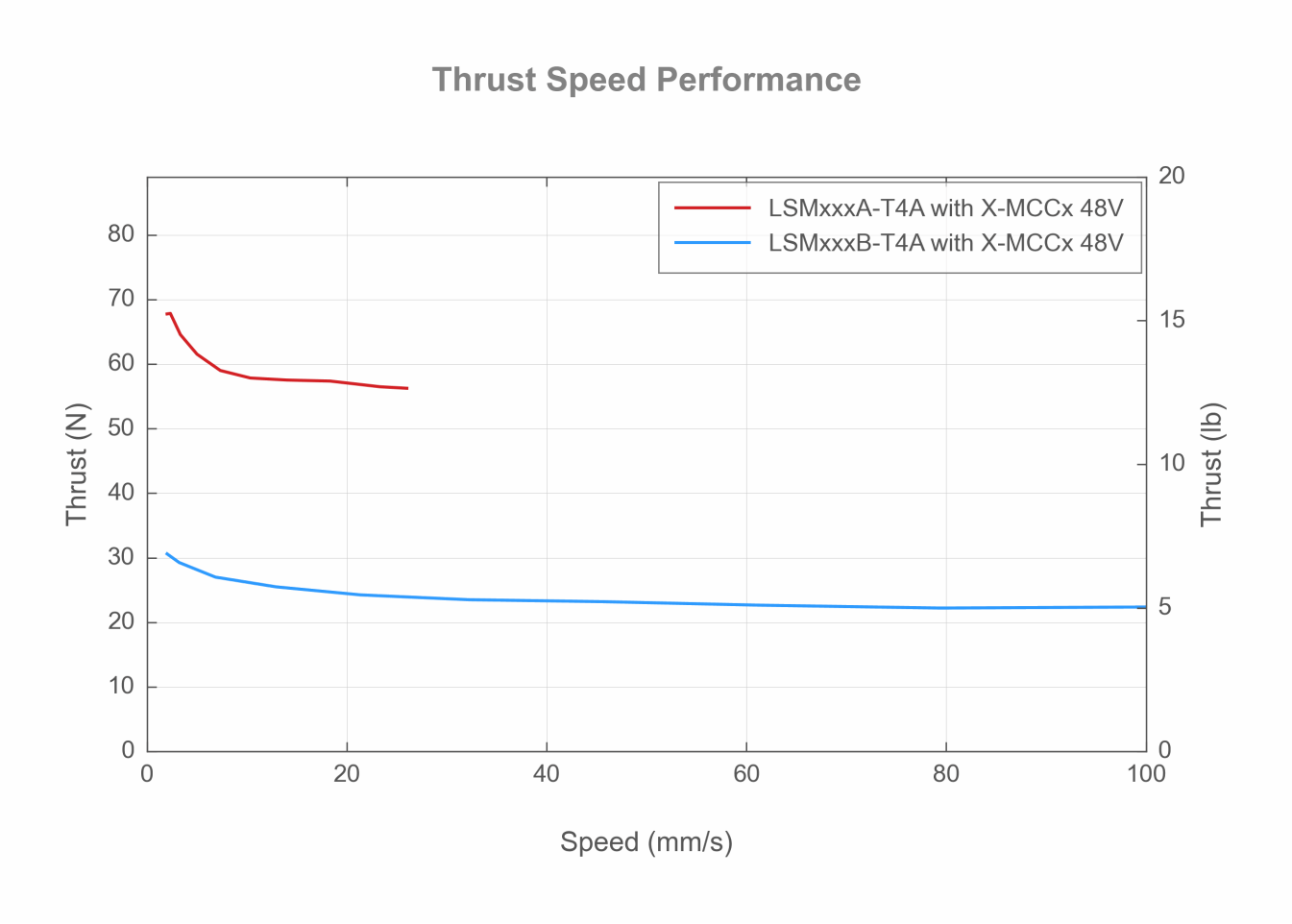
Part Number	Linear Motion Per Motor Rev
LSM025A-T4A	0.6096 mm (0.024 ")
LSM025B-T4A	2.4384 mm (0.096 ")
LSM050A-T4A	0.6096 mm (0.024 ")
LSM050B-T4A	2.4384 mm (0.096 ")
LSM100A-T4A	0.6096 mm (0.024 ")
LSM100B-T4A	2.4384 mm (0.096 ")
LSM150A-T4A	0.6096 mm (0.024 ")
LSM150B-T4A	2.4384 mm (0.096 ")
LSM200A-T4A	0.6096 mm (0.024 ")
LSM200B-T4A	2.4384 mm (0.096 ")

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LSM Series Charts

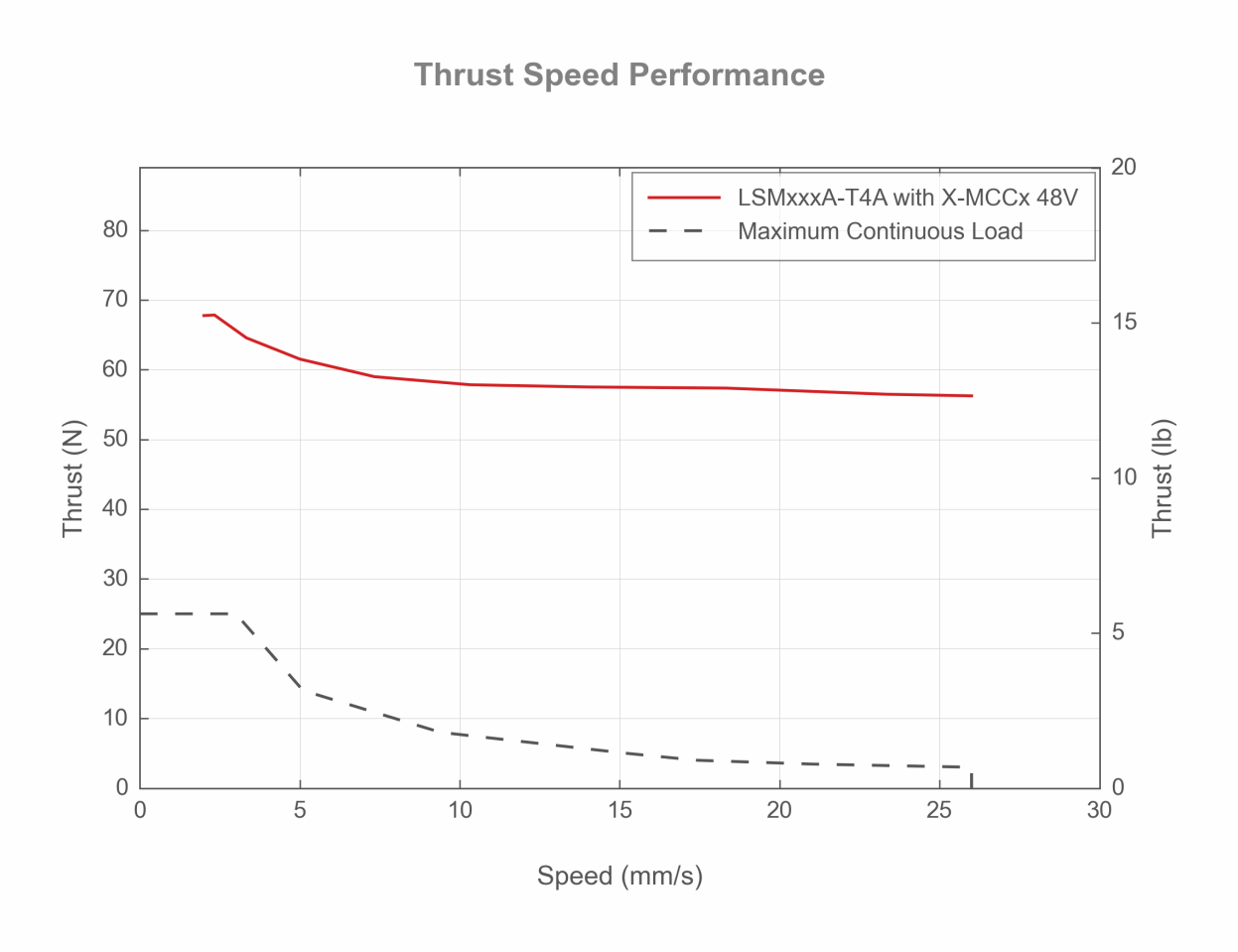
LSMxxxAB T4A Thrust Speed Performance



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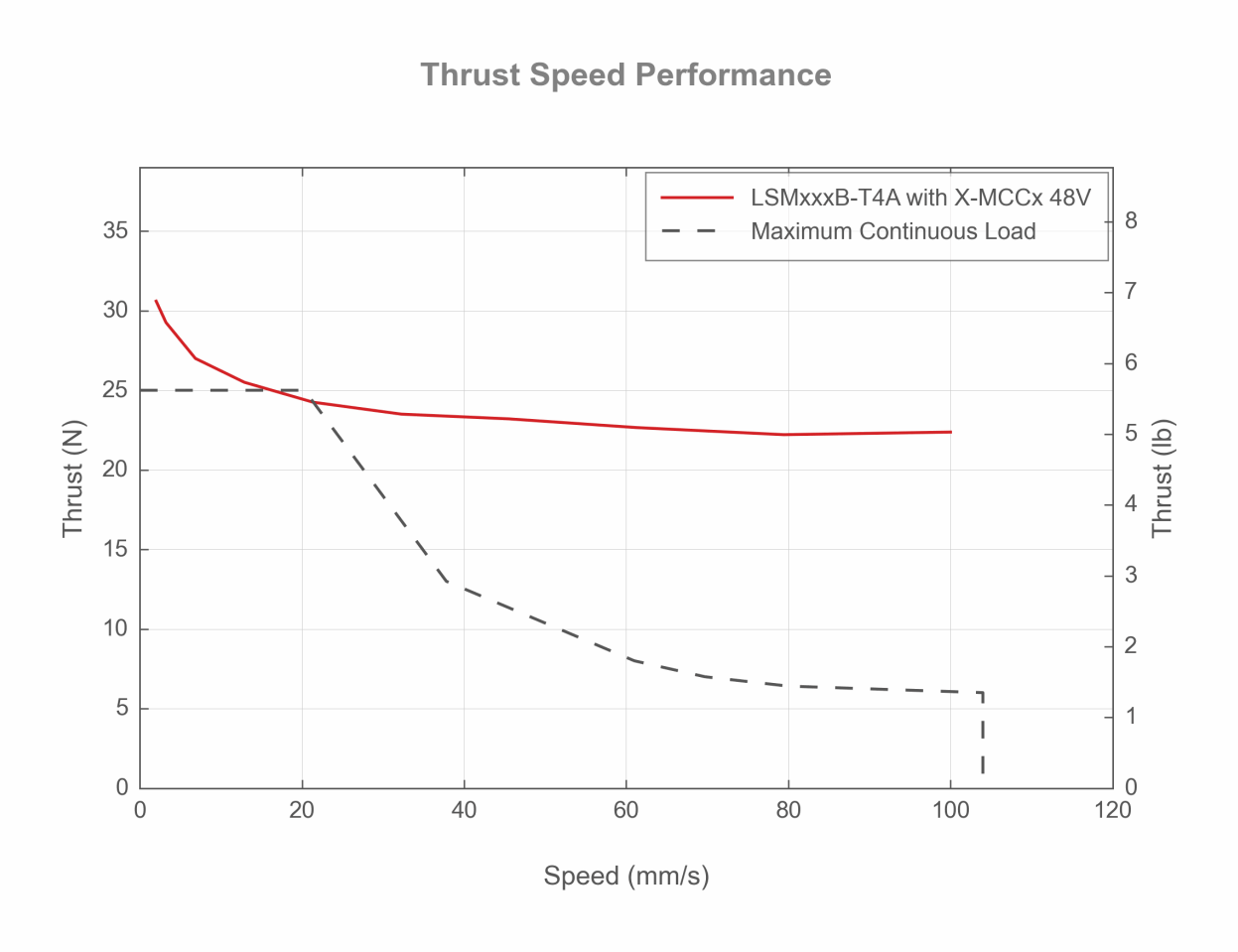
LSMxxxA T4A Thrust Speed Performance



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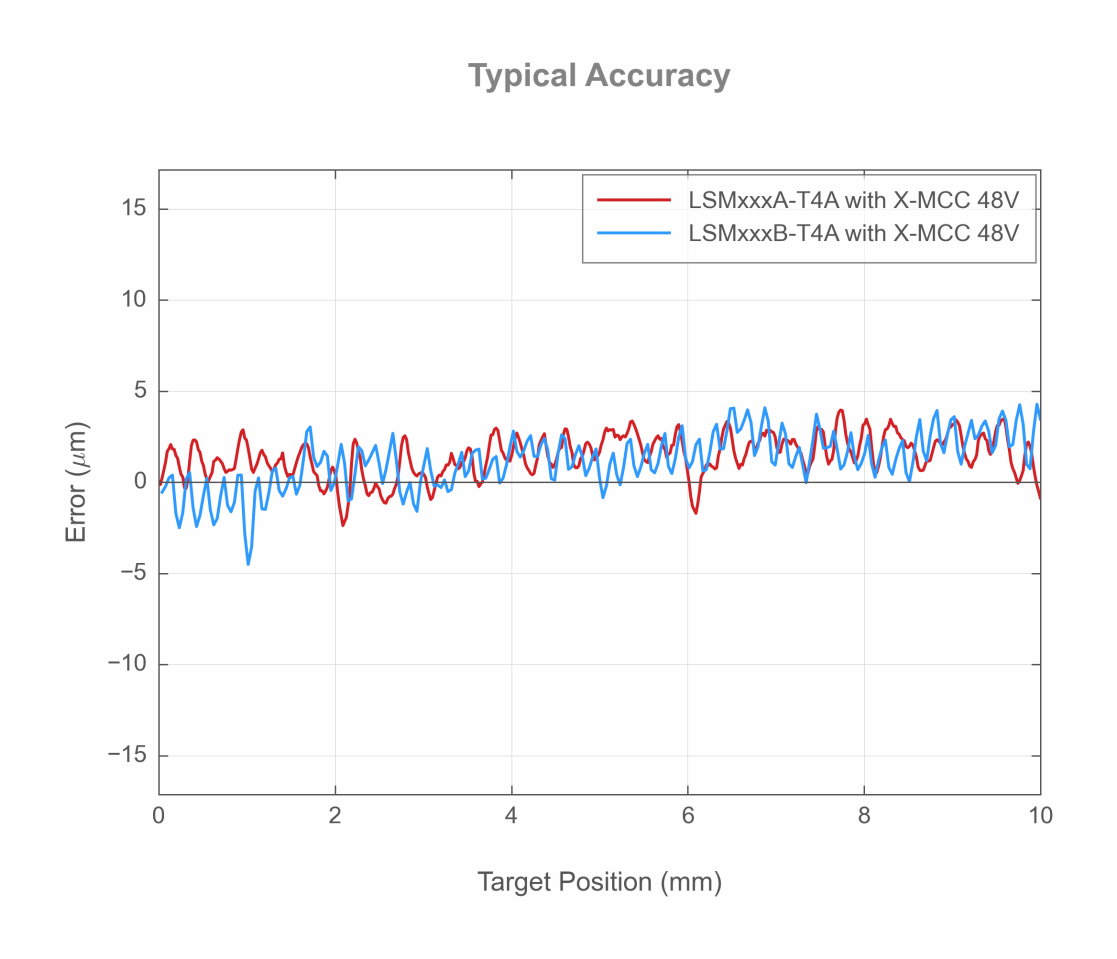
LSMxxxB T4A Thrust Speed Performance



