

6-Axis Hexapod

FOR LOADS OF UP TO 250 KG



H-850

- Load capacity to 250 kg
- Repeatability to $\pm 0.2 \mu\text{m}$
- Travel ranges to 100 mm / 60°
- Actuator resolution to 5 nm
- MTBF 20,000 h

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 versions to 10^{-6} hPa are available

Drive variants

H-850.H1x with DC gear motors for heavy loads

H-850.G1x with powerful DC motors for higher velocity. Heavy-duty, ultra-high-resolution bearings for 24/7 applications

Powerful digital controller, open software architecture

User-defined, stable pivot point, software-selectable. Positions commanded in Cartesian coordinates. Macro programming. Open source LabVIEW driver set. Work space simulation software. Virtual Hexapod machine software. Optional: Collision avoidance software (external obstacles).

H-850.xx1 includes C-887.11, 6D vector motion controller plus 2 additional servo axes. Options:

- Analog interfaces/photometer cards for visible light (F-206.VVU) or the infrared light range (F-206.iiU)
- F-206.NCU fast piezo nano-alignment system for alignment with nanometer precision

H-850.xx2 includes C-887.21 compact 6D vector motion controller

Fields of application

Research and industry, standard and vacuum environments. For astronomy, optics positioning, aviation and aerospace

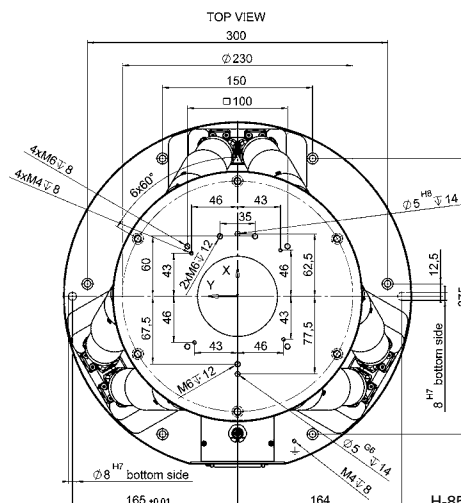
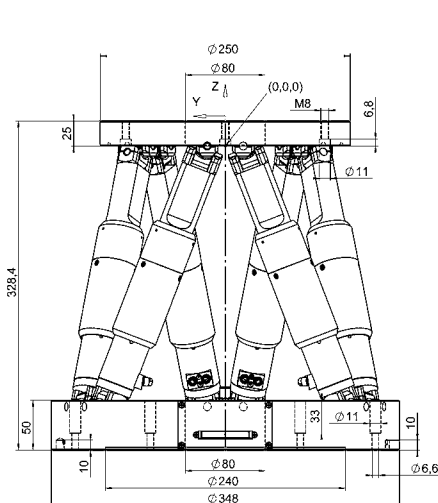
	H-850.H1x	H-850.G1x	Unit	Tolerance
	for higher loads and holding forces	for higher velocity and precision		
Active axes	X, Y, Z, θ_x , θ_y , θ_z	X, Y, Z, θ_x , θ_y , θ_z		
Motion and positioning				
Travel range* X, Y	±50	±50	mm	
Travel range* Z	±25	±25	mm	
Travel range* θ_x , θ_y	±15	±15	°	
Travel range* θ_z	±30	±30	°	
Single-actuator design resolution	0.005	0.05	µm	
Min. incremental motion X, Y	1	1	µm	typ.
Min. incremental motion Z	0.5	0.5	µm	typ.
Min. incremental motion θ_x , θ_y , θ_z	5	5	µrad	typ.
Backlash X, Y	4	5	µm	typ.
Backlash Z	1	1.5	µm	typ.
Backlash θ_x , θ_y	15	25	µrad	typ.
Backlash θ_z	30	45	µrad	typ.
Repeatability X, Y	±1	±0.5	µm	typ.
Repeatability Z	±0.3	±0.2	µm	typ.
Repeatability θ_x , θ_y	±5	±3	µrad	typ.
Repeatability θ_z	±9	±6	µrad	typ.
Max. velocity X, Y, Z	0.5	8	mm/s	
Max. velocity θ_x , θ_y , θ_z	6	100	mrad/s	
Typ. velocity X, Y, Z	0.3	5	mm/s	
Typ. velocity θ_x , θ_y , θ_z	3	50	mrad/s	
Mechanical properties				
Stiffness X, Y	7	7	N/µm	
Stiffness Z	100	100	N/µm	
Load (base plate horizontal / any orientation)	250 / 50	50 / 20	kg	max.
Holding force, de-energized (base plate horizontal / any orientation)	2000 / 500	250 / 85	N	max.
Motor type	DC motor, gearhead	DC motor, gearhead		
Miscellaneous				
Operating temperature range	-10 to 50	-10 to 50	°C	
Material	Aluminum	Aluminum		
Mass	17	17	kg	±5%
Cable length	3	3	m	±10 mm

Vacuum versions to 10^{-6} hPa are available under the following ordering number: H-850.xV. Specifications for vacuum versions can differ.

Technical data specified at $20 \pm 3^\circ\text{C}$. 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, where all other axes are at their zero positions. If the other linear or

rotational coordinates are not zero, the available travel may be less.



H-850, dimensions in mm