AUTOMATED TESTING SYSTEMS
A New Dimension in Testing Productivity
With over **70 YEARS** of materials testing experience, Instron® delivers impactful innovations to enable our users business to thrive. We are committed to delivering services which delight and usability improvements throughout the lifetime of the system.

- **1500+ Employees**
  A highly-educated, experienced, and diverse workforce

- **Representing 160 Countries**, speaking **40+ languages**

- **50,000+ systems**
  installed worldwide

- **70+ years**
  of engineering and manufacturing testing systems

- **Diverse product range**
  for nearly all global markets and industries
**Automated XY and XY-Rotary Stage**

Model: AT2 and AT2+

- Commonly used to perform compression, flex, and tensile tests on single and/or multi-surface devices and components
- Standard component/part working envelopes of 150×150 or 150×300 mm

**Automatic Tensile/Flexural Testing**

Model: AT3 and AT3+

- Commonly used to perform tensile and/or flexural tests on plastics, films, thin sheet metal, and most lightweight materials
- Small overall footprint with barcode reader and in-line measurement capabilities

**Robotic Specimen Handling**

Model: AT6

- Commonly used to perform tensile, flexural, and hardness tests on metals, plastics, thin films, components, elastomers, and sutures
- Turnkey, complete automation with large storage capacity and capable of overnight runs
WHY AUTOMATE?

**Increased Operator Safety**

Injury-related expenses can be devastating to an organization. Minimizing repetitive movement and reducing the amount of physical interaction with the testing process ultimately reduces operator injuries and saves the company valuable time and money.

**Lower Training Expenses**

A well trained operator is crucial to ensure the integrity and accuracy of results. When operators change jobs or turnover becomes an issue, significant money is spent training new operators and production time is lost during training. A fully automated system requires minimal training and provides reliable and accurate results.
Better Use of Skilled Labor

Some systems can store more than 300 specimens, allowing them to run unattended tests overnight. Labs increase testing throughput without having to pay for additional shifts.

Increased Repeatability

Retesting specimens is expensive – automation removes operator variability, which increases repeatability and reduces or eliminates costs associated with retesting.

Greater Efficiency

Automated specimen handling systems quickly identify those materials that are out of specification. This reduces the amount of products that are scrapped during testing.
In general, the answer is yes.
Available for tensile, flexural, and compression testing, Instron® TestMaster Automated Testing Solutions can improve the safety and productivity of testing for a wide range of materials and specimen sizes, including:

Flexible Materials
Films | Textiles | Fibers | Elastomers | etc.

Rigid Materials
Metals | Plastics | Composites | etc.

Components/Assemblies
Medical Devices | Springs | Buttons | etc.

Visit go.instron.com/automate to learn more and watch videos of different automation tests.
At a Glance

AUTOMATED TESTING SYSTEMS

AT2 and AT2+
Automated XY and XY-Rotary Stage

The Instron® TestMaster AT2 XY Stage Automated Testing System is ideal for compression, flex, and tension testing of multiple small components, or components with multiple test points. Available with an optional rotary stage, the AT2+ offers an additional degree of control and efficiency, allowing the system to reach test points in different axes.

- Capacities up to 2 kN
- The AT2 is commonly used for compression, flex, and tensile testing of devices and components
- The AT2+ is commonly used for compression on multi-surface components
- In-line specimen detect sensor to maximize efficiency
- AT2+ adds rotary as another degree of rotation
- Flexible interface allows modification of testing parameters to grow and change with product
- Small footprint

* Additional standards may apply
AUTOMATED TESTING SYSTEMS

At a Glance

AT3
Automatic Tensile Testing

The Instron® TestMaster AT3 Automated Testing System utilizes an innovative, three axis design for automatic tensile testing of plastics and other lightweight materials. The compact design of this system offers many of the benefits of our AT6 robotic systems, such as barcode read capability and in-line measurement, but with a smaller footprint.

- Capacities up to 50 kN
- Commonly used for tensile testing plastics and most lightweight materials, such as film and sheet metal
- Typical storage capacity of 80 specimens per test run
- Small footprint (H×W×D): 2.4×1.5×1.2 m (7.5×5×4’)
- ASTM D638 and ISO 527
- ASTM E8 and ISO 6892*
- Barcode or Queue Mode capability
- In-line measurement

* Additional standards may apply
The Instron® TestMaster AT3+ Automated Testing System expands on the AT3 system, offering the capability to perform automatic flexural, as well as tensile, testing of plastics and other lightweight materials by adding an additional axis of motion.

