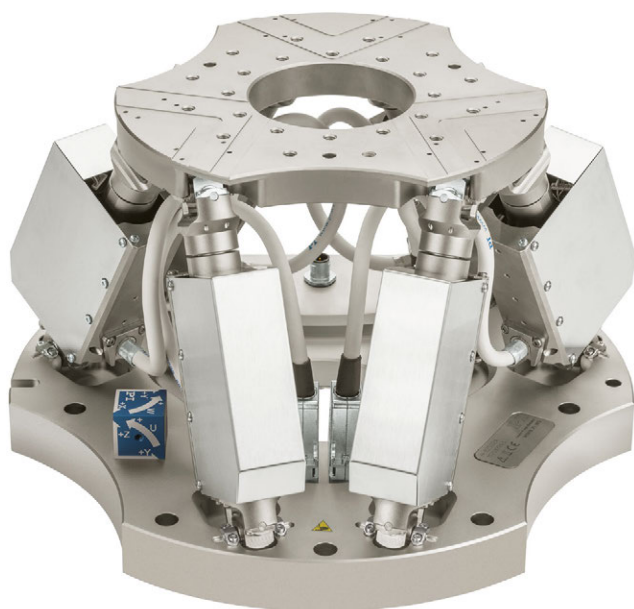# 6-Axis Hexapod

Compact Design, for Loads to 30 kg

H-825

- Load capacity to 30 kg, self-locking

- Travel ranges to ±27.5 mm, rotation range to ±11.5°

- Actuator resolution to 8 nm

- Minimum incremental motion to 0.3 µm in X, Y, and Z

- Repeatability to ±0.1 µm / ±2 µrad

- BLDC motors and absolute encoders

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.

Absolute encoder
Absolute encoders supply explicit position information that enables immediate determination of the position. This means that referencing is not required during switch-on, which increases efficiency and safety during operation.

Fields of application
Research and industry. For microassembly, biotechnology, semiconductor manufacturing, optical alignment.

Specifications

|	H-825.G2A	H-825.D2A	Unit	Tolerance
	BLDC gear motor with absolute encoder	BLDC motor with absolute encoder		
Active axes	X, Y, Z, θ_X, θ_Y, θ_Z	X, Y, Z, θ_X, θ_Y, θ_Z		
Motion and positioning				
Travel range in X, Y *	±27.5; ±25	±27.5; ±25	mm	
Travel range in Z *	±14	±14	mm	
Travel range in θ_X, θ_Y *	±11.5; ±10.5	±11.5; ±10.5	°	

	H-825.G2A	H-825.D2A	Unit	Tolerance
Travel range in θ_z *	±19	±19	°	
Actuator design resolution	0.0085	0.25	µm	
Minimum incremental motion in X, Y, Z	0.3	1	µm	typ.
Minimum incremental motion in θ_X, θ_Y, θ_z	3.5	12	µm	
Backlash in X, Y	3	1	µm	typ.
Backlash in Z	1	1	µm	typ.
Backlash in θ_X, θ_Y	20	15	µrad	typ.
Backlash in θ_z	25	25	µrad	typ.
Repeatability X, Y	±0.5	±0.5	µm	typ.
Repeatability in Z	±0.1	±0.1	µm	typ.
Repeatability in θ_X, θ_Y	±2	±2	µrad	typ.
Repeatability in θ_z	±2.5	±2.5	µrad	typ.
Max. velocity in X, Y, Z	2.5	25	mm/s	
Max. velocity in θ_X, θ_Y, θ_z	27	270	mrad/s	
Typ. velocity on X, Y, Z	2.0	20	mm/s	
Typ. velocity on θ_X, θ_Y, θ_z	20	55	mrad/s	
Mechanical properties				
Stiffness in X, Y	1.7	1.7	N/µm	
Stiffness in Z	7	7	N/µm	
Load capacity (base plate horizontal / any orientation)	30 / 10	5 / 2.5	kg	max.
Holding force, power off (base plate horizontal / any orientation)	100 / 50	10 / 5	N	max.
Motor type	BLDC gear motor	BLDC motor		
Miscellaneous				
Operating temperature range	-10 to 50	-10 to 50	°C	
Material	Aluminum	Aluminum		
Mass	10	10	kg	±10 %

Technical data specified at 20±3 °C.
Ask about custom designs!
* 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.

Drawings and Images
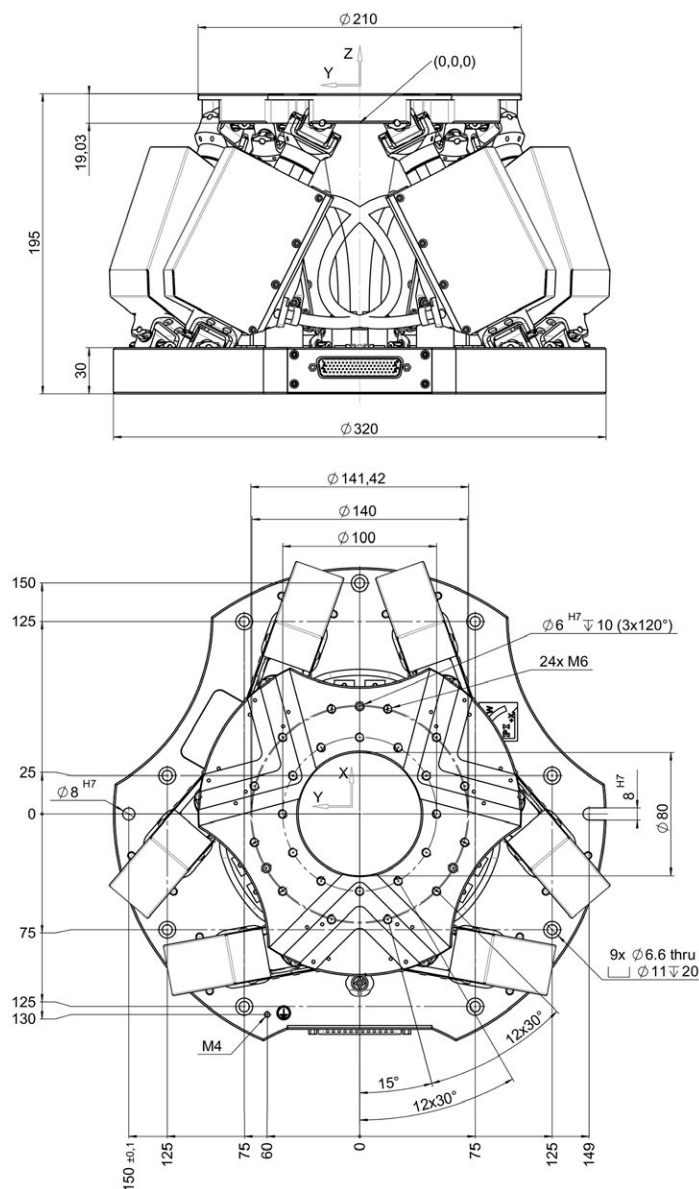
H-825, dimensions in mm

Ordering Information

H-825.D2A
Compact hexapod microrobot, brushless DC motor, absolute encoder, 5 kg load capacity, 25 mm/s velocity, including 3 m cable

H-825.G2A
Compact hexapod microrobot, brushless DC gear motor, absolute encoder, 30 kg load capacity, 2.5 mm/s velocity, including 3 m cable