



X-LSM100A-E03 Datasheet



- 25, 50, 100, 150, 200 mm travel
- 10 kg load capacity
- Up to 104 mm/s speed and up to 55 N thrust
- 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-E Series Overview

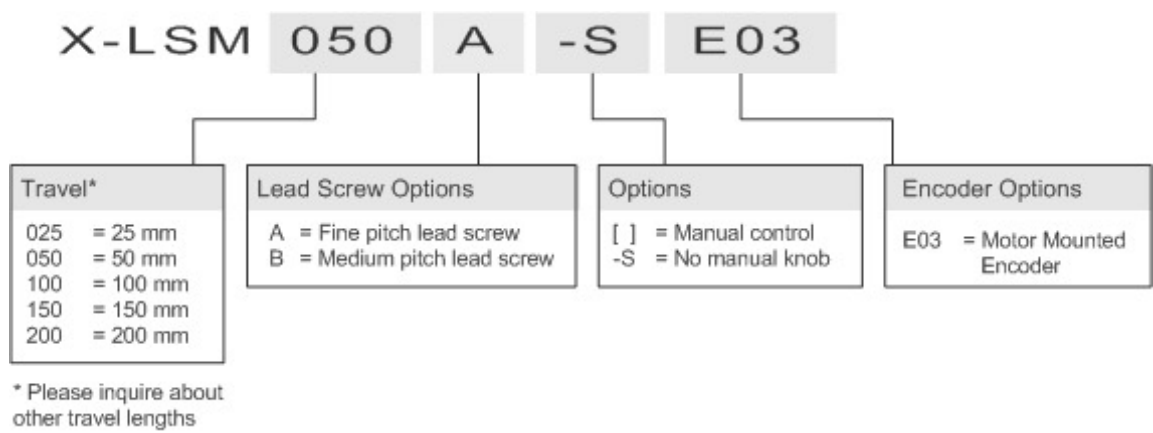
Zaber's X-LSM-E Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. They are stand-alone units requiring only a standard 24 V or 48 V power supply. The built-in motor encoder allows closed-loop operation and slip/stall recovery features. 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 10 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.

X-LSM-E Series Part Numbering



X-LSM100A-E03 Bundle Options

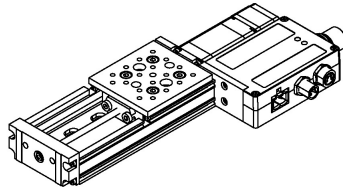
This device may be purchased stand-alone or bundled with one of the following accessory kits:

Products	Description
X-LSM100A-E03	Motorized linear stage, 100 mm travel, integrated motor encoder and controller, plus manual control
with KX14A accessory kit Power supply: North America, 48 V. Powers multiple X-Series devices	<ul style="list-style-type: none">• 1 x PS14S-48V37: Power Supply, 48 V 3.75 A, Compatible with X-Series Products• 1 x X-DC02: Data Cable, 2 ft (0.6 m), for Use with all X-Series Products• 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products
with KX13A accessory kit Power supply: North America, 48 V. Powers one axis	<ul style="list-style-type: none">• 1 x PS13S-48V12: Power Supply, 48 V 1.25 A, Compatible with X-Series Products• 1 x X-DC02: Data Cable, 2 ft (0.6 m), for Use with all X-Series Products• 1 x X-USBDC: USB to Serial Converter Cable with M8 Female Plug for X-Series Products
with PTB2 accessory Power Supply Not Included	<ul style="list-style-type: none">• 1 x PTB2: Power Terminal Block, 2 Pin, 5 mm Pitch, for Use with X-Series Devices with Custom Power Supply

