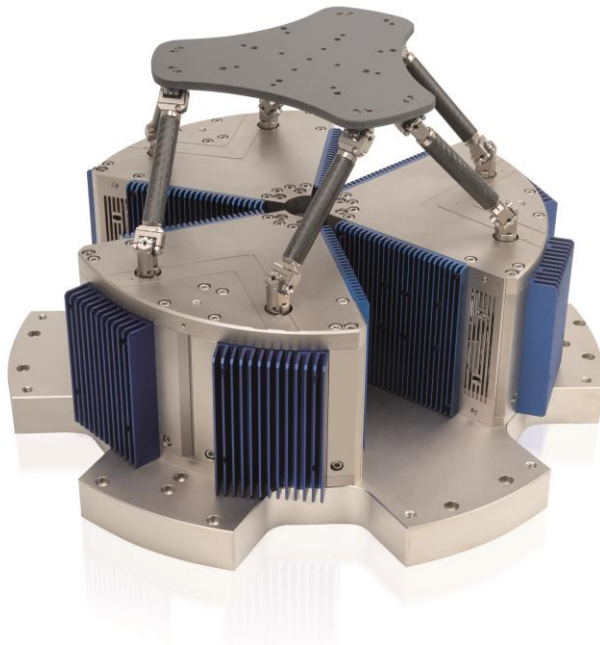


6-Axis Motion Hexapod

Magnetic Direct Drive for High Velocity



H-860

- High velocity and dynamics
- Minimal moved mass and inertia
- Velocity up to 250 mm/s
- Precise path tracking
- Friction-free voice coil drive

Thanks to its excellent dynamic properties, the H-860 is ideally suited for motion simulation. It is used in test systems, e.g. for image stabilization in cameras and mobile devices. Further fields of application include quality assurance of camera test systems and image stabilization software; vibration simulation, eye tracking, simulation of human and artificial motion.

The friction-free drive design is based on voice coils drives and flexure guides. The struts and platform are made of carbon fiber for minimal moved mass and inertia.

Parallel-kinematic 6-axis system

Parallel-kinematic design for six degrees of freedom making it significantly more compact and stiffer than serial-kinematic systems, no moved cables.

Precise running of predefined motion profiles with high path accuracy: Sine curves and freely definable trajectories.

PIMag® voice coil

Voice coil drives consist of two essential components: A permanent magnet and a coil that are located in the air gap of the magnetic field. Thanks to their low weight and friction-free drive principle, voice coil drives are particularly suitable for applications that require high dynamics and high velocities at limited travel ranges. High scan frequencies and precision positioning are also possible with these drives, because they are free of the effects of hysteresis.

Specifications

Motion and positioning	H-860.S2H	Unit	Tolerance
Active axes	X, Y, Z, θ_x , θ_y , θ_z		
Travel range* in X, Y, Z	±7.5	mm	
Travel range* in θ_x , θ_y , θ_z	±4	°	

Actuator design resolution	5	nm	
Minimum incremental motion in X, Y	1	μm	typ.
Minimum incremental motion in Z	1	μm	typ.
Minimum incremental motion in $\theta_x, \theta_y, \theta_z$	9	μrad	typ.
Backlash in X, Y	0.2	μm	typ.
Backlash in Z	0.06	μm	typ.
Backlash in θ_x, θ_y	4	μrad	typ.
Backlash in θ_z	4	μrad	typ.
Unidirectional repeatability in X, Y	±0.5	μm	typ.
Unidirectional repeatability in Z	±0.5	μm	typ.
Unidirectional repeatability in θ_x, θ_y	±9	μrad	typ.
Unidirectional repeatability in θ_z	±9	μrad	typ.

Dynamic properties	H-860.S2H	Unit	Tolerance
Velocity in X, Y, Z	250	mm/s	max.
Max. frequency	30	Hz	
Amplitude-frequency product in X, Y, Z	30	mm·Hz	
Amplitude-frequency product in $\theta_x, \theta_y, \theta_z$	15	°·Hz	
Amplitude error	10	%	max.
Phase error	60	°	max.

