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

X-LSM-C Series Overview

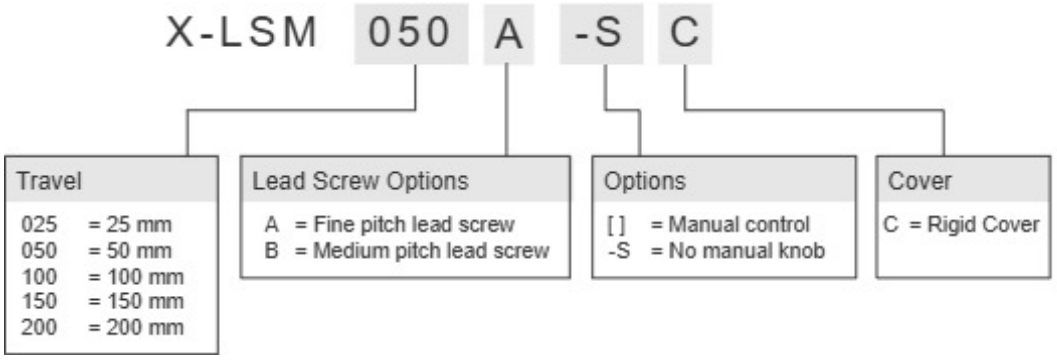
Zaber's X-LSM-C Series devices are computer-controlled, motorized linear stages with high thrust and speed capabilities and a compact size. A rigid dust cover prevents contact with the rails and bearing system. They are stand-alone units requiring only a standard 24 V or 48 V power supply. An optional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

- X-LSM-C.pdf (Drawing for the X-LSM-C)

X-LSM-C Series Specifications

Built-in Controller	
Encoder Type	No
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)
Stiffness (Pitch)	75 N-m/° (233 µrad/N-m)
Stiffness (Roll)	75 N-m/° (233 µrad/N-m)
Stiffness (Yaw)	150 N-m/° (116 µrad/N-m)
Power Supply	24-48 VDC
Power Plug	2-pin Screw Terminal
Maximum Current Draw	350 mA
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
Axes of Motion	1
LED Indicators	Yes
Mounting Interface	M3 and M6 threaded holes and M4 threaded centre hole
Stage Parallelism	< 25 µm (< 0.000984")
Operating Temperature Range	0 to 50 °C
CE Compliant	Yes
Vacuum Compatible	No

Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Repeatability
X-LSM025A-C	0.047625 µm	25.4 mm (1.000")	15 µm (0.000591")	< 3 µm (< 0.000118")
X-LSM025A-SC	0.047625 µm	25.4 mm (1.000")	15 µm (0.000591")	< 3 µm (< 0.000118")
X-LSM025B-C	0.1905 µm	25.4 mm (1.000")	15 µm (0.000591")	< 6 µm (< 0.000236")
X-LSM025B-SC	0.1905 µm	25.4 mm (1.000")	15 µm (0.000591")	< 6 µm (< 0.000236")
X-LSM050A-C	0.047625 µm	50.8 mm (2.000")	20 µm (0.000787")	< 3 µm (< 0.000118")
X-LSM050A-SC	0.047625 µm	50.8 mm (2.000")	20 µm (0.000787")	< 3 µm (< 0.000118")
X-LSM050B-C	0.1905 µm	50.8 mm (2.000")	25 µm (0.000984")	< 6 µm (< 0.000236")
X-LSM050B-SC	0.1905 µm	50.8 mm (2.000")	25 µm (0.000984")	< 6 µm (< 0.000236")
X-LSM100A-C	0.047625 µm	101.6 mm (4.000")	35 µm (0.001378")	< 3 µm (< 0.000118")
X-LSM100A-SC	0.047625 µm	101.6 mm (4.000")	35 µm (0.001378")	< 3 µm (< 0.000118")
X-LSM100B-C	0.1905 µm	101.6 mm (4.000")	45 µm (0.001772")	< 6 µm (< 0.000236")
X-LSM100B-SC	0.1905 µm	101.6 mm (4.000")	45 µm (0.001772")	< 6 µm (< 0.000236")
X-LSM150A-C	0.047625 µm	152.4 mm (6.000")	50 µm (0.001968")	< 3 µm (< 0.000118")
X-LSM150A-SC	0.047625 µm	152.4 mm (6.000")	50 µm (0.001968")	< 3 µm (< 0.000118")
X-LSM150B-C	0.1905 µm	152.4 mm (6.000")	65 µm (0.002559")	< 6 µm (< 0.000236")
X-LSM150B-SC	0.1905 µm	152.4 mm (6.000")	65 µm (0.002559")	< 6 µm (< 0.000236")
X-LSM200A-C	0.047625 µm	203.2 mm (8.000")	60 µm (0.002362")	< 3 µm (< 0.000118")
X-LSM200A-SC	0.047625 µm	203.2 mm (8.000")	60 µm (0.002362")	< 3 µm (< 0.000118")
X-LSM200B-C	0.1905 µm	203.2 mm (8.000")	85 µm (0.003346")	< 6 µm (< 0.000236")
X-LSM200B-SC	0.1905 µm	203.2 mm (8.000")	85 µm (0.003346")	< 6 µm (< 0.000236")

