

## X-LSM025B-E03C 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

## X-LSM-EC Series Overview

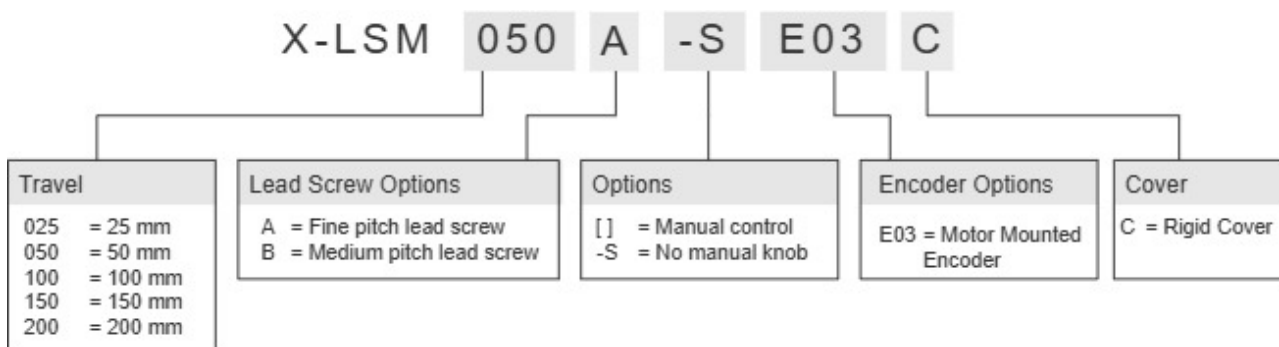
Zaber's X-LSM-EC Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. A rigid dust cover prevents contact with the rails and bearing system. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in 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-LSM025B-E03C Drawings

- [X-LSM-EC.pdf \(Drawing for the X-LSM-EC\)](#)