Mechanical properties	H-860.S2H	Unit	Tolerance
Stiffness in X, Y	0.7	N/μm	
Stiffness in Z	8	N/μm	
Load capacity (horizontal base plate / any orientation)	1	kg	max.
Motor type	Voice Coil		

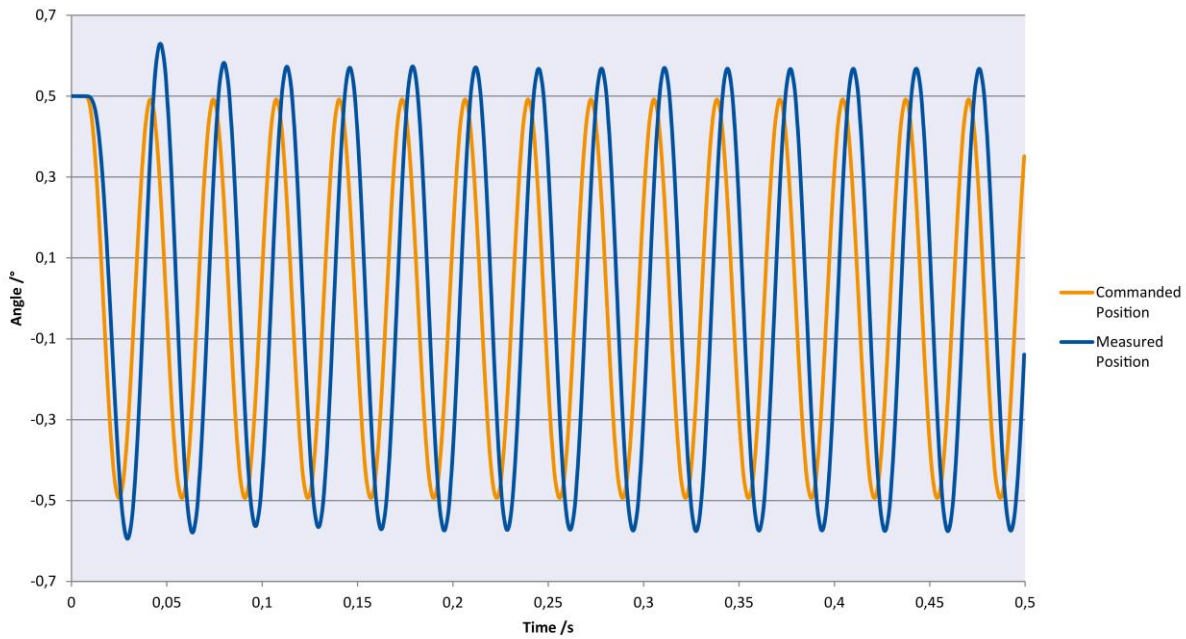
Miscellaneous	H-860.S2H	Unit	Tolerance
Operating temperature range	0 to 50	°C	
Material	Stainless steel, aluminum		
Mass	30	kg	±5 %
Power consumption	300	W	max.
Recommended controller	C-887.5x		

Technical data specified at 20±3 °C.

