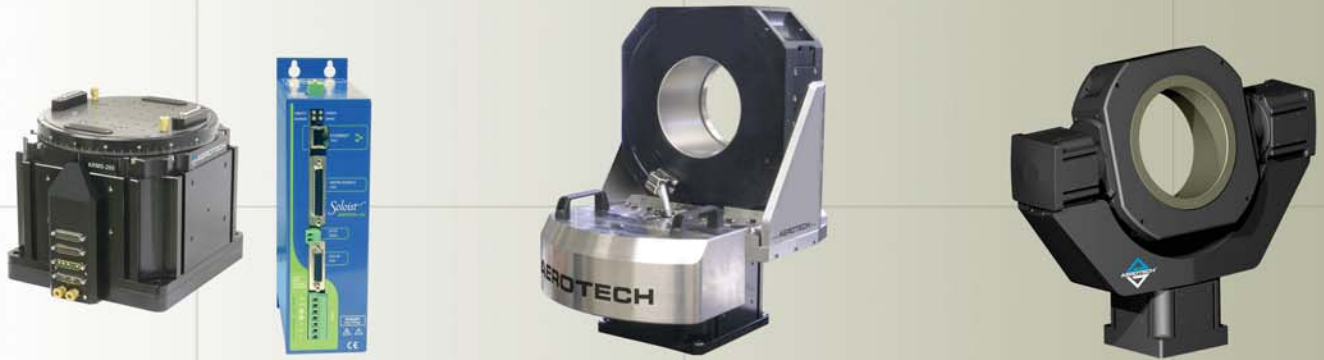


AEROTECH

*Advanced Electromechanical
Systems for
Aerospace – Defense – Government*



High Performance, Direct-Drive Motion Simulators



Multi-Axis Positioning, Tracking, Steering



Custom-Engineered Direct-Drive Pedestals



Dedicated to the Science of Motion

AEROTECH.COM

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Aerotech at a Glance



Corporate Headquarters,
Pittsburgh, PA USA



Aerotech UK



Aerotech Germany

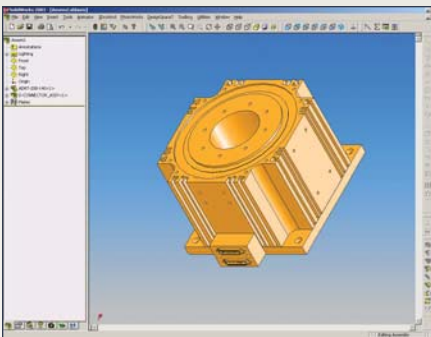


Aerotech Japan

Technically Superior Components... High Performance Sub-Assemblies... Best-In-Class Subsystems



Comprehensive Technical Support Services... High-Volume Manufacturing... Worldwide Service And Support

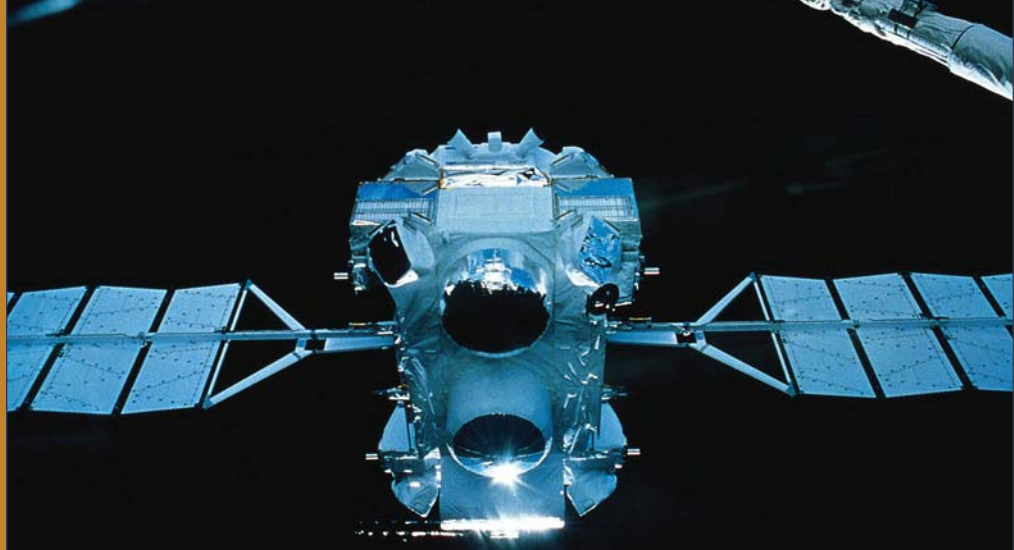


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Aerotech Precision Positioning Systems

**Providing Innovative
Systems Solutions for
Aerospace/Defense/
Government Laboratories/
Educational Institutions/
Research and Development**



*Aerotech high accuracy positioning systems
test the world's finest satellite sensors.*

For over 35 years, Aerotech has manufactured precision positioning and motion systems for businesses and organizations that require cutting-edge technologies and innovative systems. From ultra-high accuracy multi-axis air bearings to general-purpose linear and rotary systems, R&D organizations and manufacturing companies around the world depend on Aerotech's precision positioning systems for their most critical applications in system development and test. Our high-performance systems are designed for years of use with little or no maintenance for the lowest cost of ownership.

Aerotech has provided hundreds of solutions for high-accuracy systems including many for high vacuum (10^{-6} torr) and cleanroom environments. Our equipment is used for testing electro-optical systems, high-performance laser processing, materials testing and manufacturing, target tracking, satellite sensor calibration and verification, scanning, optical pointing, repeatability, and life-cycle testing for quality control. Using standard products where available, we also are able to customize our products with minimal development time. If you require a solution beyond the scope of our standard products, our engineering team can draw on its many areas of expertise to provide a complete solution suited to your specific application.

Highest Performance Gimbal Systems

We produce many single-axis rotary or multi-axis gimbal systems for optical testing, gyro testing, inertial navigation testing, and target tracking. These come in many sizes, accuracies, and payload capabilities to meet the most demanding requirements. When coupled with our controls, Aerotech gimbal systems perform high-accuracy angular positioning and scanning for characterization and test of multi-spectral sensors, inertial gyros, and missile seekers. Our AOM and AMG gimbals are also used for high accuracy, closed-loop target tracking with active and passive sensors, antennas, and telescopes.

Complete System Capability

Our linear and rotary air- and/or mechanical-bearing stages can be assembled into multi-axis systems for measuring component surfaces or positioning of payloads to sub-micron accuracy. Typical systems range from 25 mm travel to 1.5 meters of travel. Load capabilities of up to 455 kg (1000 lb) are not uncommon for our systems. We engineer, manufacture, and test all of our components and systems in our state-of-the-art manufacturing facilities which include a large, ISO 6 (class 1000) cleanroom as well as an environmental test capability. By providing a complete system solution, our customers' integration time, program risks, and development costs are significantly reduced.

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Motion Simulators/Positioners

Direct Drive

Aerotech rotary motion simulators are designed to induce angular rates, accelerations, and positions for testing of inertial navigation sensors, accelerometers, gyroscopes, avionics, and other angular rate sensing devices.

