

## 6-Axis Hexapod

Inexpensive, Precise, and Fast



### H-840

- CIPA certified
- Load capacity to 30 kg
- Travel ranges to  $\pm 50$  mm /  $\pm 30^\circ$
- Repeatability to  $\pm 0.1$   $\mu$ m
- BLDC motors and variants with absolute encoders
- Works in any orientation

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 motion simulation (CIPA certified), tool inspection, life science, micromanufacturing.

## Specifications

Motion and positioning	H-840.G2A	H-840.D2A	H-840.G2I	H-840.D2I	Unit	Tolerance
	BLDC gear motor with absolute encoder	BLDC motor with absolute encoder	BLDC gear motor with rotary encoder	BLDC motor with rotary encoder		
Active axes	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$	X, Y, Z, $\theta_x$ , $\theta_y$ , $\theta_z$		
Travel range* X, Y	±50	±50	±50	±50	mm	
Travel range* Z	±25	±25	±25	±25	mm	
Travel range* $\theta_x$ , $\theta_y$	±15	±15	±15	±15	°	
Travel range* $\theta_z$	±30	±30	±30	±30	°	
Actuator design resolution	0.0085	0.25	0.005	0.037	µm	
Min. incremental motion X, Y	0.3	2.5	0.25	0.5	µm	typ.
Min. incremental motion Z	0.2	1	0.15	0.25	µm	typ.
Minimum incremental motion $\theta_x$ , $\theta_y$ , $\theta_z$	3; 3; 5	15; 15; 40	4; 4; 6	4.5; 4.5; 8.5	µrad	typ.
Backlash in X, Y	1	0.5	1	0.5	µm	typ.
Backlash in Z	0.3	0.5	0.3	0.5	µm	typ.
Backlash in $\theta_x$ , $\theta_y$	5	8	5	8	µrad	typ.
Backlash in $\theta_z$	10	5	10	5	µrad	typ.
Repeatability X, Y	±0.3	±0.4	±0.3	±0.4	µm	typ.
Repeatability in Z	±0.15	±0.1	±0.15	±0.1	µm	typ.
Repeatability in $\theta_x$ , $\theta_y$	±2.5	±1.5	±2.5	±1.5	µrad	typ.
Repeatability in $\theta_z$	±3	±4	±3	±4	µrad	typ.
Max. velocity in X, Y, Z	2.5	60	2.5	60	mm/s	
Max. velocity in $\theta_x$ , $\theta_y$ , $\theta_z$	30	700	30	700	mrads	
Typ. Velocity in X, Y, Z	2	40	2	40	mm/s	
Typ. Velocity in $\theta_x$ , $\theta_y$ , $\theta_z$	25	480	25	480	mrads	

Mechanical properties	H-840.G2A	H-840.D2A	H-840.G2I	H-840.D2I	Unit	Tolerance
Load capacity (horizontal base plate / any orientation)	30 / 10	10 / 3	30 / 10	10 / 3	kg	max.
Holding force, power off (horizontal base plate / any orientation)	100 / 25	15 / 5	100 / 25	15 / 5	N	max.

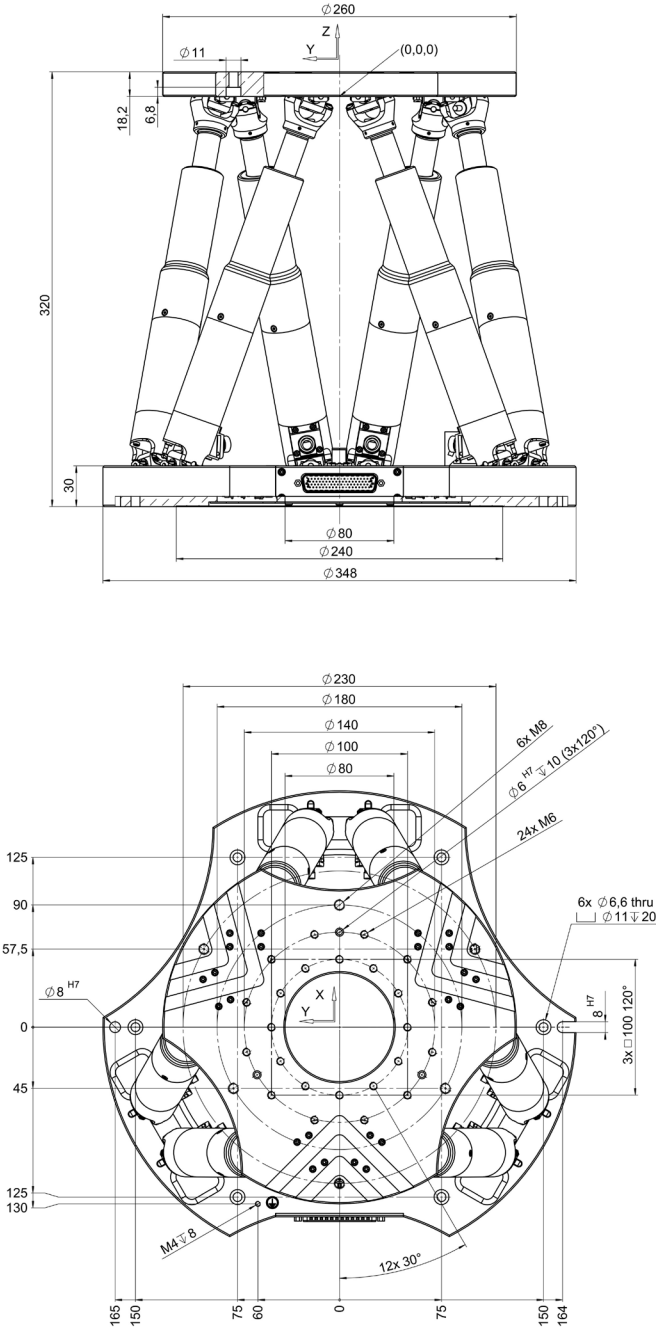
Miscellaneous	H-840.G2A	H-840.D2A	H-840.G2I	H-840.D2I	Unit	Tolerance
Operating temperature range	-10 to 50	-10 to 50	-10 to 50	-10 to 50	°C	
Material	Aluminum / steel	Aluminum / steel	Aluminum / steel	Aluminum / steel		
Mass	12	12	12	12	kg	±10 %
Cable length	3	3	3	3	m	±10 mm

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.

Ask about customized versions.

## Drawings / Images



H-840.x2A/x2I, dimensions in mm



*Certificate of approval for vibration equipment*

## Ordering Information

### **H-840.D2A**

Motion Hexapod microrobot, brushless DC motor, absolute encoder, 10 kg load capacity, 60 mm/s velocity, including 3 m cable

### **H-840.G2A**

Motion Hexapod microrobot, brushless DC gear motor, absolute encoder, 30 kg load capacity, 2.5 mm/s velocity, including 3 m cable

### **H-840.D2I**

Motion Hexapod microrobot, brushless DC motor, rotary encoder, 10 kg load capacity, 60 mm/s velocity, including 3 m cable

### **H-840.G2I**

Motion Hexapod microrobot, brushless DC gear motor, rotary encoder, 30 kg load capacity, 2.5 mm/s velocity, including 3 m cable