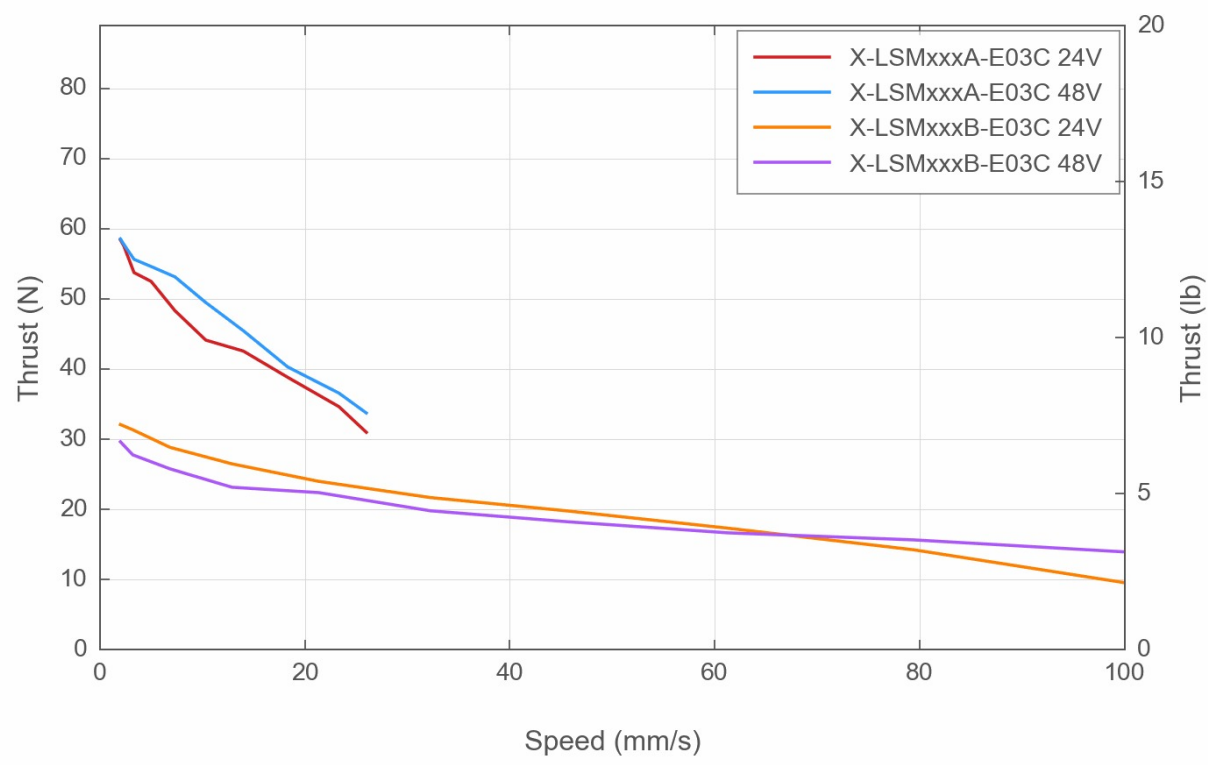
## X-LSM025B-E03C Specifications

|                                     |                                         |
|-------------------------------------|-----------------------------------------|
| Microstep Size (Default Resolution) | 0.1905 $\mu\text{m}$                    |
| Built-in Controller                 | Yes                                     |
| Travel Range                        | 25.4 mm (1.000")                        |
| Accuracy (unidirectional)           | 15 $\mu\text{m}$ (0.000591")            |
| Repeatability                       | < 6 $\mu\text{m}$ (< 0.000236")         |
| Backlash                            | < 16 $\mu\text{m}$ (< 0.000630")        |
| Maximum Speed                       | 104 mm/s (4.094"/s)                     |
| Minimum Speed                       | 0.000116 mm/s (0.000005"/s)             |
| Speed Resolution                    | 0.000116 mm/s (0.000005"/s)             |
| Encoder Resolution                  | 200 CPR (800 states/rev)                |
| Encoder Type                        | Rotary quadrature encoder (incremental) |
| Peak Thrust                         | 25 N (5.6 lb)                           |
| Back-driving Force*                 | ( $\pm$ 30%) 24 N (5.4 lb)              |
| Maximum Continuous Thrust           | 25 N (5.6 lb)                           |
| Communication Interface             | RS-232                                  |
| Communication Protocol              | Zaber ASCII (Default), Zaber Binary     |
| Data Cable Connection               | Locking 4-pin M8                        |
| Maximum Centered Load               | 250 N (56.1 lb)                         |
| Maximum Moment (Pitch)              | 4 N-m (3.0 ft-lb)                       |
| Maximum Moment (Roll)               | 10 N-m (7.4 ft-lb)                      |
| Maximum Moment (Yaw)                | 4 N-m (3.0 ft-lb)                       |
| Flatness of Travel                  | < 8 $\mu\text{m}$ (< 0.000315")         |
| Straightness of Travel              | < 12 $\mu\text{m}$ (< 0.000472")        |
| Pitch                               | 0.02° (0.349 mrad)                      |
| Roll                                | 0.02° (0.349 mrad)                      |
| Yaw                                 | 0.03° (0.523 mrad)                      |
| Stiffness (Pitch)                   | 75 N-m/° (233 $\mu\text{rad/N-m}$ )     |
| Stiffness (Roll)                    | 75 N-m/° (233 $\mu\text{rad/N-m}$ )     |

