

New Hexapod Targets Medium-Load, Ultra-Precision Applications

Six-degree-of-freedom positioning with linear travels to 60 mm, angular travels to 30°, and payloads up to 45 kg



Ultra-precision design with guaranteed positioning accuracy specifications

Minimum incremental motion to 20 nm in XYZ and 0.02 μ rad in $\theta_x\theta_y\theta_z$

Powerful controls and software with visualization of work and tool coordinate systems

Aerotech's HexGen™ hexapods represent a significant advance in six-degree-of-freedom positioning performance. The newest member of the HexGen family, the HEX300-230HL, is targeted at medium-load, ultra-precision applications ranging from sensor testing to synchrotron sample manipulation. Aerotech's HexGen hexapods are the only hexapods on the market today that provide guaranteed positioning accuracy specifications below 5 μ m.

Superior Structural Design

The HEX300-230HL is actuated with six high-accuracy struts built with precision preloaded bearings, ball screws, and drive components. Unlike competitive hexapods driven by DC brush servomotors, the HEX300-230HL is driven by Aerotech's AC brushless, slotless servomotors that maximize its performance and longevity. Directly coupling the AC brushless servomotors to the ball screw results in increased drive stiffness, higher positioning accuracy, and better minimum incremental motion (20 nm in XYZ and 0.2 μ rad for $\theta_x\theta_y\theta_z$), compared to competitive designs using belts, gearheads, or compliant couplings. Specially-engineered strut pivot-joints provide low friction and high stiffness, enhancing the hexapod's overall performance. The HEX300-230HL's superior structural design offers the user a generous load capacity of up to 45 kg.

Design Flexibility

The HEX300-230HL's platform and base can be easily modified with user-specific features or mounting patterns. It features a 100 mm diameter clear aperture in the platform, while a 60 mm diameter clear aperture in the base allows workpiece access from the bottom. The base mounting holes adapt directly to English and metric optical tables.

Vacuum Options

Aerotech hexapods can be vacuum-prepared for demanding applications such as synchrotron sample or

optics manipulation, semiconductor manufacturing and inspection, or satellite sensor testing.

Powerful Controls and Software

Driving the HEX300-230HL is Aerotech's award-winning A3200 motion control software. Built on years of experience with difficult kinematics applications, the A3200 controller allows easy programming and control of the hexapod in any user-defined coordinate system.

Aerotech's HexSim™ software gives users the ability to easily visualize and simulate the available workspace. Tight integration between HexSim™ and the A3200 motion controller provides real-time motion visualization in any user-defined coordinate system. An intuitive graphical interface permits selection of the active coordinate system for easy virtual pivot-point programming and motion.

For further information, please contact Steve McLane at 412-967-6854 (direct), or via e-mail at smclane@aerotech.com. In addition, the HEX300-230HL series data sheet is available at: <https://www.aerotech.com/product-catalog/hexapods/hexgen-hex300-230hl.aspx>

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About Aerotech - Dedicated to the Science of Motion

Since 1970, Aerotech has designed and manufactured the highest performance motion control, positioning tables/stages, and positioning systems for our customers in industry, government, science, and research institutions around the world. Aerotech's precision motion control products provide the critical performance for today's demanding applications in markets such as medical device and life sciences, semiconductor and flat panel, photonics, automotive, data storage, laser processing, military/aerospace, electronics manufacturing, test, assembly, research and development, and other markets requiring high precision, high throughput motion solutions.

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