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 an X-MCC Series stepper motor controller or any 2-phase stepper motor controller
- Only 7 feedthrough wires required to control these units
- Custom versions available

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".

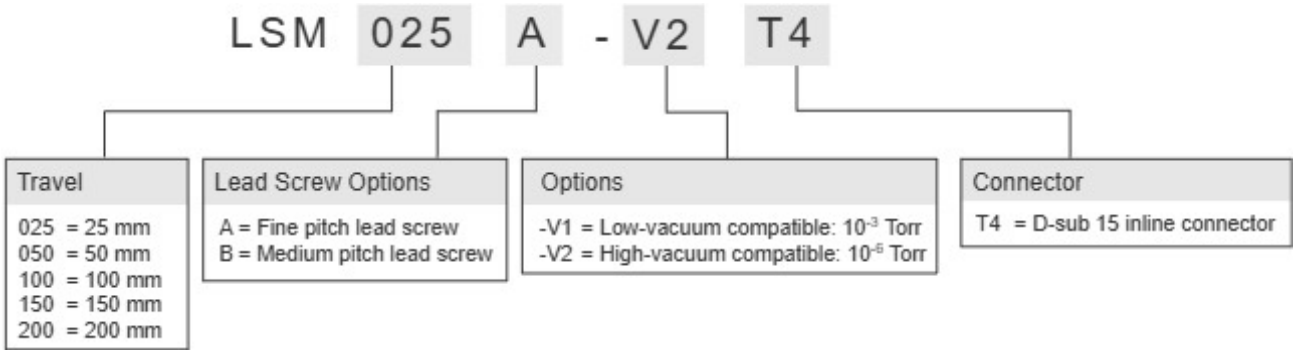
Zaber's LSM-V2 Series devices are high-vacuum compatible, computer-controlled, motorized linear stages with high thrust and speed capabilities, and a compact size.

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 X-MCC Series stepper motor 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-V2 Series Drawings

- LSM-V.png (Drawing for the LSM-V)

LSM-V2 Series Specifications

Built-in Controller	
Recommended Controller	X-MCC (48 V) Recommended
AutoDetect	No
Encoder Type	No
Maximum Continuous Thrust	25 N (5.6 lb)
Maximum Centered Load	100 N (22.4 lb)
Maximum Moment (Roll)	300 N-cm (424.8 oz-in)
Maximum Moment (Pitch)	300 N-cm (424.8 oz-in)
Maximum Moment (Yaw)	300 N-cm (424.8 oz-in)
Guide Type	Needle roller bearing
Stiffness in Pitch	55 N-m/° (317 µrad/N-m)
Stiffness in Roll	52.5 N-m/° (332 µrad/N-m)
Stiffness in Yaw	85 N-m/° (205 µrad/N-m)
Motor Steps Per Rev	200
Motor Type	Stepper (2 phase)
Motor Rated Current	800 mA/phase
Inductance	3.5 mH/phase
Motor Connection	Teflon flying leads with D-sub15 connector
Default Resolution	1/64 of a step
Mechanical Drive System	Precision lead screw
Limit or Home Sensing	Magnetic hall sensor
Manual Control	No
Axes of Motion	1
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	High vacuum (10-6 Torr)

Part Number	**Microstep Size (Default Resolution)**	**Travel Range**	**Accuracy (unidirectional)**	**Repeatability**
			15 µm	< 3 µm

Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy (unidirectional)	Repeatability
LSM025A-V2T4	0.047625 µm	25.4 mm (1.000")	(0.000591")	(< 0.000118")
LSM025B-V2T4	0.1905 µm	25.4 mm (1.000")	15 µm (0.000591")	< 6 µm (< 0.000236")
LSM050A-V2T4	0.047625 µm	50.8 mm (2.000")	20 µm (0.000787")	< 3 µm (< 0.000118")
LSM050B-V2T4	0.1905 µm	50.8 mm (2.000")	25 µm (0.000984")	< 6 µm (< 0.000236")
LSM100A-V2T4	0.047625 µm	101.6 mm (4.000")	35 µm (0.001378")	< 3 µm (< 0.000118")
LSM100B-V2T4	0.1905 µm	101.6 mm (4.000")	45 µm (0.001772")	< 6 µm (< 0.000236")
LSM150A-V2T4	0.047625 µm	152.4 mm (6.000")	50 µm (0.001968")	< 3 µm (< 0.000118")
LSM150B-V2T4	0.1905 µm	152.4 mm (6.000")	65 µm (0.002559")	< 6 µm (< 0.000236")
LSM200A-V2T4	0.047625 µm	203.2 mm (8.000")	60 µm (0.002362")	< 3 µm (< 0.000118")
LSM200B-V2T4	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
LSM025A-V2T4	< 12 µm (< 0.000472")	24 mm/s (0.945"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