Precision Direct-Drive Rotary Position and Rate Tables

High capacity angular contact bearings

Highly accurate closed-loop control

Brushless, slotless motor for smooth motion with no cogging

Large selection of integrated, low-noise slip rings for customer signals and power

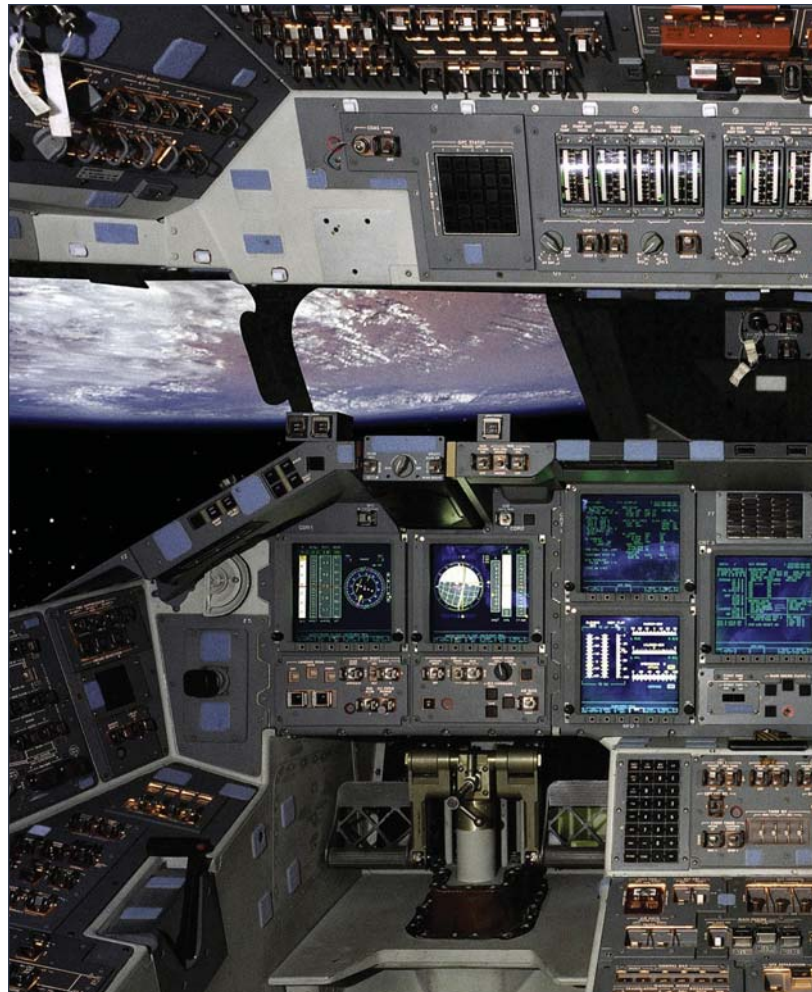
Multiple motor types for high speed or high torque configurations

Excellent runout and wobble performance

Dual liquid or gas ports

Low maintenance design

Position resolution to 0.000006°



ARMS Series

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Motion Simulators/Positioners

Direct Drive

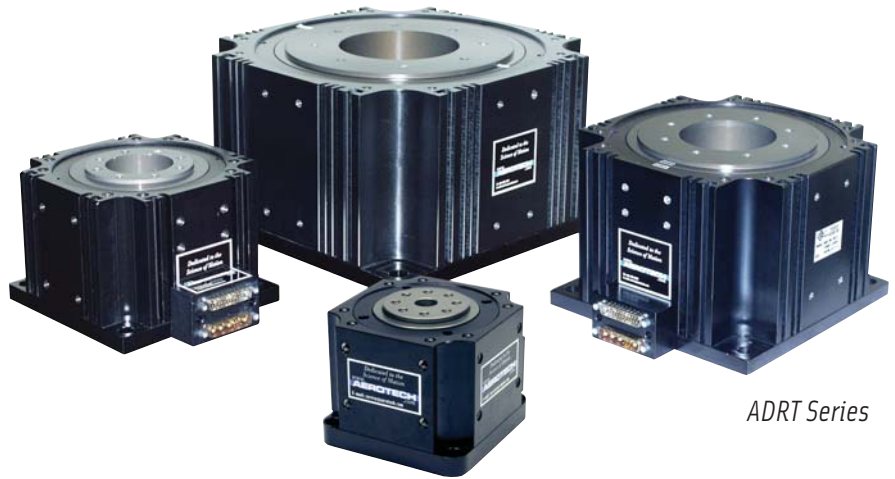
High Torque Output, Direct-Drive Rotary Stage

Cog-free brushless servomotor design for
outstanding velocity stability

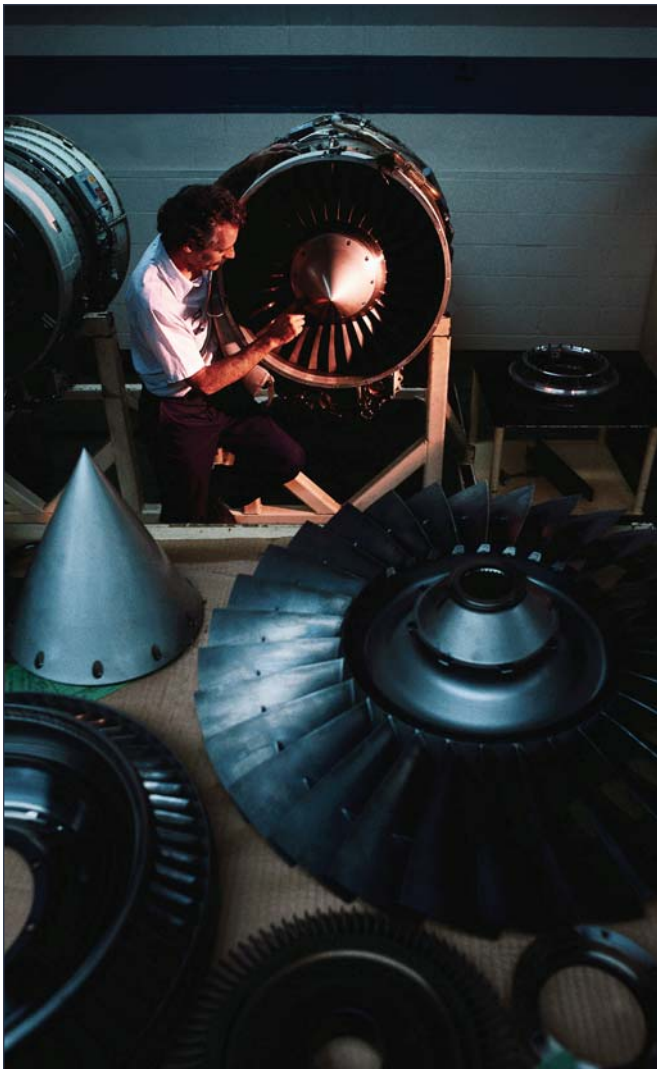
Large diameter clear aperture

High load capacity and high speed

15-48 μ rad accuracy



ADRT Series



Large Aperture, Direct-Drive Rotary Stage

100 mm, 150 mm, 200 mm, 250 mm, and 325 mm apertures

Axial load capacity of 300-1000 lb

Excellent accuracy and repeatability

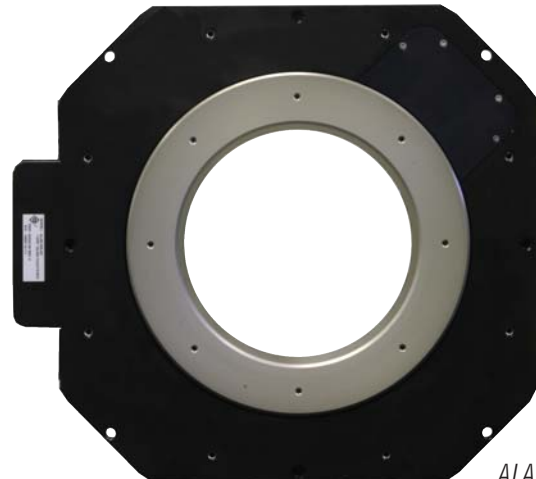
Cog-free motor provides smooth motion

No gear backlash

No accuracy changes over time from gear wear

45-300 rpm continuous rotation speed

Vac 10^{-6} torr compatible versions



ALAR Series

Aerotech's rotary stages are used in non-destructive testing of many types of precision engine components.