X-LSM100A-E03 Drawings

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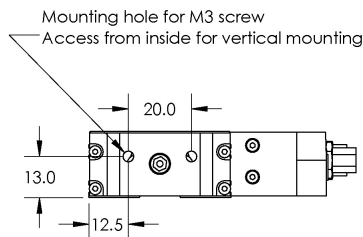
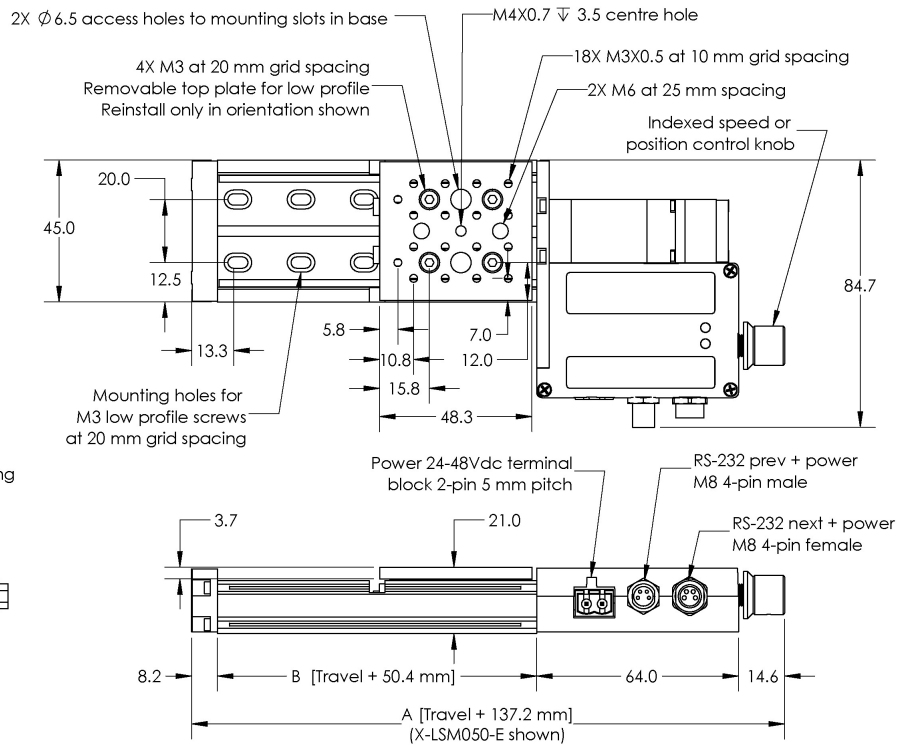
X-LSM-E Miniature Motorized Linear Stage
dimensions in mm



Model Number*	Travel	A**	B
X-LSM025-E	25.4	162.6	75.8
X-LSM050-E	50.8	188.0	101.2
X-LSM100-E	101.6	238.8	152.0
X-LSM150-E	152.4	289.6	202.8
X-LSM200-E	203.2	340.4	253.6

