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## Hexapod Six-DOF Positioning System

# HexGen<sup>®</sup> HEX300-210HL

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### Expanded capabilities. Guaranteed precision.

The HEX300-210HL hexapod offers many improvements and enhancements over its predecessor, making 6-DOF positioning more capable and accessible than ever before. Now with substantially increased travel range and payload capacity, HEX300-210HL continues to provide industry-leading minimum incremental motion performance and high speed capabilities—along with guaranteed accuracy and repeatability. Plus, with only two cables to manage, this hexapod integrates effortlessly into subsystems and machines with Aerotech's Automation1 motion control platform via the [HXA4](#) or [iHXA4](#) compact 6-axis hexapod drives.

### Key Applications

The HEX300-210HL is the premier mid-size, high-performance hexapod for many demanding applications, including:

- ◆ Optics manufacturing, inspection & optical alignment
- ◆ Photonic device manipulation, alignment & packaging
- ◆ Sensor manufacturing, testing, calibration & qualification
- ◆ Semiconductor manufacturing & inspection
- ◆ Electro-optics testing & qualification
- ◆ Synchrotron & beamline sample manipulation

### KEY FEATURES:

- ◆ **COST-EFFECTIVE**, second-generation design—now with **50% HIGHER LOAD CAPACITY & 35% GREATER TRAVEL RANGE**
- ◆ **GUARANTEED PERFORMANCE**—accuracy & bidirectional repeatability
- ◆ High speeds up to 50 mm/s & 30°/s **INCREASE PROCESS THROUGHPUT**
- ◆ Efficient **TWO-CABLE DESIGN** simplifies system wiring & integration
- ◆ Ultra-robust design provides **OUTSTANDING RELIABILITY** in labs & 24/7 production environments
- ◆ **VACUUM-COMPATIBLE** variants available
- ◆ Easily perform **COORDINATED MOTION WITH OTHER AXES** (servo, stepper, galvo & more) with Aerotech controls

