M-840 Hexapod Platform Parallel Kinematics System

Fast Parallel-Kinematics Micropositioner with Controller

- Six Degrees of Freedom, Travel Ranges to 100 mm/ 60°
- Rapid Response
- No Moving Cables for Improved Reliability and Precision
- Self-Locking Version M-840.DG3: Load Capacity up to 30 kg
- Direct-Drive Version M-840.PD3: Velocity up to 50 mm/s
- Repeatability up to ±2 µm
- Encoder Resolution up to 0.016 µm
- Significantly Smaller and Stiffer than Serial-Kinematics Systems, Better Dynamics
- Vacuum-Compatible Versions Available
- Virtual Pivot Point
- Sophisticated Controller Using Vector Algorithms
- MTBF 20,000 h

Technical Data

Model	M-840.PD3	M-840.DG3	Units
Active axes	X, Y, Z, θX, θY, θZ	X, Y, Z, θX, θY, θZ	
Motion and positioning			
*Travel range X, Y	±50	±50	mm
*Travel range Z	±25	±25	mm
*Travel range θX, θY	±15	±15	°
*Travel Range θZ	±30	±30	°
Actuator drive	DC-motor	DC-motor	
Actuator stroke	±25	±25	mm
Integrated sensor	Rotary encoder	Rotary encoder	
Sensor resolution	2048	2048	
Actuator design resolution	0.5	0.017	µm
**Min. incremental motion X, Y	3	1	µm
**Min. incremental motion Z	1	0.5	µm
**Min. incremental motion θX, θY, θZ	5	5	µrad
Repeatability X, Y	±2	±2	µm
Repeatability Z	±1	±1	µm
Repeatability θX, θY, θZ	±20	±20	µrad
Max. velocity X, Y, Z	50	2.5	mm/s
Max. velocity θX, θY, θZ	600	30	mrad/s
Typ. velocity X, Y, Z	30	2	mm/s
Typ. velocity θX, θY, θZ	300	20	mrad/s
Mechanical properties			
Max. load (baseplate horizontal / any orientation)	10 / 3	30 / 10	kg
Max. holding force (baseplate horizontal / any orientation)	15 / 5	100 / 25	N
Resonant frequency*** FX, FY	100	100	Hz
Resonant frequency*** FZ	300	300	Hz
Miscellaneous			
Operating temperature range	-10 to +50	-10 to +50	°C
Material	Aluminum	Aluminum	
Mass	12	12	kg
Controllers			
Delivered controller	M-850.502	M-850.502	
Operating voltage	100-240 VAC, 50/60 Hz	100-240 VAC, 50/60 Hz	

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

* The max. travel of the several 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).
*** Horizontal mounted baseplate without load.