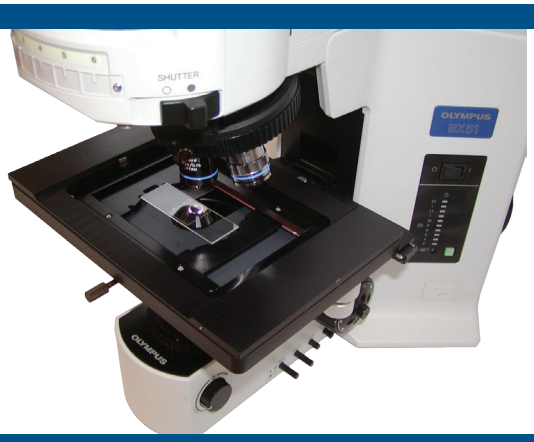
APPLIED SCIENTIFIC INSTRUMENTATION

PZMU-2000 OEM Series Piezo-Z Top Plate



The PZMU-2000 is a precise piezo Z-axis stage that can be attached to the top of a microscope's existing XY stage or be used in stand-alone applications. On select models of microscopes, ASI can mount a PZMU-2000 to an OEM stage. We can procure a manual OEM stage for you if necessary.

The PZMU-2000 consists of ASI's proven piezo-Z top plate mounted within a stand-alone housing. This system can be mounted to any horizontal surface, including on top of a manual XY stage of an upright microscope.
The optional MS1-PZM Controller compliments the ASI PZMU-2000, providing an LCD readout of position, an external focusing knob, RS-232 serial control, home and zeroing controls all in a small 6 x 4 inch (152 x 102 mm) footprint.

The PZMU-2000 has been specifically designed to provide a high resolution, and highly repeatable, means of controlling the Z position of a manual microscope stage. The XY axes would remain manually controlled by the original OEM stage controls. The PZMU-2000 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 100 µm and with nanometer accuracy (200 µm and 500 µm ranges are 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 piezo stage can be controlled remotely with a 0-10 volt D.C. analog input voltage, or optionally, with a PZM-2000 Controller.
Stages, controllers and top plates are sold separately.

Features

- Closed-loop control of Z-axis for precise and highly repeatable focusing
- Nanometer-scale resolution, repeatability, and accuracy
- Proven operation with many popular software packages

PZMU-2000 Specifications

(XY axis range of travel)	(Standard OEM Stage)
Z axis range of travel (± 5%)	100 µm (200 µm and 500 µm versions optional)
Z axis resolution	1.5 nm
Z axis repeatability	± 1 nm
Z axis maximum velocity with settling time	5 mm/sec (~ 10 ms per move)
Z axis resonant frequency (unloaded)	> 1 KHz
Z axis top plate maximum load	500 grams
Z axis top plate stiffness (± 20%)	3 N/µm
Z axis top plate in-plane tilt (typical)	10 µrad
Dimensions (L x W x H)	242 x 176 x 19 mm (9½" x 7"x ¾")

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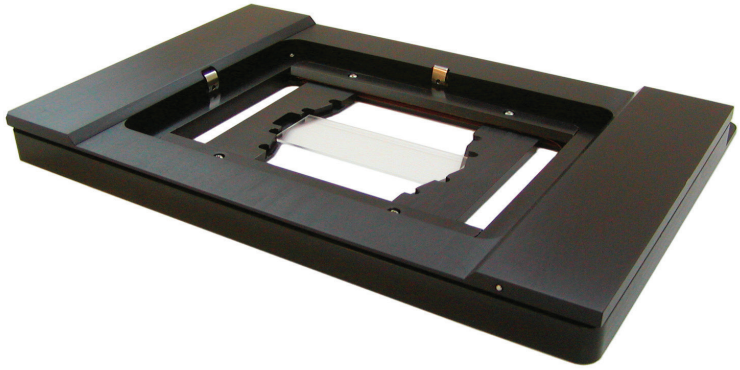

MS1-PZM Controller Specifications

Computer piezo control	RS-232 Serial
Manual piezo control	Front panel knob
External piezo control	0 – 10 VDC Pass-thru
Position information (regardless of control)	LCD Display
Control buttons	"Home" and "Zero"
Power module	12 VDC

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.*

**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