LSM025B-V2T4	< 16 µm (< 0.000630")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
LSM050A-V2T4	< 12 µm (< 0.000472")	24 mm/s (0.945"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
LSM050B-V2T4	< 16 µm (< 0.000630")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
LSM100A-V2T4	< 12 µm (< 0.000472")	24 mm/s (0.945"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
LSM100B-V2T4	< 16 µm (< 0.000630")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
LSM150A-V2T4	< 12 µm (< 0.000472")	24 mm/s (0.945"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)
LSM150B-V2T4	< 16 µm (< 0.000630")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)
LSM200A-V2T4	< 12 µm (< 0.000472")	24 mm/s (0.945"/s)	0.000029 mm/s (0.000001"/s)	0.000029 mm/s (0.000001"/s)

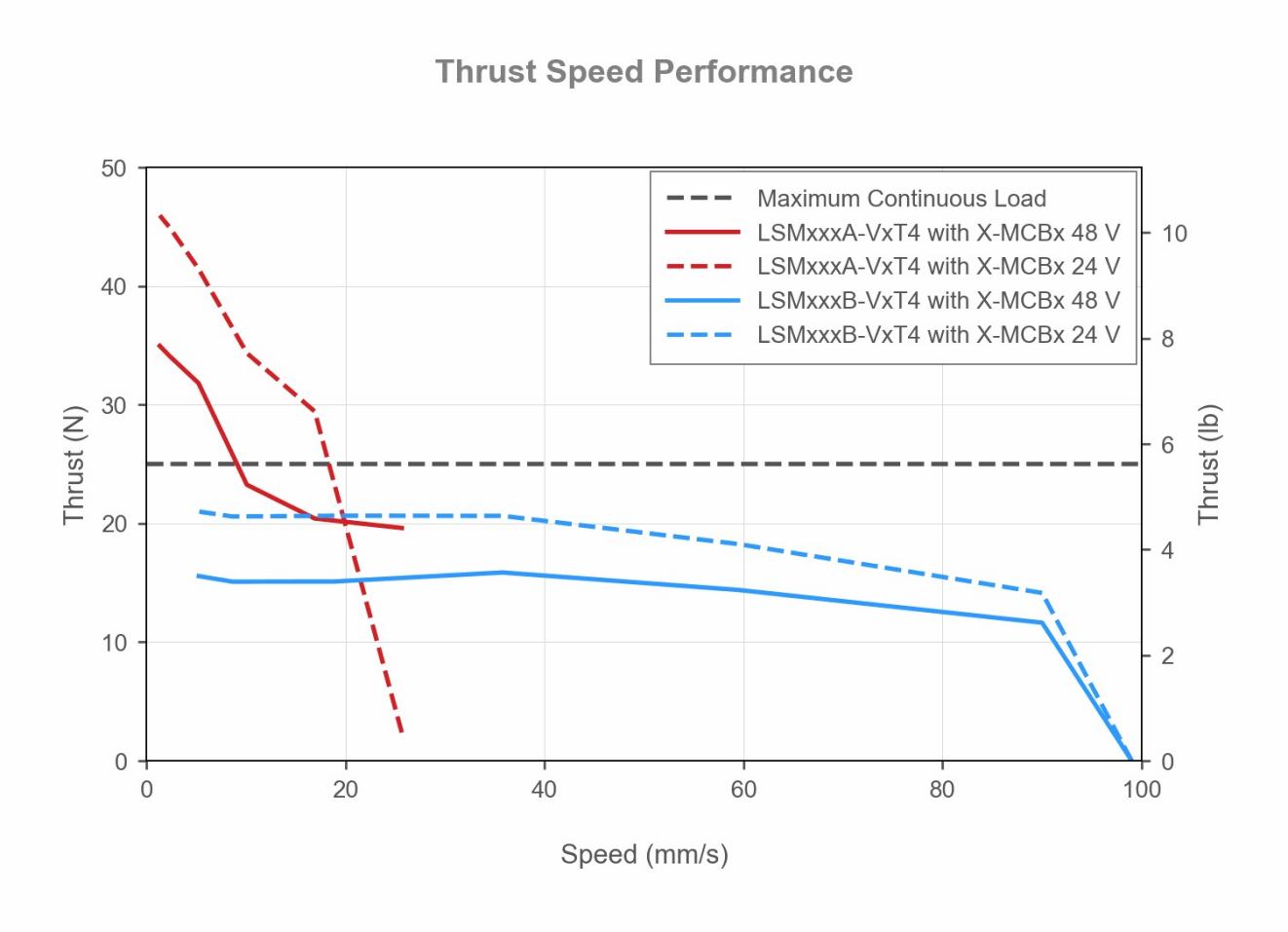
Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
LSM200B-V2T4	< 16 µm (< 0.000630")	100 mm/s (3.937"/s)	0.000116 mm/s (0.000005"/s)	0.000116 mm/s (0.000005"/s)

