T-LSM-SV1 Series Datasheet

- Vacuum compatible to 10-3 Torr
- 25, 50, 100, 150 and 200 mm travel
- 10 kg load capacity
- Up to 29 mm/s speed and up to 40 N thrust
- Our most compact motorized stage with a built-in controller
- Built-in controller; daisy chains with other T-series devices inside vacuum chamber
- Custom versions available

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".

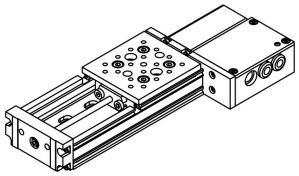
Zaber's T-LSM-SV1 series devices are computer-controlled, low-vacuum, motorized linear stages with a very compact size. They are stand-alone units requiring only a standard 15V power supply. These stages connect to the RS-232 port of any computer and can be daisy-chained with up to 254 units per chain. They can also be chained with any other T-Series products. Convenient 6-pin mini din cables on the unit allow for direct interconnection between units in close proximity. For longer distances, a standard cable extension can be used.

At only 21 mm high, these miniature vacuum stages are excellent for vacuum applications where a small profile is required. The T-LSM-SV1's innovative design allows speeds up to 29 mm/s and loads up to 10 kg. Like all Zaber's products, the T-LSM-SV1 series is designed to be 'plug and play' and very easy to set-up and operate. Adding a T-JOY3 Joystick Controller allows manual control of both X and Y or XYZ axes from a single interface as well as allowing stage positions to be saved and recalled at the touch of a button.

Drawings

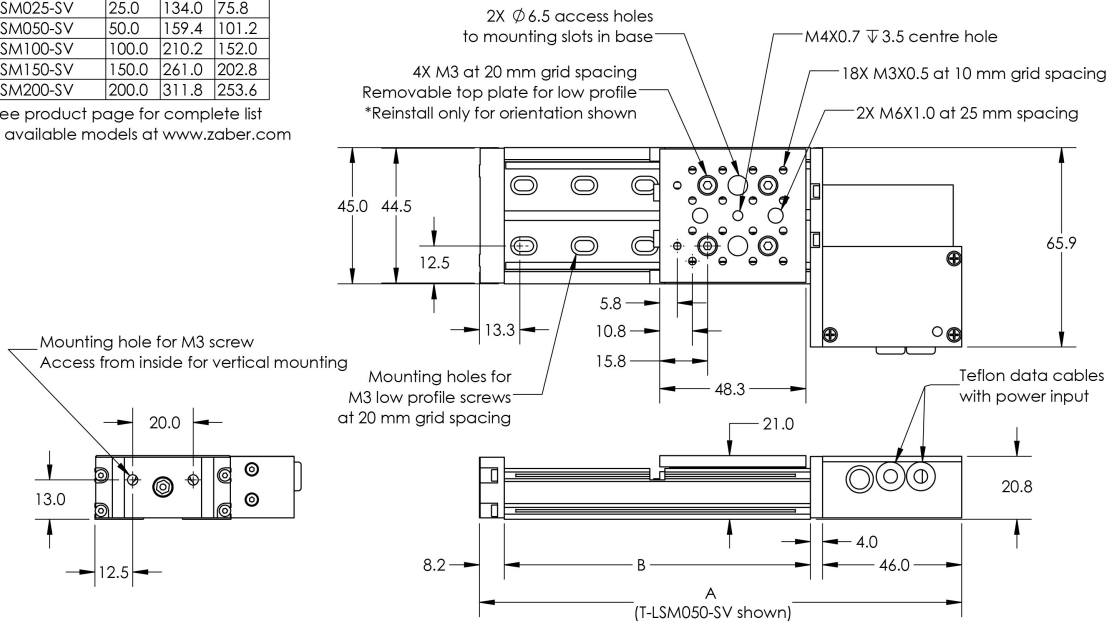
ZABER

T-LSM-SV Vacuum Compatible Motorized Linear Stage
dimensions in mm



Model Number*	Travel	A	B
T-LSM025-SV	25.0	134.0	75.8
T-LSM050-SV	50.0	159.4	101.2
T-LSM100-SV	100.0	210.2	152.0
T-LSM150-SV	150.0	261.0	202.8
T-LSM200-SV	200.0	311.8	253.6

