

6-Axis Motion Hexapod

Fast and Compact for High Dynamics Applications



H-811.S2

- CIPA certified
- Travel ranges to ± 17 mm / $\pm 21^\circ$
- Velocity to 25 mm/s
- Dynamics to 25 Hz over 0.1° travel range
- Developed for image stabilization inspection systems

Reference-class 6-axis positioning system

Parallel-kinematic design for six degrees of freedom making it significantly more compact and stiff than serial-kinematic systems, higher dynamic range, no moved cables: Higher reliability, reduced friction.

Brushless DC motor (BLDC)

Brushless DC motors are particularly suitable for high rotational speeds. They can be controlled very accurately and ensure high precision. Because they dispense with sliding contacts, they run smoothly, are wear-free and therefore achieve a long lifetime.

Fields of application

Research and industry, test systems, e.g. for image stabilization in cameras and mobile devices

Specifications

Motion and positioning	H-811.S2	Unit	Tolerance
Active axes	X, Y, Z, θ_x , θ_y , θ_z		
Travel range* X, Y, Z	± 17 , ± 16 , ± 6.5	mm	
Travel range* θ_x , θ_y , θ_z	± 10 , ± 10 , ± 21	°	
Actuator design resolution	5	nm	
Minimum incremental motion X, Y	1	μm	typ.
Minimum incremental motion Z	0.5	μm	typ.
Minimum incremental motion θ_x , θ_y , θ_z	12	μrad	typ.
Minimum incremental motion θ_z	25	μrad	typ.
Backlash X, Y	0.5	μm	typ.
Backlash Z	0.15	μm	typ.
Backlash θ_x , θ_y	5	μrad	typ.
Backlash θ_z	10	μrad	typ.
Repeatability X, Y	± 0.5	μm	typ.
Repeatability Z	± 0.2	μm	typ.
Repeatability θ_x , θ_y	± 6	μrad	typ.
Repeatability θ_z	± 10	μrad	typ.
Max. velocity X, Y, Z	25	mm/s	
Max. velocity θ_x , θ_y , θ_z	625	mrad/s	
Typ. Velocity X, Y, Z	10	mm/s	
Typ. Velocity θ_x , θ_y , θ_z	240	mrad/s	

Dynamic properties	H-811.S2	Unit	Tolerance
Max. velocity in X, Y, Z	25	mm/s	
Max. velocity θ_x , θ_y , θ_z	625	mrad/s	
Typ. velocity in X, Y, Z	10	mm/s	
Typ. velocity θ_x , θ_y , θ_z	240	mrad/s	
Max. frequency	30	Hz	
Amplitude-frequency product in X, Y	11.5	mm·Hz	
Amplitude-frequency product in Z	4	mm·Hz	
Amplitude-frequency product in θ_x , θ_y	6.4	°·Hz	
Amplitude-frequency product in θ_z	18	°·Hz	
Amplitude error	10	%	max.
Phase error	60	°	max.

Mechanical properties	H-811.S2	Unit	Tolerance
Stiffness X, Y	0.7	N/ μ m	
Stiffness Z	8	N/ μ m	
Load capacity (horizontal base plate / any orientation)	2.5 / 0.9	kg	max.
Holding force, power off (horizontal base plate / any orientation)	15 / 2.5	N	max.
Motor type	Brushless DC motor		

Miscellaneous	H-811.S2	Unit	Tolerance
Operating temperature range	0 to 50	$^{\circ}$ C	
Material	Stainless steel, aluminum		
Mass	2.2	kg	\pm 5 %
Cable length	0.5 + 3	m	\pm 10 mm
Recommended controller	C-887.5x		

Technical data specified at 20 \pm 3 $^{\circ}$ C.

* 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 range, where all other axes and the pivot point are at the reference position.



Certificate of approval for vibration equipment

Ordering Information

H-811.S2

Miniature hexapod microrobot for high dynamics applications, direct drive, 25 mm/s, 1.5 kg load, 0.5 m cable, including 3 m cable set