

## X-LSM050A-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

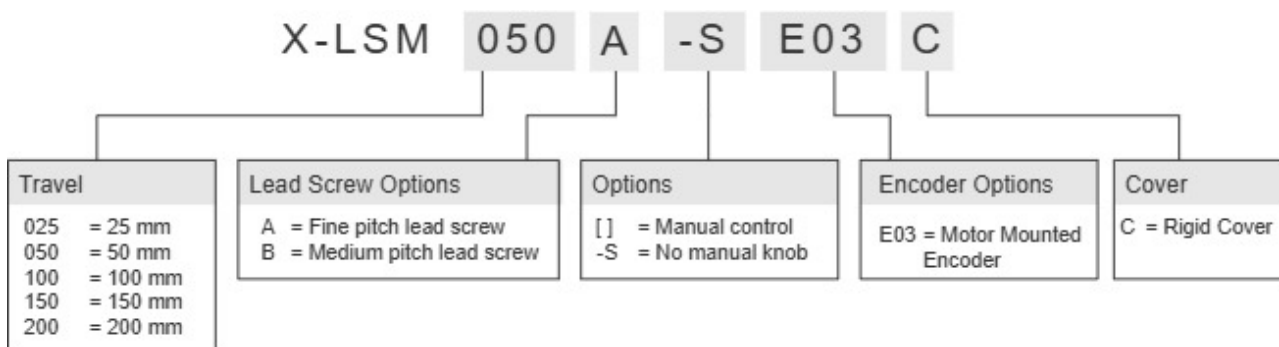
Zaber's X-LSM-EC Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. A rigid dust cover prevents contact with the rails and bearing system. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in 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-LSM050A-E03C Drawings