*See product page for complete list of available models at www.zaber.com

**Subtract 13.1 mm knob length from 'A' for -S versions without manual control



DWG 1080 R02

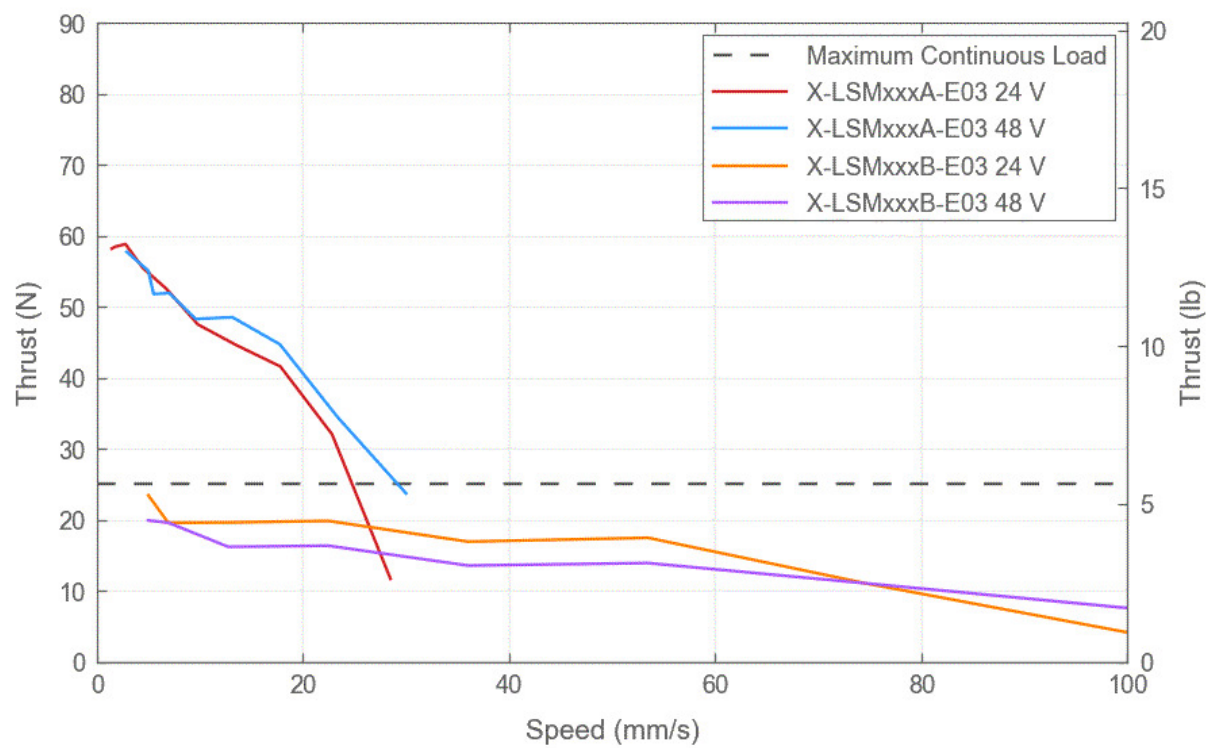
X-LSM100A-E03 Specifications

Specification	Value	Alternate Unit
Microstep Size (Default Resolution)	0.047625 μm	
Built-in Controller	Yes	
Travel Range	101.6 mm	4.000"
Accuracy (unidirectional)	35 μm	0.001378"
Repeatability	< 3 μm	< 0.000118"
Backlash	< 12 μm	< 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	
Peak Thrust	55 N	12.3 lb
Maximum Continuous Thrust	25 N	5.6 lb
Communication Interface	RS-232	
Communication Protocol	Zaber ASCII (Default), Zaber Binary	
Maximum Centered Load	100 N	22.4 lb
Maximum Cantilever Load	300 N-cm	424.8 oz-in
Guide Type	Needle roller bearing	
Vertical Runout	< 18 μm	< 0.000709"
Horizontal Runout	< 18 μm	< 0.000709"
Pitch	0.04°	0.698 mrad
Roll	0.04°	0.698 mrad
Yaw	0.04°	0.698 mrad
Stiffness in Pitch	55 N-m/°	317 $\mu\text{rad/N-m}$
Stiffness in Roll	52.5 N-m/°	332 $\mu\text{rad/N-m}$
Stiffness in Yaw	85 N-m/°	205 $\mu\text{rad/N-m}$
Maximum Current Draw	350 mA	
Power Supply	24-48 VDC	
Power Plug	2-pin Screw Terminal	
Linear Motion Per Motor Rev	0.6096 mm	0.024"