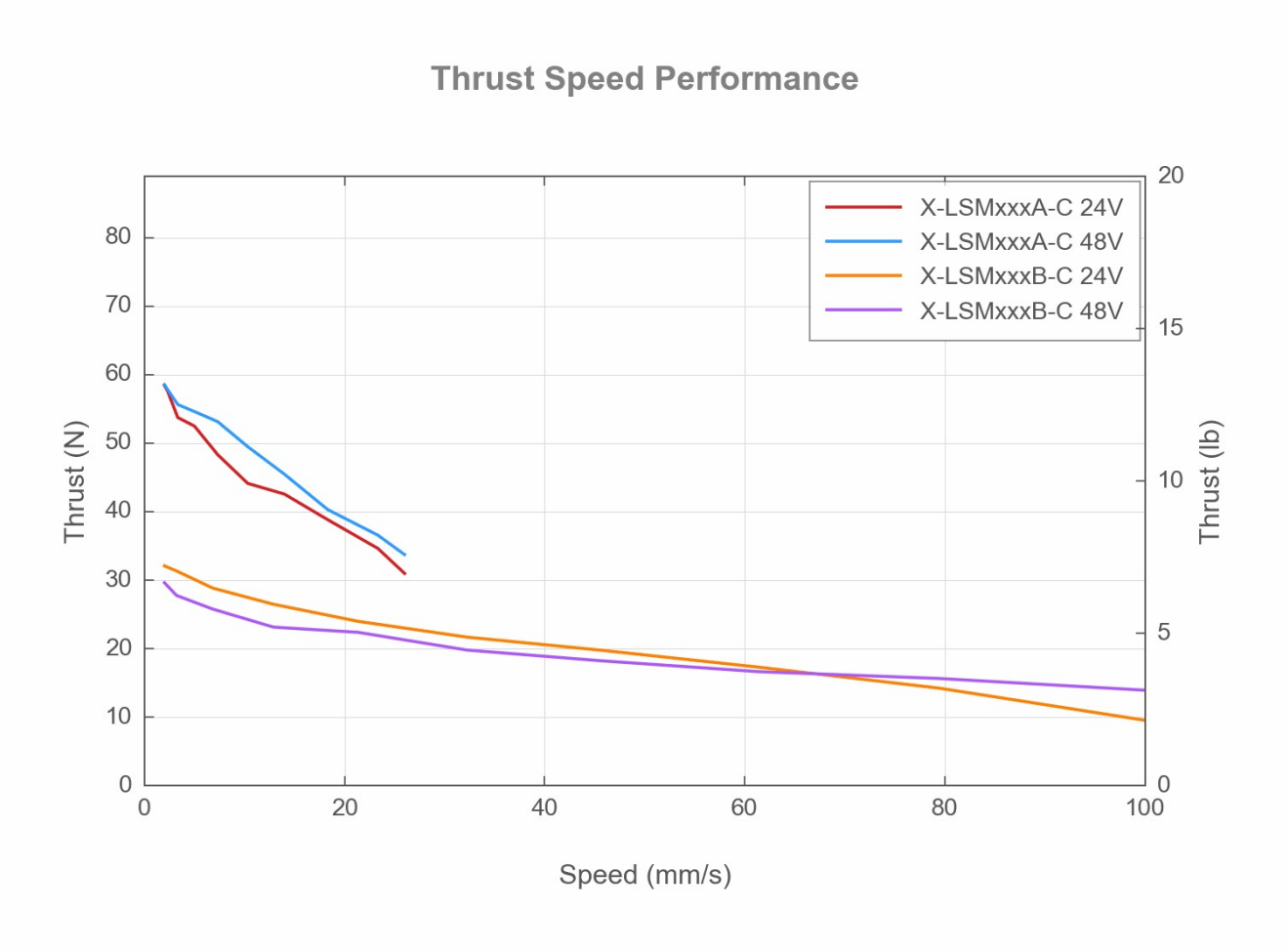
Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
X-LSM025A-C	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM025A-SC	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM025B-C	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM025B-SC	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM050A-C	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM050A-SC	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM050B-C	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM050B-SC	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM100A-C	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM100A-SC	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM100B-C	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM100B-SC	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM150A-C	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM150A-SC	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM150B-C	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM150B-SC	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM200A-C	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM200A-SC	< 12 µm (< 0.000472")	26 mm/s (1.024"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
X-LSM200B-C	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
X-LSM200B-SC	< 16 µm (< 0.000630")	104 mm/s (4.094"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)

