



Applied Scientific Instrumentation

LS-Series Linear Stages

LS linear stages provide sub-micron accuracy, deriving their precise control by using closed-loop DC servomotors and employing high-resolution rotary encoders for positioning feedback. An optional linear encoder can be added to the unit to provide even greater positioning accuracy.

The stages utilize crossed-roller slides, precision lead-screws, and zero-backlash miniature geared DC servomotors for smooth and accurate motion. The units offer precise travel from 50 mm to 300 mm (2" to 12"). They can be used singly or stacked, vertically or horizontally, and can carry loads up to 4.5 Kg (10 lbs).

The units have built-in limit switches, and can be configured with a number of lead screw options as outlined in the table below. In standard rotary encoder configuration and using ASI's MS-2000 control electronics, resolutions in the 50-to-100 nm range can be easily obtained. Repeatability factors of less than 300 nm RMS are also obtainable.

An optional linear encoder provides a scale resolution of 10 nm, and with a scale accuracy of $\pm 3 \mu\text{m}$ per length of scale.

The MS-2000 controller provides automatic backlash correction, accepts industry standard commands, and accepts RS-232 or USB communication from a host computer.



The LS-50's travel bar has twelve 1/4" holes on 1" centers for secure mounting.



The LS-100 has 4" (100 mm) of travel with only 1 3/4" (45 mm) height.



The LS-50's top plate has sixteen tapped and eight countersunk 1/4" holes on 1" and 2" centers for versatile mounting capabilities.

Lead Screw Pitch Options	Rotary Encoder Resolution	Maximum Speed
25.40 mm (Ultra-coarse)	88 nm	28 mm/sec
12.70 mm (Super-coarse)	44 nm	14 mm/sec
6.35 mm (Standard)	22 nm	7 mm/sec
1.59 mm (Fine)	5.5 nm	1.75 mm/sec
0.635 mm (Extra-fine)	2.2 nm	0.7 mm/sec

Standard Lead Screw Accuracy is 0.25 μm per mm.

We Create Solutions

Applied Scientific Instrumentation, Inc. ♦ 29391 W Enid Rd ♦ Eugene, OR USA 97402-9533
(541) 461-8181 ♦ (800) 706-2284 ♦ info@ASImaging.com ♦ www.ASImaging.com

Specifications (with standard rotary encoder and 6.35 mm pitch lead screw)	LS-50	LS-100	LS-200
Resolution with Linear Encoder*		< 0.1 μm 10 nm	
RMS repeatability (typical) with Linear Encoder* (typical)		< 0.7 μm 200 nm	
Accuracy with Linear Encoder*		0.25 μm per mm \pm 3 μm per length of scale	
Maximum velocity		7 mm/sec	
Range of travel	50 mm (2")	100 mm (4")	200 mm (8")
Length including connector	152.5 mm (6") 181 mm (7 1/8")	203.5 mm (8") 232 mm (9 1/8")	305 mm (12") 333.5 mm (13 1/8")
Width including top plate*		69 mm (2 3/4") 102 mm (4")	
Height including top plate*		35.5 mm (1.4") 45 mm (1 3/4")	
Weight	1.4 kg (3 lbs)	1.9 kg (4 lbs)	2.4 kg (6 lbs)

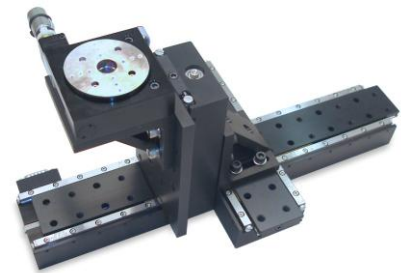
* Linear Encoder Option requires installation of the top plate



An LS-50 attached to an ASI XY stage provides precise XYZ positioning.



Precision ground cross roller bearings and guides insure precise positioning.



Multiple LS-series stages can be stacked and controlled with one ASI controller.



The LS-100's top plate has seventeen tapped and eleven countersunk 1/4" holes on 1" centers.



The bottom of the LS-50 has eighteen 1/4-20 tapped holes on 1" and 2" centers for mounting choices.



The bottom of the LS-100 has sixteen 1/4-20 tapped holes on 1" and 2" centers.

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