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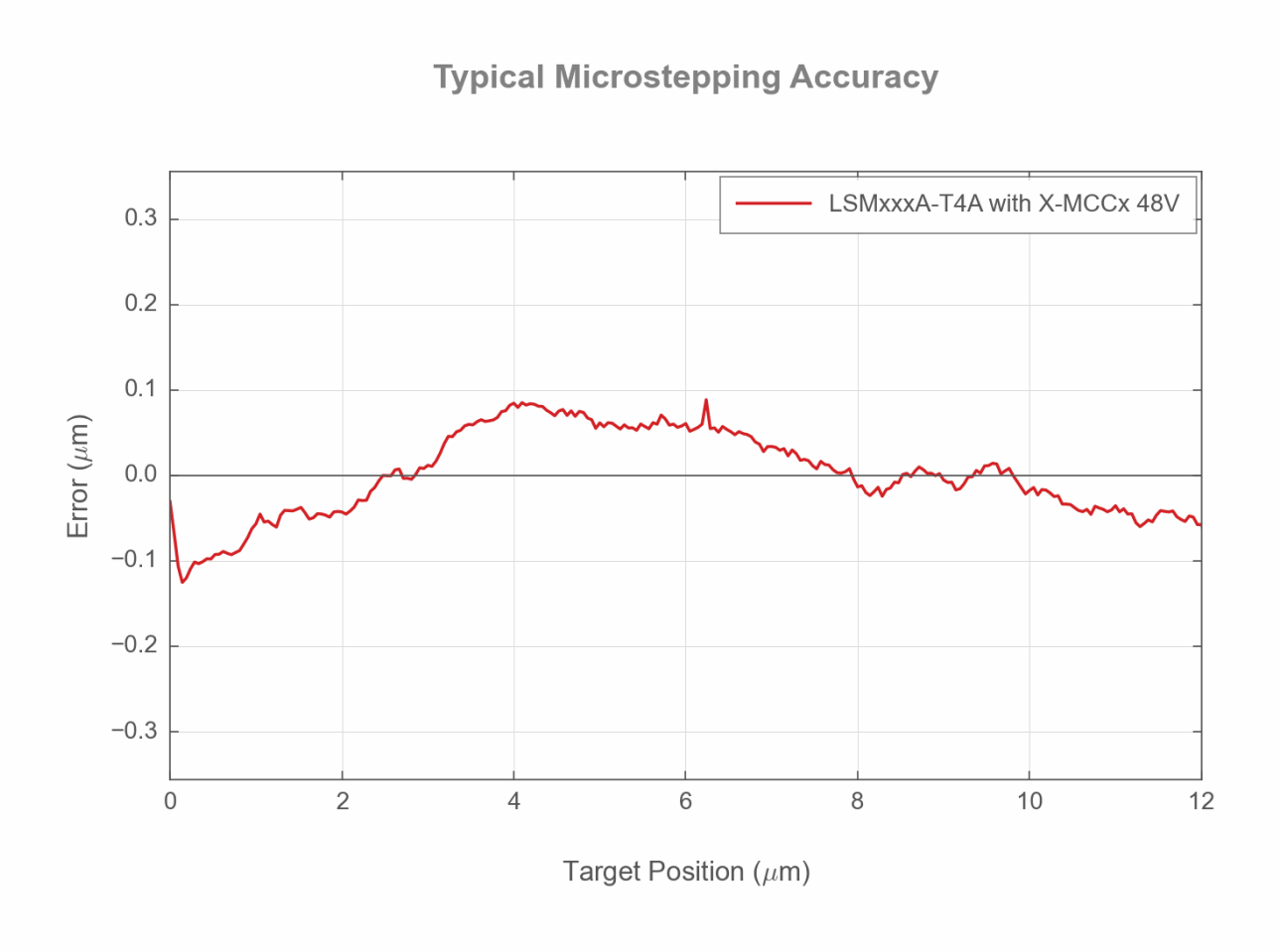
LSMxxxA T4A Typical Accuracy



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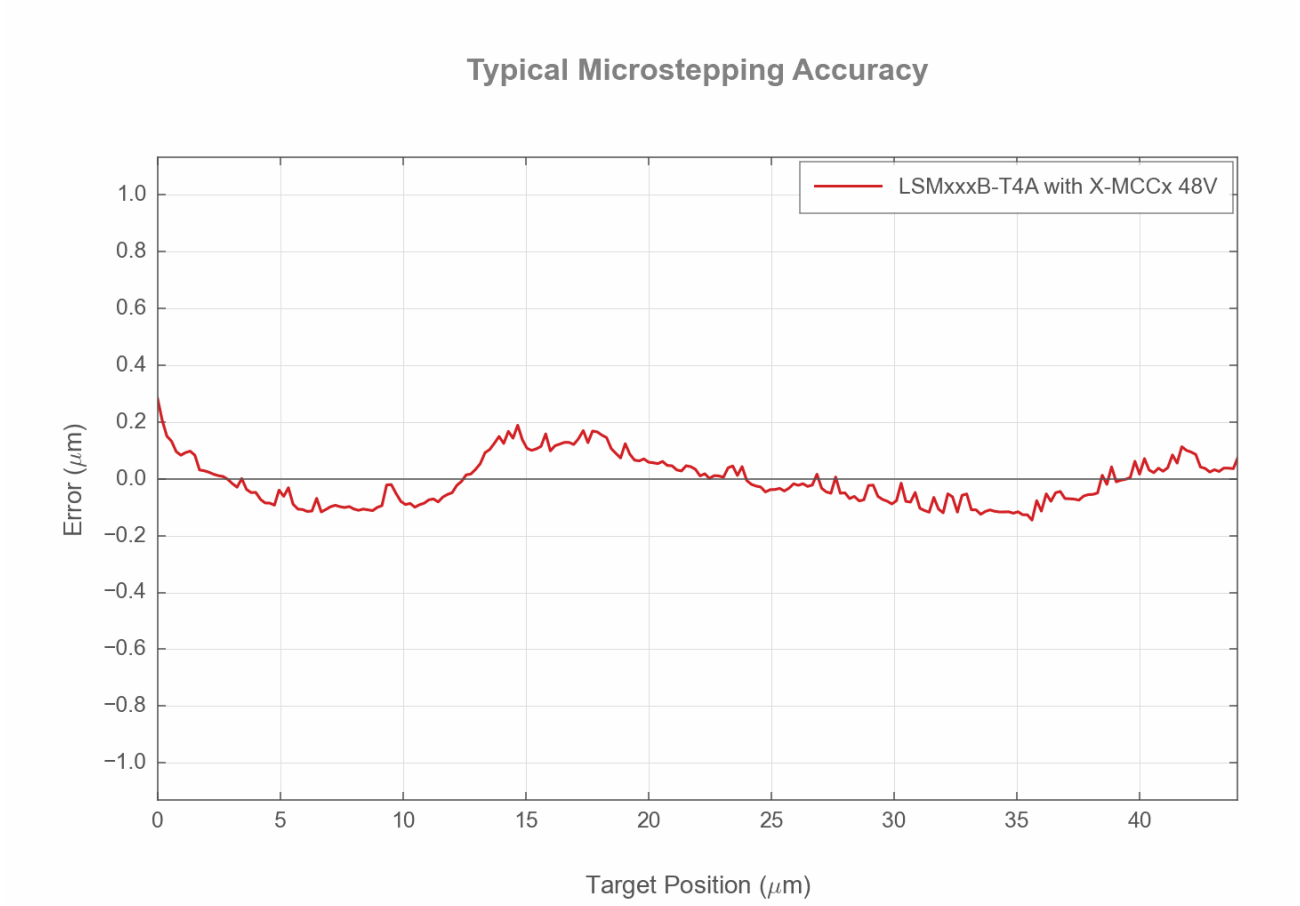
LSMxxxA T4A Typical Microstepping Accuracy



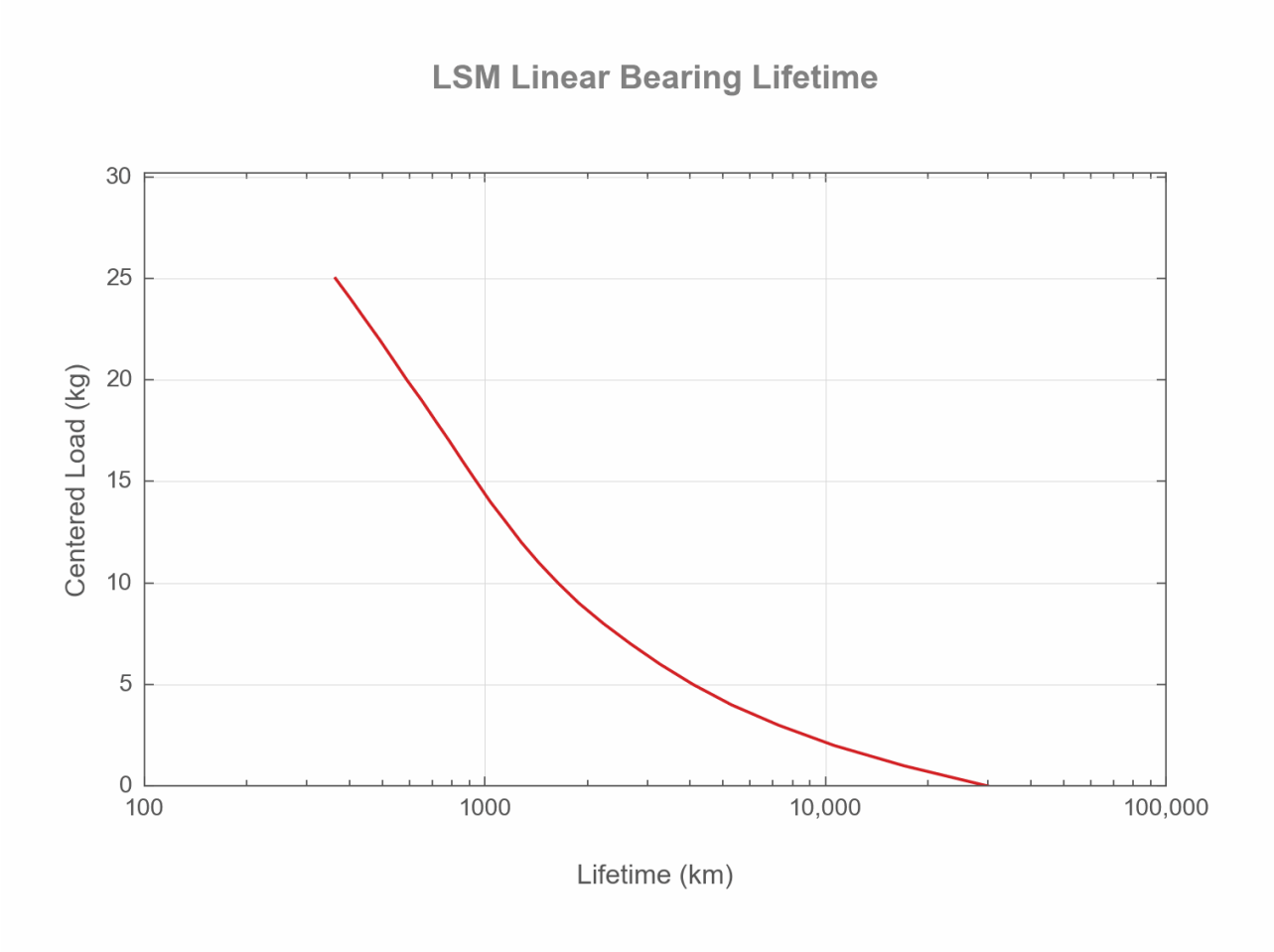
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LSMxxxB T4A Typical Microstepping Accuracy



LSMxxx Lifetime



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LSM-C Series Datasheet



- 25, 50, 100, 150 and 200 mm travel
- Up to 104 mm/s speed
- Recirculating ball bearing design for high load (25 kg) and long lifetime
- Includes stainless steel dust cover
- Very low profile at only 26.2 mm stage height
- Can be mounted in XY and XYZ configurations
- 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
- Custom versions available

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LSM-C Series Overview

Zaber's LSM-C Series devices are motorized linear stages with high thrust and speed capabilities and a very compact size. A rigid dust cover prevents contact with the rails and bearing system. They 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 LSM-C.

At only 26.2 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-C's innovative design allows speeds up to 104 mm/s and loads up to 25 kg. The stages can be mounted in XY and XYZ configurations with no additional hardware.

For more information visit: https://www.zaber.com/products/linear-stages/LSM-C

LSM-C Series Part Numbering & Options

LSM 025 A - C T4A

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

Cover
- **C** — Rigid Cover

Connector
- **T4A** — D-sub 15 inline connector with Auto Detect

LSM-C Series Drawings

- LSM-C (Drawing for the LSM-C)
- View all drawings and documents at zaber.com

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LSM-C 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
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	250 N (56.1 lb)
Maximum Moment (Pitch)	4 N·m (3 lb·ft)
Maximum Moment (Roll)	10 N·m (7.38 lb·ft)
Maximum Moment (Yaw)	4 N·m (2.952 lb·ft)
Stiffness (Pitch)	75 N·m/°
Stiffness (Roll)	75 N·m/°
Stiffness (Yaw)	150 N·m/°

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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 and M4 threaded centre hole

Environmental & Compliance

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

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Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
LSM025A-CT4A	25.4 mm (1 ")	0.2 kg (0.441 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-CT4A	25.4 mm (1 ")	0.2 kg (0.441 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-CT4A	50.8 mm (2 ")	0.21 kg (0.463 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-CT4A	50.8 mm (2 ")	0.21 kg (0.463 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-CT4A	101.6 mm (4 ")	0.24 kg (0.529 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-CT4A	101.6 mm (4 ")	0.24 kg (0.529 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-CT4A	152.4 mm (6 ")	0.28 kg (0.617 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-CT4A	152.4 mm (6 ")	0.28 kg (0.617 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-CT4A	203.2 mm (8 ")	0.31 kg (0.683 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-CT4A	203.2 mm (8 ")	0.31 kg (0.683 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-CT4A	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-CT4A	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-CT4A	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-CT4A	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-CT4A	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM100B-CT4A	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.035 ° (0.611 mrad)
LSM150A-CT4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

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LSM150B-CT4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200A-CT4A	<12 µm (<0.000472 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)
LSM200B-CT4A	<16 µm (<0.00063 ")	<20 µm (<0.000787 ")	<20 µm (<0.000787 ")	0.035 ° (0.611 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-CT4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM025B-CT4A	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM050A-CT4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	55 N (12.3 lb)
LSM050B-CT4A	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	25 N (5.6 lb)
LSM100A-CT4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	55 N (12.3 lb)
LSM100B-CT4A	0.035 ° (0.611 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	25 N (5.6 lb)
LSM150A-CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM150B-CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)
LSM200A-CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.047625 µm	55 N (12.3 lb)
LSM200B-CT4A	0.035 ° (0.611 mrad)	0.045 ° (0.785 mrad)	0.1905 µm	25 N (5.6 lb)

Part Number	Back-driving Force*	Maximum Speed	Minimum Speed	Speed Resolution
LSM025A-CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM025B-CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM050A-CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)

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LSM050B-CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM100A-CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM100B-CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM150A-CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM150B-CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)
LSM200A-CT4A	Non-back-driving	26 mm/s (1.024 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)
LSM200B-CT4A	24 (± 30%) N (5.4 lb)	104 mm/s (4.094 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)