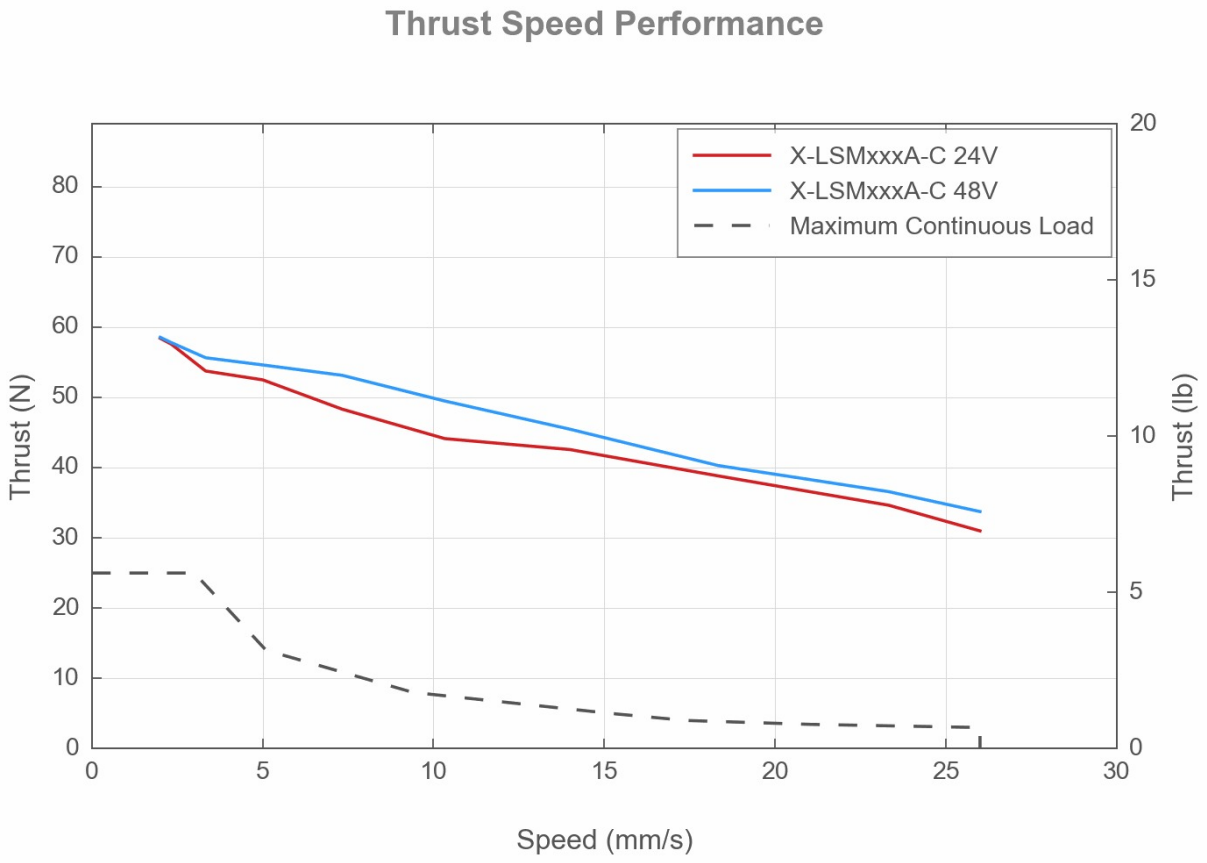
Part Number	Peak Thrust	Back-driving Force*	Flatness of Travel	Straightness of Travel
X-LSM025A-C	55 N (12.3 lb)	Non-back-driving	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")
X-LSM025A-SC	55 N (12.3 lb)	Non-back-driving	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")
X-LSM025B-C	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")
X-LSM025B-SC	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")
X-LSM050A-C	55 N (12.3 lb)	Non-back-driving	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")
X-LSM050A-SC	55 N (12.3 lb)	Non-back-driving	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")
X-LSM050B-C	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")
X-LSM050B-SC	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")
X-LSM100A-C	55 N (12.3 lb)	Non-back-driving	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")
X-LSM100A-SC	55 N (12.3 lb)	Non-back-driving	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")
X-LSM100B-C	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")
X-LSM100B-SC	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")
X-LSM150A-C	55 N (12.3 lb)	Non-back-driving	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM150A-SC	55 N (12.3 lb)	Non-back-driving	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM150B-C	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM150B-SC	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM200A-C	55 N (12.3 lb)	Non-back-driving	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM200A-SC	55 N (12.3 lb)	Non-back-driving	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM200B-C	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")
X-LSM200B-SC	25 N (5.6 lb)	(± 30%) 24 N (5.4 lb)	< 20 µm (< 0.000787")	< 20 µm (< 0.000787")