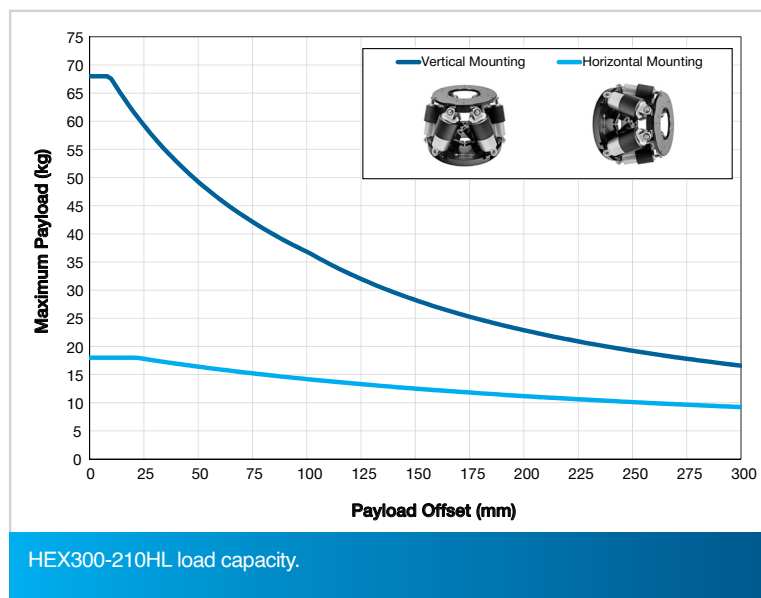
## HEX300-210HL SPECIFICATIONS

Mechanical Specifications		HEX300-210HL				
Axis	X	Y	Z	A ( $\theta_x$ )	B ( $\theta_y$ )	C ( $\theta_z$ )
Travel <sup>(1)</sup>	72 mm	78 mm	32 mm	18 deg		38 deg
Axis Positioning Accuracy Over Full Travel - ULTRA <sup>(2,3,4)</sup>	$\pm 2 \mu\text{m}$		$\pm 0.75 \mu\text{m}$	$\pm 10 \mu\text{rad}$		$\pm 15 \mu\text{rad}$
Resolution (Minimum Incremental Motion)	15 nm			0.2 $\mu\text{rad}$		
Bidirectional Repeatability, pk-pk <sup>(2,3)</sup>	$\pm 1 \mu\text{m}$		$\pm 0.35 \mu\text{m}$	$\pm 5 \mu\text{rad}$		$\pm 7.5 \mu\text{rad}$
Unidirectional Repeatability, pk-pk	$\pm 0.5 \mu\text{m}$		$\pm 0.2 \mu\text{m}$	$\pm 2.5 \mu\text{rad}$		$\pm 3.8 \mu\text{rad}$
Maximum Speed <sup>(5,6)</sup>	50 mm/s		25 mm/s	15 deg/s		30 deg/s
Load Capacity, All Positions <sup>(7)</sup>	Vertical	68 kg				
	Horizontal	18 kg				
Holding Capacity, De-Energized <sup>(8)</sup>	68 kg					
Stage Mass	12 kg					
Material	Anodized Aluminum and Steel					

**Notes:**

1. Travels are mutually exclusive. Consult our HexGen Hexapod Sizer for detailed workspace sizing.
2. Measured with single-axis moves 50 mm above the moving platform. Results may vary with loading conditions and workpoint location.
3. Translational (X, Y, Z) and angular (A, B, C) on-axis performance certified as standard.
4. Guaranteed accuracy performance requires the -PL4 metrology option to be configured with the hexapod.
5. Requires the selection of an appropriate amplifier with sufficient voltage and current.
6. Maximum speed in vacuum environments is application dependent. Contact factory for details.
7. With centered loading. Contact factory for payloads exceeding the published values.
8. With vertical mounting orientation (horizontal base plate) and centered loading.

Electrical Specifications	HEX300-210HL
Drive System	Precision Ball Screw, Brushless Servomotor
Feedback	Noncontact Incremental Encoders
Maximum Bus Voltage	48 VDC recommended for typical operation; 100 VDC max.
Limit Switches	5 V, Normally Closed
Recommended Controller Hardware	<a href="#">Automation1-HXA4</a> (PC-based control) <a href="#">Automation1-iHXA4</a> (Drive-based control)



## HEX300-210HL SERIES ORDERING OPTIONS

### Vacuum Preparation (Optional)

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**-HV** High vacuum preparation to  $10^{-6}$  Torr

### Mounting Plate (Optional)

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**-MP** Breadboard mounting plate

### Performance Grade (Required)

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**-PL1** Base performance; includes only bidirectional repeatability plots for X, Y, Z, A, B, C axes

**-PL4** Ultra high-accuracy performance; includes mapping and calibration with accuracy & bidirectional repeatability plots for X, Y, Z, A, B, C axes

### Integration (Required)

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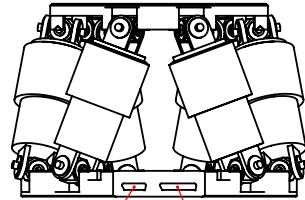
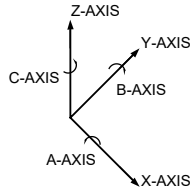
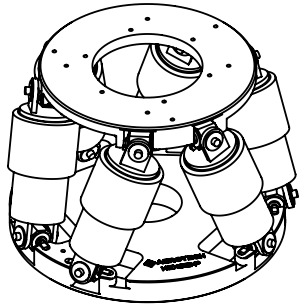
Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

