Cartesian Robots

Maximize your Application’s Throughput

- Minimal Tracking Error
- Flexible Design
- Lowest Cost of Ownership
- Configurable

www.aerotech.com
Aerotech supplies cartesian robots for many of the world’s largest manufacturers. These systems are carefully engineered to provide superior performance in a variety of applications. With our extensive line of products, Aerotech can deliver the ideal gantry customized to meet your unique application requirements.

### Cartesian Robot Comparison Table

<table>
<thead>
<tr>
<th>Product Family</th>
<th>Cartesius-HD</th>
<th>Cartesius-LM</th>
<th>AGS1000</th>
<th>AGS10000</th>
<th>ASGS15000</th>
<th>AGS15000</th>
<th>ABG10000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Performance</td>
<td>Good</td>
<td>Good</td>
<td>Better</td>
<td>Better</td>
<td>Better</td>
<td>Best</td>
<td>Best</td>
</tr>
<tr>
<td>Maximum Travel</td>
<td>1500 mm x 600 mm</td>
<td>1500 mm x 500 mm</td>
<td>500 mm x 500 mm</td>
<td>1500 mm x 1500 mm</td>
<td>800 mm x 800 mm</td>
<td>1500 mm x 1300 mm</td>
<td>1000 mm x 1000 mm</td>
</tr>
<tr>
<td>Drive System</td>
<td>Ball Screw with Brushless Rotary</td>
<td>Noncontact Linear Motor</td>
<td>Noncontact Linear Motor; Dual-Driven Lower Axis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Resolution</td>
<td>To 0.1 µm</td>
<td>To 0.01 µm</td>
<td>To 1 nm</td>
<td>To 0.25 nm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Travel Speed</td>
<td>1.4 m/s</td>
<td>2 m/s</td>
<td>2 m/s</td>
<td>3 m/s</td>
<td>2 m/s</td>
<td>3 m/s</td>
<td>1 m/s</td>
</tr>
<tr>
<td>Maximum Acceleration</td>
<td>1 g (10 m/s²)</td>
<td>3 g (30 m/s²)</td>
<td>2 g (20 m/s²)</td>
<td>3 g (30 m/s²)</td>
<td>2 g (20 m/s²)</td>
<td>5 g (50 m/s²)</td>
<td>0.5 g (5 m/s²)</td>
</tr>
<tr>
<td>Finish</td>
<td>Black Anodized/Hard Coat Surfaces; ESD Optional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended Controller</td>
<td>Ensemble/Soloist</td>
<td>A3200/Ensemble</td>
<td>A3200</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Configurable Options
Maximize Flexibility

**Travel Length**

Fully configurable and custom travel lengths up to 2000 mm x 1750 mm ensure each gantry is right-sized for its application, from compact to extended travel.

**Z Axis**

Linear motor or ball-screw vertical axis allows for component pick and place, tool height adjustment, and laser focus adjustment.

**Riser Height**

Configurable riser height permits seamless integration of conveyor systems, process equipment, or automated part handling equipment.

**Cable Management Systems**

Integration of customer cables, including signals for sensors, vision, autofocus height sensors, or fiber laser beam delivery simplify final assembly.
"T" Style Cartesian Robots
Cartesius-HD and Cartesius-LM Series

Component Inspection

Component Assembly

PCB Marking

- High speed (up to 1.4 m/s with ball screw and 2 m/s with linear motor) ensures high-throughput
- Multiple configurations maximize application flexibility (XY, XYZ, XYZθ)
- Economical T-style robot for most cost-effective performance
## Compact Gantries

**AGS1000 Series**

- Compact design offers superior performance, minimizing machine footprint
- Powerful linear motors enable high accelerations and micron-level dynamic tolerances
- Custom finishes minimize static charge buildup for ESD-sensitive applications

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### Applications

- Fuel-Cell Manufacturing
- Device Assembly
- Dispensing
- Printed Electronics
- Component Inspection

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[www.aerotech.com](http://www.aerotech.com)
High Performance Gantries
AGS10000 Series

Printed Electronics

High-Speed Component Pick and Place

Component Inspection

Photovoltaic Manufacturing

- Linear motors allow up to 3 g acceleration and 3 m/s velocity, minimizing process time
- Components designed for minimal maintenance ensuring reliable operation in 24/7 environments
- Cable management terminations provided at the workpiece simplify integration
High Performance Gantries
AGS15000 Series

- Optimized design improves geometric tolerances at high speeds
- Up to 5 g acceleration maximizes throughput
- Advanced thermal design ensures consistent accuracy and performance over time
- Pneumatic counter-balanced linear motor vertical axis for precise, high-bandwidth focusing of processing head
- Mounting surfaces on bridge structure enable attachment of optics for free-space laser delivery systems or galvo scanners

<table>
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<tr>
<th>Applications</th>
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<tr>
<td>Stencil Cutting</td>
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<td>Flat-Panel Processing</td>
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<tr>
<td>Laser Cutting</td>
</tr>
<tr>
<td>Laser Welding</td>
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<tr>
<td>Laser Micromachining</td>
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</tbody>
</table>
Sealed Gantries
ASGS15000 Series

Laser Cutting

Laser Micromachining

- Sealed design protects internal components for use in harsh environments
- Optimized design and stiff mounting surfaces permit micron-level dynamic accuracies at high speeds
- Aerotech’s Position Synchronized Output (PSO) fires a configurable event trigger in real-time directly from the encoder position, maximizing process speed
Ultimate Performance Gantry
ABG1000 Series

• Air-bearing linear axes provide exceptional velocity stability
• All axes are fully preloaded to maximize mechanical stiffness
• Superior pitch, roll, yaw, straightness, and flatness characteristics for ultimate performance

Robocasting
Profiling
Flat-Panel Inspection
Value-Added Options

Available on all Cartesian Robots:

- Weldment with Optional Skins or Doors
- Isolation Systems
- Integrated Electronics
- IO
- ESTOP
- Integrated Pneumatics
- Support Arm with Monitor, Keyboard, and Mouse
- Enclosures
- Aerotech’s Enhanced Throughput Module (ETM)
Control Solutions

Software

Use preconfigured Aerotech user interface modules or develop your own front-end and applications with .NET, C#, C++, and LabVIEW®.

Award-Winning Controllers

Automation 3200
- Up to 32 tasks
- PC-based
- RS-274 G-code
- Advanced features for demanding applications
- 1 to 32 axes of coordinated motion
- Scanner control for marking
- Tightly integrated laser functionality
- Retrofit package

Ensemble
- Up to 4 tasks
- Stand-alone 1- to 10-axis controller
- Versatile, cost-effective, coordinated motion
- PWM or linear drives (10-150 A peak)
- Brushless, brush, or stepper motors
- Desktop or panel mount
- .NET, C++, or LabVIEW®

Soloist
- Elegant, economical, single-axis controller
- Stand-alone
- PWM or linear drives (10-150 A peak)
- .NET, C#, VB.NET®, LabVIEW®
- Ethernet, USB
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