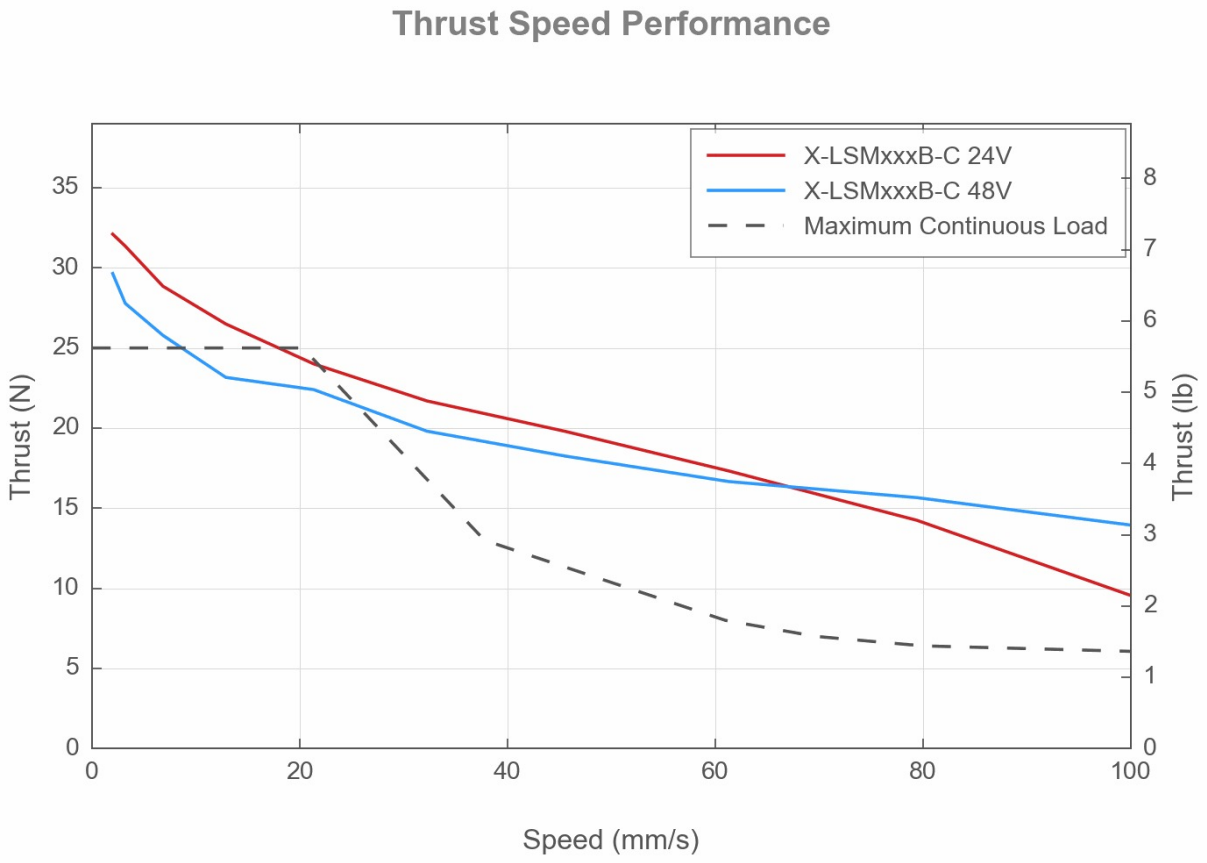
Part Number	Pitch	Roll	Yaw	Linear Motion Per Motor Rev
X-LSM025A-C	0.02° (0.349 mrad)	0.02° (0.349 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")
X-LSM025A-SC	0.02° (0.349 mrad)	0.02° (0.349 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")
X-LSM025B-C	0.02° (0.349 mrad)	0.02° (0.349 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")
X-LSM025B-SC	0.02° (0.349 mrad)	0.02° (0.349 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")
X-LSM050A-C	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")
X-LSM050A-SC	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")
X-LSM050B-C	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")
X-LSM050B-SC	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")
X-LSM100A-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.04° (0.698 mrad)	0.6096 mm (0.024")
X-LSM100A-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.04° (0.698 mrad)	0.6096 mm (0.024")
X-LSM100B-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.04° (0.698 mrad)	2.4384 mm (0.096")
X-LSM100B-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.04° (0.698 mrad)	2.4384 mm (0.096")
X-LSM150A-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	0.6096 mm (0.024")
X-LSM150A-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	0.6096 mm (0.024")
X-LSM150B-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	2.4384 mm (0.096")
X-LSM150B-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	2.4384 mm (0.096")
X-LSM200A-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	0.6096 mm (0.024")
X-LSM200A-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	0.6096 mm (0.024")
X-LSM200B-C	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	2.4384 mm (0.096")
X-LSM200B-SC	0.035° (0.611 mrad)	0.035° (0.611 mrad)	0.045° (0.785 mrad)	2.4384 mm (0.096")