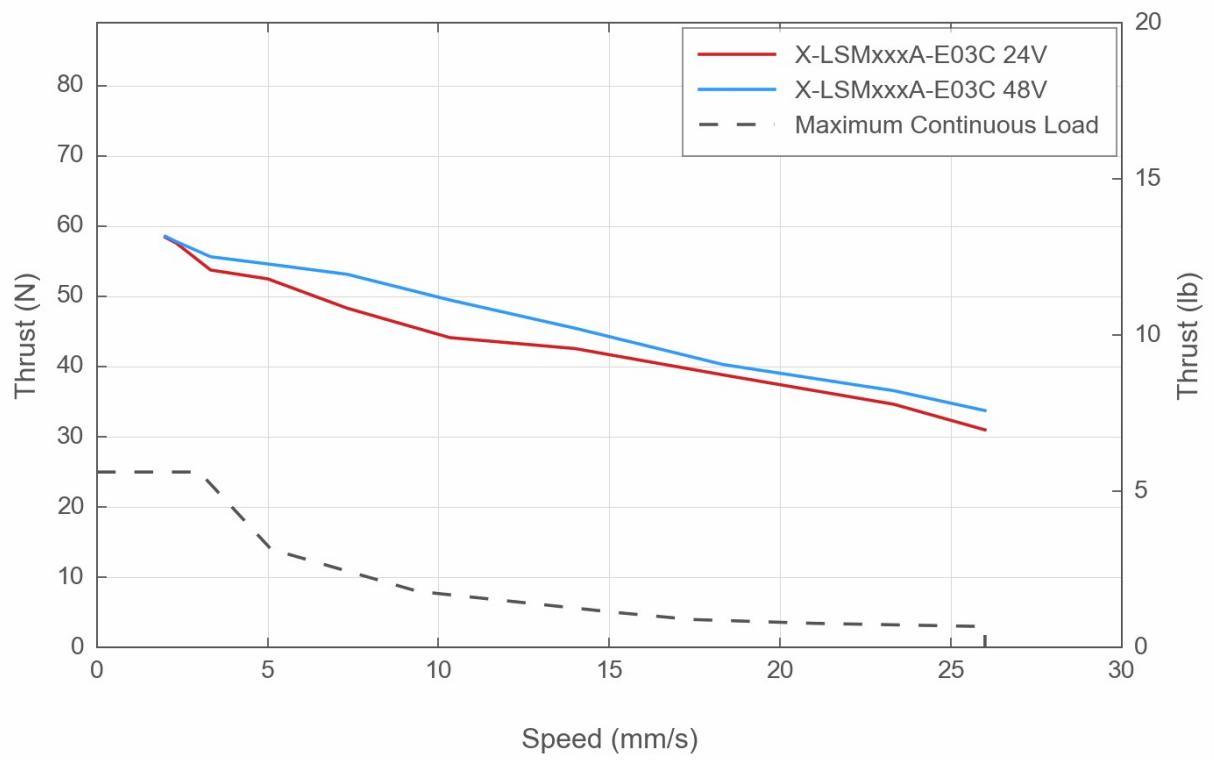
|                                            |                                                      |
|--------------------------------------------|------------------------------------------------------|
| <b>Microstep Size (Default Resolution)</b> | <b>0.1905 <math>\mu\text{m}</math></b>               |
| Stiffness (Yaw)                            | 150 N-m/ $^{\circ}$ (116 $\mu\text{rad/N-m}$ )       |
| Power Supply                               | 24-48 VDC                                            |
| Power Plug                                 | 2-pin Screw Terminal                                 |
| Maximum Current Draw                       | 350 mA                                               |
| Linear Motion Per Motor Rev                | 2.4384 mm (0.096")                                   |
| Motor Steps Per Rev                        | 200                                                  |
| Motor Type                                 | Stepper (2 phase)                                    |
| Motor Rated Current                        | 600 mA/phase                                         |
| Motor Winding Inductance                   | 3.5 mH/phase                                         |
| Default Resolution                         | 1/64 of a step                                       |
| Guide Type                                 | Recirculating ball bearing                           |
| Mechanical Drive System                    | Precision lead screw                                 |
| Limit or Home Sensing                      | Magnetic hall sensor                                 |
| Manual Control                             | Yes                                                  |
| Axes of Motion                             | 1                                                    |
| LED Indicators                             | Yes                                                  |
| Mounting Interface                         | M3 and M6 threaded holes and M4 threaded centre hole |
| Stage Parallelism                          | < 25 $\mu\text{m}$ (< 0.000984")                     |
| Operating Temperature Range                | 0 to 50 $^{\circ}\text{C}$                           |
| CE Compliant                               | Yes                                                  |
| Vacuum Compatible                          | No                                                   |
| Weight                                     | 0.35 kg (0.772 lb)                                   |

