# 6-Axis Hexapod

## HIGH VELOCITY, MEDIUM LOAD, AFFORDABLE

## H-840

- Load capacity to 30 kg
- Travel ranges to 100 mm / 60°
- Actuator resolution to 16 nm
- Repeatability to ±0.4 µm
- MTBF 20,000 h
- Velocity to 50 mm/s

**Precision-class 6-axis 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

**Drive variants**

H-840.G1x with DC gear motors

H-840.D1x with powerful DC motors for higher velocity

**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-840.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

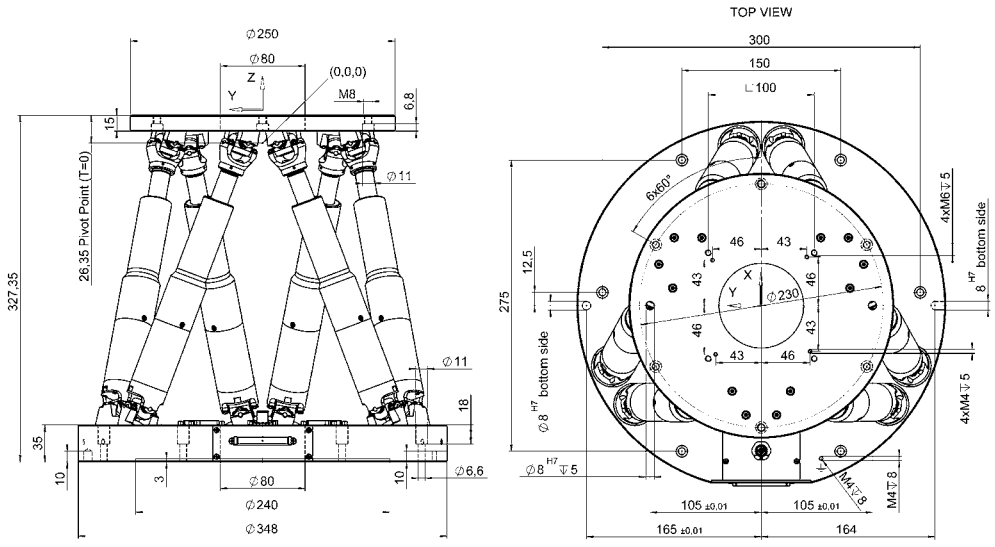
H-840.xx2 includes C-887.21 compact 6D vector motion controller

**Fields of application**

Research and industry. For micromanipulation, laser and optics alignment, biotechnology, tool control

| | H-840.G1x | H-840.D1x | Unit | Tolerance |
|---|---|---|---|---|
| | for higher resolution and load | for higher velocity | | |
| Active axes | X, Y, Z, $\theta_X$, $\theta_Y$, $\theta_Z$ | X, Y, Z, $\theta_X$, $\theta_Y$, $\theta_Z$ | | |
| **Motion and positioning** | | | | |
| Travel range* X, Y | ±50 | ±50 | mm | |
| Travel range* Z | ±25 | ±25 | mm | |
| Travel range* $\theta_X$, $\theta_Y$ | ±15 | ±15 | ° | |
| Travel range* $\theta_Z$ | ±30 | ±30 | ° | |
| Single-actuator design resolution | 0.017 | 0.5 | µm | |
| Min. incremental motion X, Y | 1 | 3 | µm | typ. |
| Min. incremental motion Z | 0.5 | 1 | µm | typ. |
| Min. incremental motion $\theta_X$, $\theta_Y$, $\theta_Z$ | 5 | 5 | µrad | typ. |
| Backlash X, Y | 7 | 7 | µm | typ. |
| Backlash Z | 2 | 2 | µm | typ. |
| Backlash $\theta_X$, $\theta_Y$ | 30 | 30 | µrad | typ. |
| Backlash $\theta_Z$ | 60 | 60 | µrad | typ. |
| Repeatability X, Y | ±0.5 | ±0.5 | µm | typ. |
| Repeatability Z | ±0.4 | ±0.4 | µm | typ. |
| Repeatability $\theta_X$, $\theta_Y$ | ±7 | ±7 | µrad | typ. |
| Repeatability $\theta_Z$ | ±12 | ±12 | µrad | typ. |
| Max. velocity X, Y, Z | 2.5 | 50 | mm/s | |
| Max. velocity $\theta_X$, $\theta_Y$, $\theta_Z$ | 30 | 600 | mrad/s | |
| Typ. velocity X, Y, Z | 2 | 30 | mm/s | |
| Typ. velocity $\theta_X$, $\theta_Y$, $\theta_Z$ | 20 | 300 | mrad/s | |
| **Mechanical properties** | | | | |
| Load (base plate horizontal / any orientation) | 30 / 10 | 10 / 3 | kg | max. |
| Holding force, de-energized (base plate horizontal / any orientation) | 100 / 25 | 15 / 5 | N | max. |
| Motor type | DC motor, gearhead | DC motor | | |
| **Miscellaneous** | | | | |
| Operating temperature range | -10 to 50 | -10 to 50 | °C | |
| Material | Aluminum | Aluminum | | |
| Mass | 12 | 12 | kg | ±5% |
| Cable length | 3 | 3 | m | ±10 mm |

Technical data specified at 20±3°C.
Ask about custom designs!
* 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, 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-840, dimensions in mm