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Ultra-Precise, Low Profile, Direct-Drive Rotary Air-Bearing

Zero-cogging, slotless, brushless motor for outstanding velocity stability

Excellent error motion and wobble performance

Direct coupled, high-accuracy rotary encoder

Low profile, planar design

5 μ rad synchronous tilt error; 0.4 μ rad asynchronous tilt error

20 nm axial/radial runout

100 N to 950 N payload capacity



ABRS Series

Low Profile, Direct-Drive Rotary Stage

High torque output, direct-drive brushless servomotor

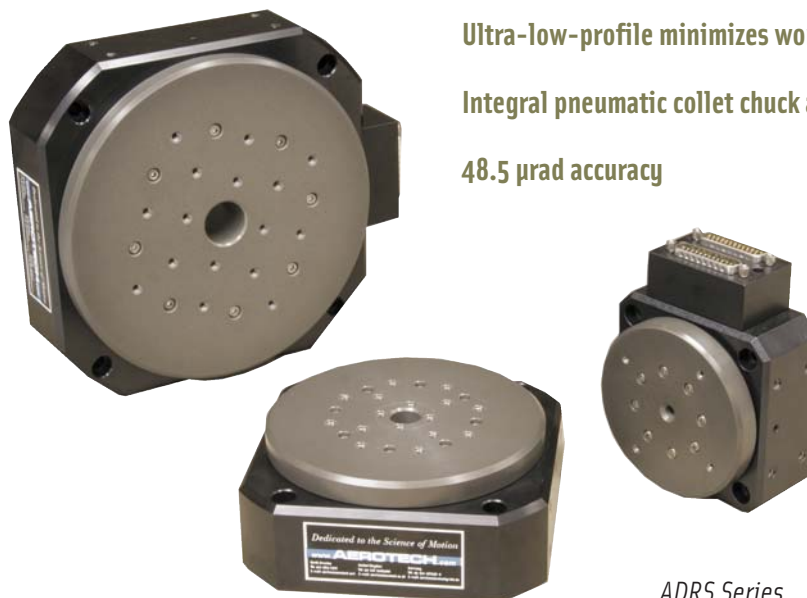
Cog free, slotless motor design for superior velocity stability

Direct coupled, high-accuracy rotary encoder

Ultra-low-profile minimizes working height

Integral pneumatic collet chuck available

48.5 μ rad accuracy



ADRS Series

www.aerotech.com

Multi-Axis Motion Simulators/Positioners

Direct Drive

These high accuracy motion systems are designed for superior multi-axis angular testing and calibration of electro-optic sensors, missile seeker gimbals, inertial navigation guidance units, as well as being used as target-tracking gimbal mounts. With our advanced controls and software, customers can rapidly integrate and test their products with these systems.



Large Aperture, 2-Axis Azimuth/Roll Gimbal

Direct drive with high resolution (0.03 μrad) and accuracy ($\pm 5 \mu\text{rad}$)

Large roll aperture allows payload to be mounted inside roll axis

100 mm to 325 mm apertures available

Azimuth slip ring; limited or unlimited travel available

Direct Drive, 2-Axis Azimuth/Elevation Gimbal

Limited or continuous azimuth and elevation travel

$\pm 10 \mu\text{rad}$ accuracy; 10 μrad orthogonality; 0.05 μrad resolution

Optional axis brakes and counterbalances

High speed/high torque for rapid motion capability

One-sided elevation axis for easy payload loading



2-Axis, Direct-Drive Azimuth/Elevation Pedestal Mount

High resolution (0.05 μrad) and accuracy ($\pm 15 \mu\text{rad}$)

Azimuth slip ring; limited or unlimited travel available

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High Performance, 3-Axis, Large Aperture, Direct-Drive Gimbal

100-325 mm roll aperture

Used for testing or calibration

Continuous or limited travel versions

Slip rings for customer signals and power

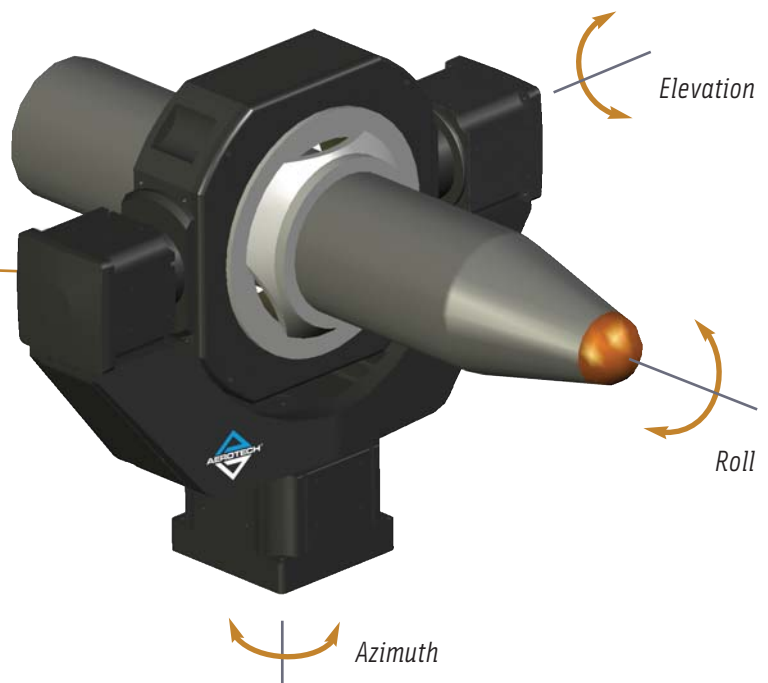
Direct drive with high resolution ($<0.03 \mu\text{rad}$) and accuracy ($\pm 5 \mu\text{rad}$)

Precision angular contact bearings with low wobble

No backlash or gear wear



With our extensive line of positioners, we can readily configure a system for unique payloads.



Large cylindrical payload can be moved accurately in azimuth, elevation, and roll.

Electro-optic sensor is at the center of all 3 rotation axes.

www.aerotech.com

Multi-Axis Motion Simulators/Positioners

Direct Drive

Aerotech's high-accuracy gimbals are used to test and calibrate high-performance imagers in air or vacuum environments.



AOM360D

High Accuracy, 2-Axis, Direct-Drive Gimbal

Continuous 360° rotation of both axes

High axis-positioning accuracy and repeatability
using inductosyn feedback

10 μ rad accuracy; 0.26 μ rad resolution

Low axis wobble and orthogonality

Direct drive, brushless, slotless servomotors

Cog-free design for outstanding velocity stability

Thermal stability better than 0.4 arc seconds/°C

Accommodates loads up to 500 mm diameter

Vacuum-compatible versions

Ultimate Precision, 2-Axis, Air-Bearing Gimbal

Direct drive, brushless, slotless motors

5 μ rad accuracy

Cleanroom compatible

<5 μ rad wobble

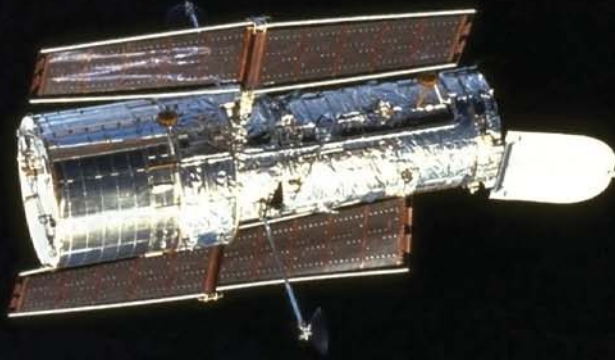
0.2 μ rad repeatability



ABMG

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Our gimbals have high resolution for tracking of satellites.