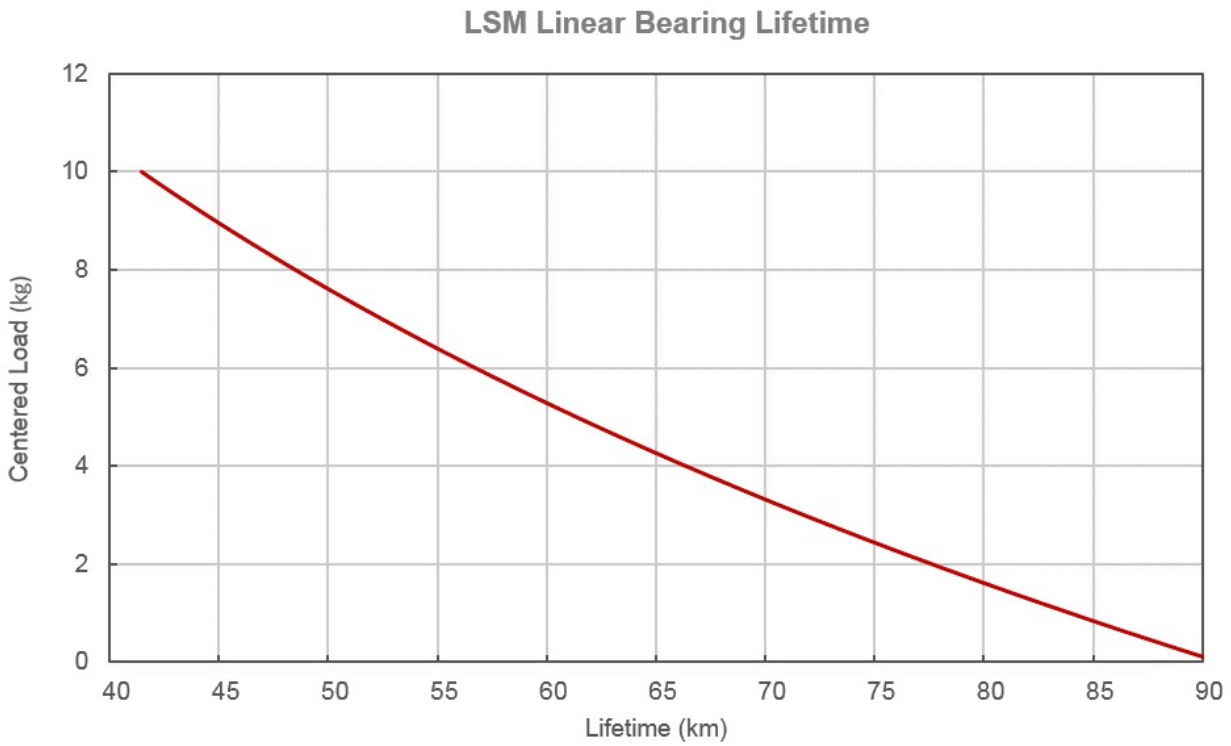
Part Number	Peak Thrust	Vertical Runout	Horizontal Runout	Pitch
LSM025A-V2T4	35 N (7.8 lb)	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")	0.02° (0.349 mrad)
LSM025B-V2T4	15 N (3.4 lb)	< 8 µm (< 0.000315")	< 12 µm (< 0.000472")	0.02° (0.349 mrad)
LSM050A-V2T4	35 N (7.8 lb)	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")	0.03° (0.523 mrad)
LSM050B-V2T4	15 N (3.4 lb)	< 11 µm (< 0.000433")	< 14 µm (< 0.000551")	0.03° (0.523 mrad)
LSM100A-V2T4	35 N (7.8 lb)	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")	0.04° (0.698 mrad)
LSM100B-V2T4	15 N (3.4 lb)	< 18 µm (< 0.000709")	< 18 µm (< 0.000709")	0.04° (0.698 mrad)
LSM150A-V2T4	35 N (7.8 lb)	< 25 µm (< 0.000984")	< 23 µm (< 0.000906")	0.04° (0.698 mrad)
LSM150B-V2T4	15 N (3.4 lb)	< 25 µm (< 0.000984")	< 23 µm (< 0.000906")	0.04° (0.698 mrad)
LSM200A-V2T4	35 N (7.8 lb)	< 32 µm (< 0.001260")	< 27 µm (< 0.001063")	0.04° (0.698 mrad)
LSM200B-V2T4	15 N (3.4 lb)	< 32 µm (< 0.001260")	< 27 µm (< 0.001063")	0.04° (0.698 mrad)