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



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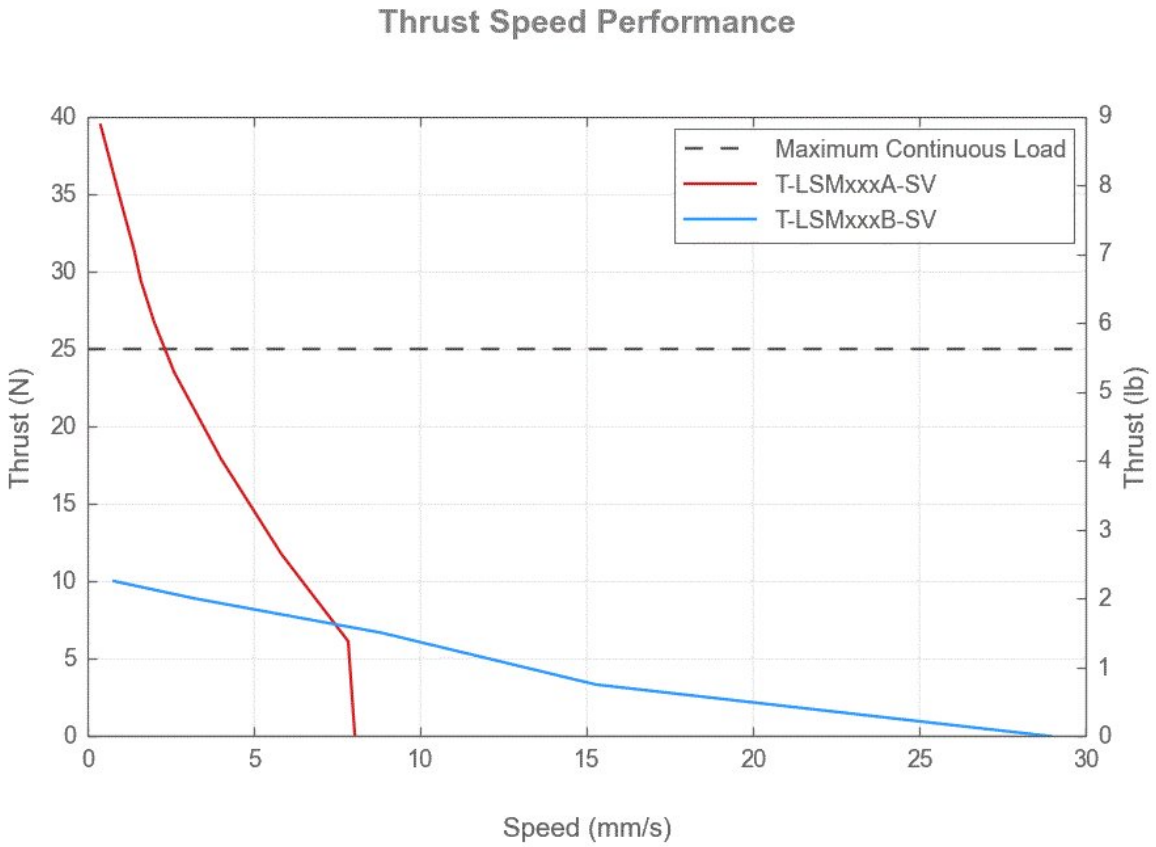
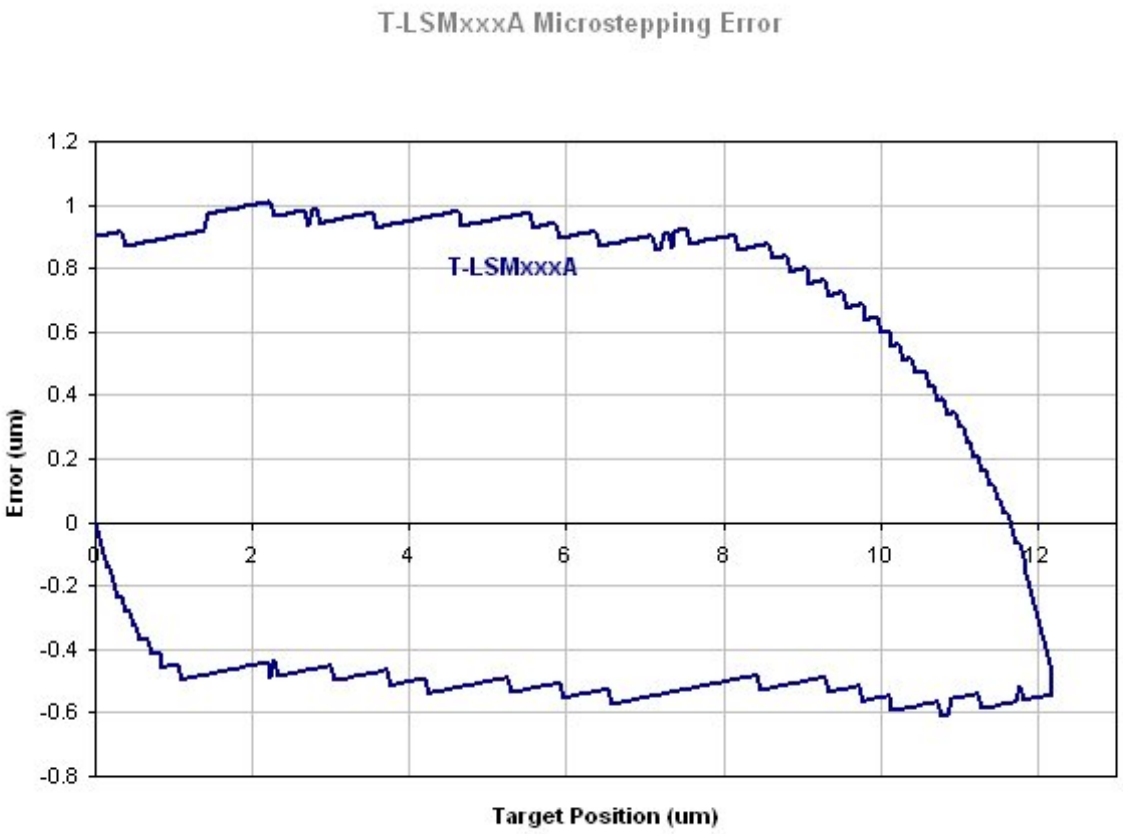
Specifications

