



APPLIED SCIENTIFIC
INSTRUMENTATION

MS-2500 XY Flat Top Extended Travel Stage

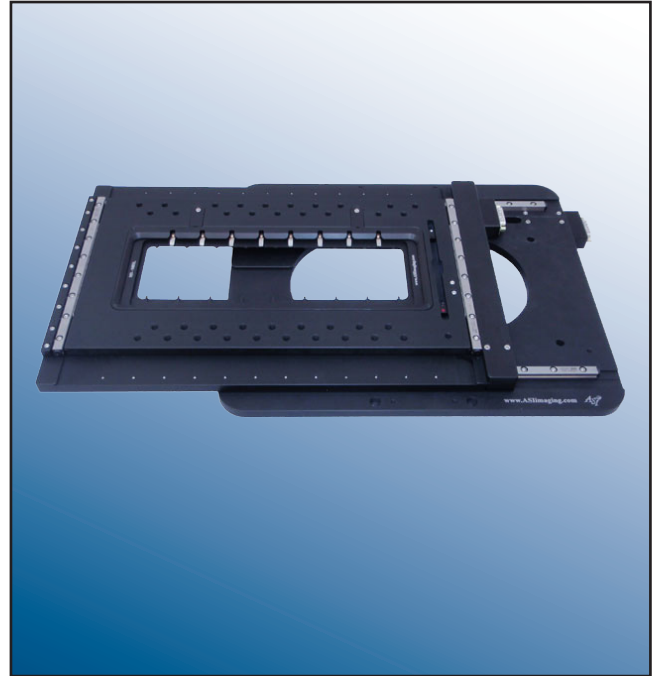
The MS-2500 XY low-profile stage has been specifically designed to provide 100 mm (4") of Y-axis travel with an extended 250 mm (10") of X-axis travel. This extended travel makes for easy robotic loading or for holding more samples per stage insert. The MS-2500 stage accepts either standard 160×110 or wide 283×110 stage inserts. Total stage thickness is only 54.1 mm (2.13"), and only 29.3 mm (1.16") from its flat obstruction-free top to its bottom mounting surface.

The high resolution, and highly repeatable, stage derives its precise control through the use of closed-loop DC servomotors employing high-resolution rotary encoders for positioning feedback. Optional linear encoders improve repeatability to less than 300 nm (typical) compared to the standard rotary encoder's 700 nm (typical) repeatability rating.

By using closed-loop control of the stage position, there is no chance that the stage will become lost, as can occur with open-loop micro-stepped stages after a number of moves and direction changes. The MS-2500 XY stage utilizes crossed-roller slides, a high-precision lead screw, and zero-backlash miniature geared DC servomotors for smooth and accurate motion. The Z-axis drive also uses ASI's proven line of closed-loop motor drives, each custom fitted to the microscope. The microprocessor-controlled MS-2000 control unit provides for RS-232 and USB communication with a host computer.

MS-2500 Features

- Obstruction-free flat top
- Thin profile: 29.3 mm (1.16") from mounting surface to top
- Closed-loop DC servo control of the X and Y-axes for precise positioning and highly repeatable focusing
- Wide dynamic speed range with XY joystick control
- Can be used with ASI's proven Z-axis drives
- Backlit LCD display shows axes' coordinates
- "Zero" and "Home" button for simple stand-alone operations
- Compact ergonomic tabletop control unit size is 9 cm (H) x 23 cm (W) x 16½ cm (D) (3" x 9" x 6")
- Microprocessor control with RS-232 serial and USB communications
- Proven operation with many popular software packages
- Suitable for stand-alone, OEM, and specialty applications as well





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MS-2500 Options

- X and Y-axis Linear Encoders for high-accuracy positioning, incorporated into the stage plates
- Stage Inserts to hold a variety of slides, dishes, sealed glass chambers, multiwell microplates, perfusers, heaters, and many other special items
- Other lead screw pitches are available, as shown below
- Stage Wings for even more room for attachments

Lead Screw Options

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 millimeter

Specifications for Standard Configuration

XY axis range of travel	250 mm x 75 mm
XY axis resolution	22 nm (typical)
XY axis RMS repeatability	< 700 nm (typical)
XY axis maximum velocity	7 mm/sec

*Shown with 6.35mm pitch lead screws

Linear Encoder Options

Axis	Resolution	Scale Accuracy
XY	10 nm	$\pm 3 \mu\text{m}$ per length of scale