- Capacities up to 50 kN
- Commonly used for flexural and tensile testing plastics and most lightweight materials, such as film and sheet metal
- Flexural testing - 90° rotation of hand added for flex capability
- Typical storage capacity of 80 specimens per test run
- Small footprint (H×W×D): 2.4×1.5×1.2 m (7.5×5×4)
- ASTM D638 and D790, ISO 527 and 178
- ASTM E8 and ISO 6892*
- Barcode or queue mode capability
- In-line measurement

* Additional standards may apply
At a Glance

AT6
Robotic Specimen Handling

Instron® TestMaster Robot Based AT6 Automated Testing System enables a new dimension in testing productivity. Available as either a complete turnkey solution or installed on an existing Instron testing instrument, the unique modular design accommodates tensile, flexural, and hardness testing. System configurations consist of a robot for specimen handling, barcode read capability, dual-axis measurement device for in-line measurement of width and thickness, and the ability to add on additional 3rd party peripheral devices, such as hardness and chemical analysis.

- Capacities up to 600 kN
- Commonly used to test metals, plastics, thin films, components, elastomers, and sutures
- Roll-away table for easy conversion to manual testing
- Advanced video extensometry and contacting extensometry for axial and transverse strain measurement
- Metals tensile testing (R&N): ASTM E8, EN10002-1, and ISO 6892*
- Plastics tensile and flexural testing: ASTM D638, ASTM D790, ASTM D882, ISO 527-2, ISO 527-3, and ISO 178*
- Composites tensile testing: ASTM D3039 and ISO 527-4*
- Elastomers tensile and tear testing: ASTM D412 and ISO 37*

* Additional standards may apply
Specimen Measurement
Extensometer
Barcode Reader
Specimen Marking
Hardness Measurement
At a Glance

TESTMASTER™ SOFTWARE

It's as easy as 1-2-3
1. Select setup
2. Input operator name
3. Select starting position

Status Icons indicate the current station
Ease of Use
You have the flexibility to modify or create sequencing parameters or use the settings already configured for you. We have made it easy to teach your robot new positions. If a new sample type is introduced to your system and the robot positioning needs to change, we can do that for you or you can set the new positions with the easy-to-use teaching tool interface.

Security
The TestMaster™ 2 Software is integrated into Windows® security. When logged in with “Administrative” rights, the operator has the ability to modify configurations or create new system configurations. As a “User”, the operator is restricted to starting automated testing using existing configurations. Bluehill® Software allows for additional security; multiple user access levels are available to ensure that test methods, results, and reports are only modified by authorized personnel.

Specimen Identification
Two modes of specimen identification are available:
1. Barcode labels attached to the specimen or batch separators
2. Identification by their location in the specimen storage rack with a pre-defined test queue in the database
How can automated Testing Systems Improve the reliability of your results?

Eliminate human error by fully automating your testing. Improve accuracy and consistency of your test results!

What affects the reliability and reproducibility of your data when testing manually?

- Specimen alignment
- Dimensional measurement
- Specimen identification
- Operator technique
- Procedural errors

Why is improving repeatability and reproducibility so important?

- Reduces manufacturing costs
- Minimizes disruptions in production line
- Maximizes availability of manpower

GR&R Study

Study shows operator has no impact on variation when automation system is used to measure and test specimens
 Designed for Safety

Your safety is of the utmost importance to Instron®. That’s why every automation system is fitted with extra safety measures designed to meet a variety of international standards, including CSA, UL, and/or CE compliance.

Safety Benefits of Automation

Automated testing systems keep the operator away from the testing areas, protecting the health and safety of your employees.

- Decrease in repetitive motion injuries
- Elimination of potential pinch hazards
- Safe, hands-free removal of debris
Maximize Resources
Automated systems can run unattended tests for hours, allowing operators to execute other value-added tasks while tests are conducted.

Reduce Human Error
Retesting specimens due to human error can be expensive and time consuming. Automated specimen handling drastically minimizes human interaction, which results in a more reliable testing system.

Increase Throughput
Additional tests such as hardness, surface roughness, and chemical analysis, can be integrated into systems. This reduces the amount of specimen handling, which results in a more efficient process that combines multiple tasks and tests.

Uninterrupted Testing
An automated system continuously runs uninterrupted tests, resulting in an increase in the number of specimens tested per day when compared with a typical manual system.
Did you know that an operator will spend approximately **10.3 hours per day waiting** for tests to run in a 24/7 operation; that translates to **72 hours each week** of valuable operator time lost.*

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**Daily Savings**
10.3 hours gained