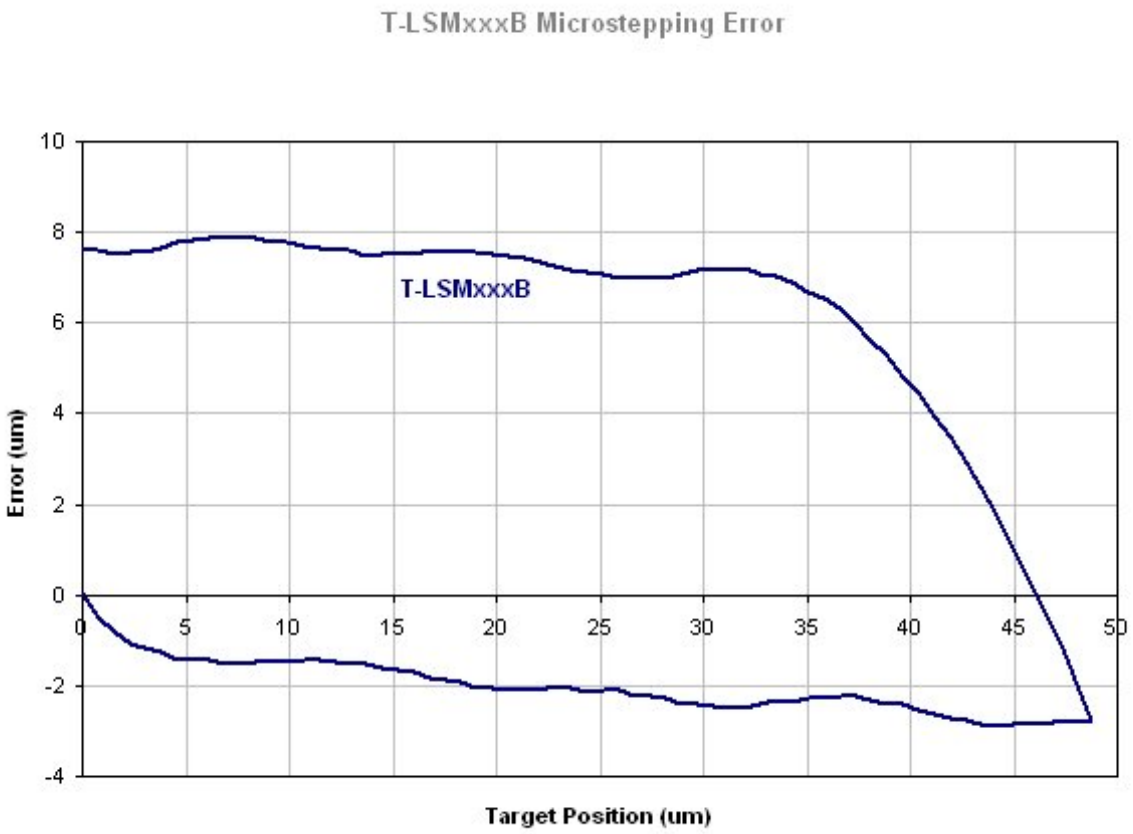
Specification	Value	Alternate Unit
Built-in Controller	Yes	
Microstep Size (Default Resolution)	0.047625 µm	
Travel Range	25.4 mm	1.000 "
Accuracy (unidirectional)	15 µm	0.000591 "
Repeatability	< 3 µm	< 0.000118 "
Backlash	< 12 µm	< 0.000472 "
Maximum Speed	8 mm/s	0.315 "/s
Minimum Speed	0.00022 mm/s	0.000009 "/s
Speed Resolution	0.00022 mm/s	0.000009 "/s
Encoder Type	None	
Peak Thrust	40 N	9.0 lb
Maximum Continuous Thrust	25 N	5.6 lb
Communication Interface	RS-232	
Communication Protocol	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	< 8 µm	< 0.000315 "
Horizontal Runout	< 12 µm	< 0.000472 "
Pitch	0.02 °	0.349 mrad
Roll	0.02 °	0.349 mrad
Yaw	0.03 °	0.524 mrad
Maximum Current Draw	500 mA	
Linear Motion Per Motor Rev	0.6096 mm	0.024 "
Motor Steps Per Rev	200	
Motor Type	Stepper (2 phase)	
Inductance	1.1 mH/phase	
Default Resolution	1/64 of a step	
Data Cable Connection	Teflon flying leads with Minidin 6 pin M/F	

