

ALIO INDUSTRIES

NANO PRECISION VACUUM ROBOTICS AND STAGES

ALIO Industries designs and manufactures high resolution precision parallel and serial kinematic motion platforms for demanding nanometer resolution vacuum applications. The AI-Hexapod and AI-Tripod are patent pending parallel kinematic solutions for OEM and end user applications requiring nanometer precision. Precision linear and rotary stages can be stacked in various configuration to satisfy multi-axis applications.

Features/Benefits

Flexibility:

- Modular design linear and rotary stages for multi-axis serial kinematics.
- 3 and 6 DOF parallel kinematics increase repeatability.
- Compact designs for minimum footprints.
- 6 axis robotic solutions with controller and GUI for tool center point programming.

Price and Performance

- High-resolution non-contact encoders for exceptional repeatability.
- Ceramic servo motors provide high speed with fast settling time and no servo dither.
- Stainless steel precision cross roller bearings assure high accuracy with long life.
- Vacuum rated down to $10e-10$ Torr with low magnetic fields.
- CE compliant components and assemblies.
- Optional stainless steel structure.



[AI-HEX-HR2-UHV Vacuum Hexapod](#)



[AI-HR2-2500E-UHV Linear Stage](#)



[Open Frame Integrated XY Stage](#)



[AI-80R-UHV \(SS\)](#)



[AI-40R-D-HV](#)

Linear Stage Specifications

Stroke	12 mm to 400 mm
Motor Type	Ceramic Servo Motor & DC Linear Motor
Force	3.5 N to 70 N (Higher forces available with DC motor)
Resolution	1 nm to 5 micron
Repeatability	8 nm to 10 micron

Rotary Stage Specifications

Motion	Standard Rotary, Goniometric and Gimbal Motion
Angular Stroke	Up to 360 degrees continuous
Repeatability	0.05 arc sec to 1 arc sec
Accuracy	1 arc sec to 5 arc sec

Hexapod & Tripod

Work envelope	15 mm cube to 200 mm cube
Resolution	5 nm
Repeatability	50 nm to 1 micron at tool center point

STANDARD VACUUM COMPONENTS:

- Ceramic servo or DC linear motors and amps.
- High resolution non-contact optical encoders.
- Ultra-precision stainless steel linear crossed roller bearings.
- Precision 6061 aluminum enclosure.
- Vacuum chamber compatible to 10^{-7} Torr
- Bake out up to 130 degrees C

OPTIONAL FEATURES:

- High-end motion controllers.
- Vacuum chamber compatible to 10^{-10} Torr
- Servo/D.C. mode amplifier for 1 nm steps.
- Non-magnetic or low magnetic fields.
- Custom products for OEM applications.
- Alternate materials and finishes available.

Environmental:

Operating Temperature: 0 to 100 degrees C

Humidity: 10 to 80% non-condensing

Standard Stage Products Electrical:

Amplifier Differential Analog Input: +/- 10V

Amplifier input : 24 VDC

Encoder output/input: analog or digital / +5 VDC



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