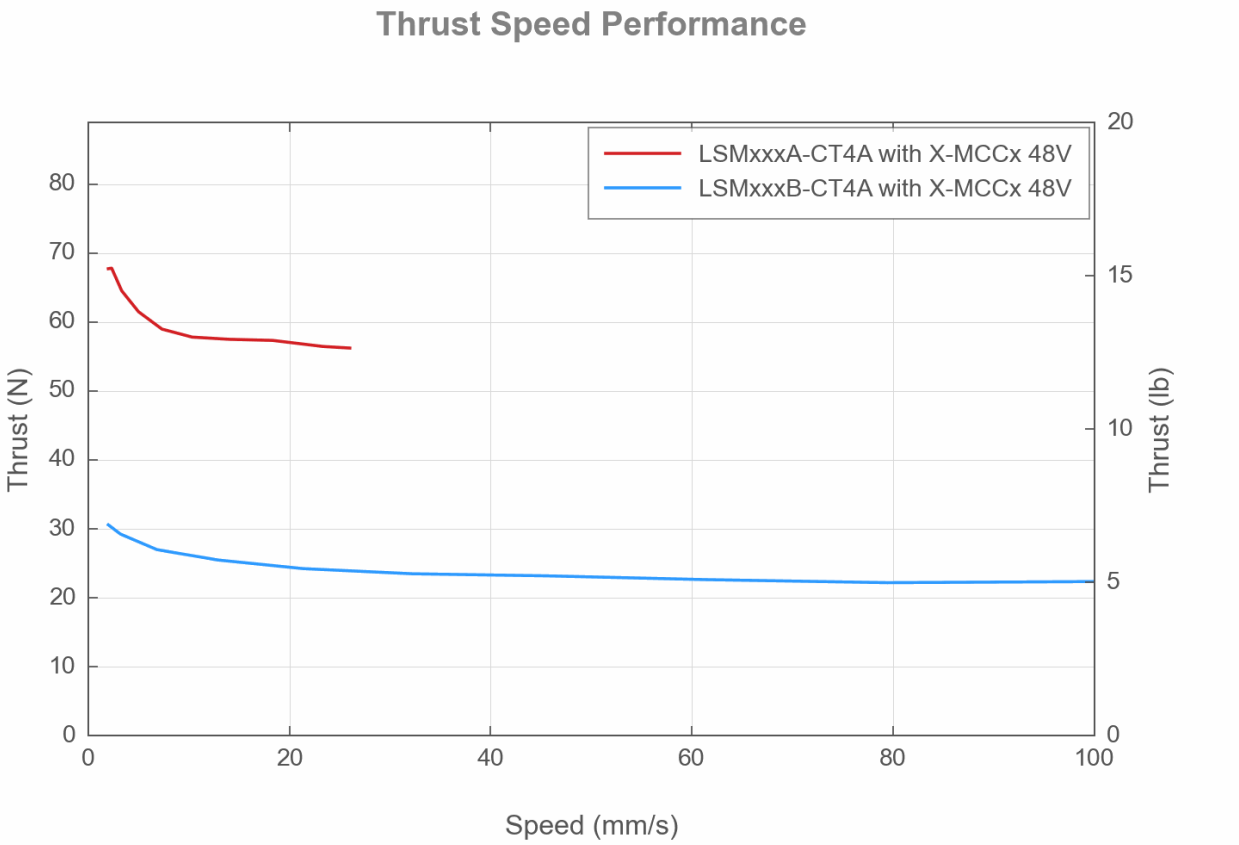
Part Number	Linear Motion Per Motor Rev
LSM025A-CT4A	0.6096 mm (0.024 ")
LSM025B-CT4A	2.4384 mm (0.096 ")
LSM050A-CT4A	0.6096 mm (0.024 ")
LSM050B-CT4A	2.4384 mm (0.096 ")
LSM100A-CT4A	0.6096 mm (0.024 ")
LSM100B-CT4A	2.4384 mm (0.096 ")
LSM150A-CT4A	0.6096 mm (0.024 ")
LSM150B-CT4A	2.4384 mm (0.096 ")
LSM200A-CT4A	0.6096 mm (0.024 ")
LSM200B-CT4A	2.4384 mm (0.096 ")

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LSM-C Series Charts

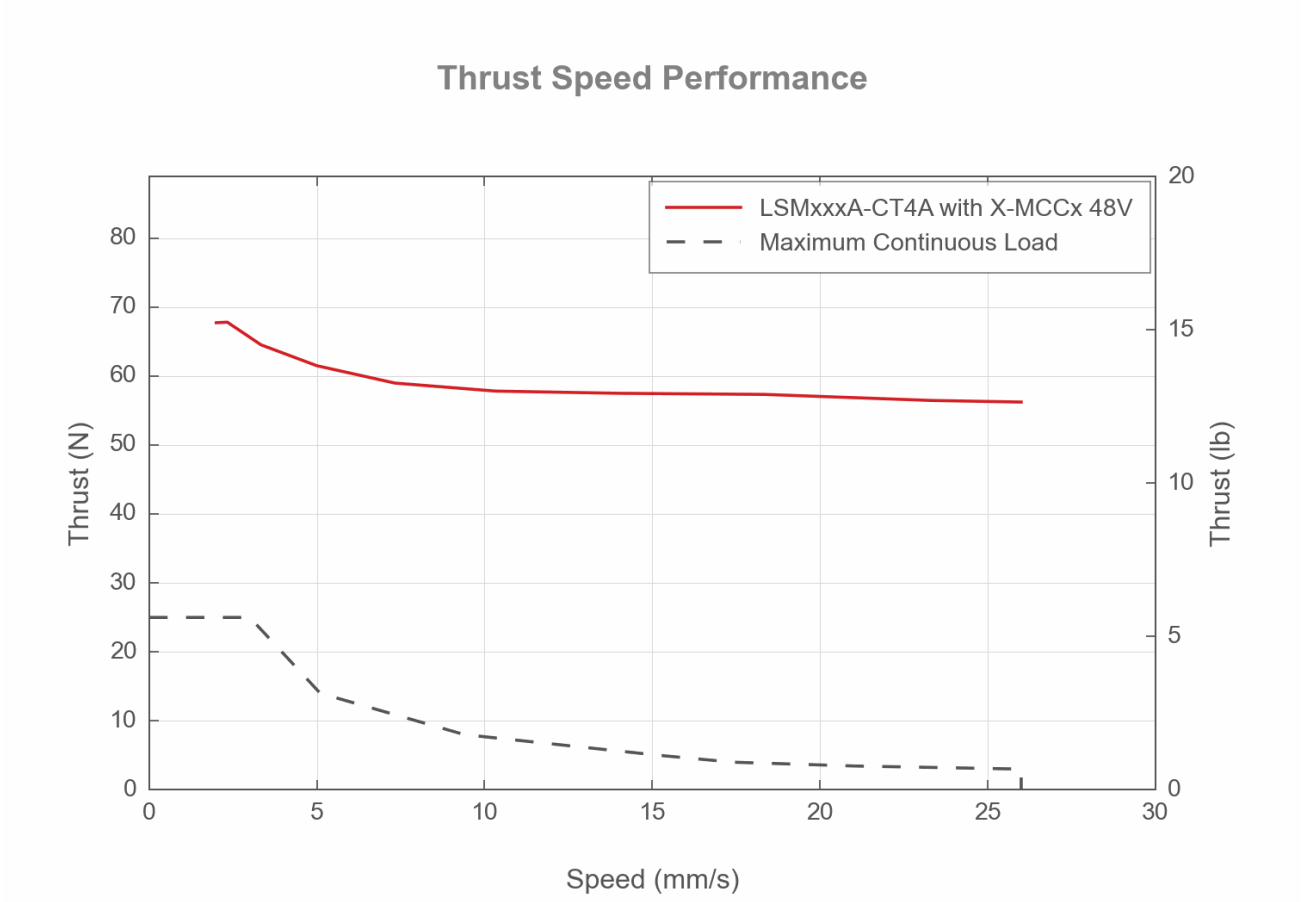
LSMxxxAB CT4A Thrust Speed Performance



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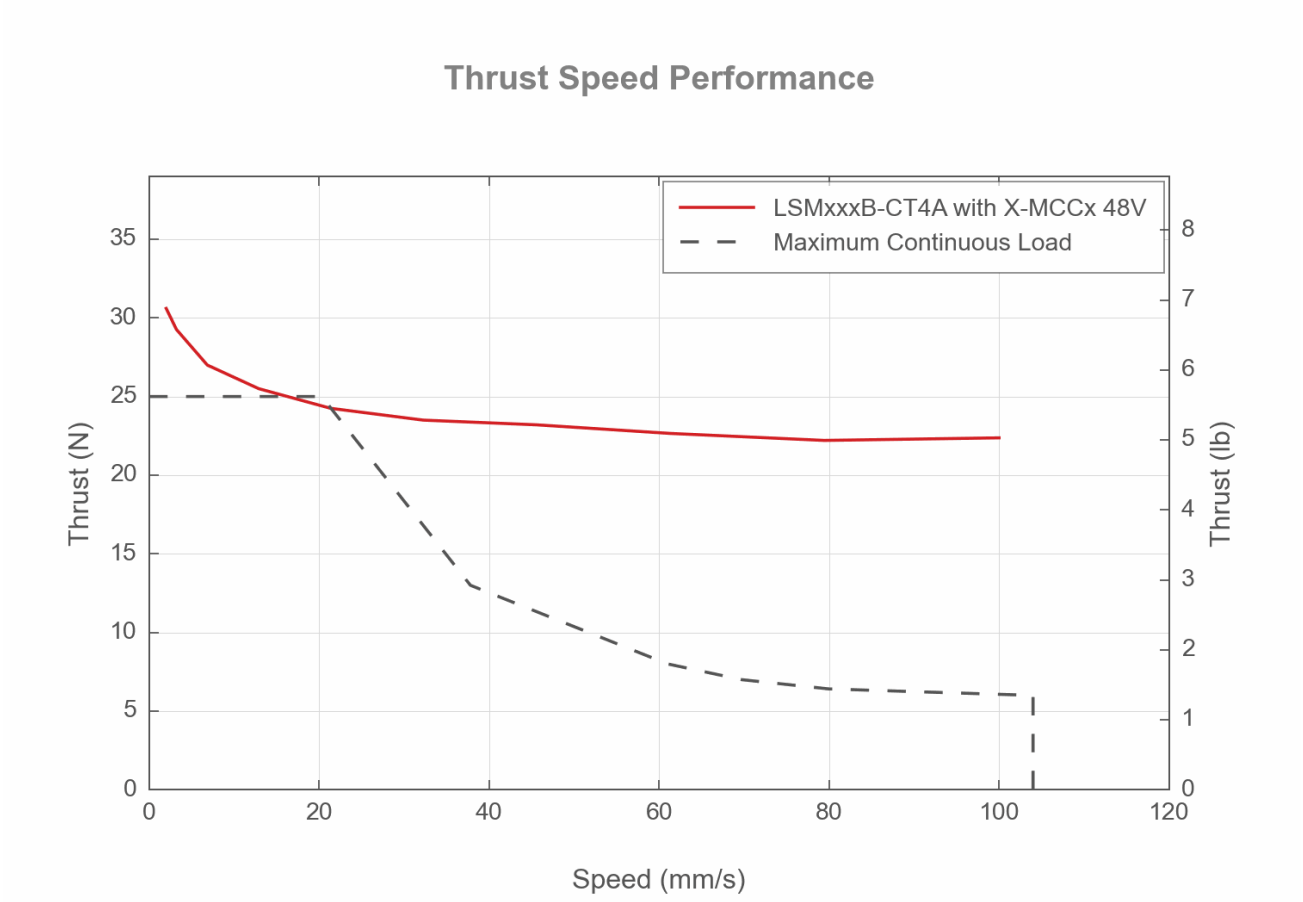
LSMxxxA CT4A Thrust Speed Performance



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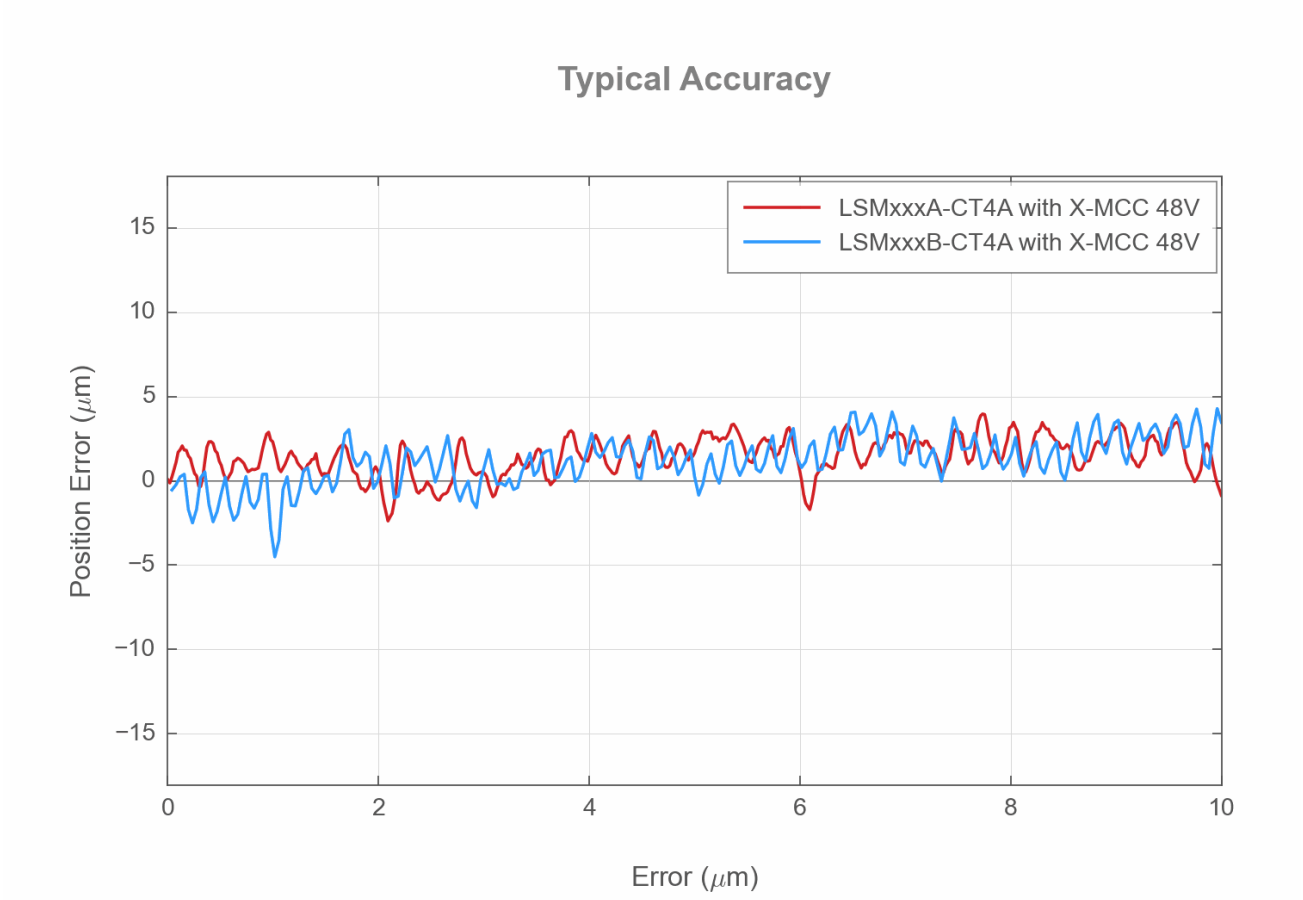
LSMxxxB CT4A Thrust Speed Performance