X-LSM-EC Series Charts

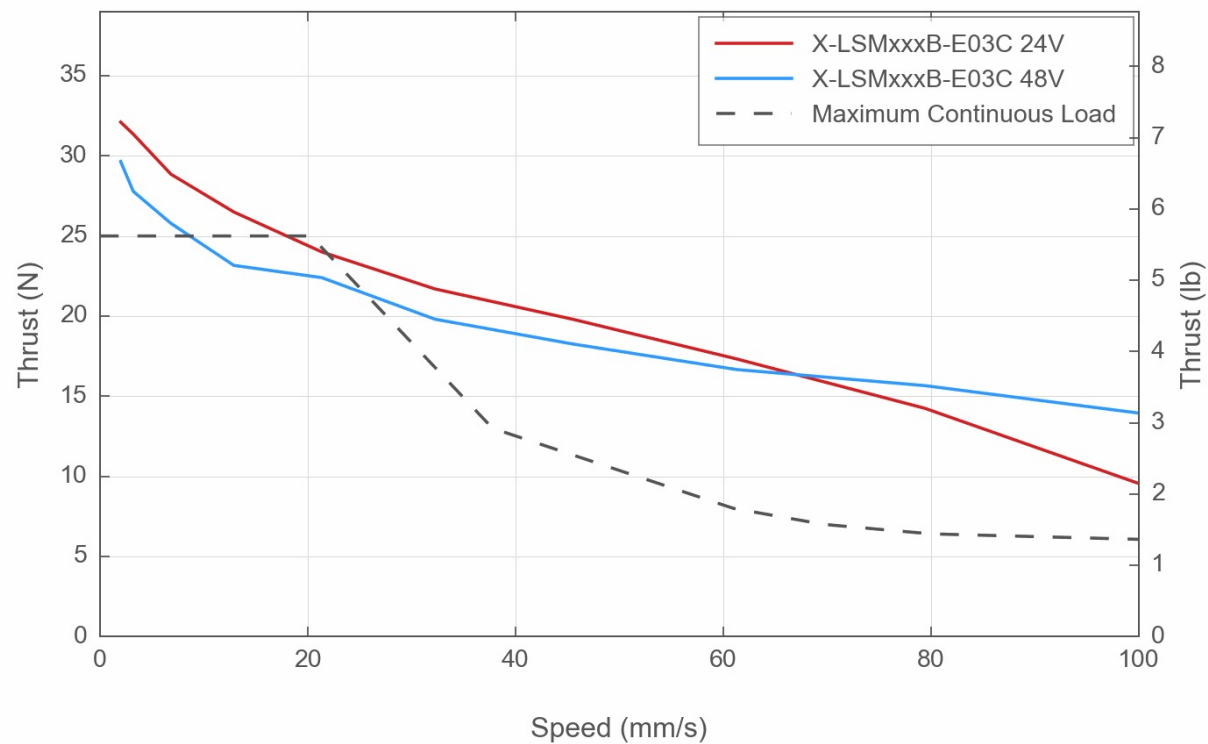
Thrust Speed Performance



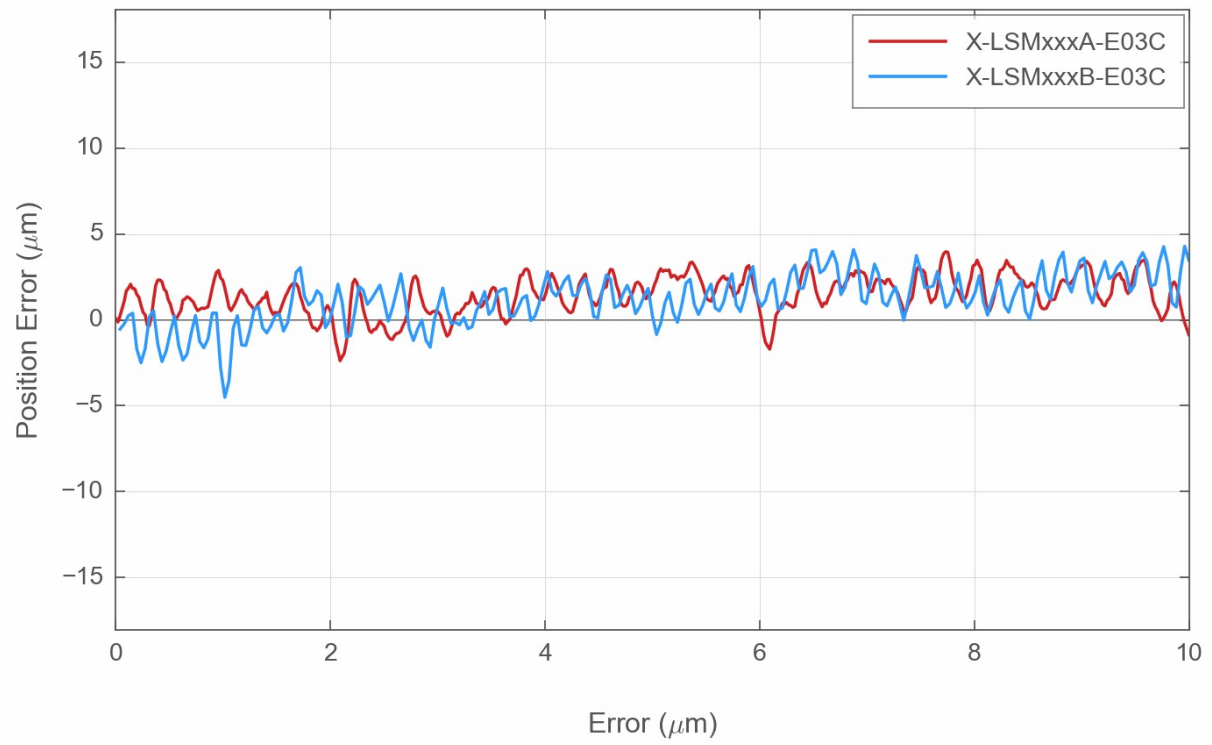
## Thrust Speed Performance