Low Profile or Heavy Duty Direct-Drive, 2-Axis Gimbals

Continuous 360° rotation of azimuth
and elevation including built-in slip ring

High-accuracy angular position and rate
capability

High axis stiffness for precise pointing

Direct drive, brushless servomotors result in zero
backlash

Cog-free design for outstanding velocity stability

Accommodate loads up to 200 mm in diameter
(AMG LP)

Accommodate loads up to 600 mm diameter (AMG)

0.2 to 0.87 μ rad resolution; 48 μ rad accuracy



AMG LP



AMG

www.aerotech.com

Multi-Axis Positioners

Gear Drive

2-Axis, Motorized-Drive Optical Mount

360° rotation in azimuth and elevation coarse travel

Excellent thermal stability and vibration stability

Standard models accept 152.4 mm through 609.6 mm optic diameters

Patented sub-arc-second resolution drive; 0.04 μ rad resolution; $\pm 4^\circ$ motorized travel; 360° field of regard

Negligible backlash and creep; non-marring set screws on retaining clips

Custom mounting designs for centering non-circular payloads

Vacuum compatible



2-Axis, Manual-Drive Optical Mount



$\pm 4^\circ$ fine adjustment travel

360° rotation in azimuth and elevation coarse travel

Excellent thermal and vibration stability

Standard models accept 152.4 mm through 609.6 mm optic diameters

Patented sub-arc-second resolution drive

Negligible backlash and creep

Non-marring set screws on retaining clips

Custom mounting designs for centering non-circular payloads

2.8-4.4 μ rad thimble gradations

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Compact, 2-Axis, Gear Drive, Azimuth and Elevation Optical Mount



- Continuous 360° elevation range; $\pm 180^\circ$ azimuth range
- Choice of high-resolution microstepping or servomotors
- Rectangular and circular cell models
- Custom, precision mounting designs are available for centering non-circular payloads
- Excellent solution for economical motorized tracking
- Up to 60°/s slewing
- 0.05° accuracy



High Precision, Differential Drive, Azimuth and Elevation Manual Optical Mount

- Patented drive provides sub-arc-second resolution
- Excellent thermal stability
- Non-marring set screws and rotating clips
- Optimized clear aperture at 45°
- Accepts NLA nested optic adapters
- Vacuum and low magnetic interference options
- 3.9-6.3 μ rad thimble gradations
- ± 2.5 to $\pm 4^\circ$ of travel



www.aerotech.com

Linear Motion Simulators/Positioners

Direct Drive



ACCU G

High-G Linear Accelerator

20 g acceleration capability

Up to 1 m of travel

7 m/s velocity

400 N continuous force

1590 N peak force



LMA

Linear Single- or Multi-Axis Direct-Drive Actuators

Travel up to 1 m

Velocity capability to 5 m/s

Acceleration capability to 5 g

Linear, brushless servomotor and noncontact encoder eliminate typical ball screw or belt maintenance

Force outputs from 32 N to 276 N

Counterbalance is available for vertical applications

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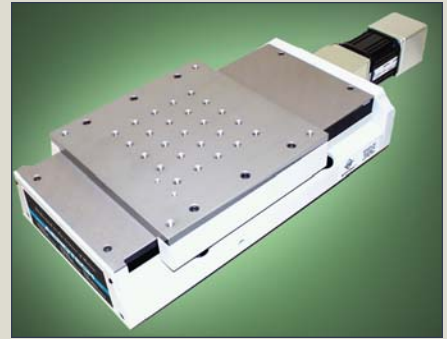
Linear Positioning Systems



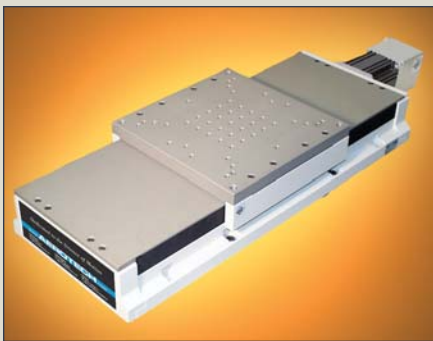
ALS130 Linear Motor Stage



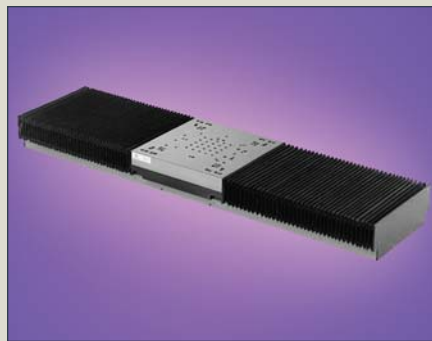
ALS25000 Sealed Linear Motor Stage



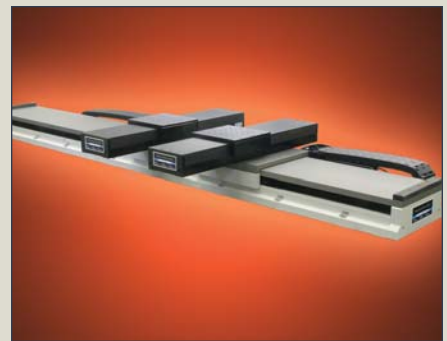
ATS2000 Ball-Screw Stage



ATS5000 High-Load, Ball-Screw Stage

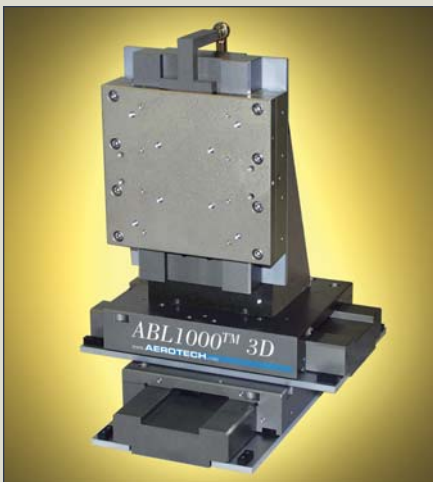


ATS500 Long Travel, Sealed Stage



ALS5000 Dual Carriage Stage

Linear Air-Bearings



ABL1000 3D Compact, Direct-Drive XYZ



ABL2000/ABL8000 Direct-Drive XY



ABL9000 High-Accuracy XY

See our website to view our complete line of linear and rotary stages. www.aerotech.com

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Custom Engineered Systems



ADRT-260/ADRT-200 Direct-Drive Gimbal



ADRT Direct-Drive AZ/EL



Vac 6 Linear Stages with Gimbal



ADR/ANT Direct-Drive Pitch/Yaw



ART320 Worm-Drive AZ/EL



Custom Worm-Drive AOM300 Gimbal



AOM130M/ART330 Worm-Drive Gimbal



AMG-160 Direct-Drive Gimbal



AMG-240 Direct-Drive Gimbal

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Custom Engineered Systems



ATS2000 XYZ, Vac 6, Ball-Screw Stage



Custom Vacuum Systems



Linear Motor Gantry



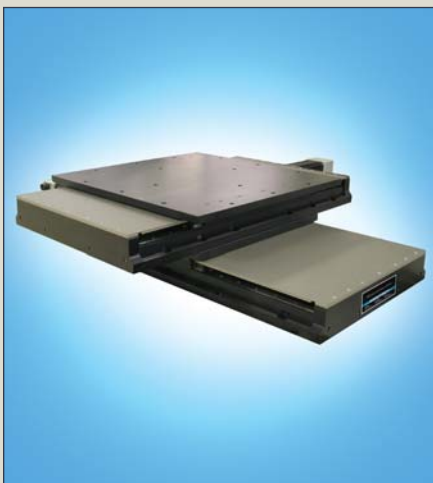
FiberAlign® Ultra-Stable Nanopositioner



Heavy Duty Vac 6 Lift Stage



5-Axis, Gear Drive, Vac 6 System



Heavy-Duty, XY, Vac 6 System



1.3 m x 1.5 m AGS10000



1.2 m ABL8000/ABL2000 Air Bearing

See our website to view our complete line of linear and rotary stages. www.aerotech.com