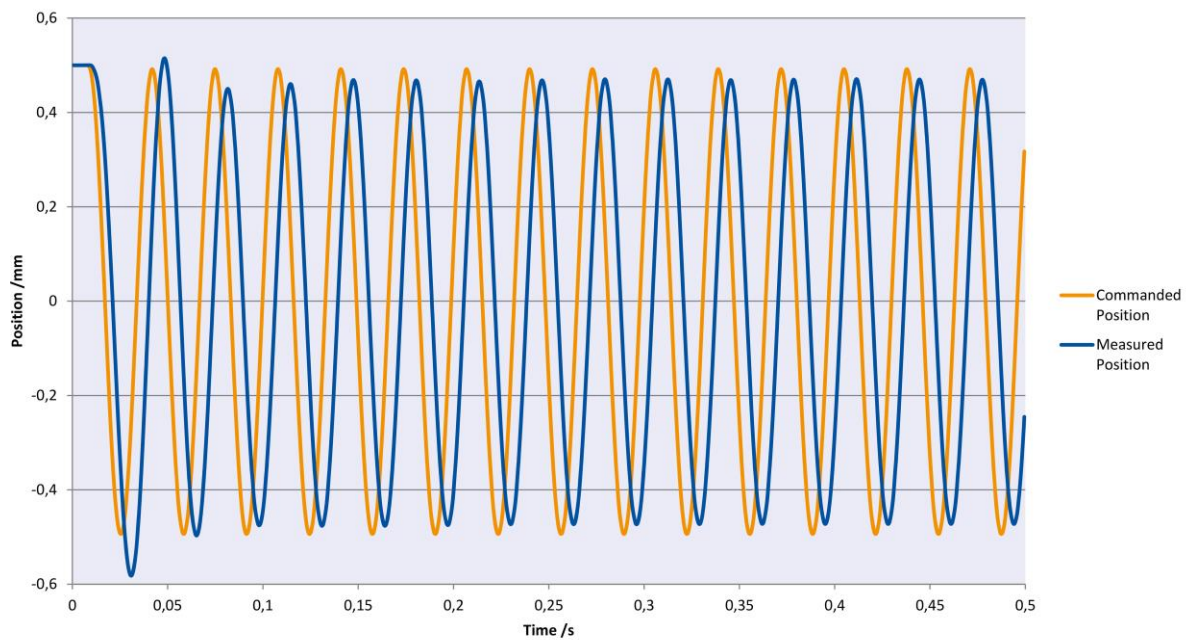
* The travel ranges of the individual coordinates (X, Y, Z, $\theta_x, \theta_y, \theta_z$) are interdependent. The data for each axis in this table shows its maximum travel range, where all other axes and the pivot point are at the reference position.

Ask about customized versions.

