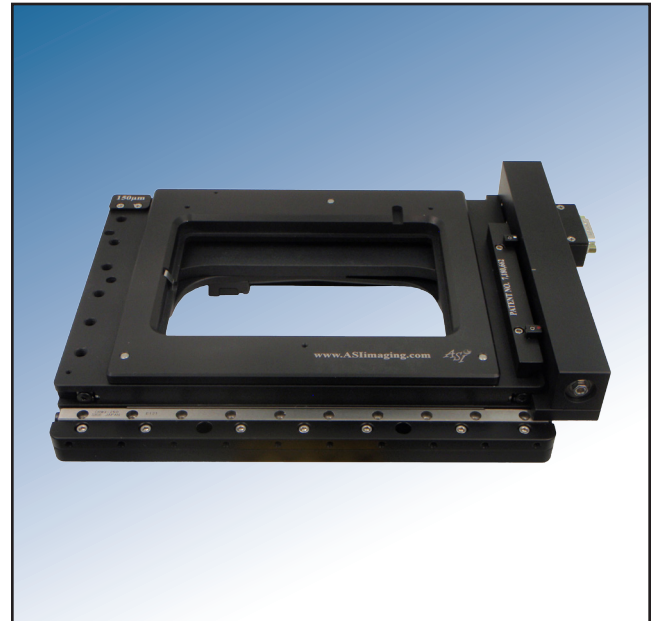




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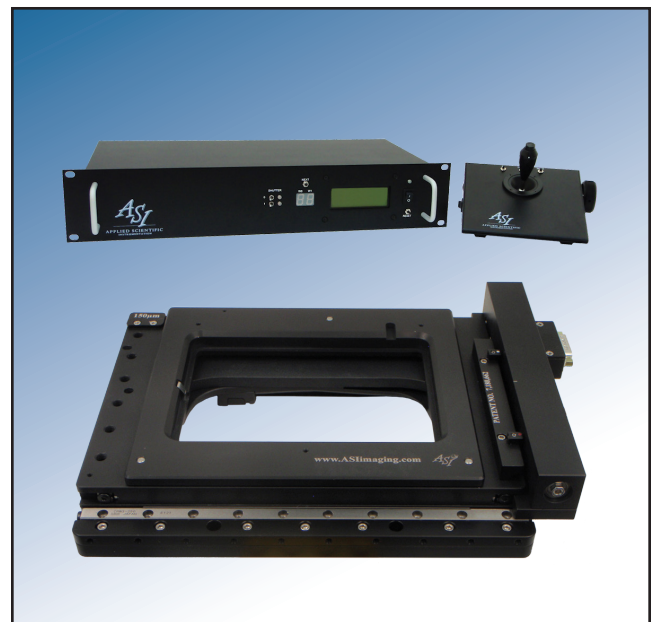
PZ-2000 Series Automated Stage with Piezo Z-Axis Top Plate

The PZ-2000 XYZ stage has been specifically designed to provide a high resolution, and highly repeatable, means of controlling the X, Y, and Z position of the microscope stage. The XY axes derive their precise control through the use of closed-loop DC servomotors employing high-resolution rotary encoders for positioning feedback. By using closed-loop control for 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 XY stage utilizes crossed-roller slides, high-precision lead screws, and zero-backlash miniature geared DC servomotors for smooth and accurate motion. The top plate of the stage accepts standard K-size slide inserts that are available for any sample, i.e., slides, petri dishes, multi-well plates, etc. The slide insert is moved in the Z-axis via a piezo element with a range of 150 μm with nanometer accuracy (300 μm & 500 μm range is also available). By moving the sample in the Z-plane, any objective can be used, eliminating twisting wires or needed spacers as required when a piezo element is put onto a single objective. The microprocessor-controlled MS-2000 control unit provides for RS-232 and USB communication with a host computer for control of the XYZ axis.



Features

- Closed-loop control of the X, Y, and Z-axes for precise positioning and highly repeatable focusing
- Wide dynamic speed range with adjustable trapezoidal move profiles
- Smooth adjustable dual-range joystick control
- Backlit LCD display shows X, Y, and Z coordinates
- "Zero" and "Home" button for simple stand-alone operations
- Compact ergonomic tabletop control unit size is 6"D x 9"W x 3"H (9 x 23 x 16½ cm). Rack mount controller with stand-alone joystick is also available.
- Proven operation with many popular software packages
- Travel range will scan full well plate in most circumstances





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PZ-2000FT Options

- XY axes Linear Encoders for high-accuracy positioning. Linear encoder resolution is 10 nm, with a scale accuracy of 0.3 μm per 10mm and 3 μm per 100mm. Positioning resolution at sample is < 50 nm.
- Auto Focus (requires NTSC or PAL composite video signal).
- ASI's proven line of Z-axis drives can also be added to the fine focus shaft of the microscope to provide Z-axis positioning with a resolution of 50 nm throughout the range of the microscope's travel. The piezo unit can then be used for fast and accurate Z-axis positioning to any point within the range of travel.
- Other lead screw pitches are available for faster XY translation, or for more precise positioning when using standard rotary encoders.
- Stage Wings for even more room for attachments.

Product Compatibility

- Leica – DMI3000, DMI4000, DMI5000, DMI6000, DMIRB, DMIRBE, DMIRE, DMIRE2
- Nikon – Diaphot 200, Diaphot 300, Diaphot Eclipse TE200, Diaphot Eclipse TE300, Diaphot Eclipse TE2000, Eclipse Ti
- Olympus – BX50WI, BX51WI, BX61WI, IMT-2, IX50, IX51, IX70, IX71, IX81
- Zeiss – Axioskop FS, Axiovert 35, Axiovert 100, Axiovert 100M, Axiovert 135, Axiovert 135M, Axiovert 200, Axiovert 200M, Axio Observer, IMC 35

Specifications for Standard Configuration

XY axis range of travel	120 mm x 110 mm
XY axis resolution (encoder step)	0.088 μm
XY axis lead screw accuracy	0.25 $\mu\text{m}/\text{mm}$
XY axis RMS repeatability	< 0.7 μm
XY axis maximum velocity	7 mm/sec

**In external input mode, use of a higher bit DAC will increase resolution. For example a 0-10 analog voltage from the DAC results in the following:*

PZ-2150FT		
External Analog input	Steps	Resolution
16 Bit DAC	65536	2.2 nm
17 Bit DAC	131075	1.1 nm
18 Bit DAC	262144	0.55 nm

ADEPT Piezo Controller Specifications

Specification	PZ-2150FT	PZ-2300FT	PZ-2500FT
Piezo Travel Range (+/- 5%)	150 μm	300 μm	500 μm
Piezo smallest move / resolution*	2.2 nm	4.5 nm	7.6 nm
Maximum Load for full range travel	2Kg	1Kg	1Kg
Transient Response time**	11 – 15 ms		
External Analog input (BNC)	0 to 10 Volts		
Maximum Input Frequency	20 Hz		
Maximum Continuous Output Current	13mA		

***Time taken to travel 10%-90% for moves below 30% travel range with 600 grams load.*