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Advanced Motion Controllers

Motion Control at its Finest

Around the globe and 24 hours a day, Aerotech's state-of-the-art single- and multi-axis motion controllers are used in a wide variety of applications, from research and development, to calibration and testing, to 24/7 production manufacturing. These servo and stepper controllers solve simple and complex motion tasks with easy-to-use, highly flexible interfaces. By combining our controls expertise with outstanding positioning mechanics, Aerotech delivers the finest system solutions available with the least amount of customer risk. We offer several different innovative digital control architectures, from PC-based FireWire® controllers to stand-alone systems with Ethernet, USB, or GPIB interfaces, so customers can get synchronized motion solutions that match their needs.

Innovation

In addition to a standard suite of features, our controls include important interfaces for: high-speed, 3D vector-based position synchronized outputs (PSO) for highly accurate position-based event triggering; rapid position latching for precise event-based position capture; and special motion command pipelines for receiving rapid position or velocity inputs used in dynamic tracking systems. These features are often critical for electro-optic testing, eddy current and ultrasonic inspections, tracking, calibration, or motion simulation testing.

Simplicity

Our control software provides a library of easy-to-use commands for initializing the system, commanding incremental or absolute position motion, velocity motion, fault trapping, error handling, and synchronized and asynchronous I/O. These functions can be multitasking or a single process thread. Motion commands can simultaneously command many axes to move together or independently. Simultaneous to the application process, our controllers process numerous fault and error checking routines so the customer remains focused on the motion process and not the system housekeeping tasks. Our software is compatible with



Soloist™



Ensemble™ Epaq



Automation 3200

RS-274 G-code, C++, .NET, or LabVIEW®. Numerous canned functions and programming examples for scanning, tracking, and point-to-point motion can be immediately integrated by customers for rapid program development.

Flexibility

Aerotech controllers feature interfaces for brush and brushless servomotors including sinusoidal commutation, as well as stepper motors. Standard encoder interfaces include TTL quadrature inputs, analog sinusoidal encoder inputs, and resolver and inductosyn inputs for magnetic encoding where optical encoders are impractical. We have many onboard I/O channels controlled from single or multiple I/O commands. These I/O are easily combined with Opto 22™ modules for a large variety of DC, AC, and switch closure capabilities. Opto-coupling I/O protects the controls from over-voltage or over-current damage. I/O can be expanded by additional controllers or with Ethernet I/O modules. Aerotech designed and manufactured linear and PWM amplifiers feature high power outputs with low electrical noise, and minimum crossover distortion and dead time. They provide fast reaction motion capability while minimizing electrical noise. We manufacture our own linear and rotary motors to complement our amplifiers, eliminating problems of component compatibility and wiring.

Our expertise in all facets of the motion system – controls, drives, motors, and mechanics – allows us to understand and optimize the total system solution better than any other manufacturer. Call us to assist you with your application today.

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Soloist™ Stand-Alone, Single-Axis Controller

Soloist™

Aerotech's Soloist™ single-axis digital servo controller combines advanced software architecture (.NET) with a power supply, an amplifier, and a position controller in a single package. The flexibility and scalability of the Soloist™ make it the ideal controller for both small and large applications on the production floor and in laboratory applications.

Advanced software architecture reduces development time and eases maintenance

Development environment for .NET (C#) or Windows® (C++)

Virtual instruments for the LabVIEW® environment

Positioning modes include indexing, homing, velocity profiling, freerun, and CAM tables

Autotuning makes servo tuning fast and simple

File storage folder for parameters, programs, maintenance data, etc.

Multitasking operating system

Advanced data logging capabilities

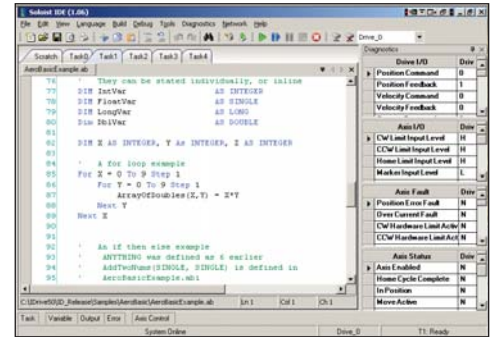
Industry standard interfaces (Ethernet/USB/RS-232) make connectivity quick and cost-effective

Multi-axis configuration through Ethernet up to 1024 axes

MODBUS over Ethernet master/slave capabilities

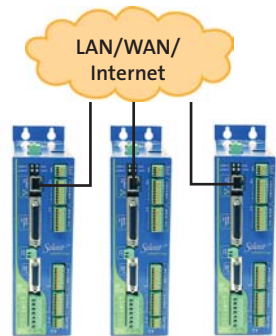
Status, development, and commands can be performed via Ethernet or locally through USB

General purpose RS-232 serial port



Soloist™ CP

Soloist™ MP



Scalable design suitable for large axis count web applications or stand-alone operation

Digital drive in models up to 30 A_{pk}

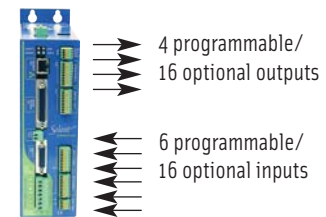
Six programmable inputs (two high speed); four programmable outputs

E-stop input

Dual encoder inputs for master/slave applications or dual-loop control

Optional AUX power, encoder multiplier, single-axis PS0, integral or external shunt

Expansion board with 16 digital inputs, 16 digital outputs, 1 analog input, 1 analog output, and brake relay



Soloist™ CL



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Ensemble Multi-Axis Motion Controller

Ensemble Epaq and Drives

Up to 10 axes of coordinated motion

Multiple 10-axis systems can be controlled by a single PC via Ethernet or USB

Controller architecture capable of coordinating motion of up to five independent tasks

Capable of driving and controlling linear or rotary brushless, DC brush servo, and microstepping motors

Complete motion capabilities include: point-to-point, linear and circular interpolation, electronic gearing, velocity profiling

Program in AeroBASIC™ with the HMI/IDE, Microsoft .NET including C#, VB.NET®, Managed C++, or LabVIEW® over Ethernet or USB from Windows® 2000 or Windows® XP

Remote ASCII interface provided for Windows® or non-Windows® programs (including Linux) to command the Epaq through standard Ethernet, RS-232 port, and optional IEEE-488

Advanced Windows®-based remote diagnostics, tuning, and programming interface software

Axis jogging/control with optional joystick

Epaq is available in rackmount or desktop versions

The Ensemble™ is Aerotech's next-generation multi-axis controller for moderate- to high-performance applications with high-speed communication through 10/100 Base T Ethernet or USB interfaces. It offers easy-to-use, affordable multi-axis motion programming for laboratory experimentation, production testing, or advanced OEM automated manufacturing systems.