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

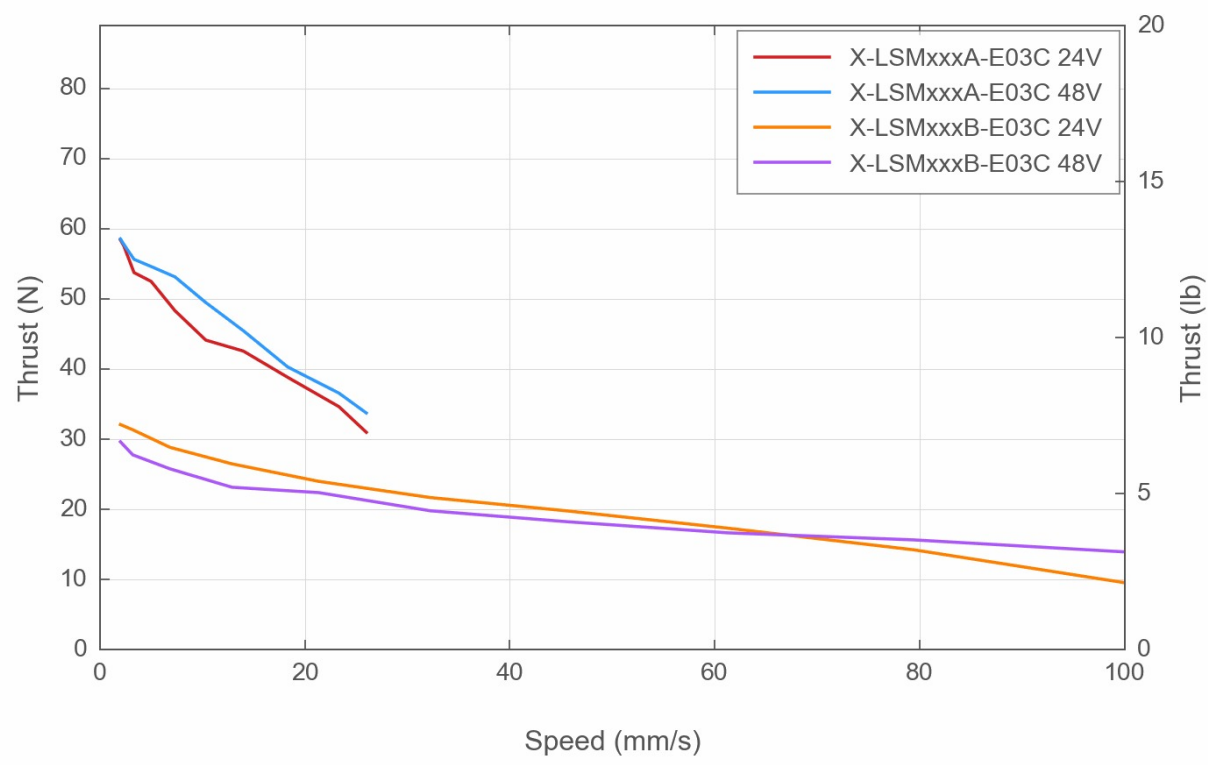
## X-LSM050A-E03C Specifications

|                                            |                                          |
|--------------------------------------------|------------------------------------------|
| <b>Microstep Size (Default Resolution)</b> | <b>0.047625 <math>\mu\text{m}</math></b> |
| Built-in Controller                        | Yes                                      |
| Travel Range                               | 50.8 mm (2.000")                         |
| Accuracy (unidirectional)                  | 20 $\mu\text{m}$ (0.000787")             |
| Repeatability                              | < 3 $\mu\text{m}$ (< 0.000118")          |
| Backlash                                   | < 12 $\mu\text{m}$ (< 0.000472")         |
| Maximum Speed                              | 26 mm/s (1.024"/s)                       |
| Minimum Speed                              | 0.000029 mm/s (0.000001"/s)              |
| Speed Resolution                           | 0.000029 mm/s (0.000001"/s)              |
| Encoder Resolution                         | 200 CPR (800 states/rev)                 |
| Encoder Type                               | Rotary quadrature encoder (incremental)  |
| Peak Thrust                                | 55 N (12.3 lb)                           |