Part Number	Manual Control	Weight
X-LSM025A-C	Yes	0.33 kg (0.728 lb)
X-LSM025A-SC	No	0.33 kg (0.728 lb)
X-LSM025B-C	Yes	0.33 kg (0.728 lb)
X-LSM025B-SC	No	0.33 kg (0.728 lb)
X-LSM050A-C	Yes	0.34 kg (0.750 lb)
X-LSM050A-SC	No	0.34 kg (0.750 lb)
X-LSM050B-C	Yes	0.34 kg (0.750 lb)
X-LSM050B-SC	No	0.34 kg (0.750 lb)
X-LSM100A-C	Yes	0.37 kg (0.816 lb)
X-LSM100A-SC	No	0.37 kg (0.816 lb)
X-LSM100B-C	Yes	0.37 kg (0.816 lb)
X-LSM100B-SC	No	0.37 kg (0.816 lb)
X-LSM150A-C	Yes	0.41 kg (0.904 lb)
X-LSM150A-SC	No	0.41 kg (0.904 lb)
X-LSM150B-C	Yes	0.41 kg (0.904 lb)
X-LSM150B-SC	No	0.41 kg (0.904 lb)
X-LSM200A-C	Yes	0.44 kg (0.970 lb)
X-LSM200A-SC	No	0.44 kg (0.970 lb)
X-LSM200B-C	Yes	0.44 kg (0.970 lb)
X-LSM200B-SC	No	0.44 kg (0.970 lb)