Versatile, Stand Alone, Multi-Axis Control

With the Ensemble stand-alone controller, up to ten axes of synchronized motion are offered in a distributed network of panel-mounted drives. This is excellent for applications where drives must be embedded into a machine at various locations or where panel space is at a premium. For desktop

and rack-mount installations, the Ensemble is offered in a stand-alone, 6-axis unit with integrated drives. Three additional panel-mounted linear or PWM drives may be added externally to the six-axis unit for up to nine axes of motion control. The Ensemble can control any Aerotech brushless, brush, or stepper motors or stages in any combination. The simple parameter interface also allows easy integration to third-party motors and stages. The controller encoder interface includes TTL quadrature input or analog encoder input. Standard serial interfaces on the Ensemble are an Ethernet port, a USB 2.0 port, and RS-232 port. Standard I/O on each axis includes a ± 10 VDC analog input, dedicated home marker input, over-travel limits, Hall inputs for motor commutation, E-stop input, six programmable inputs, and four programmable outputs.

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Multi-Axis Motion Controller Ensemble Epaq and Drives



Ensemble Family (left to right): MP, CP, CL, Epaq

Each Ensemble axis uses the processing power of a 225 MHz double precision, floating-point DSP to offer exceptional performance in a variety of applications, including point-to-point motion, linear and circular interpolation, multi-axis error correction, 2D error mapping, direct commutation of linear and rotary brushless servomotors, and on-board servo autotuning. High-speed interrupts and data logging capabilities provide a real-time link to external systems. The Ensemble also offers high-speed position latching capability and optional single-axis PSO (Position Synchronized Output). Whether the requirement is simple point-to-point motion or complex velocity profiled contours with output on the fly, Ensemble ensures peak performance for critical applications.

Flexible Drives

Multiple Ensemble controllers can be controlled from a single Windows® PC through Ethernet or USB, allowing more than ten axes of motion to be operated from one host PC. The Ensemble HMI with Integrated Development Environment software offers a graphical user interface in Windows® featuring an intuitive Program Editor, Variable Output Window, Compiler Output Window, Task State Monitor, Network Explorer, and Solution Explorer. This interface enables users to easily monitor all aspects of their positioning system, no matter how complex. The Axis Control, Diagnostic screens, and IO Control interfaces are further supplemented by a fully functional Autotune utility that minimizes startup time and allows easy optimization of motion axes. System diagnostics are easily read from the interface. The HMI Windows-based remote software package is included with each unit, which allows the user to upload/download programs, modify parameter files, and analyze motion with Aerotech's advanced graphical tuning package, all from the convenience of a remote PC.

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Digital Automation Platform

The Intelligent 32-Axis Motion, Vision, PLC, Robotics, & I/O Platform

POWERFUL SOFTWARE

Extensive suite of development tools:

- Nmotion® SMC – Software Motion Controller
- Nview® GUI – Graphical User Interface
- Ncontrol® SDK – Software Development Kit
- Nlab SDK – LabVIEW® Software Development Kit
- Nlogic PLC – Programmable Logic Controller
- Nvision® VCM – Vision Control Module

Modular software architecture permits mixing and matching of applications to suit the automation process requirements.

Programmers can create their own applications with modern tools such as Active X-based components and .NET class libraries.

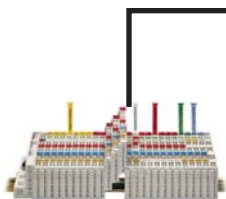
A3200 ADVANTAGES

- Higher throughput due to high performance control, network, and high-power drives
- Higher quality output (accuracy and precision) due to fully digital drive and advanced servo algorithms
- Faster startup and changeover results from fully integrated motion platform, easy-to-use setup tools, and extensive diagnostics
- Lower startup and lifecycle cost due to lower component count and reduced engineering time
- Higher reliability due to fewer components
- Simplified integration as all major automation components are bundled into one platform
- User interface flexibility due to local or remote processing
- “Future Proof” architecture built on commercially available PCs running Windows® 2000/XP operating systems

EXTENSIVE I/O CAPABILITY

All Automation 3200 drives and drive racks are available with an integrated 10/100 Base-T Ethernet interface. This permits Automation 3200 systems to interact with third-party I/O boards and PLCs!

Analog and Discrete I/O

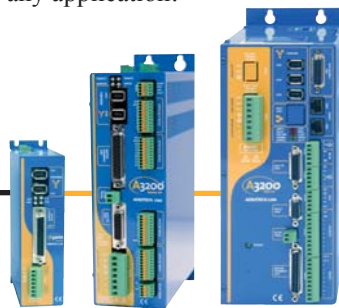


Ethernet I/O Expansion

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EASILY INSTALLED DIGITAL DRIVES FROM 8 A-100 A

From highly compact, cost-optimized designs to self-contained, plug and play models, Aerotech has the drive for any application!



Distributed Motion Control

Motion control is performed at the drive level.

FireWire® (IEEE-1394) INDUSTRY STANDARD, SUPER-HIGH-PERFORMANCE COMMUNICATION NETWORK

DIGITAL DRIVE FEATURES

- PWM or linear
- Integrated 10/100 Base-T Ethernet
- Onboard x65536 encoder multiplication
- Resolver or inductosyn feedback
- 20 kHz position, velocity, and current-loop sample rate
- Integral power supply
- Sinusoidal commutation
- Local I/O ports



Distributed Control from Aerotech

ROBUST, HIGH-PERFORMANCE MOTION ENGINE CAPABILITIES

- Point-to-point motion
- Interpolated motion
- Velocity profiling
- Look-ahead
- Electronically geared motion
- Cutter compensation
- CNC functionality
- Electronic CAM profiling
- Position synchronized output
- Fast position capture
- High-speed registration
- Gantry mode
- Motor control
- Dual loop control
- Axis calibration
- Orthogonality correction
- 3D error mapping
- Helical interpolation
- Autotuning
- Coordinate transformations
- Normalcy, parts rotation, mirroring, and retrace
- Cubic spline fitting
- Kinematics

FIREWIRE® (IEEE-1394) ADVANTAGES

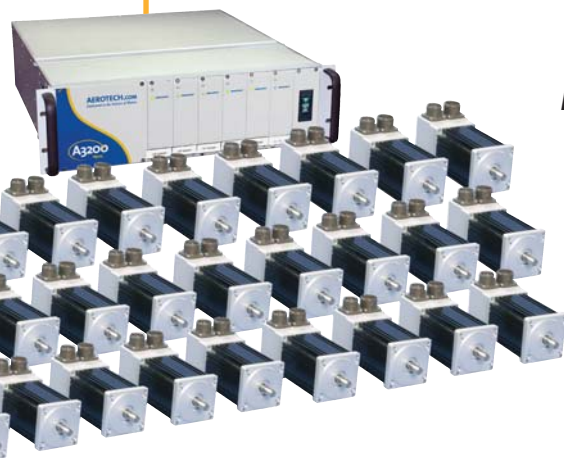
- Deterministic architecture maintains consistent performance updates across all 32 axes
- 30 to 1000 times faster than competitive motion networks
- 3.2 Gbps over fiber
- No system degradation as number of axes increases
- Versatile, high-speed, low-cost communication system
- “Future Proof”
- Commercially available
- Nonproprietary architecture
- OHCI compliant
- International standard
- FireWire® (IEEE-1394) standard on PCs



Motion Controller

Motion generation and synchronization are centralized at the PC. Motion execution is decentralized at the drives. A3200 operates on any standard desktop or industrial PC. Servo loops are closed on the drive.

**Npaq®
6-Axis Drive Rack**



Any Brush or Brushless Servomotor



RETROFIT TO EXISTING MOTORS & DRIVES

Use as an integrated system or interface to existing motors and drives in a cost-effective retrofit.