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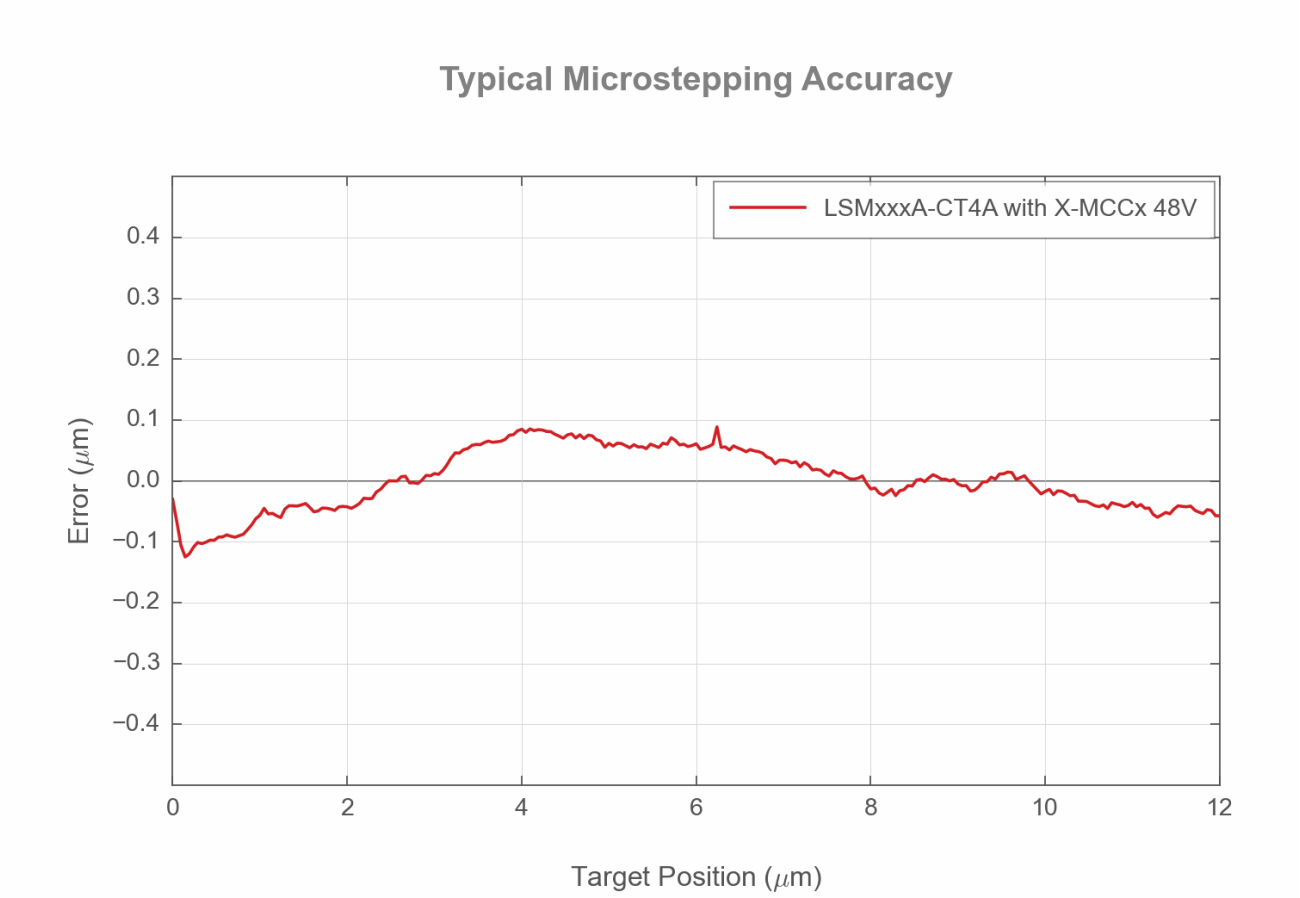
LSMxxxAB CT4A Typical Accuracy



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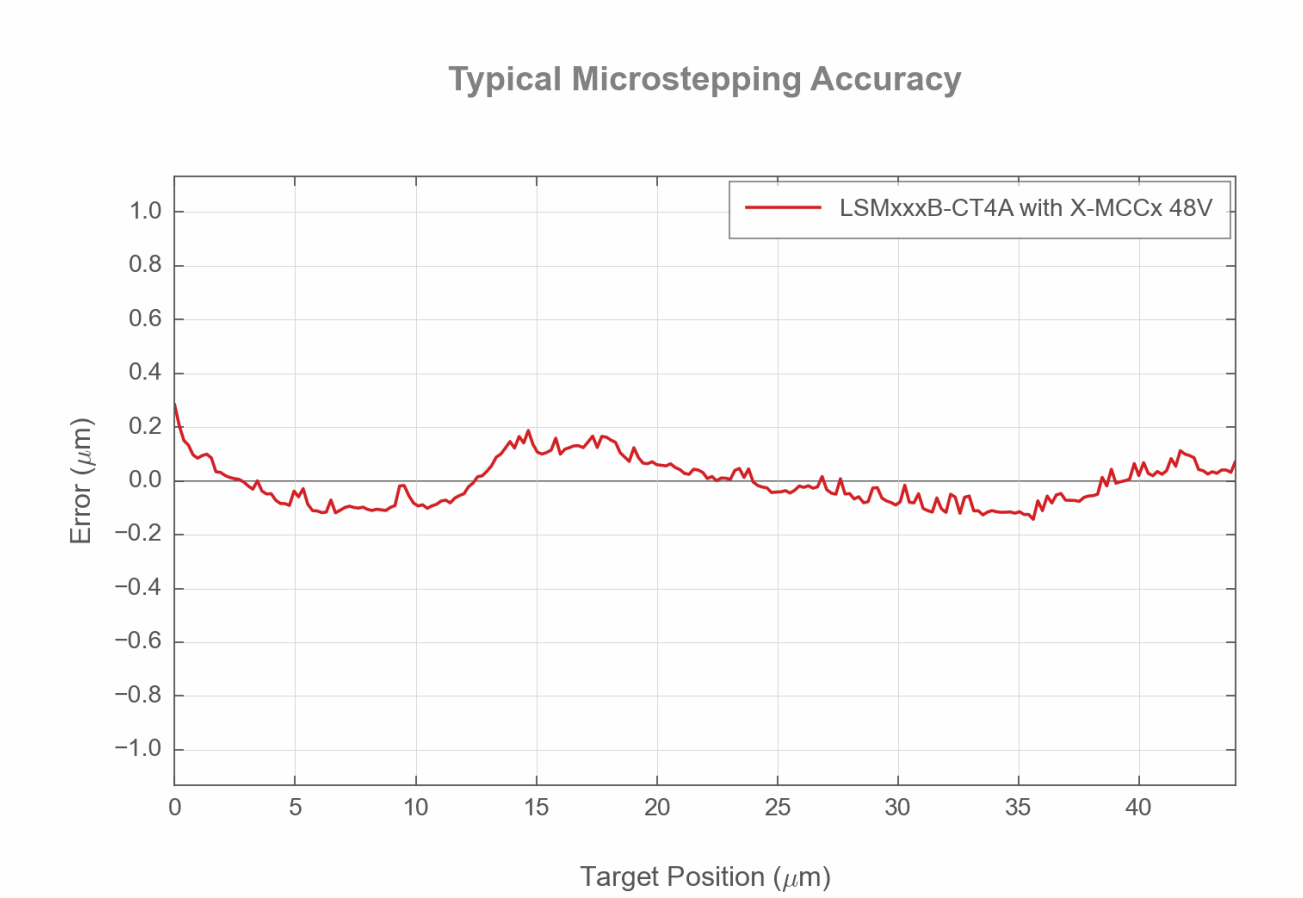
LSMxxxA CT4A Typical Microstepping Accuracy



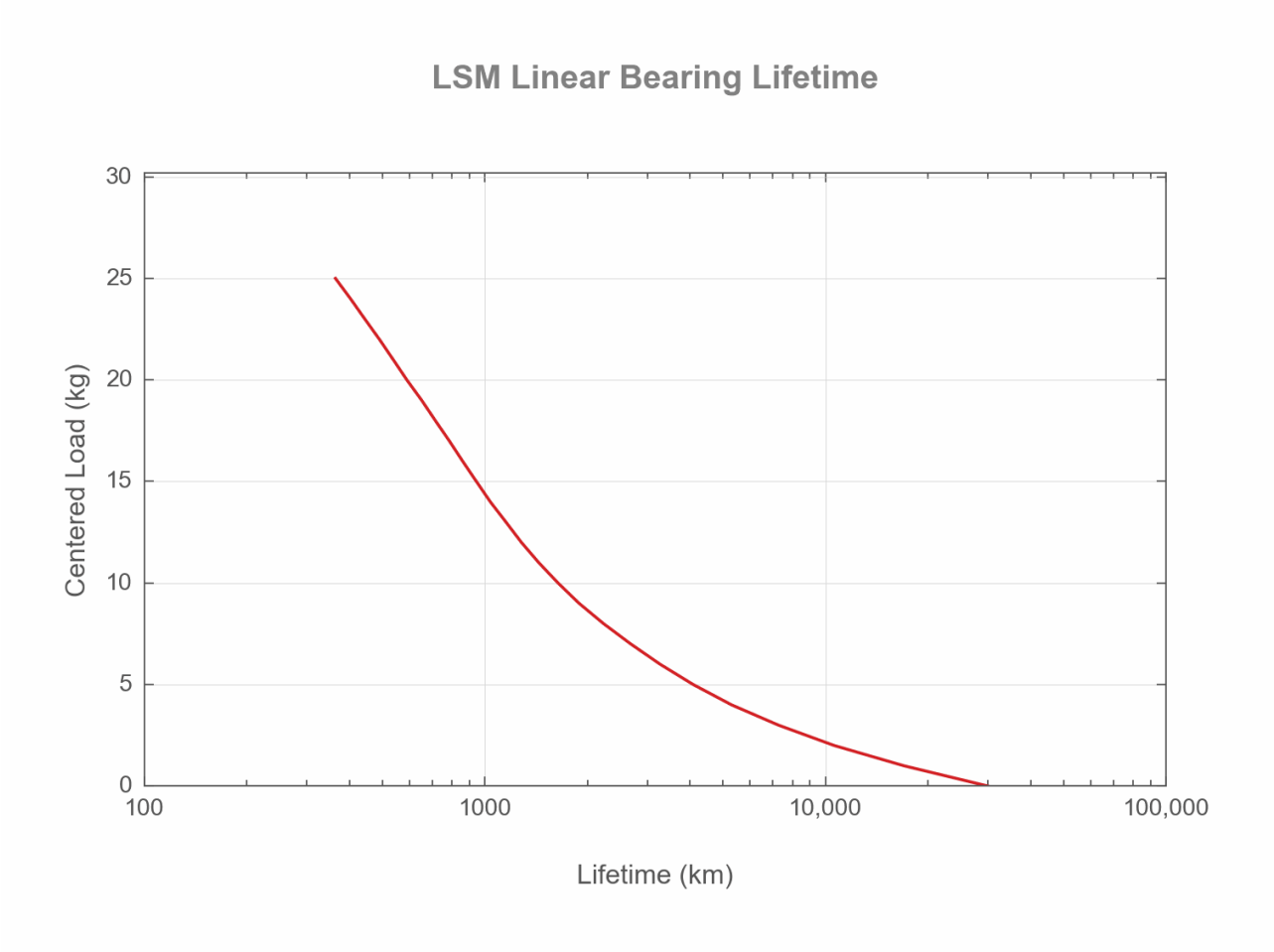
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LSMxxxB CT4A Typical Microstepping Accuracy



LSM Linear Bearing Lifetime



Contact

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X-LSM-SV2 Series Datasheet



- Vacuum compatible to 10-6 Torr
- 25, 50, 100, 150, 200 mm travel
- Up to 100 mm/s speed and up to 35 N thrust
- 10 kg load capacity
- Built-in controller; daisy-chains with other Zaber products
- Only 4 feedthrough wires required to control all units in the daisy-chain via serial port (with an X-PIB adaptor)
- Custom versions available

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X-LSM-SV2 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's X-LSM-SV2 Series devices are high-vacuum compatible, computer-controlled, motorized linear stages with high thrust and speed capabilities, and a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM-SV2 is designed with vacuum compatible materials to minimize outgassing and allow for faster pump down times. Like all of Zaber's products, the X-LSM-SV2 Series is designed to be 'plug and play' and very easy to set up and operate.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/X-LSM-SV2

X-LSM-SV2 Series Part Numbering & Options

X-LSM 025 A -SV2

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

Options

- **-SV2** — High-vacuum compatible: 10-6 Torr

X-LSM-SV2 Series Drawings

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

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X-LSM-SV2 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)
Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)
Stiffness (Pitch)	55 N·m/°
Stiffness (Roll)	52.5 N·m/°
Stiffness (Yaw)	85 N·m/°

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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	800 mA/phase
Motor Winding Inductance	3.5 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Teflon flying leads with M8 4 pin M/F
Power Supply	24-48 VDC
Power Plug	None, use X-PIB
Maximum Current Draw	350 mA

Mechanical

Specification	Value
Guide Type	Needle roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	M3 and M6 threaded holes and M4 threaded center hole

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Environmental & Compliance

Specification	Value
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	High vacuum (10-6 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
X-LSM025A-SV2	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
X-LSM025B-SV2	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
X-LSM050A-SV2	50.8 mm (2 ")	0.4 kg (0.882 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
X-LSM050B-SV2	50.8 mm (2 ")	0.4 kg (0.882 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
X-LSM100A-SV2	101.6 mm (4 ")	0.43 kg (0.948 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
X-LSM100B-SV2	101.6 mm (4 ")	0.43 kg (0.948 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
X-LSM150A-SV2	152.4 mm (6 ")	0.47 kg (1.036 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
X-LSM150B-SV2	152.4 mm (6 ")	0.47 kg (1.036 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
X-LSM200A-SV2	203.2 mm (8 ")	0.5 kg (1.102 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
X-LSM200B-SV2	203.2 mm (8 ")	0.5 kg (1.102 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
X-LSM025A-SV2	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
X-LSM025B-SV2	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)

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X-LSM050A-SV2	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
X-LSM050B-SV2	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
X-LSM100A-SV2	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
X-LSM100B-SV2	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
X-LSM150A-SV2	<12 µm (<0.000472 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
X-LSM150B-SV2	<16 µm (<0.00063 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
X-LSM200A-SV2	<12 µm (<0.000472 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)
X-LSM200B-SV2	<16 µm (<0.00063 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
X-LSM025A-SV2	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM025B-SV2	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM050A-SV2	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM050B-SV2	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM100A-SV2	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM100B-SV2	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM150A-SV2	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM150B-SV2	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM200A-SV2	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM200B-SV2	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)

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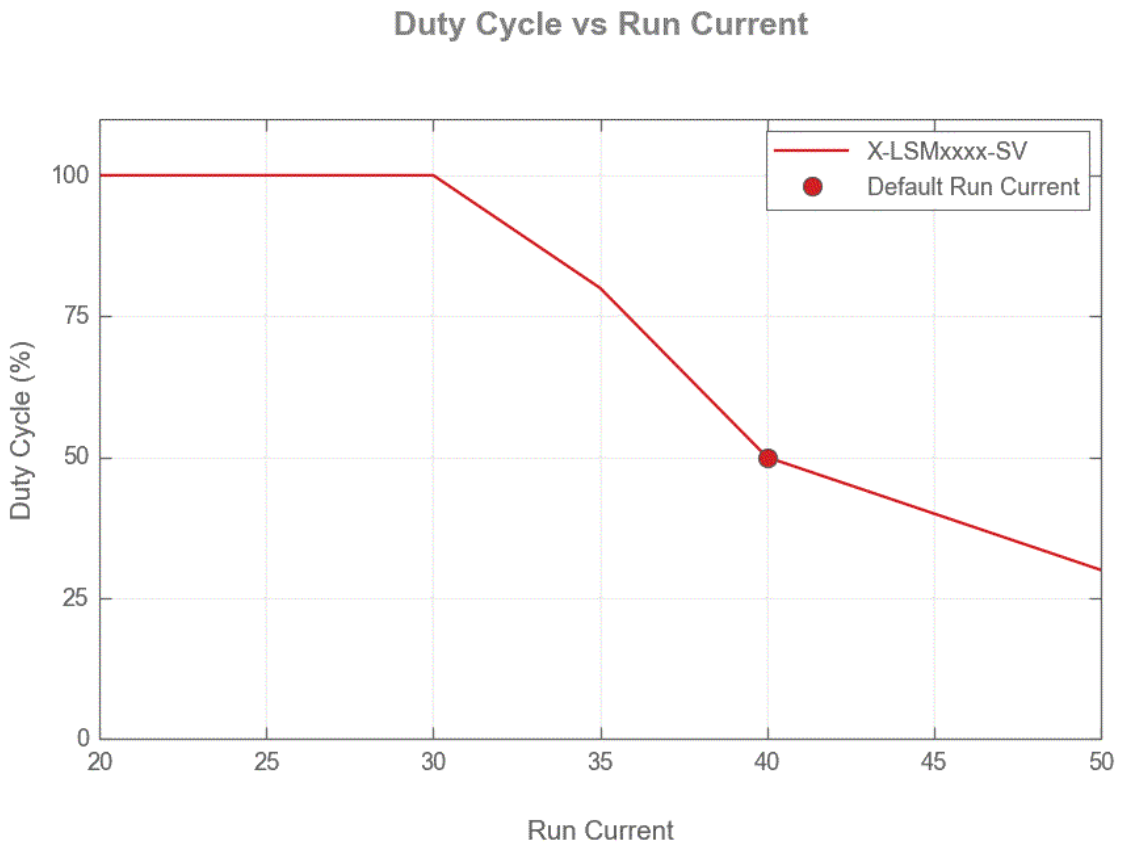
Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A-SV2	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B-SV2	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A-SV2	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050B-SV2	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A-SV2	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100B-SV2	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150A-SV2	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B-SV2	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A-SV2	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B-SV2	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM-SV2 Series Charts