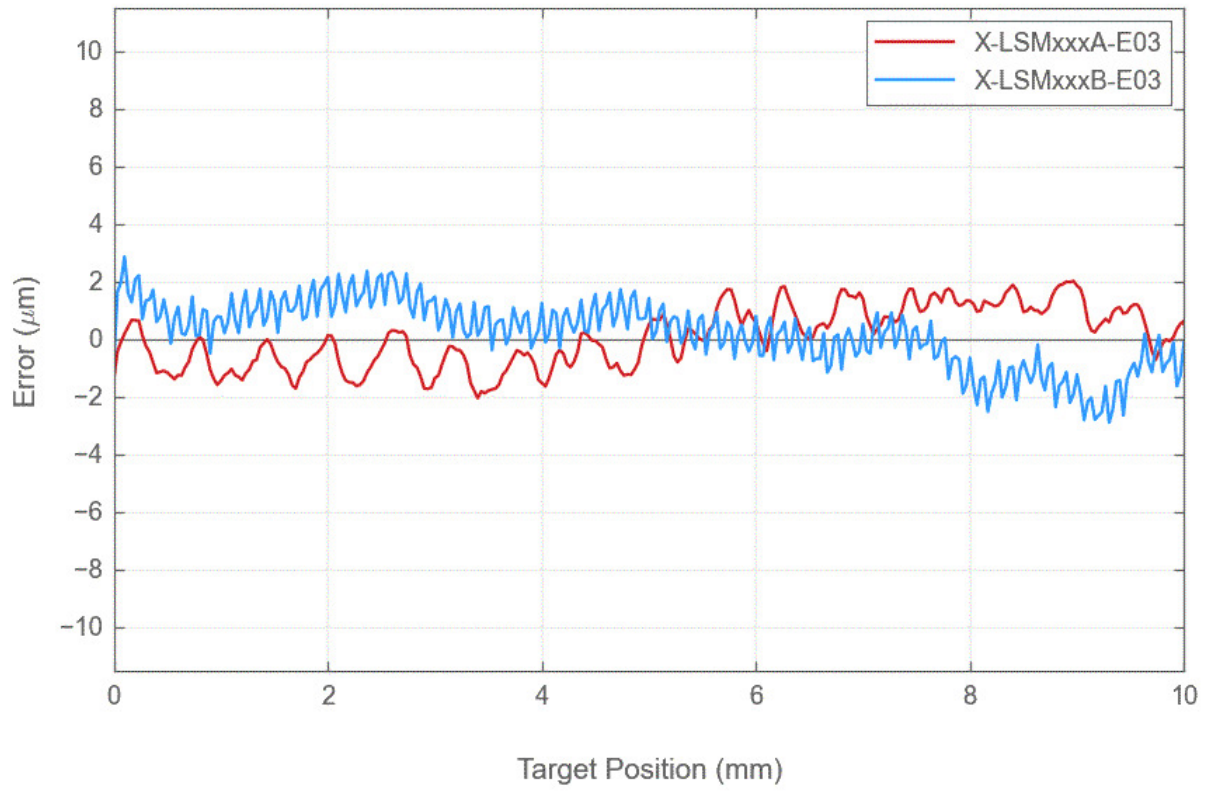
Specification	Value	Alternate Unit
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Motor Rated Current	600 mA/phase	
Inductance	3.5 mH/phase	
Default Resolution	1/64 of a step	
Data Cable Connection	Locking 4-pin M8	
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic hall sensor	
Manual Control	Yes	
Axes of Motion	1	
LED Indicators	Yes	
Mounting Interface	M3 and M6 threaded holes and M4 threaded centre hole	
Operating Temperature Range	0 to 50 °C	
Vacuum Compatible	No	
RoHS Compliant	Yes	
Stage Parallelism	< 25 µm	< 0.000984"
CE Compliant	Yes	
Weight	0.39 kg	0.860 lb