**Weekly Savings**
72 hours gained

**Yearly Savings**
156 days gained

* Based on 1440 specimens tested per week
## Specifications

### AT6

<table>
<thead>
<tr>
<th>System/Load Capacity</th>
<th>Robot Capacity</th>
<th>Max Specimen Weight</th>
<th>Electrical Requirements</th>
<th>Storage Rack Type</th>
<th>Storage Capacity</th>
<th>Measurement Device</th>
<th>System Dimensions overall with vertical sliding doors (H × W × D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kN</td>
<td>lbs</td>
<td>kg</td>
<td>kg</td>
<td>lbs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 30</td>
<td>225 - 6,750</td>
<td>2</td>
<td>&lt;0.75</td>
<td>1.75</td>
<td>Top Feed Rack</td>
<td>40 - 200</td>
<td>2190 × 2320 × 2770 87 × 92 × 110</td>
</tr>
<tr>
<td>1 - 30</td>
<td>225 - 6,750</td>
<td>4</td>
<td>&lt;0.75</td>
<td>1.75</td>
<td>Discrete Position</td>
<td>165 - 400</td>
<td>2190 × 2320 × 2770 87 × 92 × 110</td>
</tr>
<tr>
<td>50</td>
<td>11,250</td>
<td>4</td>
<td>&lt;0.75</td>
<td>1.75</td>
<td>Top Feed Rack</td>
<td>40 - 200</td>
<td>2190 × 2320 × 2770 87 × 92 × 110</td>
</tr>
<tr>
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<td>22,500</td>
<td>4</td>
<td>&lt;0.75</td>
<td>1.75</td>
<td>Discrete Position</td>
<td>165 - 275</td>
<td>2190 × 2260 × 2540 87 × 89 × 100</td>
</tr>
<tr>
<td>250</td>
<td>56,250</td>
<td>4</td>
<td>&lt;2.00</td>
<td>4.40</td>
<td>Discrete Position</td>
<td>165 - 275</td>
<td>2190 × 2260 × 2540 87 × 89 × 100</td>
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### AT3

<table>
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<tr>
<th>System/Load Capacity</th>
<th>Actuator Capacity</th>
<th>Max Specimen Weight</th>
<th>Electrical Requirements</th>
<th>Storage Rack Type</th>
<th>Storage Capacity</th>
<th>Measurement Device</th>
<th>System Dimensions overall with enclosure doors open (H × W × D)</th>
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<tbody>
<tr>
<td>kN</td>
<td>lbs</td>
<td>kg</td>
<td>kg</td>
<td>lbs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1 - 50</td>
<td>225 - 11,250</td>
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<td>&lt;0.75</td>
<td>1.75</td>
<td>Storage Cartridge</td>
<td>80</td>
<td>1524 × 1194 × 2337 60 × 47 × 92</td>
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### AT2

<table>
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<tr>
<th>Frame Models</th>
<th>Max Stage Load Capacity</th>
<th>XY Stage Travel (Maximum)</th>
<th>Total Crosshead Travel (Does not account for any fixture or probe height)</th>
<th>Stage Speed</th>
<th>Stage Position Accuracy</th>
<th>Stage Position Repeatability</th>
<th>Electrical Requirements</th>
<th>System Dimensions Overall (H × W × D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg</td>
<td>lbs</td>
<td>mm</td>
<td>in</td>
<td>mm/sec</td>
<td>µm</td>
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<td>mm</td>
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<tr>
<td>5942</td>
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<td>450</td>
<td>150 × 150</td>
<td>5.9 × 5.9</td>
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<td>±40</td>
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<tr>
<td>5944</td>
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<td>450</td>
<td>150 × 150</td>
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<td>35.6</td>
<td>25</td>
<td>±40</td>
<td>0.0016</td>
</tr>
</tbody>
</table>
Support for the Life of Your Equipment

Instron® is the largest supplier of materials testing machines in the world. Our reliable testing systems can run 24 hours a day, 7 days a week, 365 days of the year. However, if something does go wrong, or you have a question, we offer a variety of resources to ensure you receive the assistance you need as soon as you need it.

You can count on us

- Represented in more than 160 countries, speaking 40 different languages
- Our on-site and laboratory calibration and verification processes are ISO 17025 accredited throughout Europe, North America, Brazil, Australia, China, Japan, Korea, Singapore, India, Thailand, and Taiwan

Enhanced technical support a “touch” away

- Instron Connect provides easy remote screen sharing and service request submissions to reduce support times
- Built in verification reminders in Instron Connect minimize risk for delayed certifications
- Instron Connect allows simple test method and file transfers to keep systems up to date
- Expert consultants provide tailored solutions and traditional hotline access anywhere in the world
- Additional services like preventative maintenance, calibration, training, emergency repair, and service parts insure confidence that you can keep systems running and get data in a timely fashion

Stay at the forefront of materials science

- Training courses available on-site or in one of our Regional Training Centers
- Utilize our Applications Engineering Lab or Custom Engineered Solutions Group for the latest technological advances in materials testing
- Our state-of-the-art Calibration Laboratory offers a comprehensive range of accredited calibration and verification services complying with ASTM, ISO, and Nadcap standards for: Force, Speed, Strain (extensometers), Displacement, Impact, Temperature, Torque, Creep, Strain Gauge Channel, Alignment, and Verification of all CEAST Instruments.

Resources at your fingertips • www.instron.com

- Our Testing Solutions section provides answers to your most current testing challenges
- WSA is a dedicated support website, providing web-based delivery of information specific to your system
- Access to our complete online Accessories catalog
“True innovation occurs when product designers and developers show relentless curiosity towards the needs of their customers. This builds an understanding that allows them to anticipate and create a new suite of solutions that are Simpler, Smarter, and Safer.”

Yahya Gharagozlou
Group President
ITW Test & Measurement
(Instron is an ITW Company)