LSM Product
User's Manual
Firmware 5.00 and up

Last Update: September 30 2011
Visit www.zaber.com/wiki for more recent updates.

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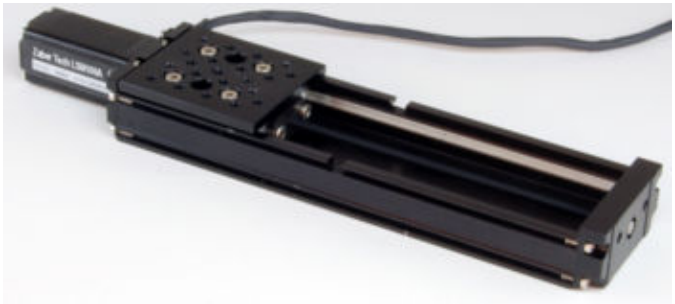

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Disclaimer

Zaber’s devices are not intended for use in any critical medical, aviation, or military applications or situations where a product's use or failure could cause personal injury, death, or damage to property. Zaber disclaims any and all liability for injury or other damages resulting from the use of our products.

Precautions

Zaber's motion control devices are precision instruments and must be handled with care. In particular, moving parts must be treated with care. Avoid axial loads in excess of the rated thrust load, axial and radial impact, dust and other contaminants and damage to the leadscrew thread. These will reduce the performance of the device below stated specifications.

Installation

Mounting

There are several options available for mounting Zaber stages. Use the mounting holes in the bottom to mount to a surface or to another stage. You might have to move the carriage to access the bottom mounting holes. Some stages have mounting holes in the end plates for mounting vertically. Mounting screws are included with most stages.

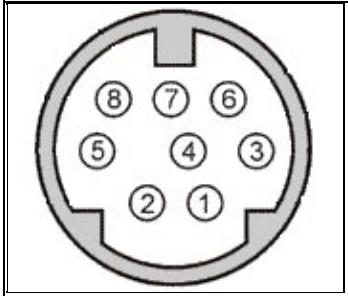
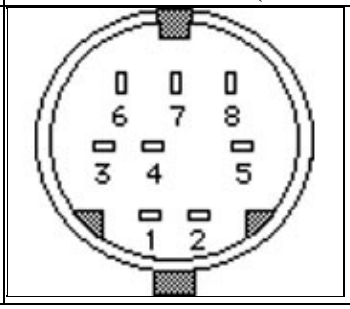
Caution: Some stages have threaded through-holes in the top mounting plate of the carriage. Be sure not to install mounting screws too deep, causing them to interfere with inside parts of the stage.

LSM stages can be mounted to a standard metric or imperial breadboard with our AP101 adaptor plates.

Operation

The LSM stages are designed to be controlled with the T-MCA series chopper drive controllers. It is important to know the peripheral ID of your LSM stage. If you ever need to restore the correct settings for your stage, send restore settings (command 36) with the peripheral ID as the data.

Pin-Out for Minidin 8 (T-MCA connector and CDC6 cable to Peripheral)

Minidin 8 Female (on T-MCA)	Minidin 8 Male (on Peripheral)
	

Pin #	Function
1	Motor A1
2	Motor A2
3	Motor B1
4	Not Connected
5	Motor B2
6	+5V
7	Home Signal
8	Ground

Warranty and Repair

Standard products

Standard products are any part numbers that do not contain the suffix ENG followed by a 4 digit number. Most but not all standard products are listed for sale on our website. All standard Zaber products are backed by a one-month satisfaction guarantee. If you are not satisfied with your purchase, we will refund your payment minus any shipping charges. Goods must be in brand new saleable condition with no marks. Zaber products are guaranteed for one year. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

Custom products

Custom products are any part numbers containing the suffix ENG followed by a 4 digit number. Each of these products has been designed for a custom application for a particular customer. Custom products are guaranteed for one year, unless explicitly stated otherwise. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

How to return products

Customers with devices in need of return or repair should contact Zaber to obtain an RMA form which must be filled out and sent back to us to receive an RMA number. The RMA form contains instructions for packing and returning the device. The specified RMA number must be included on the shipment to ensure timely processing.

Email Updates

If you would like to receive our periodic email newsletter including product updates and promotions, please sign up online at www.zaber.com (news section). Each newsletter typically includes a promotional offer worth at least $100.

Contact Information

Contact Zaber Technologies Inc by any of the following methods:

Phone	1-604-569-3780 (direct) 1-888-276-8033 (toll free in North America)
Fax	1-604-648-8033
Mail	1777 West 75th Ave, 1st Floor, Vancouver, BC, Canada, V6P 6P2
Web	www.zaber.com
Email	Please visit our website for up to date email contact information.

