

www.DanaherPrecision.com



Providing Solutions for:

- Flat Panel Display
- Data Storage
- Semiconductor
- Factory Automation
- Life Science



Precision Positioning Systems





Danaher Motion's Precision Systems Group offers a complete array of precision and industrial grade electromechanical solutions based on the following product families:

- Precision XY Tables
- Electric Cylinders
- Cartesian Systems
- Compact Shuttle Stages
- Rotary Stages
- Precision Air Bearing Stages
- Gantry Platforms
- Air Bearing Spindles
- Complete Electronics & Controls Packages

Danaher Motion's engineering team stands ready to solve your application challenges with one of our standard products, or with a customized system that meets your specifications.

The solutions presented here only begin to demonstrate the breadth of our ability to assist high-technology and industrial companies in achieving breakthrough results.

Innovation, global manufacturing capabilities, a worldwide support infrastructure, and the Danaher Business System (DBS) all exemplify Danaher Motion's passion to bring increasing value to you, our customer.

Flat Panel Display Processing Market Highlight

Danaher Motion leads the way in high-precision motion platforms for Flat Panel Display processing.

Danaher Motion's expertise in providing high-precision gantry platforms provides cutting-edge solutions to Flat Panel Display (FPD) process tool OEM's.

- Base platforms suitable for substrate sizes through Gen 7.
- Prepared for operation in Class 10 cleanroom environments.
- Complete systems optimized for high throughput.
- Existing gantry designs minimize the FPD OEM's time to market.
- Patented multi-axis servo control technology.



▲ GEN 7



◀ GEN 5 SPLIT AXIS



◀ GEN 6

Mechanical Bearing Stages & Actuators

Precision & Value



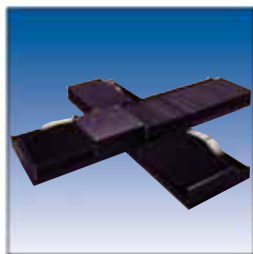
◀ EC-Series Electric Cylinders

XY with two KV Compact Shuttle Stages ▶



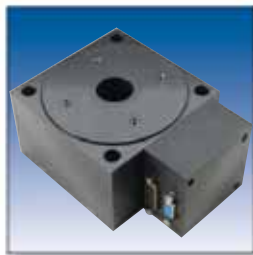
◀ DS4 Ballscrew Driven Shuttle Stage

SAS Linear Motor Shuttle Stages in XY ▶



◀ XYR Monolithic Crossed-roller XY Stage

DRT Direct Drive Rotary Stage ▶



◀ URS Integrated Rail Ballscrew Stage

From precision linear and rotary translation stages, to highly-integrated multi-axis systems, to high-thrust electric cylinders, Danaher Motion offers the widest range of electro-mechanical products based upon mechanical bearing way technologies. Our products are recognized world-wide for precision, performance and high reliability.

Our standard product offering features:

- Low-profile, small-footprint designs which minimize workspace requirements.
- Crossed-roller way stages for high stiffness throughout travel.
- Recirculating rail way stages for high speed and load capacity.
- Leadscrew-driven stages for smooth, precise motion.
- Ballscrew-driven stages for high duty cycle and mechanical advantage.
- Iron-core linear motor driven stages for move-and-settle performance.
- Ironless linear motor driven stages for superior performance in scanning (constant velocity) applications.
- Moving-magnet linear motor stages that simplify cable management requirements.
- Direct drive and worm gear driven rotary stages for precise angular positioning.
- Belt- and screw-driven rodless actuators with standard travels over 2.5 meters.
- Rod-type electric cylinders capable of up to 25,000N of thrust force.

These products often become the building blocks for precision multi-axis platforms, and we are continuously innovating to provide improved performance in compact package sizes. Whether it is simple or complex, Danaher Motion can meet your linear and rotary motion requirements.

Life Science Market Highlight

Application: Array Scanning

Array scanners offer high resolution array imaging for large-scale fluorescent imaging studies, such as microarrays, tissue arrays, and cell arrays. Critical motion requirements include smooth scanning movement, compact stage design, high linearity, high repeatability and the ability to support a cantilevered sample plate.



Solution: RMR™ Crossed Roller Stage

The RMR stage has allowed Danaher Motion to dominate this market space. The crossed roller ways provide excellent stiffness, flatness, straightness, pitch and yaw performance. The high-precision leadscrew offers superior scanning performance and high repeatability. Stepper motor driven for this application, the RMR is the cost effective solution in a compact (2" high x 2 5/8" wide) package. Danaher Motion also employs the URS™ series stages in similar applications.

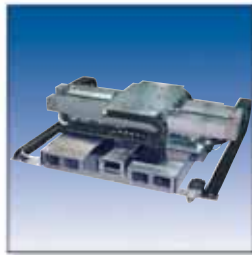


Air Bearing Stages & Systems

Highest Accuracy



◀ Stationary Substrate Air Bearing Gantry



S300 ▶
XY Air Bearing Stage



AirBeam AB-610 ▶
Linear Air Bearing Stage



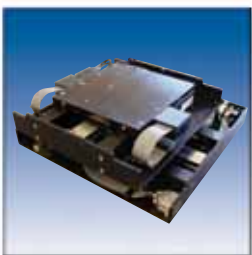
◀ Compact Spin Stand



Triathlon Planar Air Bearing Stage with Granite Bridge ▶



◀ AirBeam AB 150x150



Danaher Motion offers a comprehensive product line of standard and customized products incorporating air bearing technology.