Nservo



Any Servo Amplifier

Nstep



Any Stepper Drive



Any Stepper Motor



Robotics



Vision

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Servo and Stepper Drives, Drive Racks,



Ndrive® MP



Ndrive® CP



Ndrive® HP



Ndrive® HL

"Micro-sized" drive saves space and reduces costs

Digital servo/stepper amplifier
Output power up to 10 A peak at 80 VDC

Digital current, velocity, and position loops for improved motion stability

Optional software multiplier

Dedicated E-stop input

Single-axis position synchronized output (laser firing) capability

Optional brake

Drive brushless/DC brush-type servomotors as well as stepping motors

Ultra-compact (41 mm x 141 mm x 107 mm)

Dedicated end of travel limit inputs

CE compliant

Compact drive minimizes integration time

Digital servo/stepper amplifier with integral power supply
10-30 amps peak; 20-320 VDC

Digital current, velocity, and position loops for improved motion stability

Optional software multiplier

Dedicated E-stop input

Single-axis position synchronized output (laser firing) capability

Optional brake

Drive brushless/DC brush-type servomotors as well as stepping motors

16 in/16 out expansion board with analog in/out, auxiliary encoder input, and brake relay

Dedicated end of travel limit inputs

CE compliant

High-performance drive for demanding applications

Digital servo/stepper amplifier with integral power supply
10-100 amps peak; 20-320 VDC

Digital current, velocity, and position loops for improved motion stability

Optional integrated hardware encoder multiplier for higher throughput and reduced wiring

Dedicated E-stop input

Supports up to three axes of position synchronized output

Optional brake

Drive brushless/DC brush-type servomotors as well as stepping motors

8 in/8 out I/O expansion board; Ethernet for additional I/O

Resolver option

Dedicated end of travel limit inputs

CE compliant

High-powered linear drive for ultimate performance

Digital servo amplifier with integral linear power stage for low noise, zero crossover distortion and high loop gain
400 W continuous, 800 W peak power output

400 W continuous, 800 W peak power output

Digital current, velocity, and position loops for improved motion stability

Optional integrated hardware encoder multiplier for higher throughput and reduced wiring

Dedicated E-stop input

Supports up to three axes of position synchronized output

Optional brake

Drive brushless/DC brush-type servomotors as well as stepping motors

8 in/8 out I/O expansion board; Ethernet for additional I/O

Resolver option

CE compliant

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Consoles, and Servo and Stepper Retrofit Options



Npaq



Nsys



Nservo



Nstep

Highly integrated six-axis drive chassis

- 3U x 19" rack mount
- 5 A to 30 A peak output
- Integral power supplies
- Digital current, velocity, and position loops for improved motion stability
- 8 in/8 out opto-isolated plus high-speed differential I/O
- Optional Ethernet for I/O expansion
- Supports up to six amplifiers (PWM or linear) for controlling brushless, brush, or stepping motors
- Up to six axes of integrated encoder multiplier
- Optional integrated E-stop relays
- CE compliant

Integrated consoles

- Multiple solutions available for different system configurations
- Integrated computer, controller, I/O, and customer-supplied product
- Optional user buttons for E-stop, power, and cycle start/stop
- CE compliant

Multi-axis servo interface for retrofits or third-party drives

- Use to retrofit your existing system with new controls; extend the life of your capital investment
- Supports two (standard) or four closed-loop servo axes
- Each axis has three-phase ± 10 volt outputs to drive any amplifier
- FireWire® enabled servo controller for simplified wiring
- Software configurable for brush, brushless, and stepper motor operation provides flexibility
- Optional Ethernet port to connect additional I/O
- Connector options include terminal block, D connector, and legacy OP500 connector
- Optional position synchronized output
- CE compliant

Multi-axis stepper interface for retrofits or third-party drives

- Support up to four axes of loop stepper with encoder verification
- One clock output (up to 25 MHz) and direction output per axis
- One non-isolated digital input (5-24 VDC)
- 5-24 VDC opto-isolated CW/CCW/HOME and drive enable inputs
- Supply voltage of 24 to 80 VDC
- Screw terminal connectors for I/O
- Easily connects to 3rd-party power modules
- CE compliant

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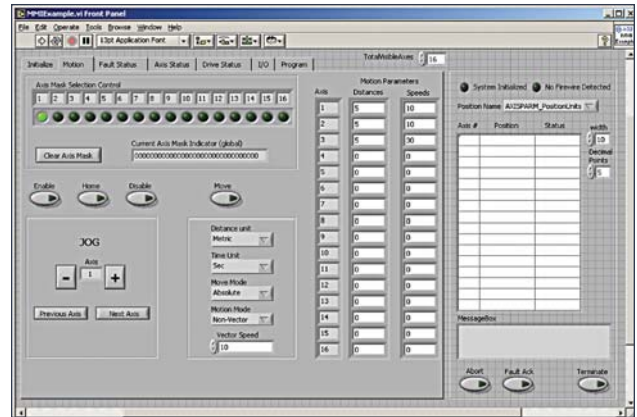
The Automation 3200 32-axis motion controller includes integrated LabVIEW® VIs and LabVIEW® example code for powerful motion capabilities in the Windows® LabVIEW® environment. The LabVIEW® multi-axis HMI front panel easily integrates into your application. Our user-friendly VI library includes tools and examples for initializing the A3200, executing simple or complex move functions, status checking, error checking, and fault handling. Now LabVIEW® programmers have a toolbox of advanced motion VIs for rapid prototype work with no need to know C, Visual Basic®, or other software packages.

The Nlab SDK provides a set of LabVIEW® VIs that can be used to control and communicate with the A3200 motion controller. These VIs can be used as building blocks or as stand-alone VIs to perform various tasks such as initialization, motion, and status/position updates.

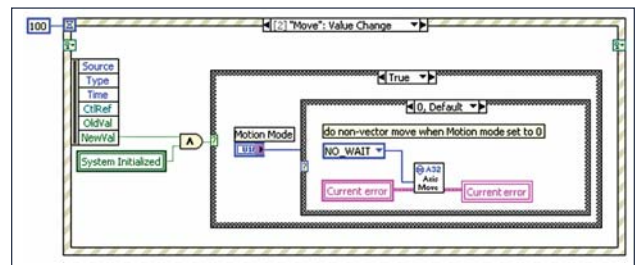
The VIs are organized into the following categories, with a dedicated .llb file for each category:

- Initialization Functions** **Analog and Digital I/O Functions**
- Motion Functions** **Error Handling Functions**
- Parameter Functions** **Status and Position Functions**
- Global Data Functions** **Run CNC Program Functions**
- Utility Functions** **Get and Set Variable Functions**

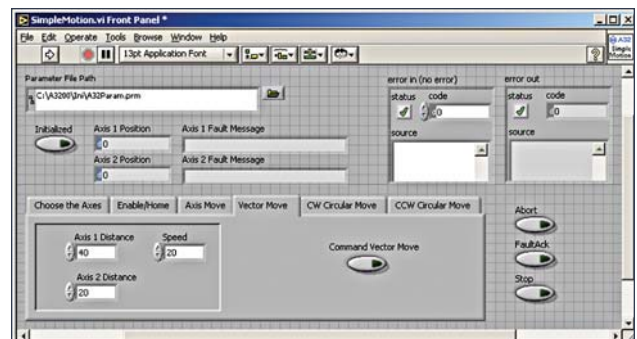
Aerotech’s VIs conform to National Instruments LabVIEW® programming standards. LabVIEW® library files (.llb) are used to create a higher level ‘directory’ structure. Each library file contains VIs that are grouped according to functionality. For example, the motion.llb library file contains VIs that perform axis and/or vector moves, while the initialization.llb library file contains VIs that initialize the A3200. Each VI is simple and intuitive to use.