| Back-driving Force*                        | Non-back-driving                         |
| 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                         | < 11 $\mu\text{m}$ (< 0.000433")         |
| Straightness of Travel                     | < 14 $\mu\text{m}$ (< 0.000551")         |
| Pitch                                      | 0.03° (0.523 mrad)                       |
| Roll                                       | 0.03° (0.523 mrad)                       |
| Yaw                                        | 0.03° (0.523 mrad)                       |
| Stiffness (Pitch)                          | 75 N-m/° (233 $\mu\text{rad/N-m}$ )      |
| Stiffness (Roll)                           | 75 N-m/° (233 $\mu\text{rad/N-m}$ )      |

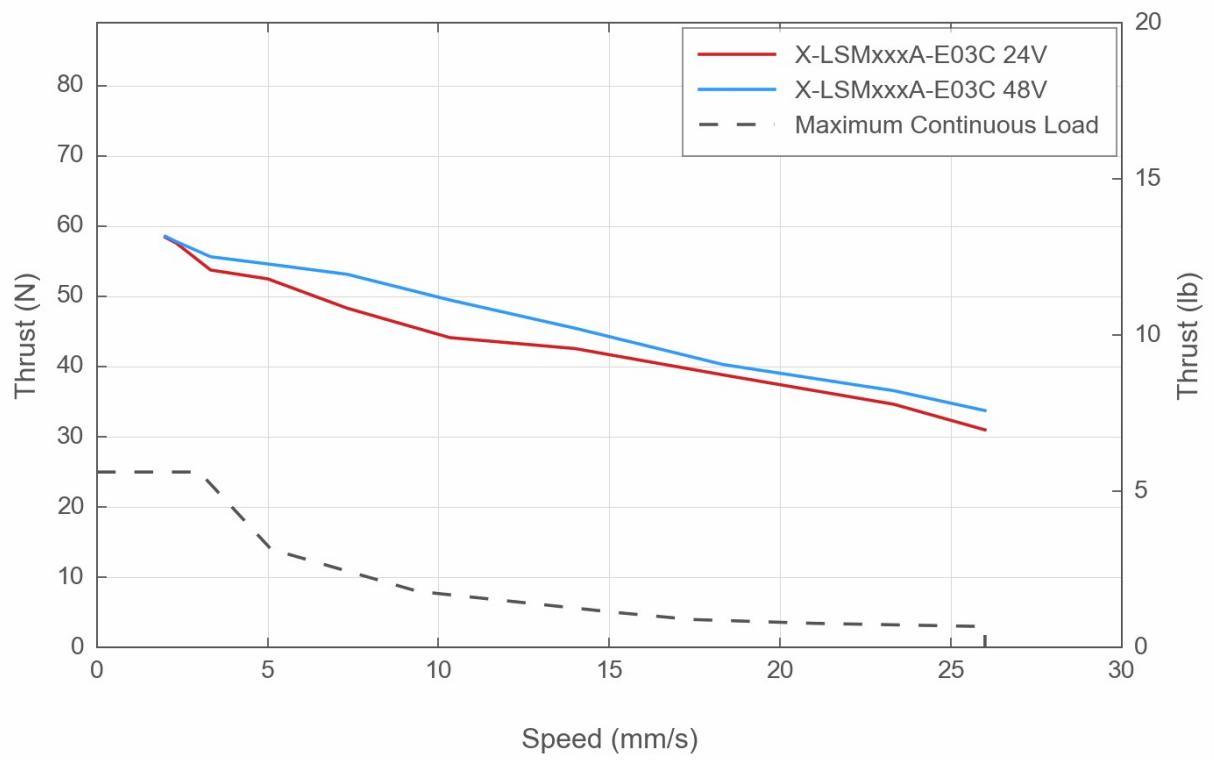
|                                            |                                                      |
|--------------------------------------------|------------------------------------------------------|
| <b>Microstep Size (Default Resolution)</b> | <b>0.047625 <math>\mu\text{m}</math></b>             |
| 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                | 0.6096 mm (0.024")                                   |
| 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                                     | 0.36 kg (0.794 lb)                                   |