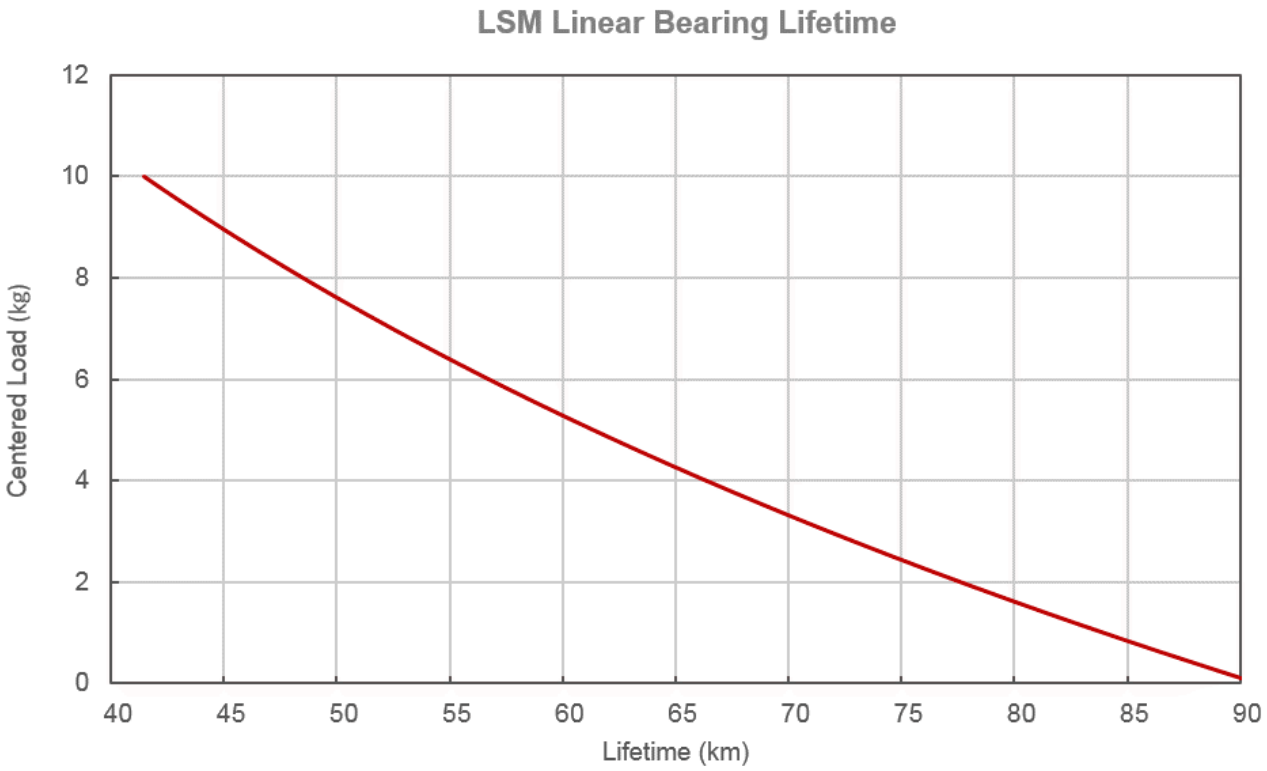
Duty Cycle Vs Run Current



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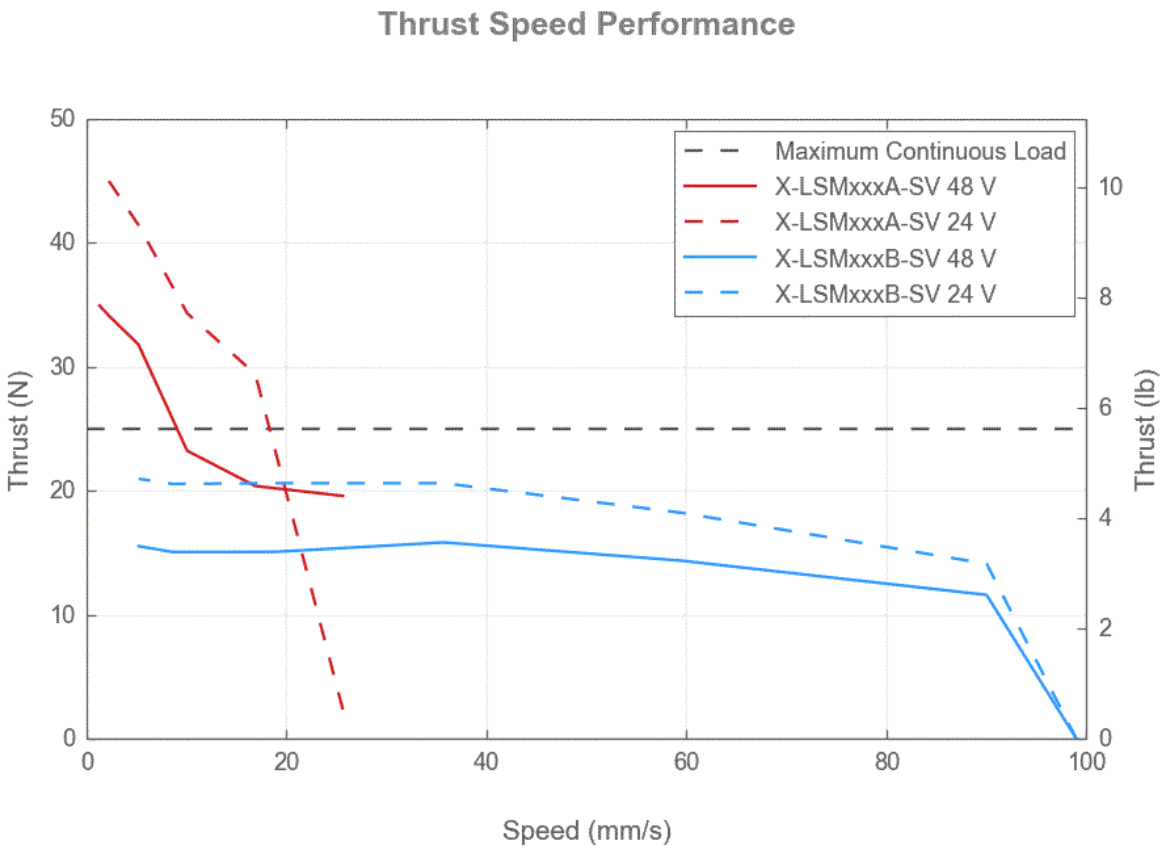
LSM Lifetime



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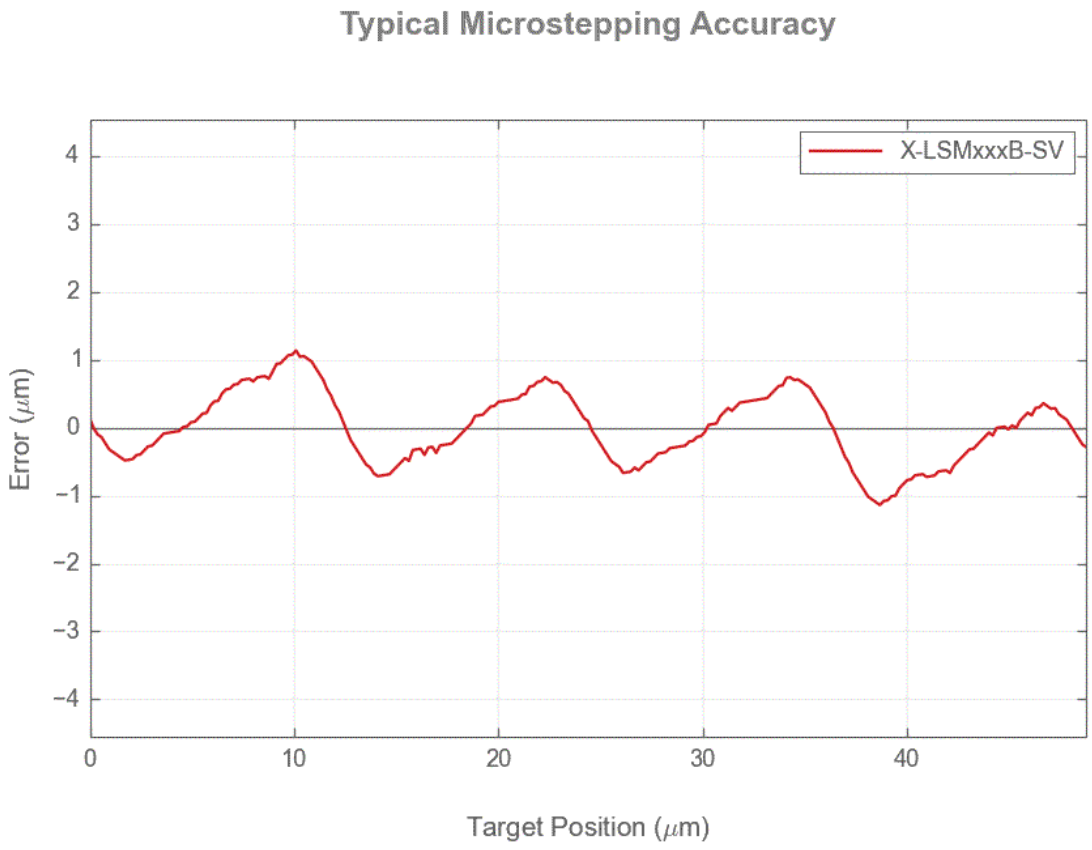
Thrust Speed



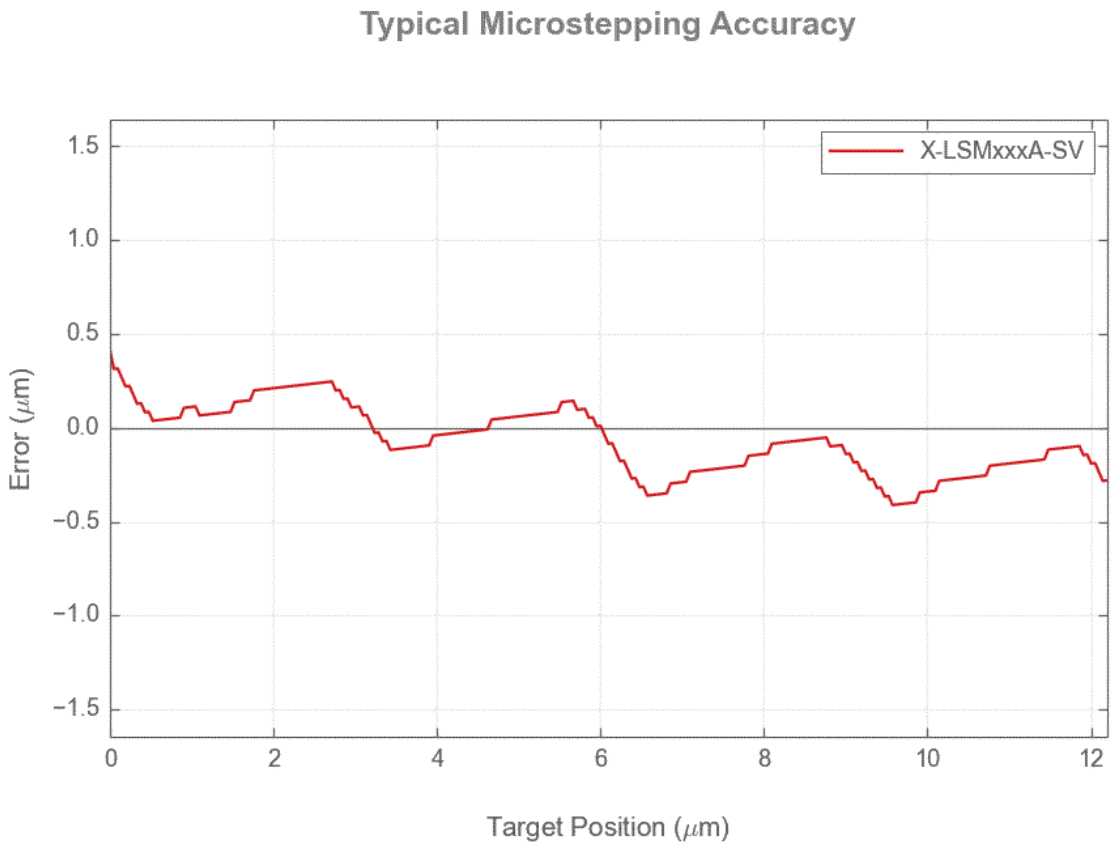
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Microstep Accuracy



Microstep Accuracy



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LSM-V2 Series Datasheet



- Vacuum compatible to 10-6 Torr
- 25, 50, 100, 150, 200 mm travel
- Up to 100 mm/s speed and up to 35 N thrust
- 10 kg load capacity
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- Only 7 feedthrough wires required to control these units
- Custom versions available

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LSM-V2 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's LSM-V2 Series devices are high-vacuum compatible, computer-controlled, motorized linear stages with high thrust and speed capabilities, and a compact size.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-V2 is designed with vacuum compatible materials to minimize outgassing and allow for faster pump down times. Like all of Zaber's products, the LSM-V2 Series is designed to be very easy to set up and operate.

