

# 6-Axis Miniature Hexapod

High Precision in the Smallest Space



## H-810

- Travel ranges to 40 mm / 60°
- Load capacity to 5 kg
- Repeatability to  $\pm 0.08 \mu\text{m}$
- Velocity to 6 mm/s
- Works in any orientation
- Virtual pivot point

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. For micromanipulation, biomedical engineering, tool inspection.

## Specifications

Motion and positioning	H-810.I2	Unit	Tolerance
Active axes	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$		
Travel range* X, Y	$\pm 20$	mm	
Travel range* Z	$\pm 6.5$	mm	
Travel range* $\theta_x$ , $\theta_y$	$\pm 10$	°	
Travel range* $\theta_z$	$\pm 30$	°	
Actuator design resolution	5	nm	
Minimum incremental motion X, Y	0.5	$\mu\text{m}$	typ.
Minimum incremental motion Z	0.25	$\mu\text{m}$	typ.

Minimum incremental motion $\theta_x, \theta_y$	8	$\mu\text{rad}$	typ.
Minimum incremental motion $\theta_z$	15	$\mu\text{rad}$	typ.
Backlash X, Y	0.7	$\mu\text{m}$	typ.
Backlash Z	0.2	$\mu\text{m}$	typ.
Backlash $\theta_x, \theta_y$	10	$\mu\text{rad}$	typ.
Backlash $\theta_z$	20	$\mu\text{rad}$	typ.
Repeatability X, Y	$\pm 0.3$	$\mu\text{m}$	typ.
Repeatability Z	$\pm 0.08$	$\mu\text{m}$	typ.
Repeatability $\theta_x, \theta_y$	$\pm 2.5$	$\mu\text{rad}$	typ.
Repeatability $\theta_z$	$\pm 10$	$\mu\text{rad}$	typ.
Max. velocity X, Y, Z	6	mm/s	
Max. velocity $\theta_x, \theta_y, \theta_z$	120	mrad/s	
Typ. Velocity X, Y, Z	3	mm/s	
Typ. Velocity $\theta_x, \theta_y, \theta_z$	50	mrad/s	

Mechanical properties	H-810.I2	Unit	Tolerance
Load capacity (horizontal base plate / any orientation)	5 / 2.5	kg	max.
Holding force (horizontal base plate)	15	N	max.
Motor type	Brushless DC motor		

Miscellaneous	H-810.I2	Unit	Tolerance
Operating temperature range	0 to 50	$^{\circ}\text{C}$	
Material	Stainless steel, aluminum		
Mass	1.7	kg	$\pm 5\%$
Cable length	0.5 + 3	m	$\pm 10\text{ mm}$
Recommended controller	C-887.52x, C-887.53x		

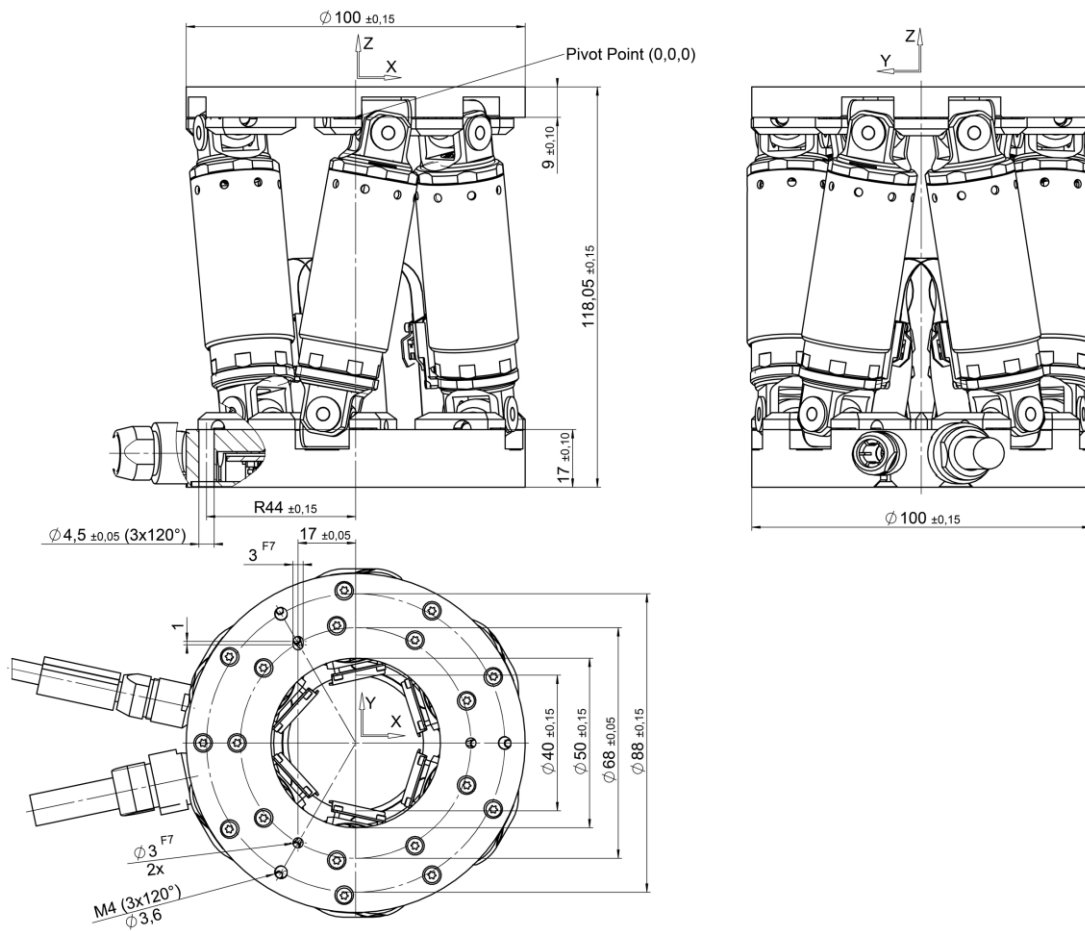
Technical data specified at  $20 \pm 3\text{ }^{\circ}\text{C}$ .

The length of the connecting cable for the H-810.I2 is 0.5 m. It is permanently connected to the hexapod.

\* 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.

Ask about customized versions.

## Drawings / Images



H-810, dimensions in mm

## Ordering Information

### H-810.I2

Miniature hexapod microrobot for six degrees of motion freedom, brushless DC motors, 5 kg load capacity, 6 mm/s velocity, 0.5 m cable length + cable set 3 m