Group Specifications - LSM Series

Specification	Value	Alternate Unit
Integrated Controller	No	
Recommended Controller	T-MCA	
Maximum Continuous Thrust	25 N	5.6 lb
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 "
Motor Steps Per Rev	200	
Motor Type	2 phase	
Motor Rated Current	800 mA/phase	
Motor Winding Resistance	5.4 ohms/phase	
Inductance	1.5 mH	
Motor Rated Power	6.9 Watts	
Motor Rotor Inertia	2 g-cm^2	
Motor Connection	Minidin 8 male	
Motor Frame Size	NEMA 08	
Mechanical Drive System	Precision leadscrew	
Limit or Home Sensing	Magnetic hall sensor	
Axes of Motion	1	
Mounting Interface	M3 and M6 threaded holes and M4 threaded center hole	
Compatible Products	T-LSM, T-LSR, T-LST Motorized Stages	
Operating Temperature Range	0 to 50 degrees C	

Stage Parallelism	< 25 µm	< 0.000984 "
RoHS Status	Compliant	
CE Compliant	Compliant	

Comparison - LSM Series

Part Number	Microstep Size (Default Resolution)	Travel Range	Accuracy	Repeatability
LSM025A	0.047625 µm	25.4 mm (1.000 ")	+/- 4 µm (+/- 0.000157 ")	< 1 µm (< 0.000039 ")
LSM025B	0.1905 µm	25.4 mm (1.000 ")	+/- 9 µm (+/- 0.000354 ")	< 4 µm (< 0.000157 ")
LSM050A	0.047625 µm	50.8 mm (2.000 ")	+/- 8 µm (+/- 0.000315 ")	< 1 µm (< 0.000039 ")
LSM050B	0.1905 µm	50.8 mm (2.000 ")	+/- 13 µm (+/- 0.000512 ")	< 4 µm (< 0.000157 ")
LSM100A	0.047625 µm	101.6 mm (4.000 ")	+/- 16 µm (+/- 0.000630 ")	< 1 µm (< 0.000039 ")
LSM100B	0.1905 µm	101.6 mm (4.000 ")	+/- 21 µm (+/- 0.000827 ")	< 4 µm (< 0.000157 ")
LSM150A	0.047625 µm	152.4 mm (6.000 ")	+/- 24 µm (+/- 0.000945 ")	< 1 µm (< 0.000039 ")
LSM150B	0.1905 µm	152.4 mm (6.000 ")	+/- 29 µm (+/- 0.001142 ")	< 4 µm (< 0.000157 ")
LSM200A	0.047625 µm	203.2 mm (8.000 ")	+/- 32 µm (+/- 0.001260 ")	< 1 µm (< 0.000039 ")
LSM200B	0.1905 µm	203.2 mm (8.000 ")	+/- 37 µm (+/- 0.001457 ")	< 4 µm (< 0.000157 ")

Part Number	Backlash	Maximum Speed	Minimum Speed	Speed Resolution
LSM025A	< 3 µm (< 0.000118 ")	14 mm/s (0.551 "/s)	0.00022 mm/s (0.00001 "/s)	0.00022 mm/s (0.00001 "/s)
LSM025B	< 13 µm (< 0.000512 ")	58 mm/s (2.283 "/s)	0.0009 mm/s (0.00004 "/s)	0.0009 mm/s (0.00004 "/s)
LSM050A	< 3 µm (< 0.000118 ")	14 mm/s (0.551 "/s)	0.00022 mm/s (0.00001 "/s)	0.00022 mm/s (0.00001 "/s)
LSM050B	< 13 µm (< 0.000512 ")	58 mm/s (2.283 "/s)	0.0009 mm/s (0.00004 "/s)	0.0009 mm/s (0.00004 "/s)
LSM100A	< 3 µm (< 0.000118 ")	14 mm/s (0.551 "/s)	0.00022 mm/s (0.00001 "/s)	0.00022 mm/s (0.00001 "/s)
LSM100B	< 13 µm (< 0.000512 ")	58 mm/s (2.283 "/s)	0.0009 mm/s (0.00004 "/s)	0.0009 mm/s (0.00004 "/s)
LSM150A	< 3 µm (< 0.000118 ")	14 mm/s (0.551 "/s)	0.00022 mm/s (0.00001 "/s)	0.00022 mm/s (0.00001 "/s)

LSM150B	< 13 µm (< 0.000512 ")	58 mm/s (2.283 "/s)	0.0009 mm/s (0.00004 "/s)	0.0009 mm/s (0.00004 "/s)
LSM200A	< 3 µm (< 0.000118 ")	14 mm/s (0.551 "/s)	0.00022 mm/s (0.00001 "/s)	0.00022 mm/s (0.00001 "/s)
LSM200B	< 13 µm (< 0.000512 ")	58 mm/s (2.283 "/s)	0.0009 mm/s (0.00004 "/s)	0.0009 mm/s (0.00004 "/s)

Part Number	Peak Thrust	Linear Motion Per Motor Rev	Weight
LSM025A	45 N (10.1 lb)	0.6096 mm (0.024 ")	.19 kg
LSM025B	25 N (5.6 lb)	2.4384 mm (0.096 ")	.19 kg
LSM050A	45 N (10.1 lb)	0.6096 mm (0.024 ")	.20 kg
LSM050B	25 N (5.6 lb)	2.4384 mm (0.096 ")	.20 kg
LSM100A	45 N (10.1 lb)	0.6096 mm (0.024 ")	.23 kg
LSM100B	25 N (5.6 lb)	2.4384 mm (0.096 ")	.23 kg
LSM150A	45 N (10.1 lb)	0.6096 mm (0.024 ")	.27 kg
LSM150B	25 N (5.6 lb)	2.4384 mm (0.096 ")	.27 kg
LSM200A	45 N (10.1 lb)	0.6096 mm (0.024 ")	.30 kg
LSM200B	25 N (5.6 lb)	2.4384 mm (0.096 ")	.30 kg