These stages are wired with a male D-sub 15 connector for plug-and-play use with our MCC Family controllers. Simply cut the connector off for flying leads in vacuum and match the wire connections outside of the vacuum for an easy connection. Our handy kits include free software, and all of the accessories that you will need to get the stage running right out of the box.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/LSM-V2

LSM-V2 Series Part Numbering & Options

LSM 025 A -V2 T4

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

Options
- **-V2** — High-vacuum compatible: 10-6 Torr

Connector
- **T4** — D-sub 15 inline connector

LSM-V2 Series Drawings

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

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LSM-V2 Series Specifications

Overview

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

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	300 N·cm (424.8 oz·in)
Maximum Moment (Roll)	300 N·cm (424.8 oz·in)
Maximum Moment (Yaw)	300 N·cm (424.8 oz·in)
Stiffness (Pitch)	55 N·m/°
Stiffness (Roll)	52.5 N·m/°
Stiffness (Yaw)	85 N·m/°

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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	800 mA/phase
Motor Winding Inductance	3.5 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector

Mechanical

Specification	Value
Guide Type	Needle roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	M3 and M6 threaded holes and M4 threaded centre hole

Environmental & Compliance

Specification	Value
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	High vacuum (10-6 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability

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LSM025A-V2T4	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-V2T4	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-V2T4	50.8 mm (2 ")	0.4 kg (0.882 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-V2T4	50.8 mm (2 ")	0.4 kg (0.882 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-V2T4	101.6 mm (4 ")	0.43 kg (0.948 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-V2T4	101.6 mm (4 ")	0.43 kg (0.948 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-V2T4	152.4 mm (6 ")	0.47 kg (1.036 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-V2T4	152.4 mm (6 ")	0.47 kg (1.036 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-V2T4	203.2 mm (8 ")	0.5 kg (1.102 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-V2T4	203.2 mm (8 ")	0.5 kg (1.102 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-V2T4	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-V2T4	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-V2T4	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-V2T4	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-V2T4	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
LSM100B-V2T4	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
LSM150A-V2T4	<12 µm (<0.000472 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
LSM150B-V2T4	<16 µm (<0.00063 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)

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LSM200A-V2T4	<12 µm (<0.000472 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)
LSM200B-V2T4	<16 µm (<0.00063 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-V2T4	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
LSM025B-V2T4	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
LSM050A-V2T4	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
LSM050B-V2T4	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
LSM100A-V2T4	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	35 N (7.8 lb)
LSM100B-V2T4	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	15 N (3.4 lb)
LSM150A-V2T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
LSM150B-V2T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)
LSM200A-V2T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
LSM200B-V2T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Linear Motion Per Motor Rev
LSM025A-V2T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM025B-V2T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM050A-V2T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM050B-V2T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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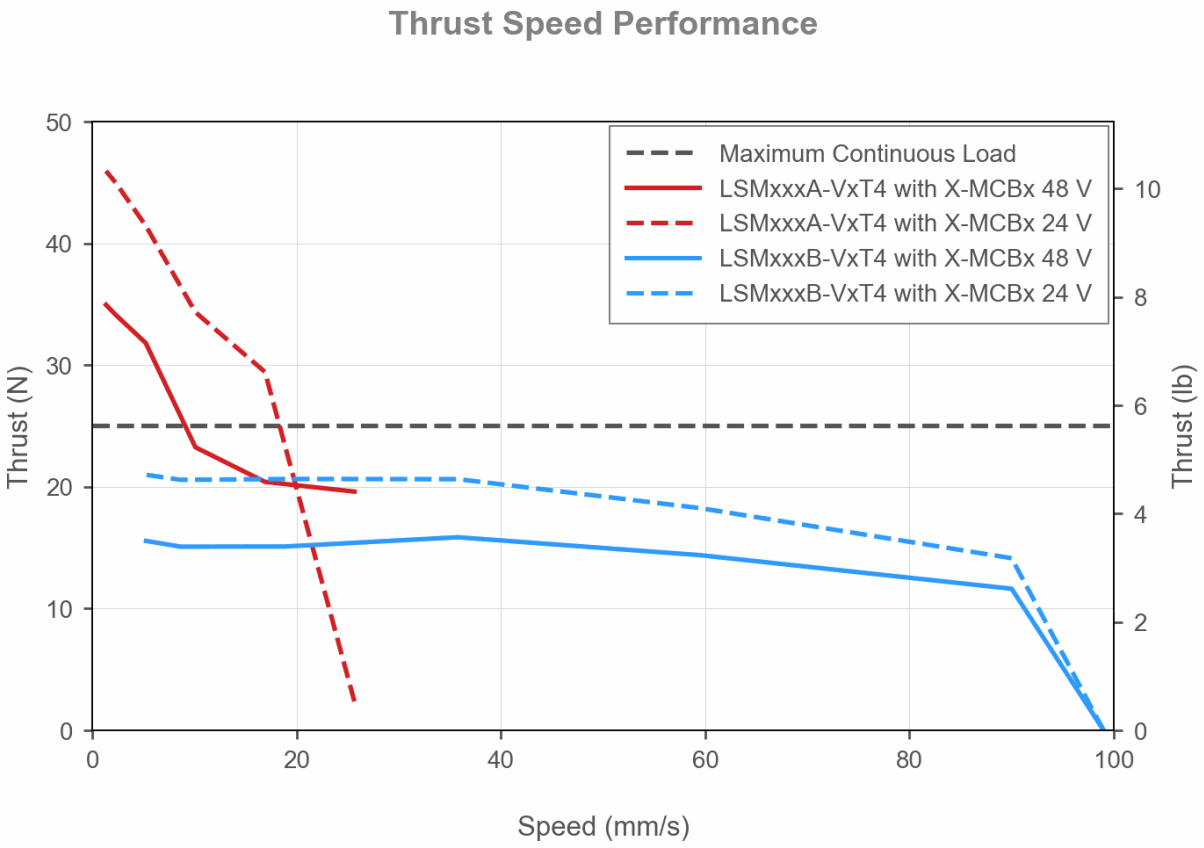
LSM100A-V2T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM100B-V2T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM150A-V2T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM150B-V2T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM200A-V2T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM200B-V2T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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LSM-V2 Series Charts

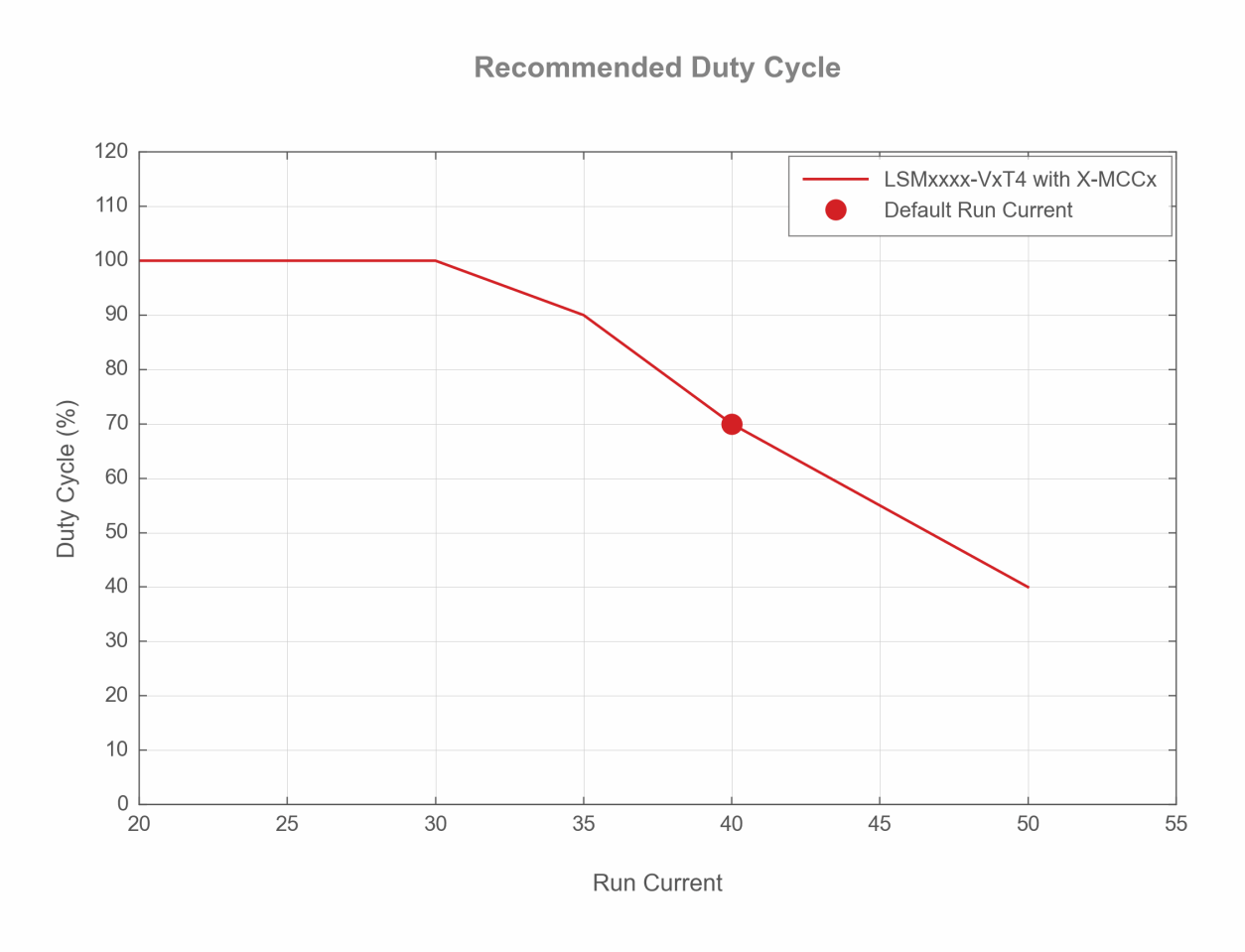
LSM Vx With X MCBx Thrust Speed



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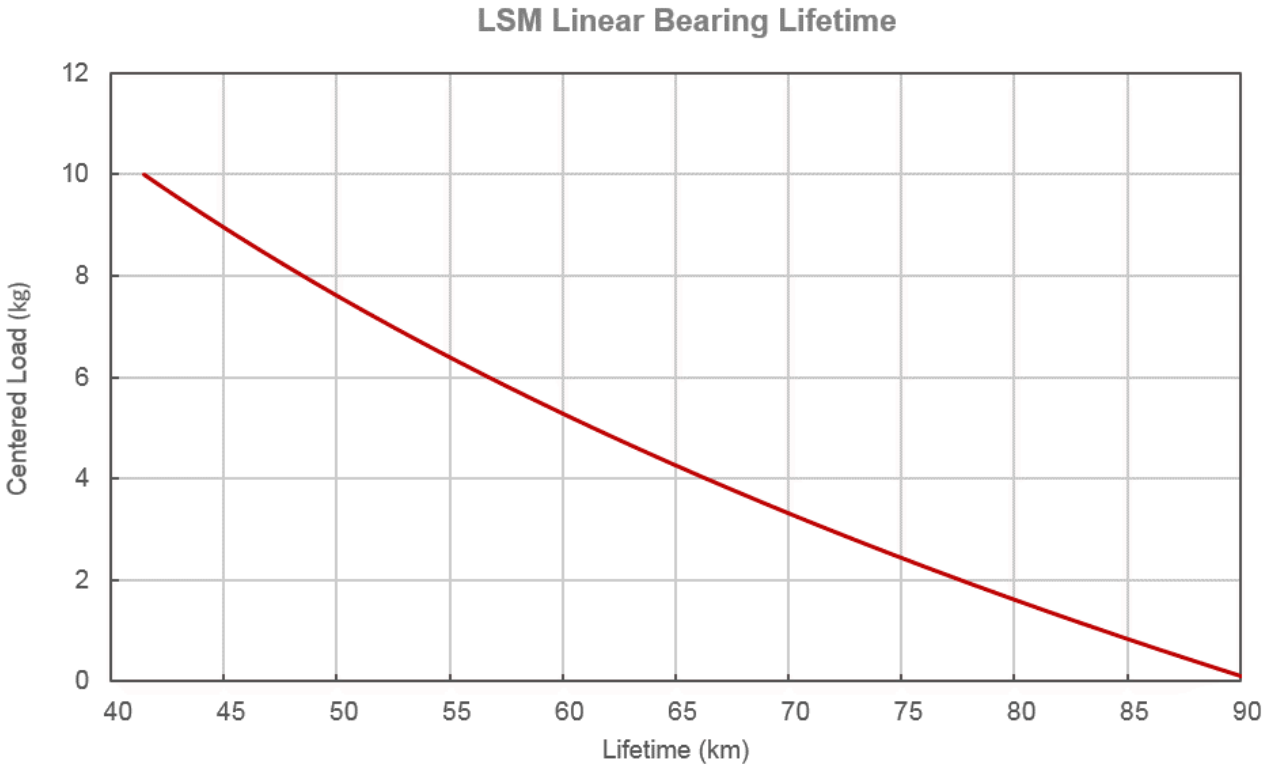
LSMxxxx VxT4 Run Current Duty Cycle



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LSM Lifetime



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X-LSM-SV1 Series Datasheet



- Vacuum compatible to 10-3 Torr
- 25, 50, 100, 150, 200 mm travel
- Up to 100 mm/s speed and up to 35 N thrust
- 10 kg load capacity
- Built-in controller; daisy-chains with other Zaber products
- Only 4 feedthrough wires required to control all units in the daisy-chain via serial port (with an X-PIB adaptor)
- Custom versions available

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X-LSM-SV1 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's X-LSM-SV1 Series devices are low-vacuum compatible, computer-controlled, motorized linear stages with high thrust and speed capabilities, and a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply.

These stages connect to the RS-232 port or USB port of any computer, and they can be daisy-chained with any other Zaber products. The daisy-chain also shares power, making it possible for multiple X-Series products to share a single power supply.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The X-LSM-SV1 is designed with vacuum compatible materials to minimize outgassing and allow for faster pump down times. Like all of Zaber's products, the X-LSM-SV1 Series is designed to be 'plug and play' and very easy to set up and operate.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/X-LSM-SV1

X-LSM-SV1 Series Part Numbering & Options

X-LSM 025 A -SV1

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

Options

- **-SV1** — Low-vacuum compatible: 10-3 Torr

X-LSM-SV1 Series Drawings

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

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X-LSM-SV1 Series Specifications

Overview

Specification	Value
Built-in Controller	Yes
Manual Control	No
Axes of Motion	1
LED Indicators	Yes

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	3 N·m (2.2 lb·ft)
Maximum Moment (Roll)	3 N·m (2.214 lb·ft)
Maximum Moment (Yaw)	3 N·m (2.214 lb·ft)
Stiffness (Pitch)	55 N·m/°
Stiffness (Roll)	52.5 N·m/°
Stiffness (Yaw)	85 N·m/°

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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	800 mA/phase
Motor Winding Inductance	3.5 mH/phase

Power and Communication

Specification	Value
Communication Interface	RS-232
Communication Protocol	Zaber ASCII (Default), Zaber Binary
Data Cable Connection	Teflon flying leads with M8 4 pin M/F
Power Supply	24-48 VDC
Power Plug	None, use X-PIB
Maximum Current Draw	350 mA

Mechanical

Specification	Value
Guide Type	Needle roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	M3 and M6 threaded holes and M4 threaded center hole

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Environmental & Compliance

Specification	Value
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10-3 Torr)

Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
X-LSM025A-SV1	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
X-LSM025B-SV1	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
X-LSM050A-SV1	50.8 mm (2 ")	0.4 kg (0.882 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
X-LSM050B-SV1	50.8 mm (2 ")	0.4 kg (0.882 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
X-LSM100A-SV1	101.6 mm (4 ")	0.43 kg (0.948 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
X-LSM100B-SV1	101.6 mm (4 ")	0.43 kg (0.948 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
X-LSM150A-SV1	152.4 mm (6 ")	0.47 kg (1.036 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
X-LSM150B-SV1	152.4 mm (6 ")	0.47 kg (1.036 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
X-LSM200A-SV1	203.2 mm (8 ")	0.5 kg (1.102 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
X-LSM200B-SV1	203.2 mm (8 ")	0.5 kg (1.102 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
X-LSM025A-SV1	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
X-LSM025B-SV1	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)

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X-LSM050A-SV1	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
X-LSM050B-SV1	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
X-LSM100A-SV1	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
X-LSM100B-SV1	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
X-LSM150A-SV1	<12 µm (<0.000472 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
X-LSM150B-SV1	<16 µm (<0.00063 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
X-LSM200A-SV1	<12 µm (<0.000472 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)
X-LSM200B-SV1	<16 µm (<0.00063 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
X-LSM025A-SV1	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM025B-SV1	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM050A-SV1	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM050B-SV1	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM100A-SV1	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM100B-SV1	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM150A-SV1	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM150B-SV1	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)
X-LSM200A-SV1	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
X-LSM200B-SV1	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)