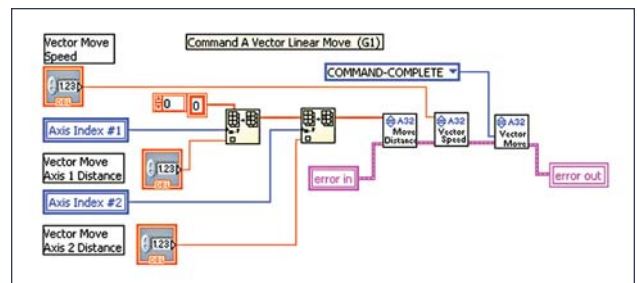
LabVIEW® multi-axis HMI front panel



HMI diagram



LabVIEW® simple 2-axis VI



Vector linear move diagram

Worldwide Training and Support

Aerotech offers comprehensive worldwide training and customer service either at customer facilities or at one of our Aerotech training centers.

Our Training Program Features:

Standard and customized courses

Hands-on training with Aerotech positioning systems

Interactive training with experienced instructors

Comfortable, spacious facilities



Aerotech Ltd



Aerotech North America



Aerotech GmbH

INSTALLATION AND START UP (COMMISSIONING)

Aerotech offers startup and commissioning services to minimize startup times, reduce cost and accelerate time-to-production. By combining our product knowledge with your process and application expertise, new systems and applications can be completed faster at a reduced overall cost.

ENGINEERING SUPPORT

Aerotech provides complete engineering support for our products, including onsite support and maintenance, and remote support via phone, fax, website, and/or WebEx[®] software. As a manufacturer staffed by engineers, we understand the unacceptability of downtime.

TRAINING

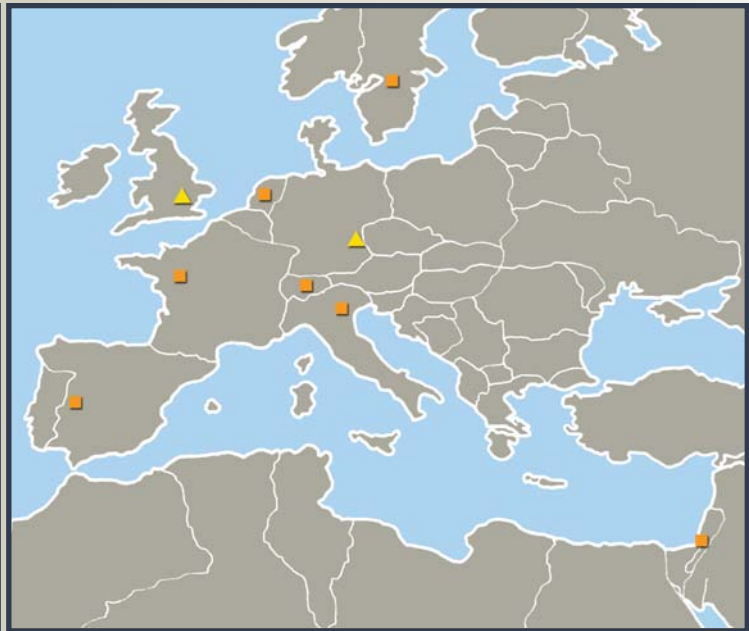
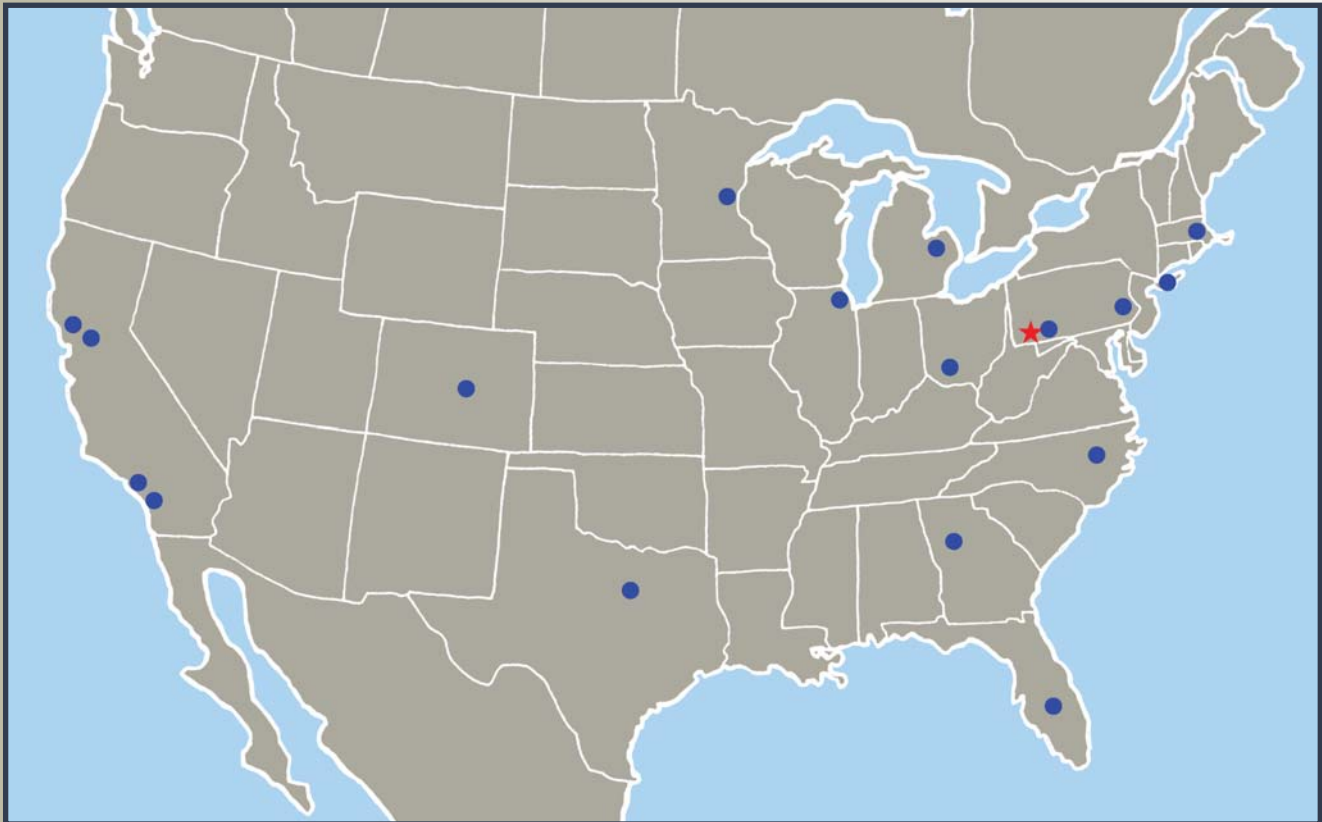
Aerotech training classes are designed to help our customers realize the full potential of our products. By demonstrating all of a product's features and how to use them, customers have been able to reduce startup time and quickly optimize their applications. Aerotech's classes have been developed, and continually upgraded, using feedback from our customers.

Aerotech has over 35 years of expertise in designing motion control and positioning systems and components with an unsurpassed track record of reliability. When you make the choice to purchase from Aerotech, we urge you to learn how to get the most from your new Aerotech products. Aerotech provides both onsite (your facility) and/or in-house (our facility) training for our customers' convenience.

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Aerotech's Worldwide Sales and Service Locations



★ - Aerotech Headquarters ● - Direct Field Sales Office ▲ - Aerotech Subsidiary ■ - Representative



Dedicated to the Science of Motion

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