X-LSM-EC Series Charts

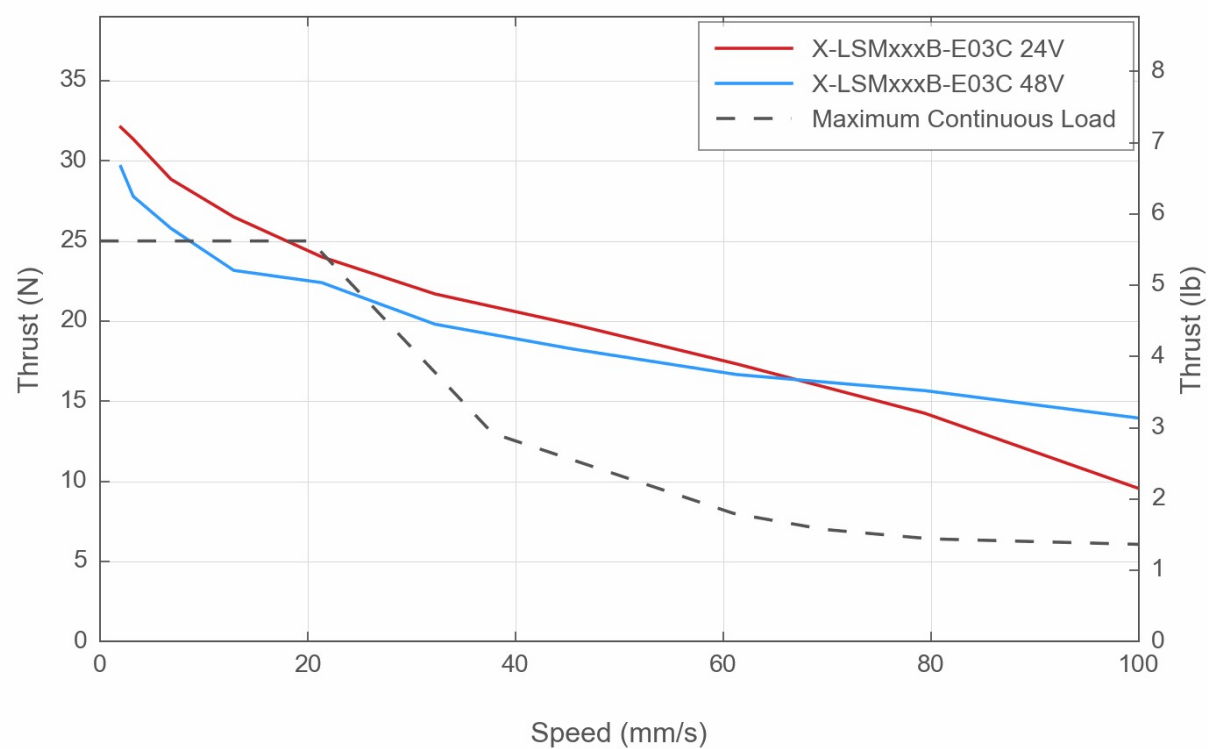
Thrust Speed Performance



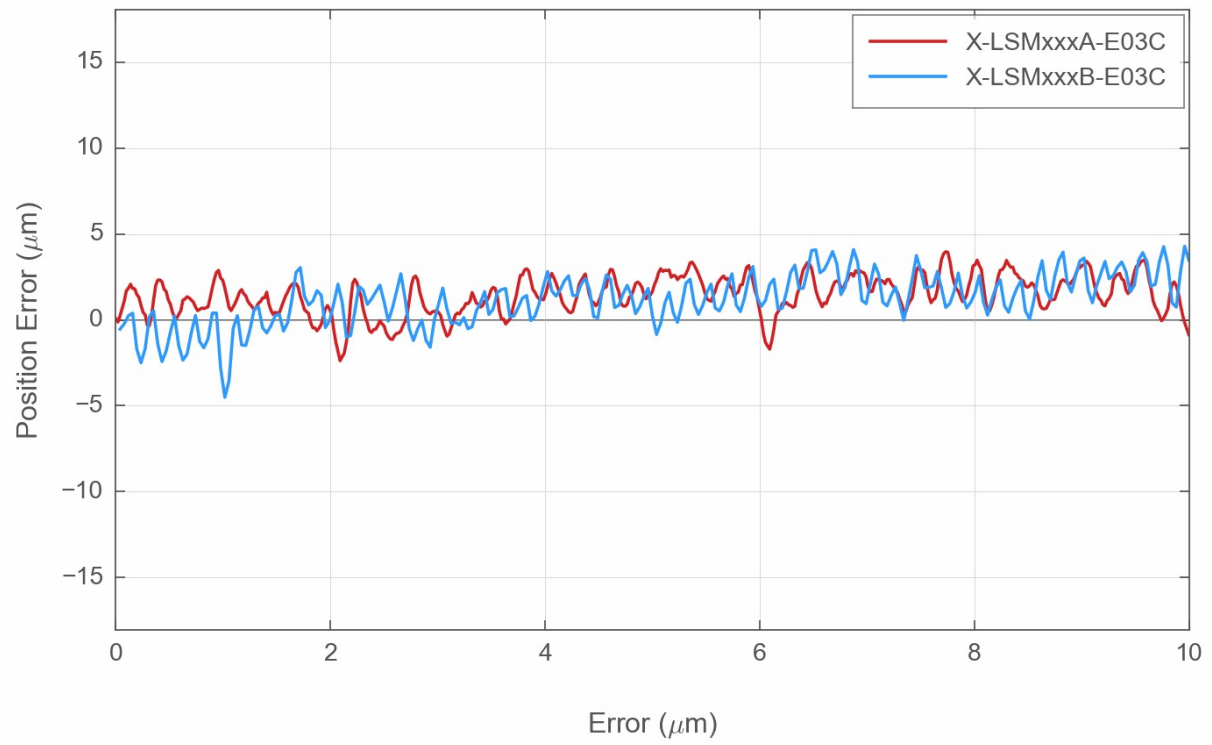
## Thrust Speed Performance



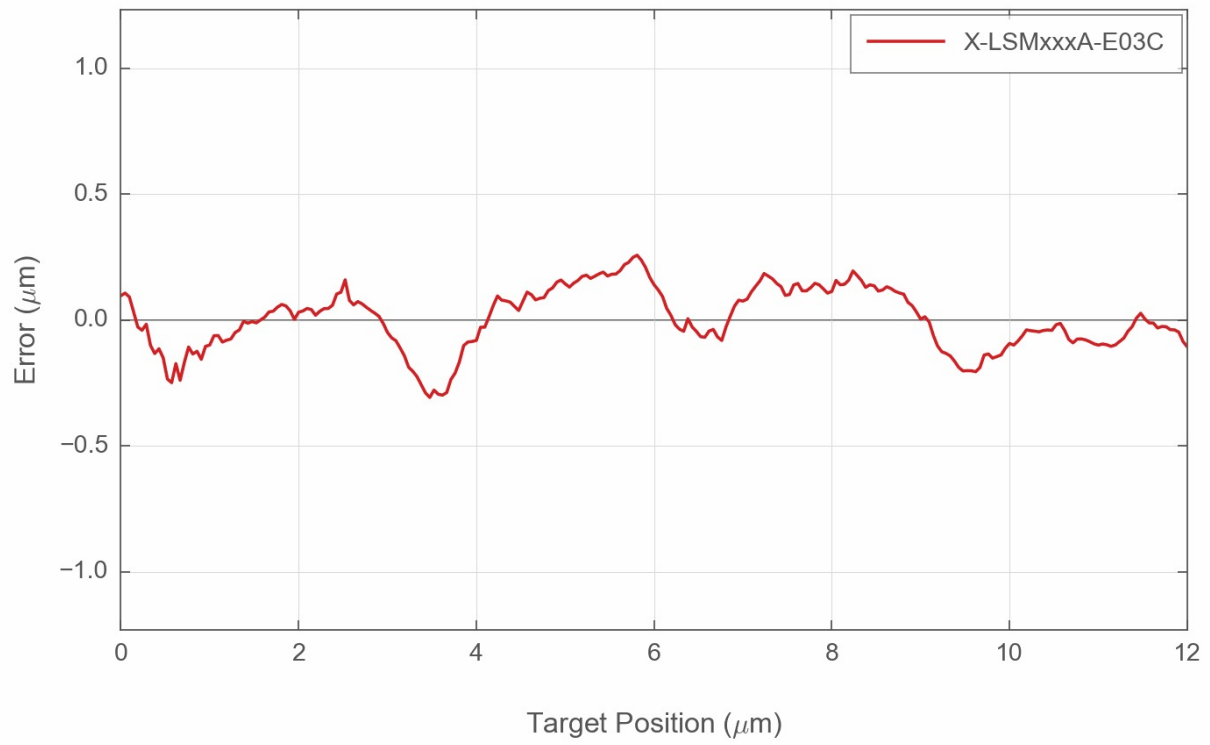
Thrust Speed Performance



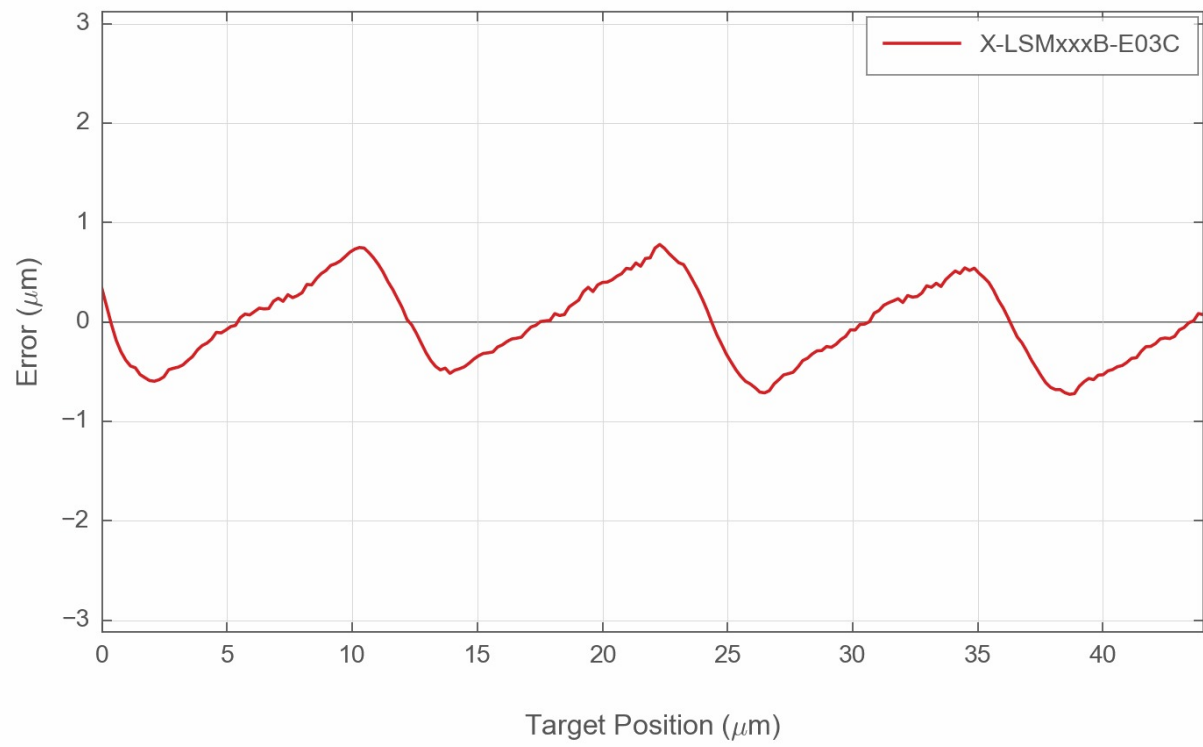
## Typical Accuracy



## Typical Microstepping Accuracy



## Typical Microstepping Accuracy



## LSM Linear Bearing Lifetime



## Contact

Email: [contact@zaber.com](mailto:contact@zaber.com)

Phone (toll free Canada/USA): 1-888-276-8033

Phone (direct): 1-604-569-3780

Fax: 1-604-648-8033

Zaber Technologies Inc.

#2 - 605 West Kent Ave. N.

Vancouver, British Columbia

Canada, V6P 6T7

<https://www.zaber.com>