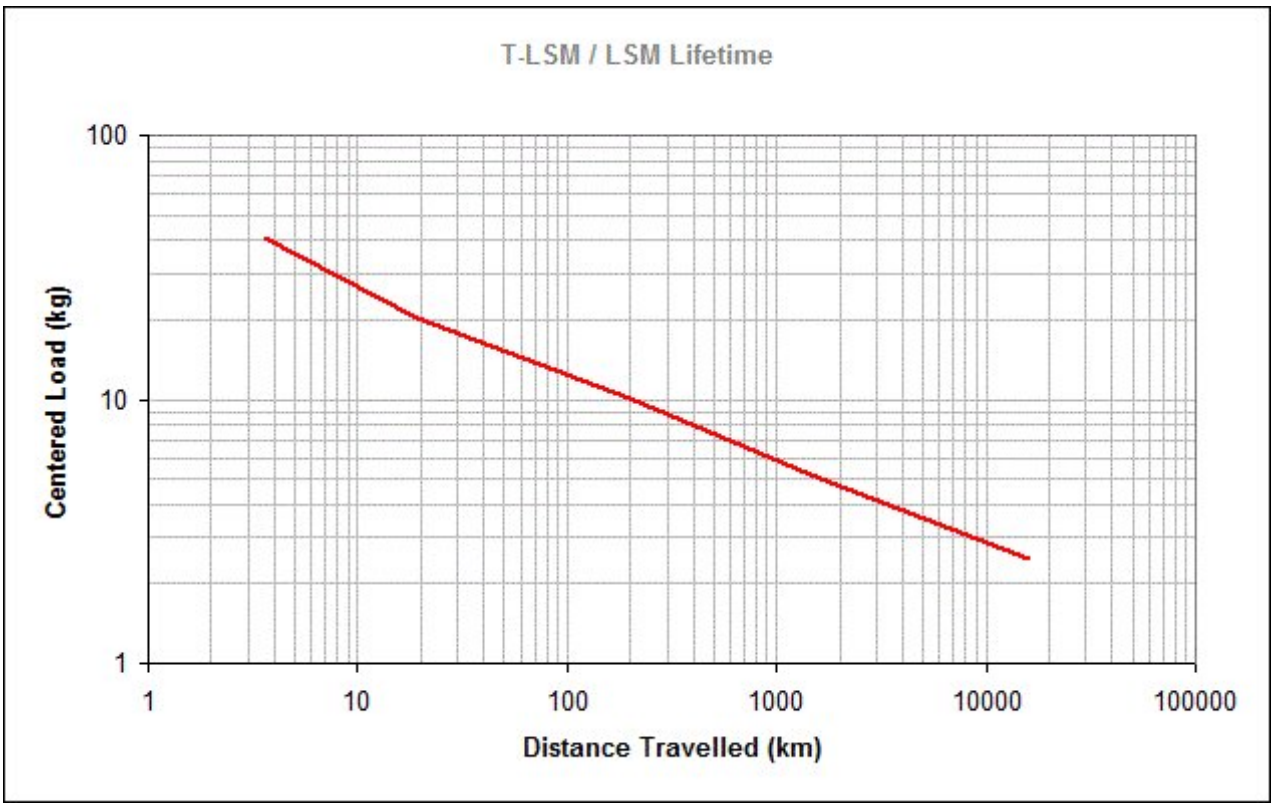
Specification	Value	Alternate Unit
Mechanical Drive System	Precision lead screw	
Limit or Home Sensing	Magnetic hall sensor	
Axes of Motion	1	
Mounting Interface	M3 and M6 threaded holes and M4 threaded center hole	
Vacuum Compatible	Low vacuum (10-3 Torr)	
Operating Temperature Range	0 to 50 °C	
Stage Parallelism	< 25 µm	< 0.000984 "
RoHS Compliant	Yes	
CE Compliant	Yes	
Weight	0.31 kg	0.683 lb