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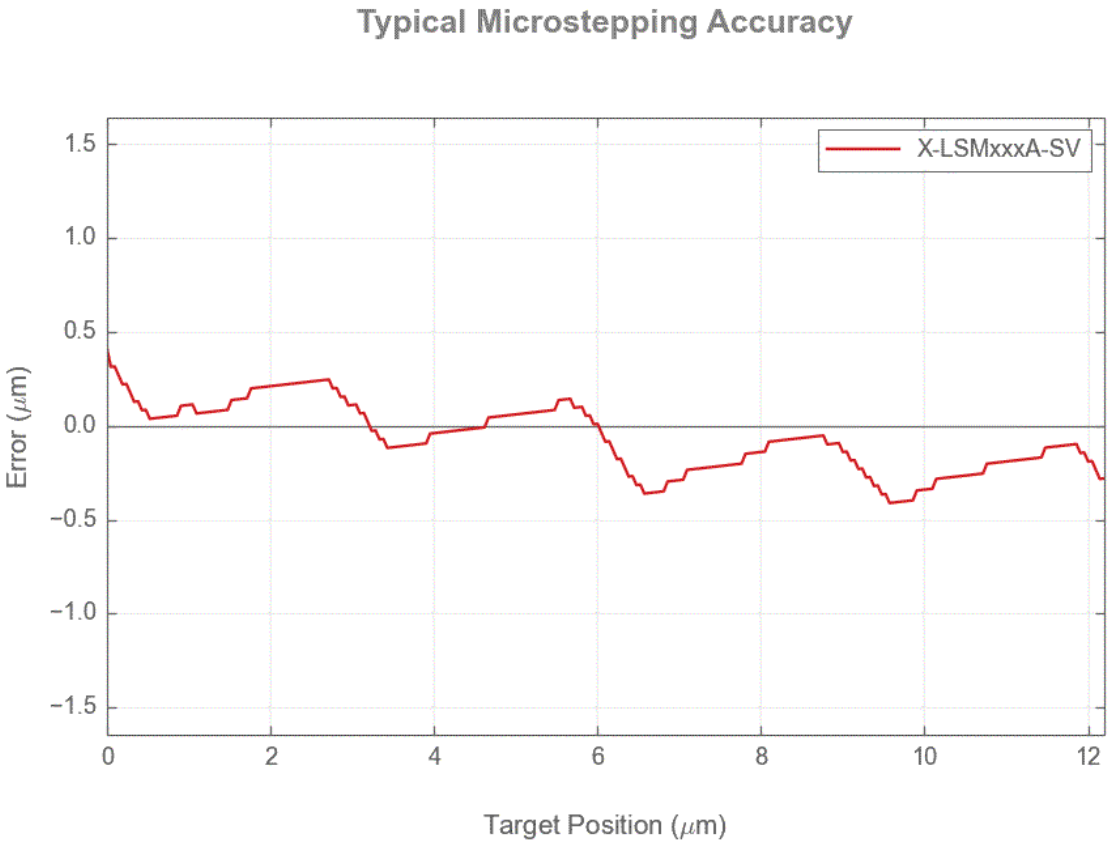
Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Linear Motion Per Motor Rev
X-LSM025A-SV1	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM025B-SV1	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM050A-SV1	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM050B-SV1	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM100A-SV1	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM100B-SV1	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM150A-SV1	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM150B-SV1	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
X-LSM200A-SV1	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
X-LSM200B-SV1	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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X-LSM-SV1 Series Charts

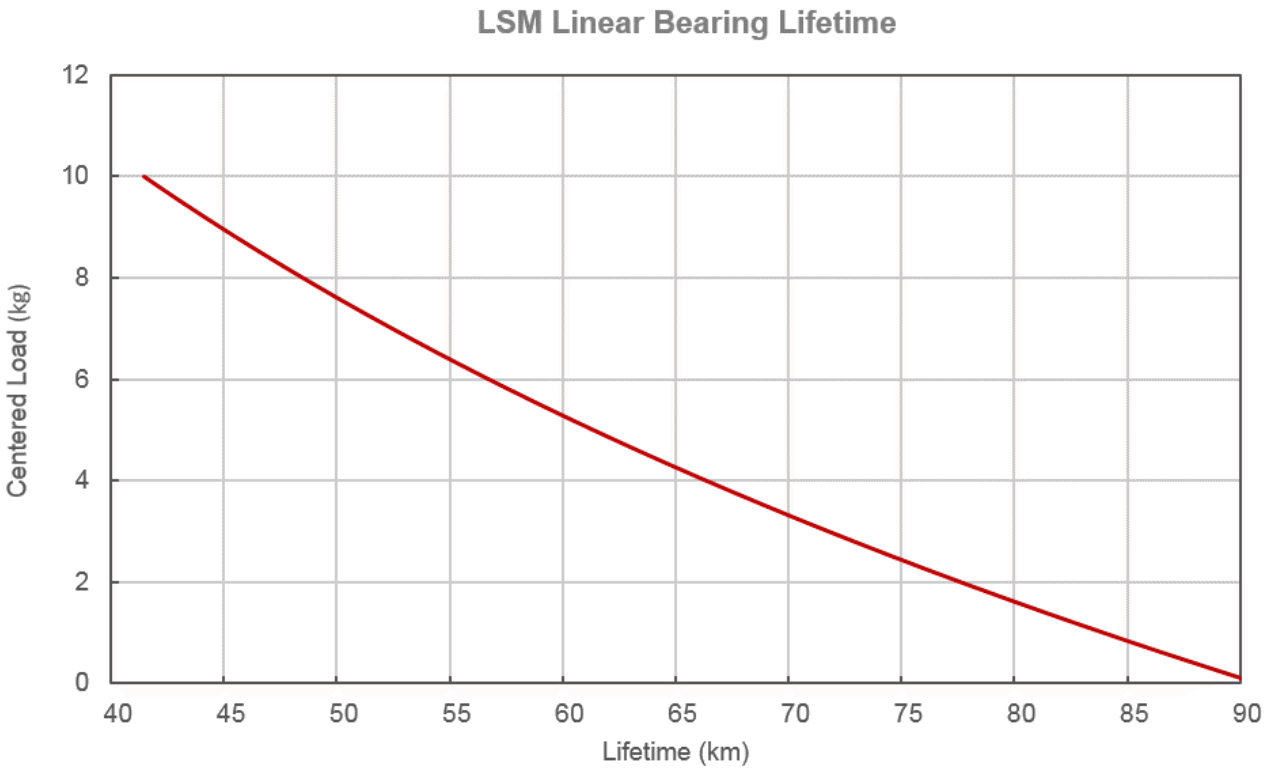
Microstep Accuracy



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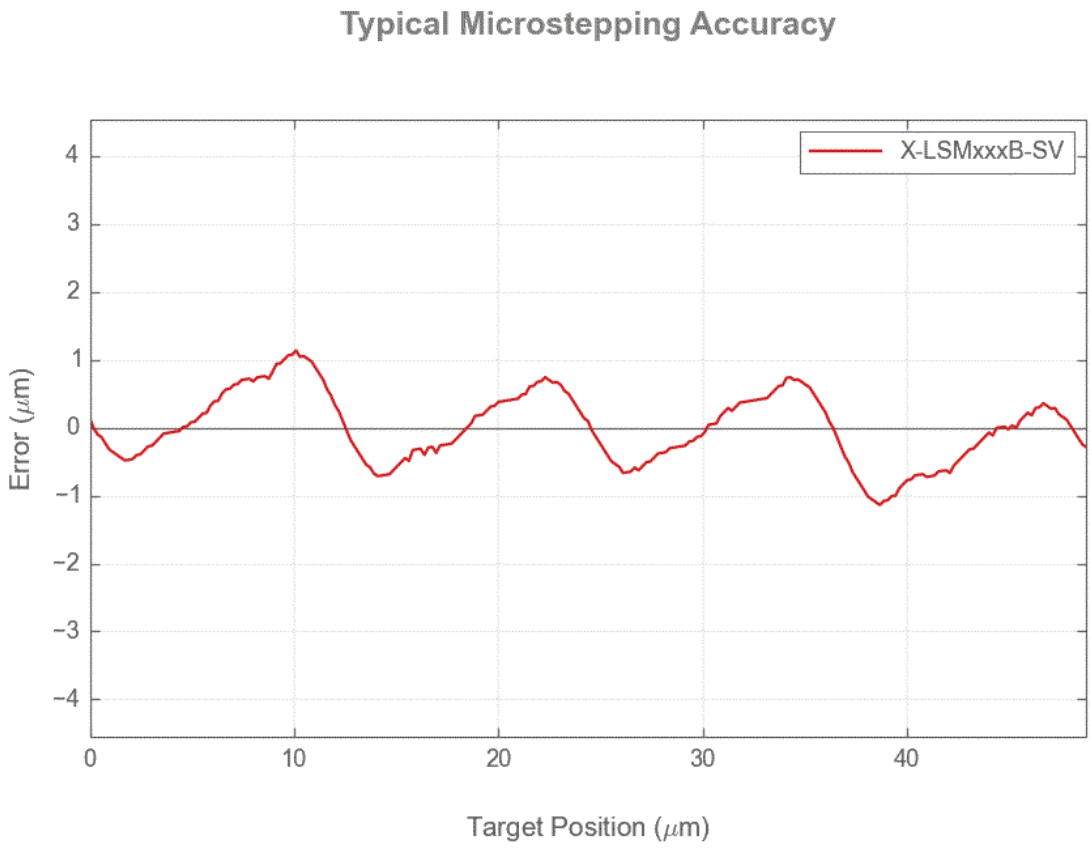
LSM Lifetime



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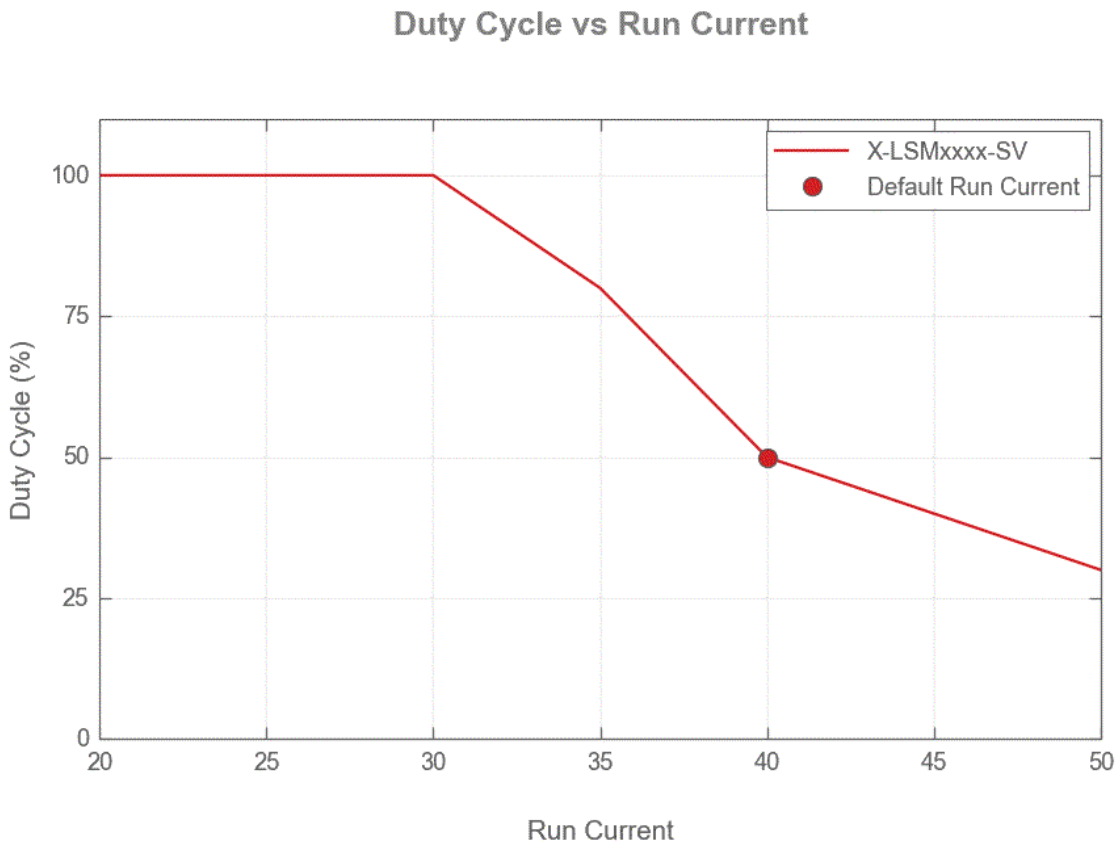
Microstep Accuracy



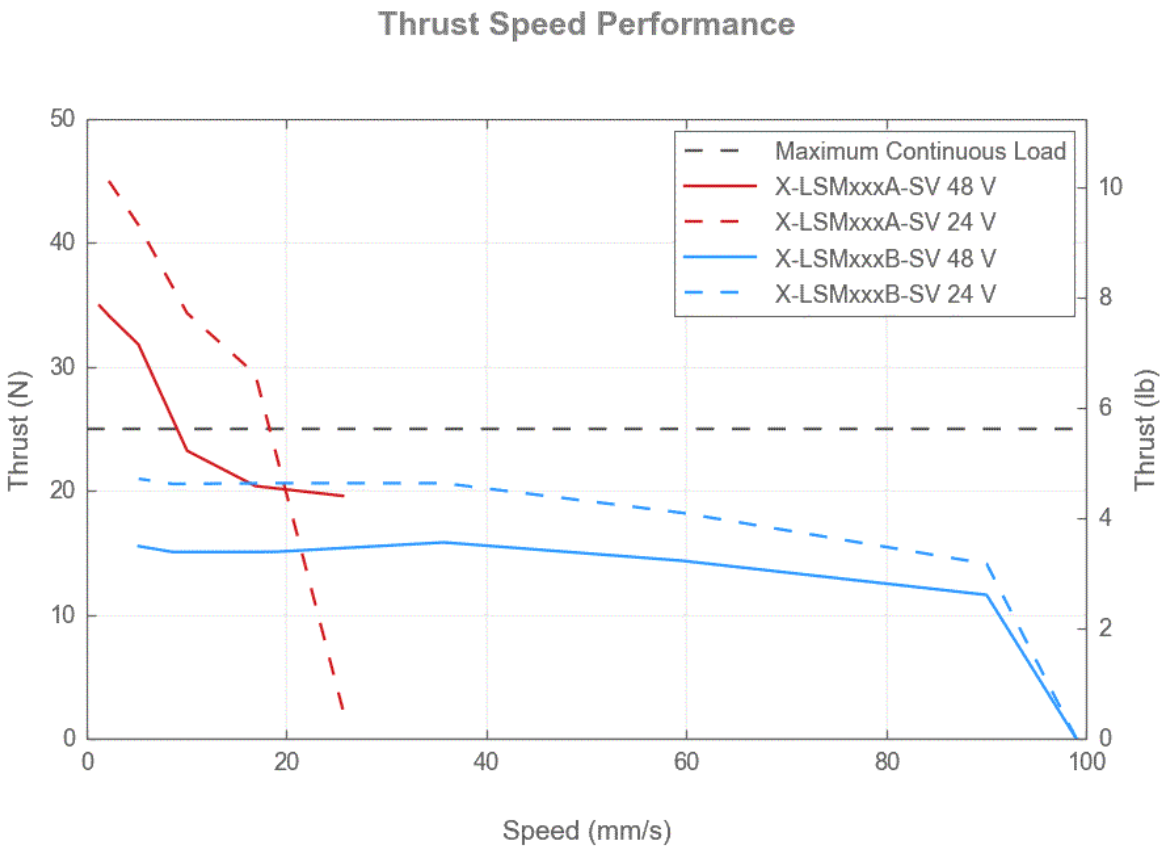
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Duty Cycle Vs Run Current



Thrust Speed



Contact

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LSM-V1 Series Datasheet



- Vacuum compatible to 10-3 Torr
- 25, 50, 100, 150, 200 mm travel
- Up to 100 mm/s speed and up to 35 N thrust
- 10 kg load capacity
- Designed for use with MCC Family controllers or any 2-phase stepper motor controller
- Only 7 feedthrough wires required to control these units
- Custom versions available

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LSM-V1 Series Overview

For more information about the basics of a vacuum system and considerations to keep in mind when gathering requirements for your application, read our technical article, "Motion Device Design Considerations for Vacuum Applications".

Zaber's LSM-V1 Series devices are low-vacuum compatible, computer-controlled, motorized linear stages with high thrust and speed capabilities, and a compact size.

At only 21 mm high, these miniature stages are excellent for applications where a small profile is required. The LSM-V1 is designed with vacuum compatible materials to minimize outgassing and allow for faster pump down times. Like all of Zaber's products, the LSM-V1 Series is designed to be very easy to set up and operate.

These stages are wired with a male D-sub 15 connector for plug-and-play use with our MCC Family controllers. Simply cut the connector off for flying leads in vacuum and match the wire connections outside of the vacuum for an easy connection. Our handy kits include free software, and all of the accessories that you will need to get the stage running right out of the box.