**-TAS Integration - Test as system**

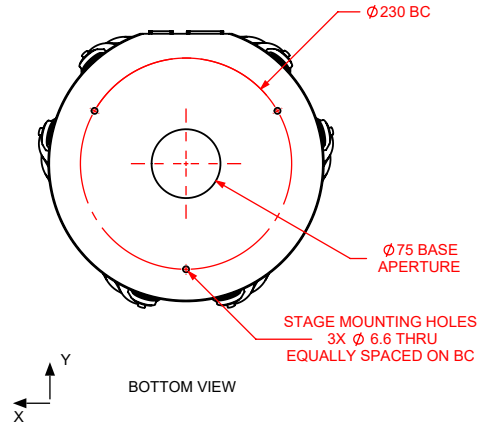
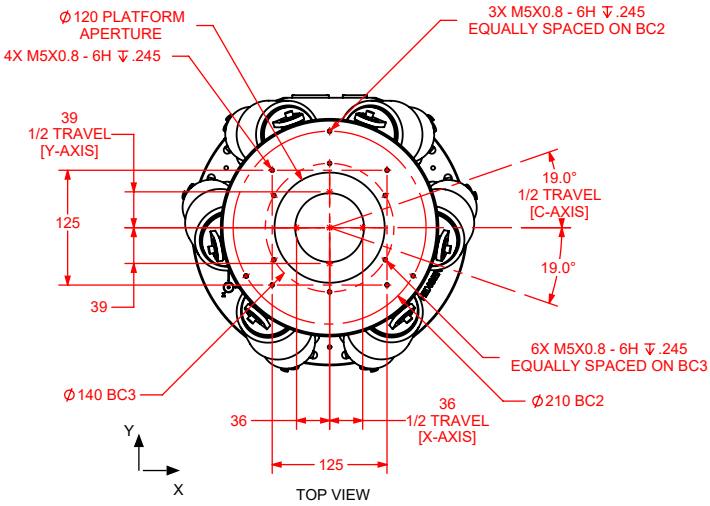
Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller and stage). This includes parameter file generation, system tuning and documentation of the system configuration.



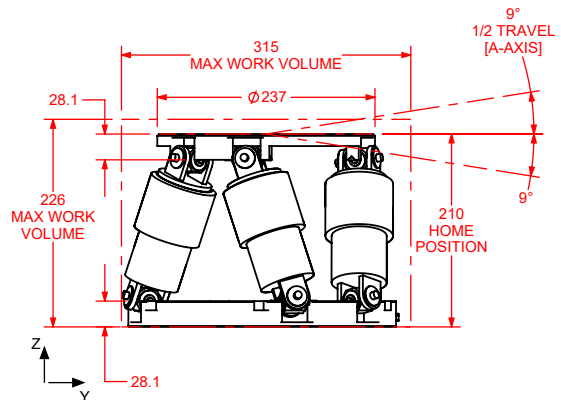
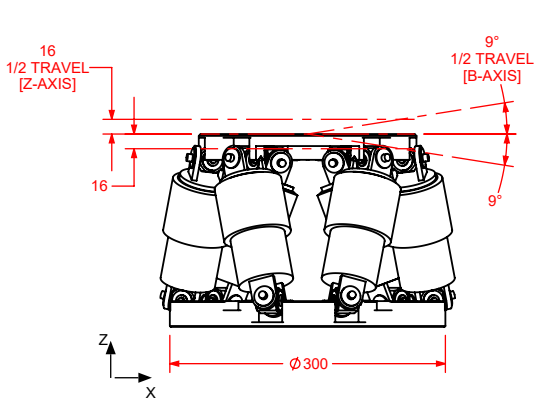
# HEX300-210HL DIMENSIONS



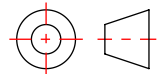
FEEDBACK CONNECTOR PORT  
MOTOR CONNECTOR PORT



NOTE: ALL TRAVEL SPECIFIED AS SINGLE-AXIS MOVES FROM HOME POSITIONS



DIMENSIONS: MILLIMETERS



# HEX300-210HL MOUNTING PLATE