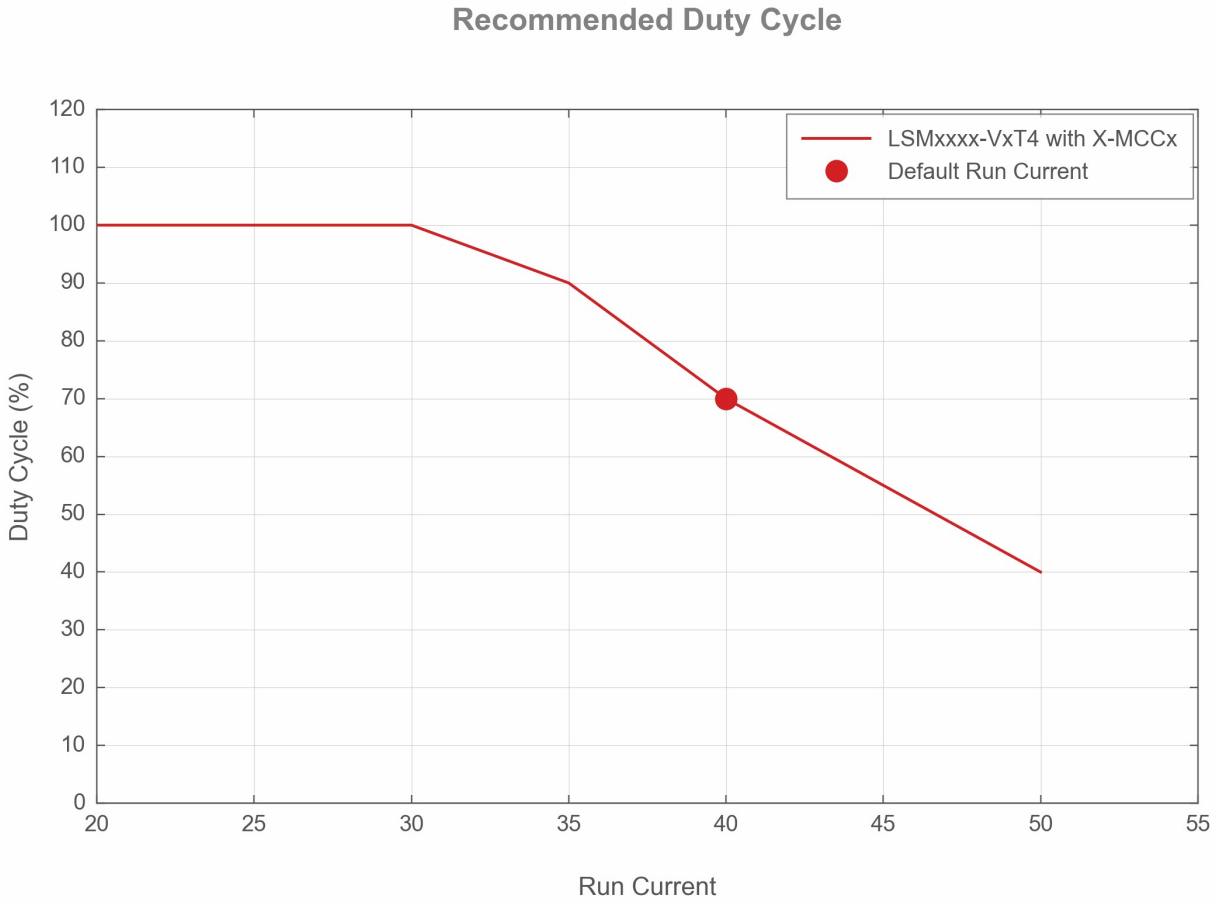
Part Number	Roll	Yaw	Linear Motion Per Motor Rev	Weight
LSM025A-V2T4	0.02° (0.349 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")	0.39 kg (0.860 lb)
LSM025B-V2T4	0.02° (0.349 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")	0.39 kg (0.860 lb)
LSM050A-V2T4	0.03° (0.523 mrad)	0.03° (0.523 mrad)	0.6096 mm (0.024")	0.40 kg (0.882 lb)
LSM050B-V2T4	0.03° (0.523 mrad)	0.03° (0.523 mrad)	2.4384 mm (0.096")	0.40 kg (0.882 lb)
LSM100A-V2T4	0.04° (0.698 mrad)	0.04° (0.698 mrad)	0.6096 mm (0.024")	0.43 kg (0.948 lb)
LSM100B-V2T4	0.04° (0.698 mrad)	0.04° (0.698 mrad)	2.4384 mm (0.096")	0.43 kg (0.948 lb)
LSM150A-V2T4	0.05°	0.05°	0.6096 mm	0.47 kg

Part Number	Roll	Yaw	Linear Motion Per Motor Rev	Weight
	(0.873 mrad)	(0.873 mrad)	(0.024")	(1.036 lb)
LSM150B-V2T4	0.05° (0.873 mrad)	0.05° (0.873 mrad)	2.4384 mm (0.096")	0.47 kg (1.036 lb)
LSM200A-V2T4	0.05° (0.873 mrad)	0.05° (0.873 mrad)	0.6096 mm (0.024")	0.50 kg (1.102 lb)
LSM200B-V2T4	0.05° (0.873 mrad)	0.05° (0.873 mrad)	2.4384 mm (0.096")	0.50 kg (1.102 lb)

LSM-V2 Series Charts




LSM Linear Bearing Lifetime
Centered Load (kg)
12
10
8
6
4
2
0
40
45
50
55
60
65
70
75
80
85
90
Lifetime (km)


Recommended Duty Cycle
LSMxxxx-VxT4 with X-MCCx
Default Run Current
Duty Cycle (%)
120
110
100
90
80
70
60
50
40
30
20
10
0
20
25
30
35
40
45
50
55
Run Current

Contact

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