

## XYZ Manual 3-Axis Stage

### SUPERIOR PERFORMANCE

Imagine a positioning system so stable and easy to adjust that singlemode optical fiber alignment is as simple as tuning a radio! No need to let go of the micrometers while adjusting - the I3000 is *extremely* touch insensitive. And with the patented ergonomic inline design, all the micrometers are easily accessible on one side - just rest your hand comfortably on the table and enjoy the ease and efficiency of quickly aligning any type of fiber. No fiber alignment challenge is too difficult - even 1-2 micron core lensed fibers can easily be aligned. This is possible because of the radical departure from conventional design.

### FEATURES

- Patented Inline actuators provide ease of access.
- Patented 25x Ratio Drive™ system affords superior resolution for far less cost.
- Small footprint allows multiple unit workstations.
- Onboard controller for actuators avoids high cost of separate motion controllers.
- Damped exterior shell design provides superior vibration and touch insensitivity.
- Lightweight aluminum construction allows system to be moved easily by other motion equipment.
- High mechanical stiffness affords rugged and stable base system.
- Patented linear dual flexure Z offers frictionless repeatable straight travel.



### INNOVATION

The Luminos I3000 benefits from our patented Ratio Drive™ while all other stages are direct-drive. A standard micrometer, which has about 1/3 the backlash of a differential micrometer, is further improved by the 25x Ratio Drive™ resulting in a backlash of only 20 nanometers and an incredible single-sided resolution of just 1 nanometer!

The I3000 is extremely vibration and temperature insensitive. In an ordinary lab *without* an optical table, normal temperature fluctuations result in only 0.03 dB variation with *no* drift in a typical singlemode alignment for over a month.

### ACCESSORIES

With accessories ranging from fiber array holders to contact sensors, Luminos can get you out-fitted and up-and-running quickly on your applications

### AUTOMATION

With this advanced design, upgrading to automation is easy and inexpensive. Our standard, low cost stepper motor option provides the I3000 with a resolution of 4 nanometers and a 1/2 millimeter of travel on the X and Y axes. An additional 2 millimeters of manual travel is still available using the coarse adjustments. If you require more travel to be available using the actuator, consider the I3005. The Z axis provides a larger 1/2 inch (12.5mm) travel on the focal axis and a resolution of 100 nanometers. Using the internal Linear Motors option, the I3000 is capable of 1/2 nanometer movements on the X and Y axes superimposed on the stepper motor and coarse adjustment travel.

### ORDERING INFORMATION

Part #	Description
P3-M-M-M-1-N-H-N	<b>I3000:</b> 3-Axis Positioner, Z-Axis Actuator: Manual Imperial Micrometer, X-Axis Actuator: Manual Micrometer, Y-Axis Actuator: Manual Micrometer, XY Coarse Adjust: 40 pitch set screw, XY Linear Motors: None, Mounting Axis: Horizontal, Side Damper: None
P3A-M-M-M-H-N	<b>I3005:</b> 3-Axis Positioner (5x), Z-Axis Actuator: Manual Imperial Micrometer, X-Axis Actuator: Manual Micrometer, Y-Axis Actuator: Manual Micrometer, Mounting Axis: Horizontal, Side Damper: None

# I3000/I3005 Specifications

Travel				
Axis		Actuator <sup>1</sup>	Coarse	Total
Z – focus		12.7mm (0.5")	N/A	12.7mm (0.500")
I3000	Y – vertical	0.5mm (0.02")	2mm (0.080")	2.5mm (0.1")
	X – lateral	0.5mm (0.02")	2mm (0.080")	2.5mm (0.1")
I3005	Y – vertical	2.5mm (0.1")	N/A	2.5mm (0.1")
	X – lateral	2.5mm (0.1")	N/A	2.5mm (0.1")
Setability <sup>2</sup> (Micrometer)				
Axis		Resolution	Movement /Division	
Z		0.25 micron (10μ-inch)	0.001"	
I3000	Y	10nm (0.4μ-inch)	1μm - 25x Ratio Drive™	
	X	10nm (0.4μ-inch)	1μm - 25x Ratio Drive™	
I3005	Y	50nm (2μ-inch)	5μm - 5x Ratio Drive™	
	X	50nm (2μ-inch)	5μm - 5x Ratio Drive™	
Resolution (Stepper Motor)				
Axis		Resolution	Total Steps	
Z		100nm (4μ-inch)	128 000	
I3000	Y	4nm (0.16μ-inch)	128 000 - 25x Ratio Drive™	
	X	4nm (0.16μ-inch)	128 000 - 25x Ratio Drive™	
I3005	Y	20nm (0.8μ-inch)	128 000 - 5x Ratio Drive™	
	X	20nm (0.8μ-inch)	128 000 - 5x Ratio Drive™	
Stage Configuration & Arc Error Motion				
Axis		Flexure Type	Arc Error	
Z		Dual	None - True Linear Motion	
Y		Single	Max 30μm - Arc Error in Z only	
X		Single	Max 30μm - Arc Error in Z only	
Linear Stiffness				
Along Axis		Stiffness	Comments	
Z		130 kN/m	measured at the rotation center	
Y		95 kN/m	measured at the rotation center	
X		40 kN/m	measured at the rotation center	
Torsional Stiffness				
About Axis		Stiffness	Comments	
Z – roll		75Nm/rad	measured at the rotation center	
Y – yaw		100Nm/rad	measured at the rotation center	
X – pitch		130Nm/rad	measured at the rotation center	
Maximum Load				
Static Load		Transient Load	Comments	
2.2 lbs (1kg)		10 lbs (4.5kg)	stage must be protected from shock loading during transport and usage	