X-LSM-E Series Charts

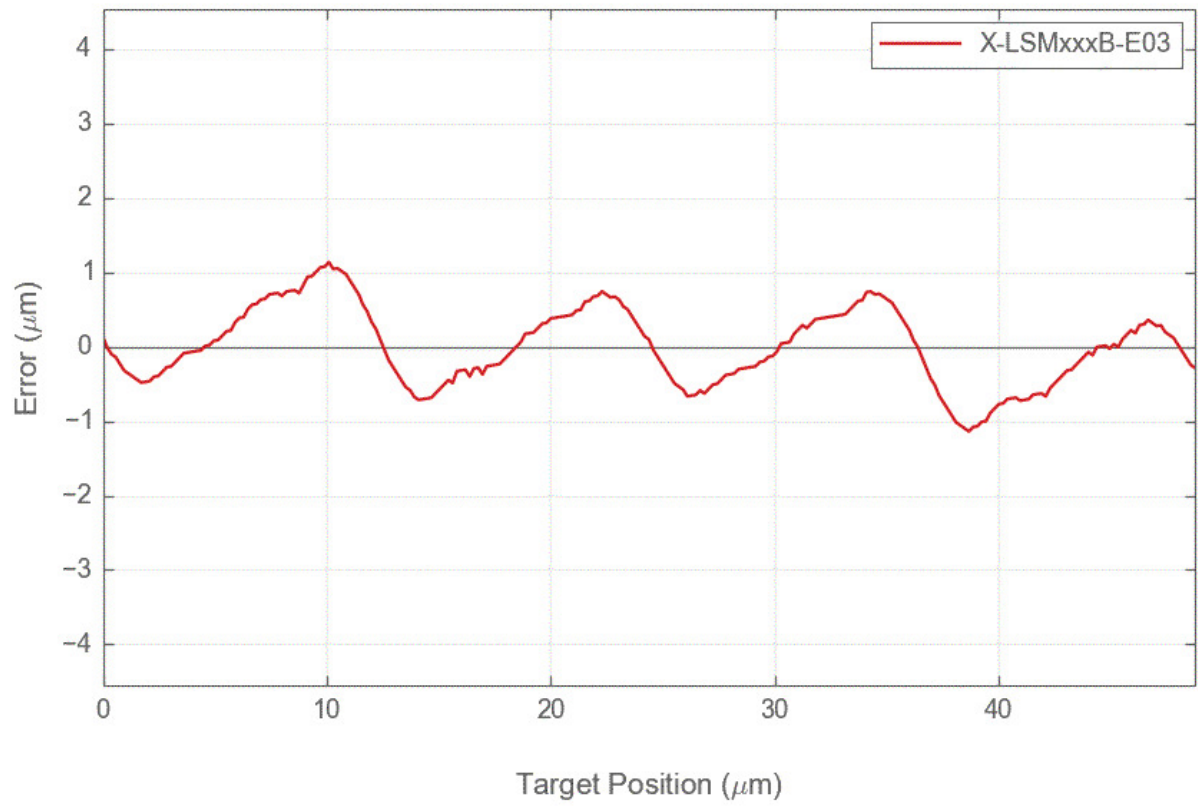
Thrust Speed Performance



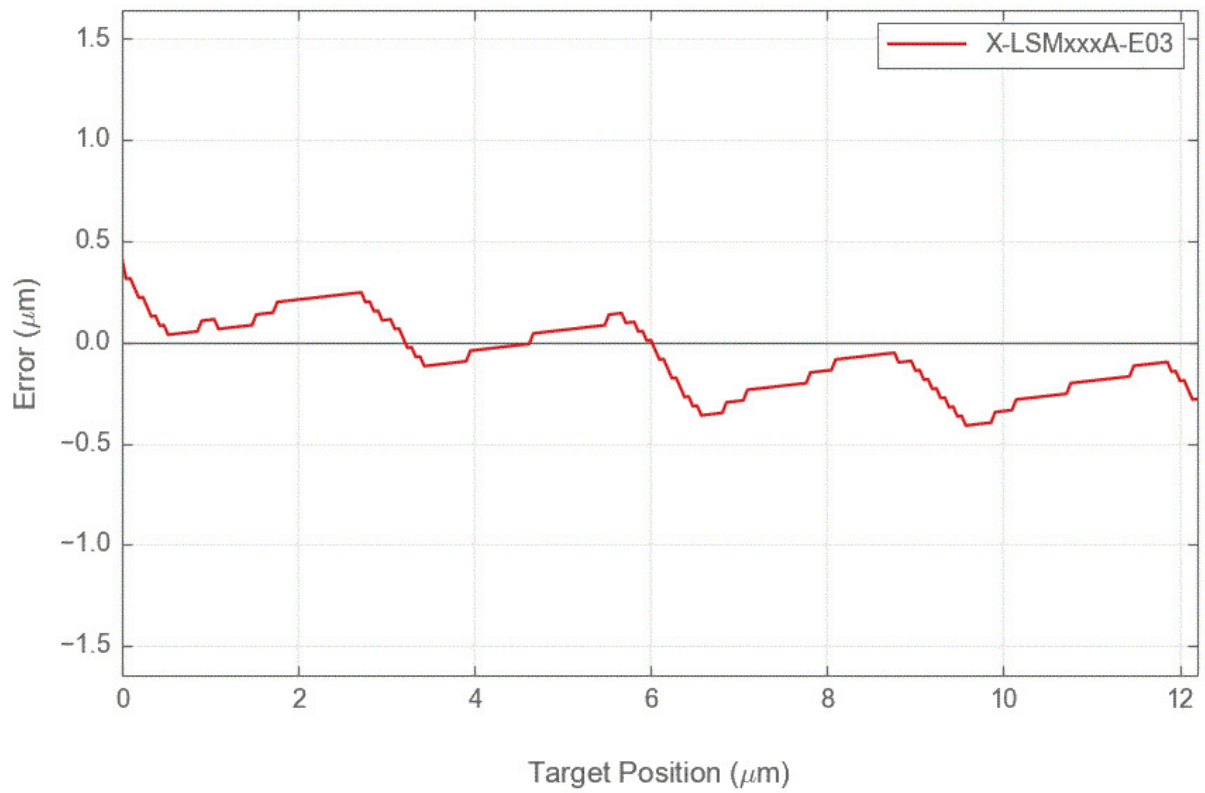
Typical Accuracy



Typical Microstepping Accuracy



Typical Microstepping Accuracy



LSM Linear Bearing Lifetime

