

6-Axis Miniature Hexapod

Fast, Compact, and Highly Precise



H-811.I2/I2V

- Travel ranges to ± 17 mm / $\pm 21^\circ$
- Load capacity to 5 kg
- Repeatability to ± 0.06 μm
- Velocity to 20 mm/s
- Superior lifetime
- Vacuum-compatible versions available

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. Vacuum-compatible version to 10^{-6} hPa available

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, standard and vacuum environments. For micromanufacturing, medical technology, tool inspection.

Specifications

Motion and positioning	H-811.I2 / .I2V**	Unit	Tolerance
Active axes	X, Y, Z, θ_x , θ_y , θ_z		
Travel range* in X, Y	± 17 , ± 16	mm	
Travel range* in Z	± 6.5	mm	
Travel range* in θ_x , θ_y	± 10 , ± 10	°	
Travel range* in θ_z	± 21	°	
Actuator design resolution	5	nm	

Minimum incremental motion X, Y	0.2	μm	typ.
Minimum incremental motion Z	0.08	μm	typ.
Minimum incremental motion θ_x, θ_y	2.5	μrad	typ.
Minimum incremental motion θ_z	5	μrad	typ.
Backlash X, Y	0.2	μm	typ.
Backlash Z	0.06	μm	typ.
Backlash θ_x, θ_y	2	μrad	typ.
Backlash θ_z	4	μrad	typ.
Repeatability X, Y	±0.15	μm	typ.
Repeatability Z	±0.06	μm	typ.
Repeatability θ_x, θ_y	±2	μrad	typ.
Repeatability θ_z	±3	μrad	typ.
Max. velocity X, Y, Z	20 / 10	mm/s	
Max. velocity $\theta_x, \theta_y, \theta_z$	500 / 250	mrad/s	
Typ. Velocity X, Y, Z	10 / 5	mm/s	
Typ. Velocity $\theta_x, \theta_y, \theta_z$	240 / 120	mrad/s	

Mechanical properties	H-811.I2 / .I2V**	Unit	Tolerance
Stiffness X / Y	0.7	N/μm	
Stiffness Z	8	N/μm	
Load capacity, horizontal base plate	5	kg	max.
Load capacity, base plate in any orientation	2.5	kg	max.
Holding force, power off, horizontal base plate	15	N	max.
Holding force, power off, base plate in any orientation	2.5	N	max.
Motor type	BLDC motor		

Miscellaneous	H-811.I2 / .I2V**	Unit	Tolerance
Operating temperature range	0 to 50	°C	
Material	Stainless steel, aluminum		
Mass	2.2	kg	±5 %
Cable length	0.5 + 3 / 3 (air) + 2 (vacuum)	m	±10 mm
Recommended controller	C-887.5x		

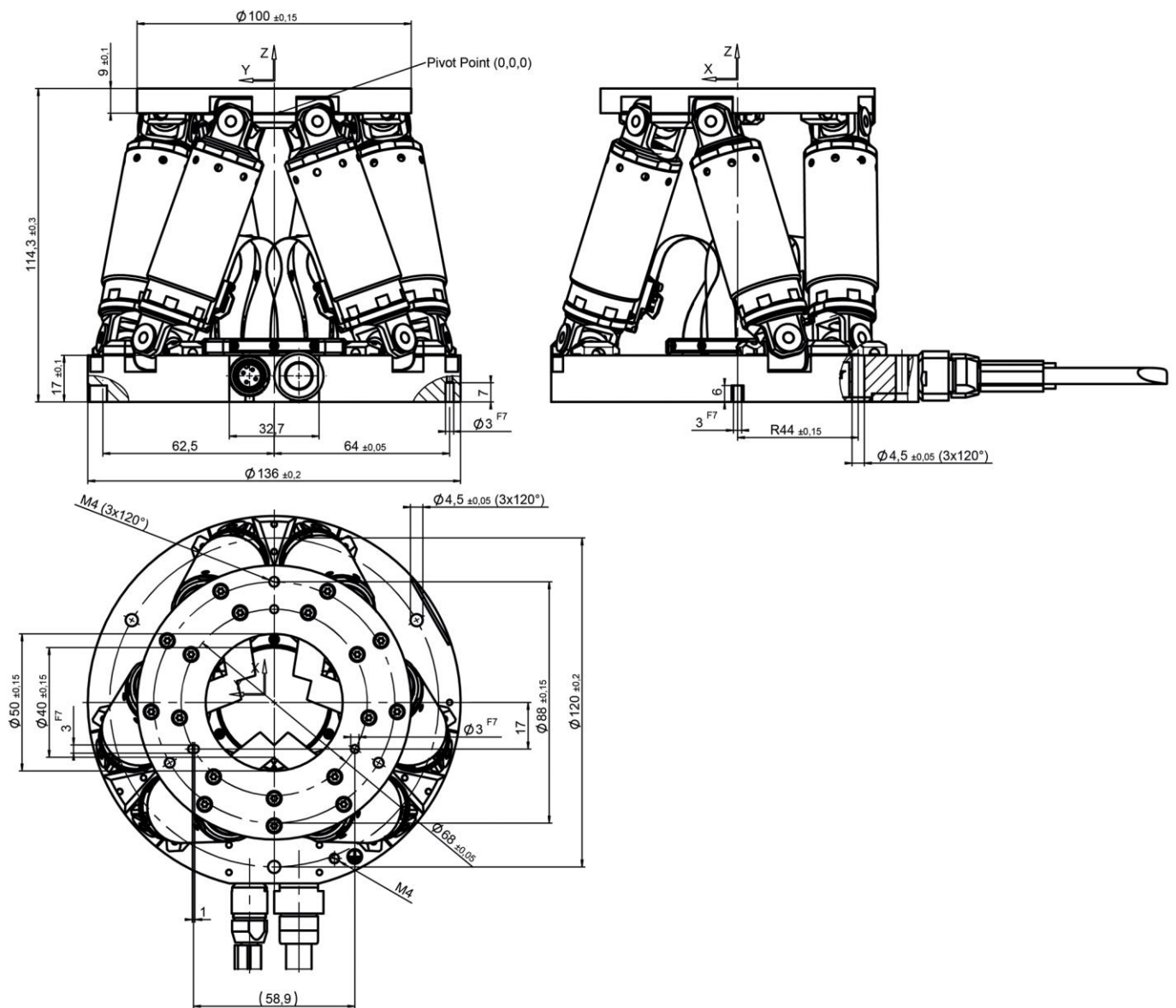
Technical data specified at 20±3 °C.

* The travel ranges of the individual coordinates (X, Y, Z, $\theta_x, \theta_y, \theta_z$) 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.

** For continuous operation in a vacuum, restrictions on operating parameters may be necessary due to heat generation.

Ask about customized versions.

Drawings / Images



H-811.I2, dimensions in mm

Ordering Information

H-811.I2

Miniature Hexapod microrobot, brushless DC motor, 5 kg load capacity, 20 mm/s velocity, 0.5 m cable length, including 3 m cable set

H-811.I2V

Miniature Hexapod microrobot, brushless DC motor, vacuum compatible to 10^{-6} hPa, 5 kg load capacity, 10 mm/s velocity, 2 m cable length, including 3 m cable set and feedthrough