

M-810 Miniature Hexapod Platform Parallel Kinematics Positioner

With 6-D Vector Controller and Software



- Most-Compact Hexapod in the PI Portfolio
- Travel Ranges 40 x 40 x 13 mm, Rotation to 60 Degrees
- Load Capacity to 5 kg
- Resolution of a Single Strut 40 nm
- Min. Incremental Motion to 0.5 μm
- Repeatability up to $\pm 0.5 \mu\text{m}$
- Velocity to 2.5 mm/s

Technical Data

	M-810.00 / M-810.0A	Unit
Active axes	X, Y, Z, Θ X, Θ Y, Θ Z	
Motion and positioning		
*Travel range X, Y	± 20	mm
*Travel range Z	± 6.5	mm
*Travel range Θ X, Θ Y	± 10	$^{\circ}$
*Travel range Θ Z	± 30	$^{\circ}$
Actuator drive	Brushless DC Motor, ActiveDrive	
Actuator stroke	± 7.5	mm
Single-actuator design resolution	0.04	μm
Integrated sensor	Rotary encoder	
Sensor resolution	12800	Cts./rev.
**Min. incremental motion X, Y	1	μm
**Min. incremental motion Z	0.5	μm
**Min. incremental motion Θ X, Θ Y, Θ Z	3.5	μrad
Repeatability X, Y	± 2	μm
Repeatability Z	± 0.5	μm
Repeatability Θ X, Θ Y, Θ Z	± 5	μrad
Backlash X, Y	2	μm
Backlash Z	0.5	μm
Max. velocity X, Y, Z	2.5	mm/s
Max. velocity Θ X, Θ Y, Θ Z	60	mrad/s
Typ. velocity X, Y, Z	2	mm/s
Typ. velocity Θ X, Θ Y, Θ Z	30	mrad/s
Mechanical properties		
Stiffness X, Y	0.1	N/ μm
Stiffness Z	4	N/ μm
Max. load (baseplate horizontal / any orientation)	5 / 2.5	kg
Miscellaneous		
Operating temperature range	0 to +50	$^{\circ}\text{C}$
Material	Stainless steel, aluminum	
Mass	1.7	kg
Controller		
Operating Voltage	100–240 VAC, 50/60 Hz	

* The travel ranges of the individual coordinates (X, Y, Z, Θ X, Θ Y, Θ Z) are interdependent. The data for each axis in this table shows its maximum travel, where all other axes are at their zero positions. If the other linear or rotational coordinates are not zero, the available travel may be less.

** Six-axis move. No moving cables (unlike serial-kinematic stacked systems). Eliminates bending, inertia and friction, improving accuracy. Technical data are specified at 20 $\pm 3^{\circ}\text{C}$. Data for vacuum versions may differ.

M-810.0A Miniature Hexapod Platform

Bottom Cable Exit



- Most-Compact Hexapod in the PI Portfolio
- Travel Ranges 40 x 40 x 13 mm, Rotation to 60 Degrees
- Clear Aperture Ø 59 mm
- Load Capacity to 5 kg
- Resolution of a Single Strut 40 Nm
- Min. Incremental Motion to 200 Nm
- Repeatability up to ±0.5 µm
- Velocity to 10 mm/s

Technical Data

Model	M-810.0A
Active axes	X, Y, Z, θX , θY , θZ
Motion and positioning	
*Travel range X, Y	±20 mm
*Travel range Z	±6.5 mm
*Travel range θX , θY	±11°
*Travel range θZ	±30°
Actor drive	Brushless DC motor, ActiveDrive
Actuator stroke	±7.5 mm
Single-actuator design resolution	0.04 µm
Integrated sensor	Rotary encoder
Sensor resolution	12800 cts. / rev.
**Min. incremental motion X, Y	1 µm
**Min. incremental motion Z	0.2 µm
**Min. incremental motion θX , θY , θZ	3.5 µrad
Repeatability X, Y	±2 µm
Repeatability Z	±0.5 µm
Repeatability θX , θY , θZ	±5 µrad
Backlash X, Y	2 µm
Backlash Z	0.5 µm
Max. velocity X, Y, Z	10 mm/s
Max. velocity θX , θY , θZ	250 mrad/s
Typ. velocity X, Y, Z	5 mm/s
Typ. velocity θX , θY , θZ	120 mrad/s
Mechanical properties	
Stiffness X, Y	0.1 N/µm
Stiffness Z	4 N/µm
Max. load (baseplate horizontal / any orientation)	5 / 2.5 kg
Miscellaneous	
Operating temperature range	0 to +50 °C
Material	Stainless steel, aluminum
Mass	1.7 kg
Controller	
Operating voltage	100–240 VAC, 50 / 60 Hz

* The travel ranges of the individual coordinates (X, Y, Z, θX , θY , θZ) are interdependent. The data for each axis in this table shows its maximum travel, where all other axes are at their zero positions. If the other linear or rotational coordinates are not zero, the available travel may be less.

** Six-axis move. No moving cables (unlike serial-kinematic stacked systems) to introduce bending forces, torque and friction which degrade positioning accuracy.

Technical data are specified at 20 ±3 °C. Data for vacuum versions may differ.