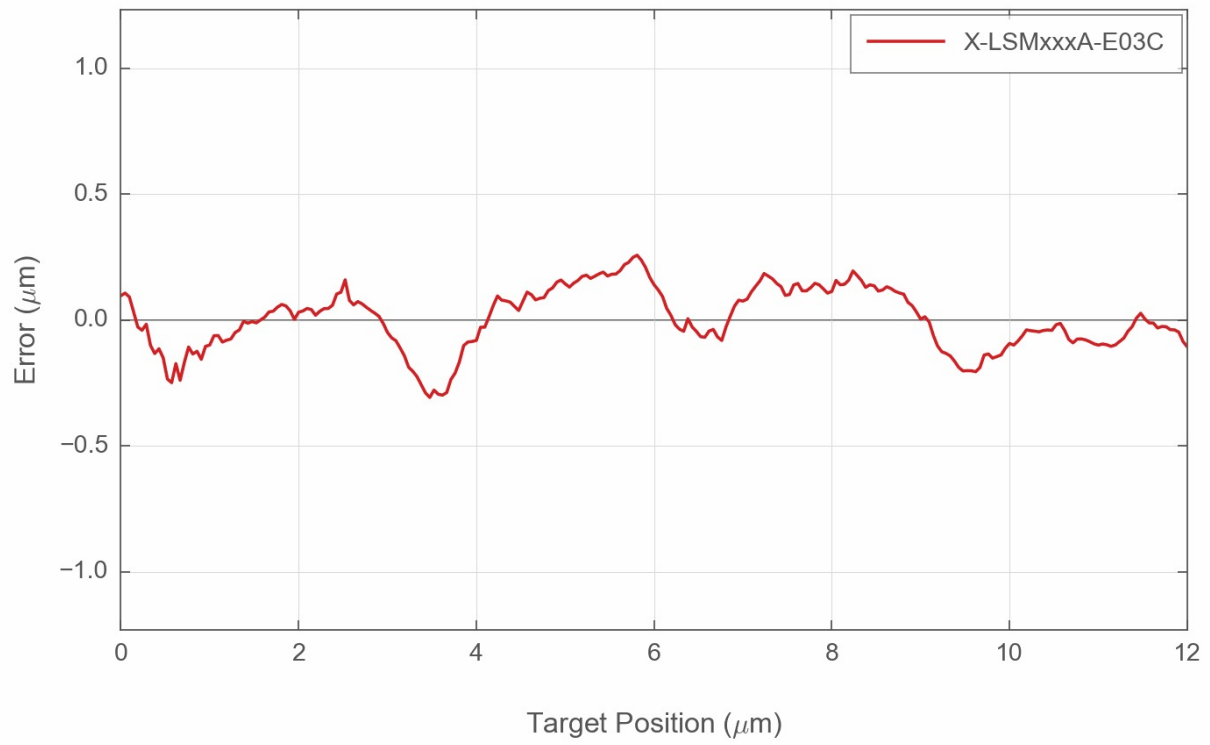
# Thrust Speed Performance



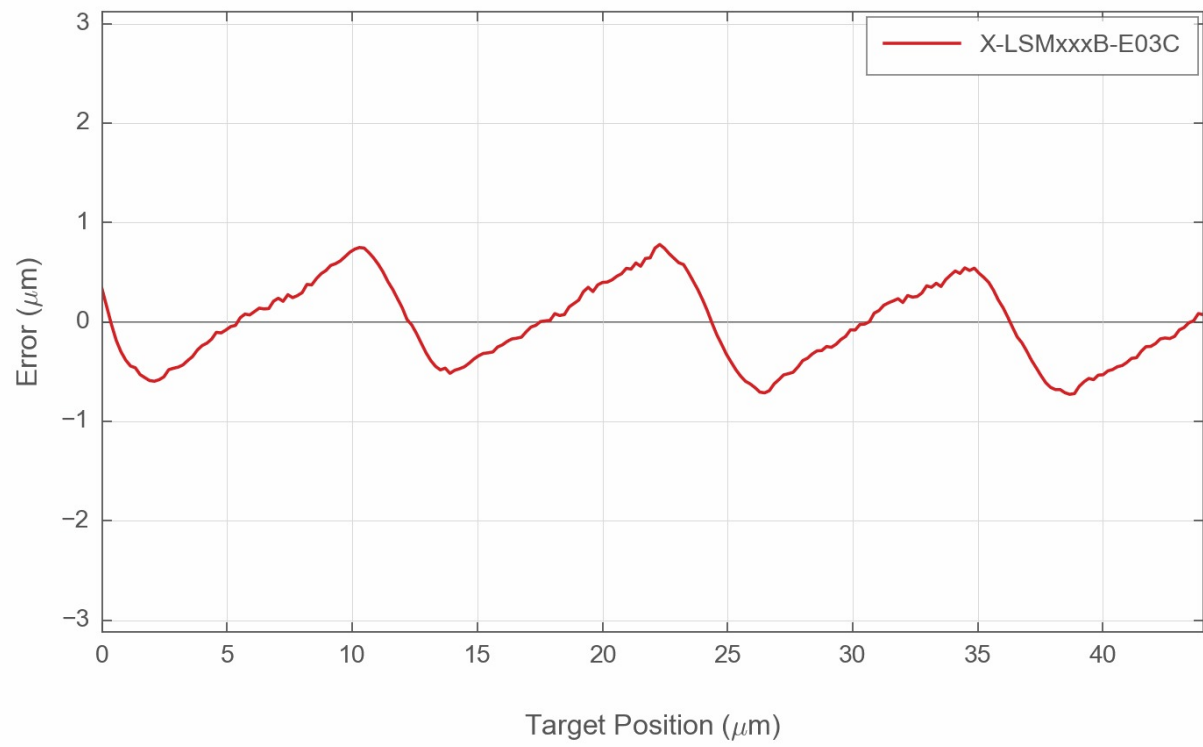
## Typical Accuracy



## Typical Microstepping Accuracy



## Typical Microstepping Accuracy



## LSM Linear Bearing Lifetime



## Contact

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