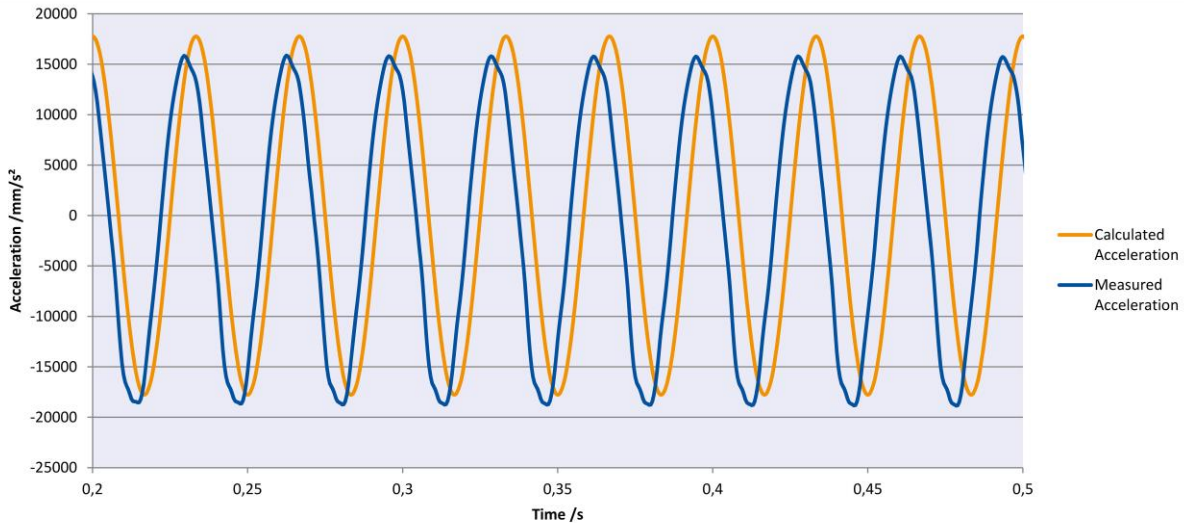
Drawings / Images



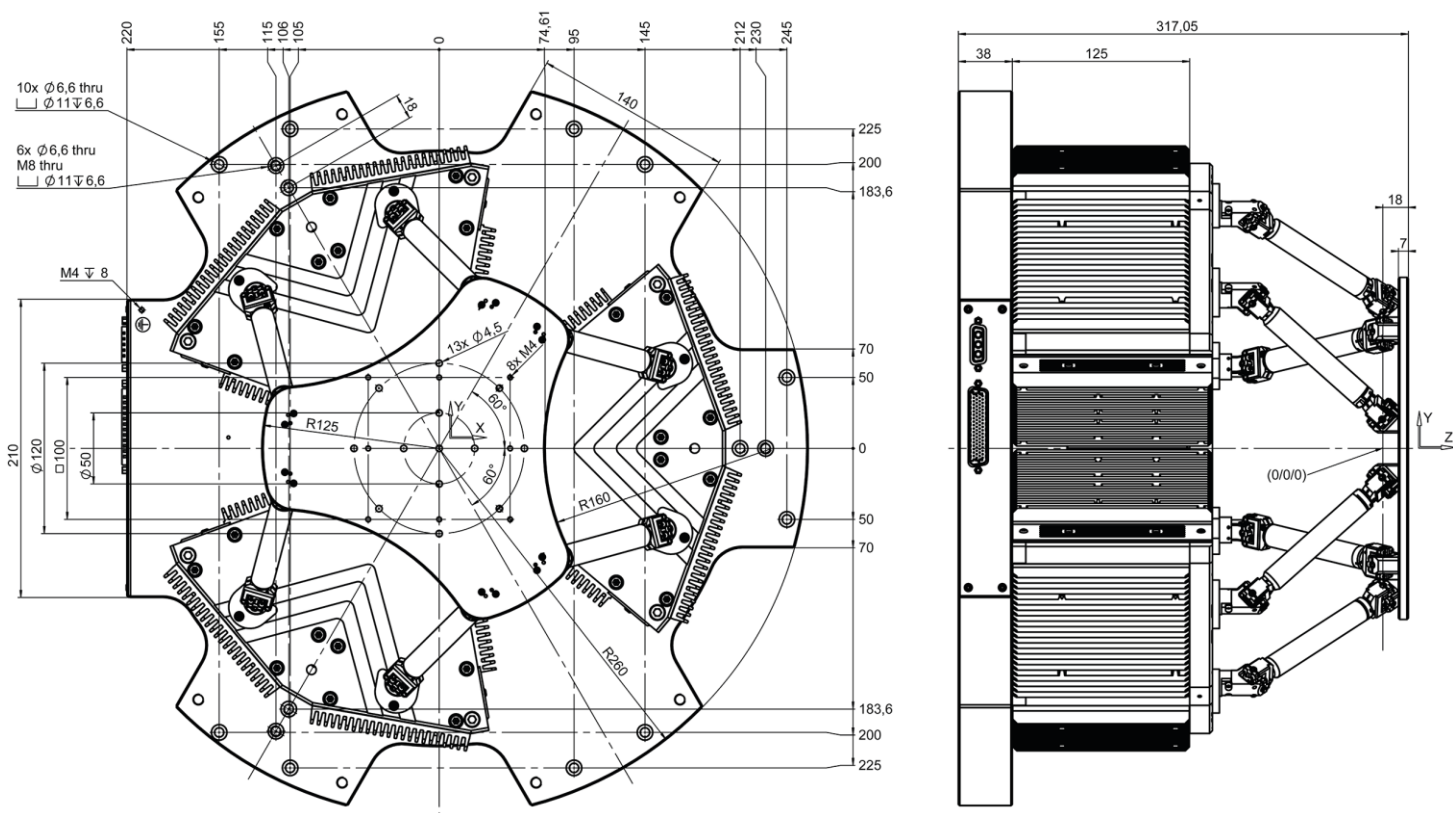
Sinusoidal oscillation with 30 Hz in ϑ_x . The H-860 follows the specified trajectory precisely.



Sinusoidal oscillation with 30 Hz in Z. The H-860 follows the specified trajectory precisely.



Sinusoidal oscillation with 30 Hz in Z, amplitude 0.5 mm. Due to the high dynamics and mass being moved, the H-860 can simulate accelerations precisely. The acceleration was measured in Z direction with an external acceleration sensor directly at the motion platform.



H-860.S2H, dimensions in mm

Ordering Information

H-860.S2H

High dynamics Motion Hexapod microrobot, voice coil drives, 1 kg load capacity, 250 mm/s max. velocity, flexures, high-performance power supply, 3 m cable set