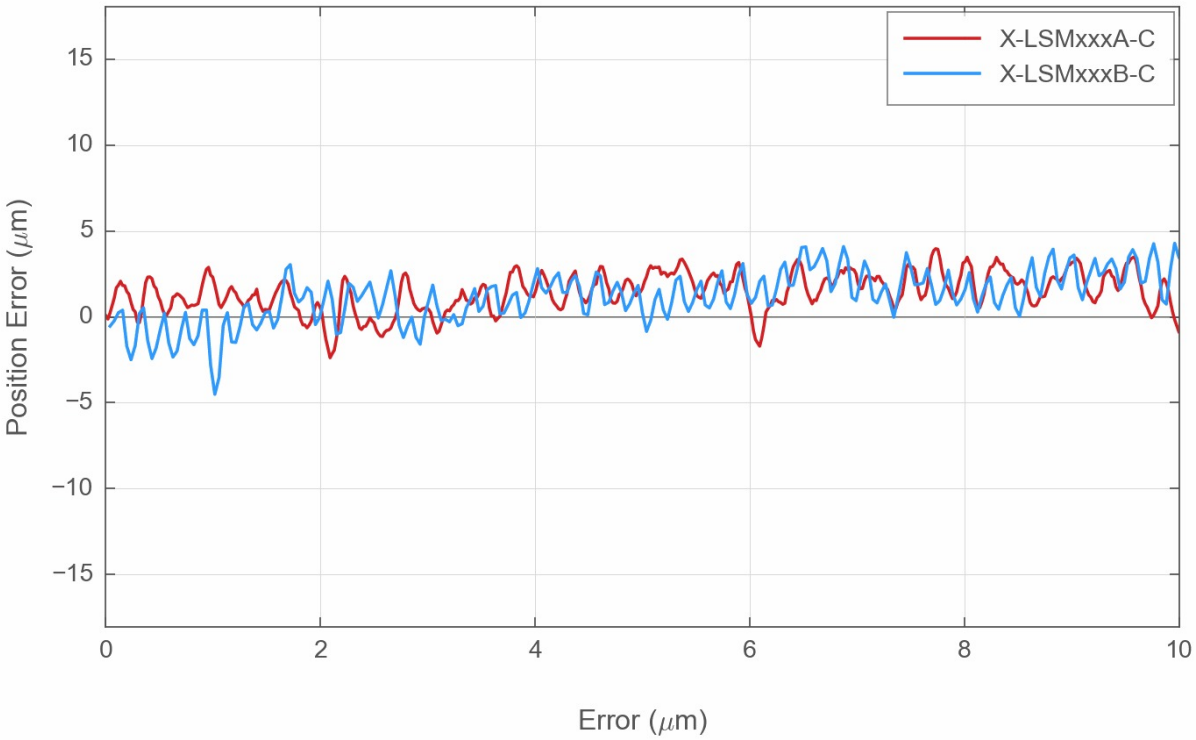
X-LSM-C Series Charts

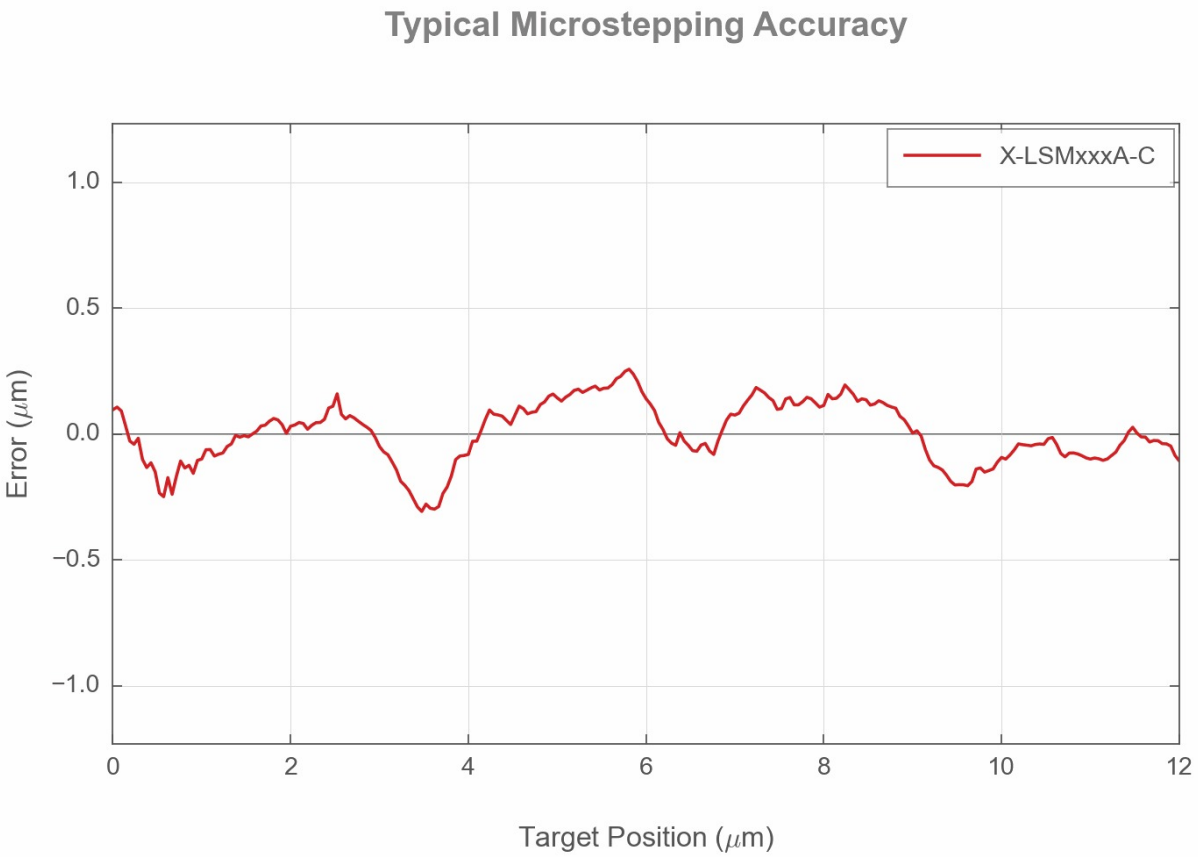


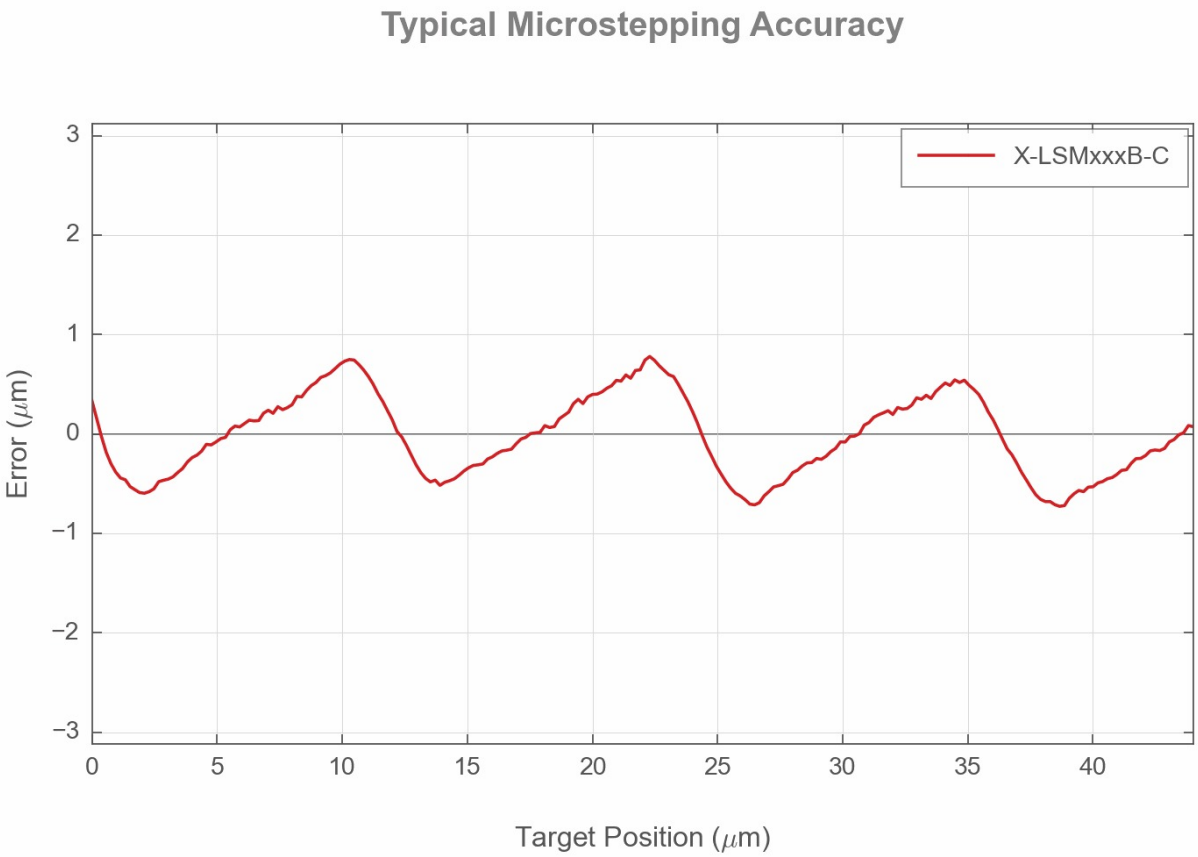

Thrust Speed Performance
X-LSMxxxA-C 24V
X-LSMxxxA-C 48V
Maximum Continuous Load
Thrust (N)
Thrust (lb)
Speed (mm/s)
0
10
20
30
40
50
60
70
80
0
5
10
15
20
25
30
0
5
10
15
20


Thrust Speed Performance
X-LSMxxxB-C 24V
X-LSMxxxB-C 48V
Maximum Continuous Load
Thrust (N)
Thrust (lb)
Speed (mm/s)
0
5
10
15
20
25
30
35
0
1
2
3
4
5
6
7
8
0
20
40
60
80
100

Typical Accuracy




Typical Microstepping Accuracy
X-LSMxxxA-C
1.0
0.5
0.0
−0.5
−1.0
Error (μm)
0
2
4
6
8
10
12
Target Position (μm)


Typical Microstepping Accuracy
X-LSMxxxB-C
Error (μm)
Target Position (μm)
3
2
1
0
−1
−2
−3
0
5
10
15
20
25
30
35
40

Contact

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