For more information visit: https://www.zaber.com/products/vacuum-compatible-stages/LSM-V1

LSM-V1 Series Part Numbering & Options

LSM 025 A -V1 T4

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

Options
- **-V1** — Low-vacuum compatible: 10-3 Torr

Connector
- **T4** — D-sub 15 inline connector

LSM-V1 Series Drawings

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

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LSM-V1 Series Specifications

Overview

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

Positioning Performance

Specification	Value
Default Resolution	1/64 of a step
Stage Parallelism	<25 µm (<0.000984 ")

Load Performance

Specification	Value
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Pitch)	300 N·cm (424.8 oz·in)
Maximum Moment (Roll)	300 N·cm (424.8 oz·in)
Maximum Moment (Yaw)	300 N·cm (424.8 oz·in)
Stiffness (Pitch)	55 N·m/°
Stiffness (Roll)	52.5 N·m/°
Stiffness (Yaw)	85 N·m/°

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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	800 mA/phase
Motor Winding Inductance	3.5 mH/phase

Power and Communication

Specification	Value
Data Cable Connection	Teflon flying leads with D-sub15 connector

Mechanical

Specification	Value
Guide Type	Needle roller bearing
Mechanical Drive System	Precision lead screw
Mounting Interface	M3 and M6 threaded holes and M4 threaded centre hole

Environmental & Compliance

Specification	Value
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	Low vacuum (10-3 Torr)

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Part Number	Travel Range	Weight	Accuracy (unidirectional)	Repeatability
LSM025A-V1T4	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<3 µm (<0.000118 ")
LSM025B-V1T4	25.4 mm (1 ")	0.39 kg (0.86 lb)	15 µm (0.000591 ")	<6 µm (<0.000236 ")
LSM050A-V1T4	50.8 mm (2 ")	0.4 kg (0.882 lb)	20 µm (0.000787 ")	<3 µm (<0.000118 ")
LSM050B-V1T4	50.8 mm (2 ")	0.4 kg (0.882 lb)	25 µm (0.000984 ")	<6 µm (<0.000236 ")
LSM100A-V1T4	101.6 mm (4 ")	0.43 kg (0.948 lb)	35 µm (0.001378 ")	<3 µm (<0.000118 ")
LSM100B-V1T4	101.6 mm (4 ")	0.43 kg (0.948 lb)	45 µm (0.001772 ")	<6 µm (<0.000236 ")
LSM150A-V1T4	152.4 mm (6 ")	0.47 kg (1.036 lb)	50 µm (0.001968 ")	<3 µm (<0.000118 ")
LSM150B-V1T4	152.4 mm (6 ")	0.47 kg (1.036 lb)	65 µm (0.002559 ")	<6 µm (<0.000236 ")
LSM200A-V1T4	203.2 mm (8 ")	0.5 kg (1.102 lb)	60 µm (0.002362 ")	<3 µm (<0.000118 ")
LSM200B-V1T4	203.2 mm (8 ")	0.5 kg (1.102 lb)	85 µm (0.003346 ")	<6 µm (<0.000236 ")

Part Number	Backlash	Flatness of Travel	Straightness of Travel	Pitch Error
LSM025A-V1T4	<12 µm (<0.000472 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM025B-V1T4	<16 µm (<0.00063 ")	<8 µm (<0.000315 ")	<12 µm (<0.000472 ")	0.02 ° (0.349 mrad)
LSM050A-V1T4	<12 µm (<0.000472 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM050B-V1T4	<16 µm (<0.00063 ")	<11 µm (<0.000433 ")	<14 µm (<0.000551 ")	0.03 ° (0.523 mrad)
LSM100A-V1T4	<12 µm (<0.000472 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
LSM100B-V1T4	<16 µm (<0.00063 ")	<18 µm (<0.000709 ")	<18 µm (<0.000709 ")	0.04 ° (0.698 mrad)
LSM150A-V1T4	<12 µm (<0.000472 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)

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LSM150B-V1T4	<16 µm (<0.00063 ")	<25 µm (<0.000984 ")	<23 µm (<0.000906 ")	0.04 ° (0.698 mrad)
LSM200A-V1T4	<12 µm (<0.000472 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)
LSM200B-V1T4	<16 µm (<0.00063 ")	<32 µm (<0.00126 ")	<27 µm (<0.001063 ")	0.04 ° (0.698 mrad)

Part Number	Roll Error	Yaw Error	Microstep Size (Default Resolution)	Peak Thrust
LSM025A-V1T4	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
LSM025B-V1T4	0.02 ° (0.349 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
LSM050A-V1T4	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.047625 µm	35 N (7.8 lb)
LSM050B-V1T4	0.03 ° (0.523 mrad)	0.03 ° (0.523 mrad)	0.1905 µm	15 N (3.4 lb)
LSM100A-V1T4	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.047625 µm	35 N (7.8 lb)
LSM100B-V1T4	0.04 ° (0.698 mrad)	0.04 ° (0.698 mrad)	0.1905 µm	15 N (3.4 lb)
LSM150A-V1T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
LSM150B-V1T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)
LSM200A-V1T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.047625 µm	35 N (7.8 lb)
LSM200B-V1T4	0.05 ° (0.873 mrad)	0.05 ° (0.873 mrad)	0.1905 µm	15 N (3.4 lb)

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Linear Motion Per Motor Rev
LSM025A-V1T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM025B-V1T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM050A-V1T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")

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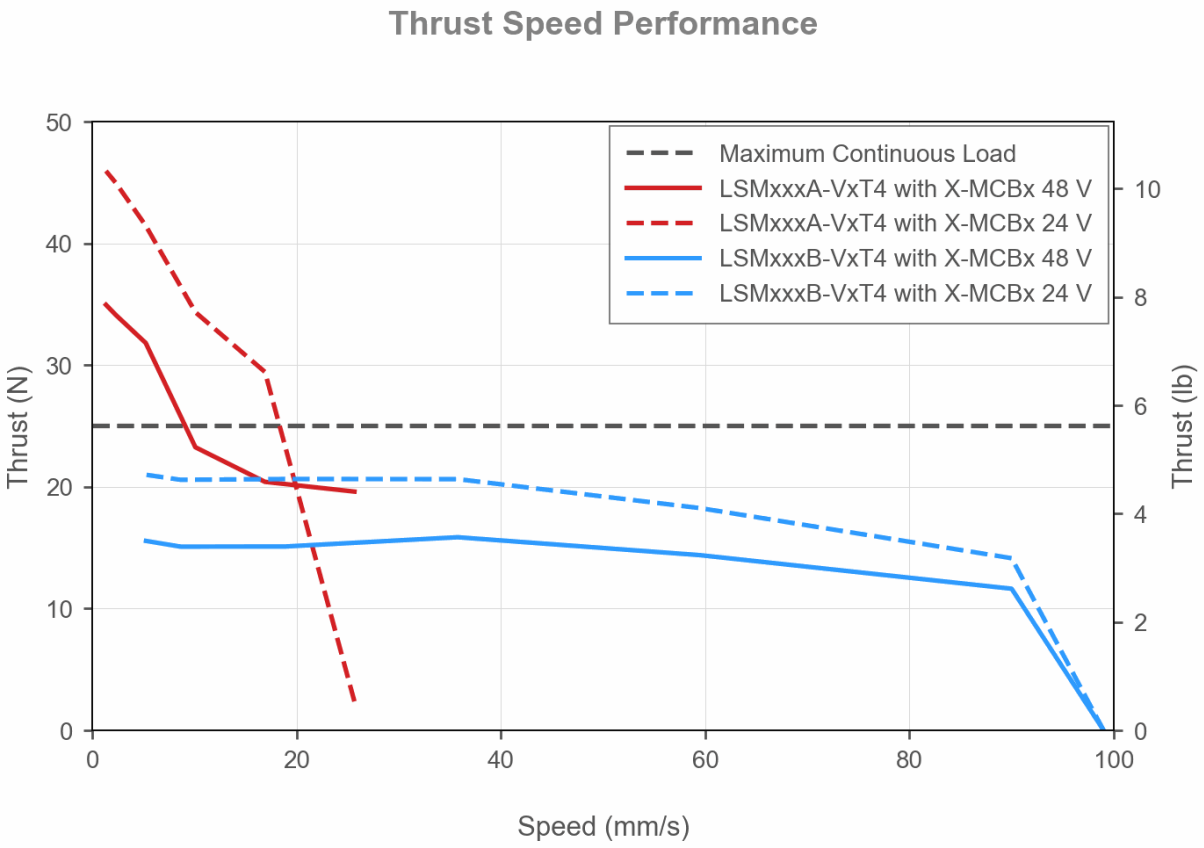
LSM050B-V1T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM100A-V1T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM100B-V1T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM150A-V1T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM150B-V1T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")
LSM200A-V1T4	24 mm/s (0.945 "/s)	0.000029 mm/s (0.000001 "/s)	0.000029 mm/s (0.000001 "/s)	0.6096 mm (0.024 ")
LSM200B-V1T4	100 mm/s (3.937 "/s)	0.000116 mm/s (0.000005 "/s)	0.000116 mm/s (0.000005 "/s)	2.4384 mm (0.096 ")

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LSM-V1 Series Charts

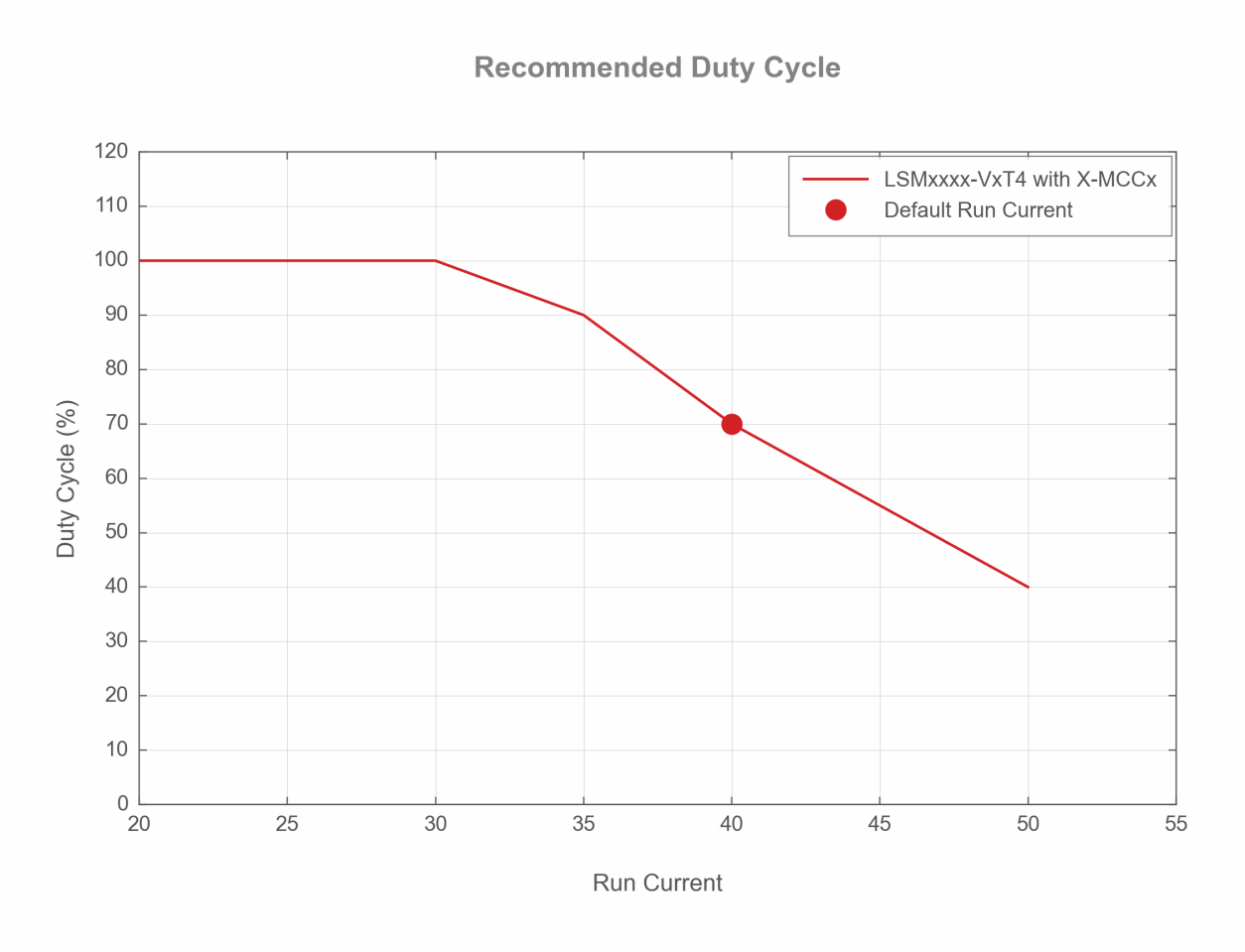
LSM Vx With X MCBx Thrust Speed



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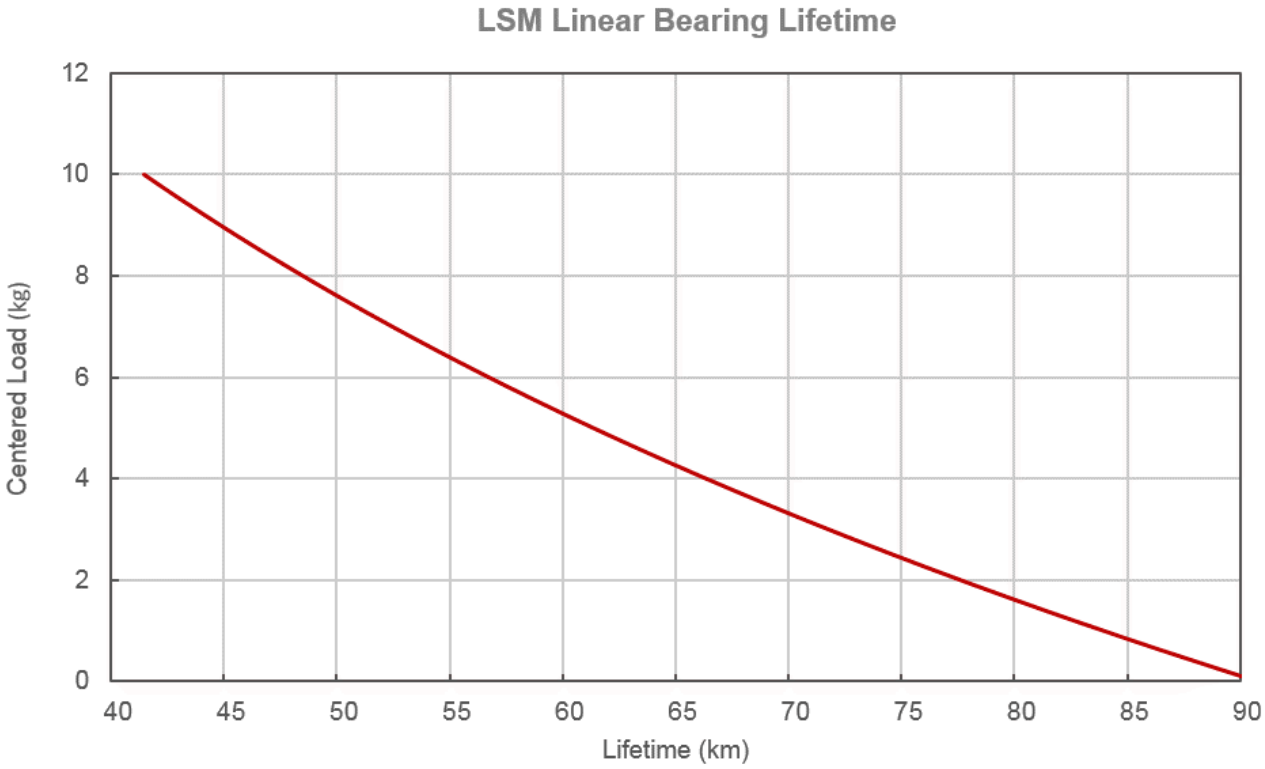
LSMxxxx VxT4 Run Current Duty Cycle



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LSM Lifetime



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