ALIO 6-D

6-D Nano Precision Motion Systems

ALIO's Next Generation 6-D Motion Systems are an Order of Magnitude More Precise than Any Other Commercially Available Motion Platform

ALIO True Nano® Specifications

- ❑ Six Degrees of Precision Motion
- ❑ Motion Exactly Like a Hexapod but More Precise
- ❑ Travel Ranges, Standard
  - ❑ XY to 300mm Standard Travel
    - ❑ Consult ALIO for Longer Travels
  - ❑ Z to 100mm
  - ❑ Theta XY to +/- 17.5 degrees
  - ❑ Theta Z 360 degrees Continuous
- ❑ Velocity
  - ❑ microns/second
  - ❑ > 200 mm/s
- ❑ Bi-Directional Repeatability
  - ❑ Linear < 100nm per axis
  - ❑ Rotational < 0.4 arc-sec per axis
- ❑ Forward and Inverse Kinematic Equations
  - ❑ User Defined Tool Point Center
  - ❑ Extreme Velocity Control
  - ❑ Mathematical Path Control
- ❑ Controllers
  - ❑ High Precision
  - ❑ Ultra High Precision
  - ❑ G-Code Option
- ❑ MTBF > 40,000 hours

Applications

- ❑ Biotechnology
- ❑ Ink Jet Deposition
- ❑ Lithography
- ❑ Metrology
- ❑ Nano/Micro Assembly
  - ❑ Excellent for Precision Bonding
- ❑ Nano/Micro Machining
  - ❑ High Speed Spindle
  - ❑ Laser Machining
- ❑ Photonics Alignment and Assembly

ALIO will Provide
NIST Traceable Proof of Performance
Not Just Marketing Datasheets

ML10 GOLD STANDARD

ALIO True Nano®
NIST Traceable Proof

DOP 6

ALIO's passion has built a reputation for unmatched quality and performance with our nano-precision motion systems. ALIO's world leading performance is backed by our NIST referenced ML10 laser interferometer system from Renishaw.

ALIO True Nano Precision ®

ALIO Standard Configurable Systems

Standard Torque Motor Rotary Axes		
AI-TM-56R-62 360 deg. Continuous 0.65 kg mass	AI-TM-104R-80(-AB) 360 deg. Continuous 2.7 kg mass	AI-TM-208R-110* Under Tripod, Rotation Limited 11 kg mass

Standard Linear Motor Tripods			
AI-TRI-LM-600	AI-TRI-LM-2400	AI-TRI-LM-5500	AI-TRI-LM-10600
6 mm Z +/- 3 deg. 3 kg mass	24mm Z +/- 15 deg. 4.5 kg mass	55 mm Z +/- 14 deg. 11 kg mass	106 mm Z +/- 17.5 deg. 27 kg mass

Standard Metrology Grade XY Stage				
AI-LM-10000-XY	AI-LM-15000-XY	AI-LM-20000-XY	AI-LM-25000-XY	AI-LM-30000-XY
+/- 50 mm 13 kg mass	+/- 75 mm 16 kg mass	+/- 100 mm 28 kg mass	+/- 125 mm 52 kg mass	+/- 150 mm 75 kg mass

Tripod / Tripod-Rotary	Minimum XY Required
AI-TRI-LM-600	AI-LM-10000-XY
AI-TRI-LM-600-56R	AI-LM-10000-XY
AI-TRI-LM-2400	AI-LM-10000-XY
AI-TRI-LM-2400-56R	AI-LM-10000-XY
AI-TRI-LM-5500	AI-LM-15000-XY
AI-TRI-LM-5500-104R(-AB)	AI-LM-25000-XY
AI-TRI-LM-10600	AI-LM-20000-XY
AI-TRI-LM-10600-104R(-AB)	AI-LM-30000-XY

6-D Point Precision™

Let ALIO Help Configure Your System to Best Meet Your Application Needs

Specification*	ALIO Industries 6-D
XY Travel	+/- 50 mm to +/- 150 mm (Consult Factory for Longer Travel)
Z Travel	+/- 3 mm to +/- 53 mm (Consult Factory for Longer Travel)
Θx, Θy	+/- 3 deg. to +/- 17.5 (Consult Factory for Longer Travel)
Θz	360 deg. Continuous
Actuator Stroke	6 mm to 106 mm (Consult Factory for Longer Travel)
Actuator Resolution	5 nm, Standard
Minimum X Motion	20nm to 50 nm
Minimum Y Motion	20nm to 50 nm
Minimum Z Motion	20nm to 50 nm
Repeatability X	<< 100 nm
Repeatability Y	<< 100 nm
Repeatability Z	<< 100 nm
Minimum Θx, Θy, Θz	~ 1 µrad
Repeatability Θx, Θy, Θz	< +/- 2 µrad
Minimum Velocity	microns/sec
Maximum Velocity	200 mm/sec
Load Capacity	2 kg to 10 kg (Air Counter Balance)
Motor/Drive Train	Linear Servo Motor or Torque Servo Motor Direct Drive
Feedback	Optical Encoder
ZeroMet Encoder Scale Upgrade	Yes
Backlash	No
Hysteresis	No
Forward/Inverse Kinematics	Yes
Velocity Control	Yes
Mathematical Path Control	Yes
Controllers	High Precision / Ultra High Precision
G-Code	Optional
Software Interfaces	C++, VB, LabVIEW

*** Performance Application Dependent. Consult ALIO for Expectations Based on Specific Configuration and Payload.**