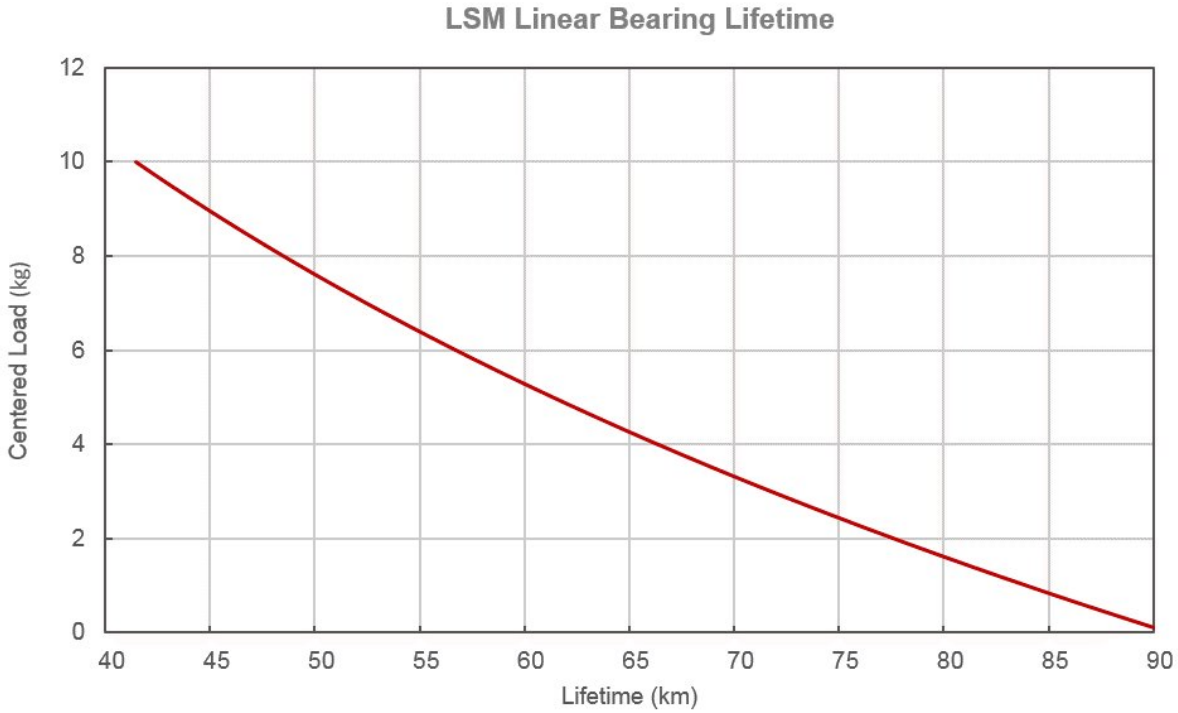
Charts


Thrust Speed Performance
Maximum Continuous Load
T-LSMxxxA-SV
T-LSMxxxB-SV
Thrust (N)
Thrust (lb)
Speed (mm/s)
0
5
10
15
20
25
30
35
40
0
1
2
3
4
5
6
7
8
9


T-LSMxxxA Microstepping Error
T-LSMxxxA
Error (um)
Target Position (um)
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
0
2
4
6
8
10
12


T-LSMxxxB Microstepping Error
T-LSMxxxB
Error (um)
Target Position (um)
10
8
6
4
2
0
-2
-4
0
5
10
15
20
25
30
35
40
45
50


T-LSM / LSM Lifetime
Centered Load (kg)
100
10
1
1
10
100
1000
10000
100000
Distance Travelled (km)


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)