We provide a broad range of ultra-precision linear translation stages, rotary spindles, XY tables, and a variety of multi-axis positioners. These products are available with a variety of drive and feedback devices from leadscrews to linear motors, and optical encoders to laser interferometers.

Non-contact air bearing stages are perfect for applications that require sub-micron accuracy and exceptionally smooth velocity control. Markets including digital imaging, semiconductor, and flat panel display (FPD) processing rely on these intrinsic performance advantages.

Our standard air bearing product offering features:

- Rotary spindles with proprietary crash proof technology and capable of speed in excess of 30,000 rpm.
- Precision stationary-substrate gantries available with XY travels over 2 meters.
- Compact spin stands integrating XY and rotary air bearing axes with high-performance controls.
- Split-axis gantries ideal for high-speed, high-accuracy, moving-substrate applications.
- Low-profile XY planar stages offering increased travel capacity without any compromise in performance.
- Compact, low-profile single axis stages with resolutions well below 1 nanometer.

Danaher Motion also offers a standard product line of advanced servo control systems to meet the most demanding positioning requirements (see highlight on next page).

Data Storage Market Highlight

Application: Media Testing

Danaher Motion continues to work with the world's leading head, media, and drive manufacturers to ensure we understand the current and emerging market needs for test equipment. That's why we offer a standard spindle with a process speed up to 30,000 rpm, the lowest AEM in the industry, low encoder jitter, and a conductive path that meets the requirements of MR and GMR head testing.

Solution: The Revolution™ Spindle



The idea behind the Revolution XL and Revolution XLS Spindles is simple. We offer two standard high-speed instrument spindles to the Data Storage industry that meet all production testing and R&D testing requirements, yet we maintain the ability to customize our products for varying application needs. We provide the best air bearing spindle performance in a crash proof spindle with a lifetime warranty.

Custom Stages & Systems

Innovation in Design



◀ Integrated XYZ Mechanical Bearing Gantry

High Vacuum XY Stage ▶



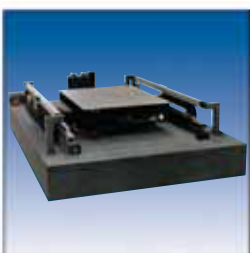
◀ Cartesian System

Field Framing Assembly ▶



◀ Digital Imaging Application

Triathlon XY Stage with Dual Z Axes ▶



◀ Large Panel Planar Air Bearing

Danaher Motion is the proven custom solution leader in the precision positioning industry.

A significant part of our business is the design and manufacture of specialty positioning systems to meet our customers' specifications and requirements.

Our years of custom design work experience, combined with the creative talents of our Engineering staff, enable us to provide cost-effective and timely solutions to tough challenges – from initial conceptualization, to system acceptance testing, to delivered systems. We welcome the challenge of solving your advanced positioning requirements.

We have successfully provided solutions for hundreds of high-end positioning applications, including assembly and inspection operations, to a broad range of OEM and end-users. Many of these applications have been in cleanroom or high-vacuum (1×10^{-6} torr) environments, for which we are keenly aware of the finer design points necessary for success.

Our custom systems capabilities leverage:

- Four decades of innovation.
- Unmatched application knowledge.
- A tradition of OEM focused partnerships.
- Leading-edge technology.
- Unsurpassed customization expertise.
- The global support structure of Danaher Motion.

If you have a motion requirement that requires more than a standard product solution, contact Danaher Motion's Precision Systems Group. Let us put our experience to work for you to develop a system to meet your performance and budget requirements.

Advanced Servo Control Highlight

- High Performance
- OEM Focused



The Danaher Motion DMM is a series of fully programmable, multi-axis, microprocessor-based motion controllers. The DMM provides up to 6 axes of closed-loop, point-to-point positioning with velocity and acceleration control, as well as coordinated linear and circular interpolation. Each DMM can be custom configured to meet the performance demands of your ultra-precision motion control requirements. The controller is a self-contained package that provides all the necessary hardware and software for a complete multi-axis motion control system.

Thank you for considering Danaher Motion!

Danaher Motion – A Partner For The Future:

While business cycles will ebb and flow, technological advancements across a multitude of industries march forward. In many cases, the success of these advancements hinges upon the ability of engineers to create automated systems capable of accurately manipulating materials at both the macro and microscopic levels. Danaher Motion solutions are often at the core of these systems. Many recent advancements in the semiconductor, flat panel display, data storage, digital imaging, transportation, machine automation, life sciences and photonics markets have been made possible by the actuators and stages illustrated in this brochure.

Our IDC and Dover product brands contain hundreds of standard electromechanical solutions. Still, we recognize that each application is unique and so we continue to welcome opportunities that require modifications and occasionally complete redesign of our standard solutions.

While we believe our engineering and applications support teams are second to none, it's also important to select a partner that is driven by operational excellence and able to withstand market cycles. As part of Danaher Corporation (NYSE Symbol DHR), we have the tremendous benefit of the Danaher Business System as well as the financial resources and global reach to support our customers wherever their business may take them.

Call us and discover why Danaher Motion is your best ... **Partner For The Future.**



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