

## Automated defect and feature inspection for aviation and automotive development and production

The 4Di InSpec AT is a high-throughput, high resolution defect and feature inspection solution. The automated system measures dozens of features in minutes, vastly improving throughput and driving down inspection costs.

The system consists of a non-contact 4D InSpec or 4D InSpec XL surface gage, integrated with a collaborative robot for rapid inspection in a quality lab or on the production floor.

### Rapid Measurement—Anywhere on a Part

The 4Di InSpec AT quickly measures features such as edge break and radii, and quantifies defects such as pits, scratches, bumps, and corrosion. The high resolution system measures in any orientation, on curved surfaces, over large and complex geometries, and in tight spaces or blind locations.

### Improve Defect and Feature Inspection

The 4Di InSpec AT instantly produces 3D measurement results, with far more information than

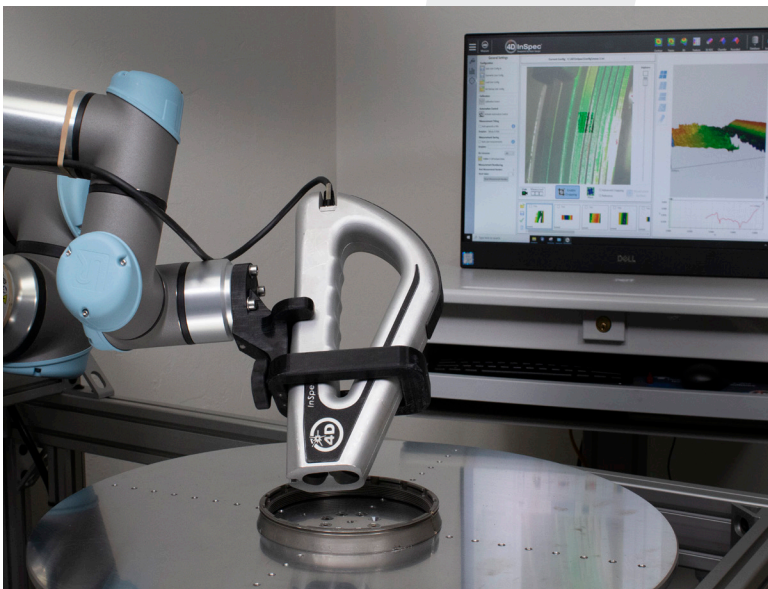
other methods. An inspector can immediately see both an image of the feature and easy-to-read statistics with pass/fail color coding. The data can be conveniently exported to an SPC system.

### Increase Inspection Throughput

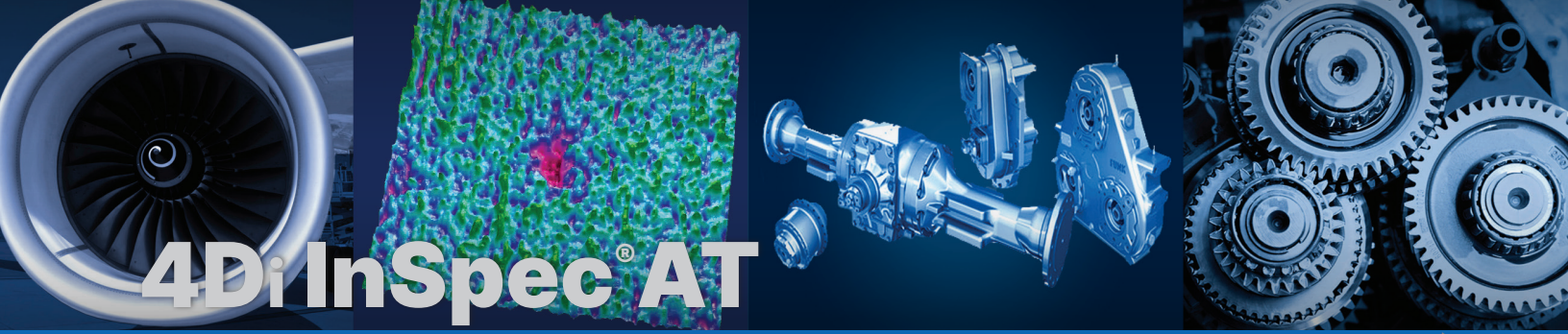
The Universal Robotics collaborative robots are easy to program for rapid, repetitive measurements. Automation enables measurement at more locations, providing more thorough inspection and higher throughput. The included Software Automation Package enables reliable, flexible operation.

### Maximize Process Yield and Quality

The 4Di InSpec AT accurately measures defects, features, and roughness, with real-time pass/fail results, enabling more precise part disposition. Rapid measurement reduces inspection queuing times, while the ability to measure at more locations in the same time frame ensures part quality.



- Automated 3D Surface Measurement of Defects and Features
- Increase Inspection Throughput
- Improve Process Quality and Yield
- Measure on Large Components and Complex Geometries
- Easy to Implement and Operate



# 4Di InSpec® AT

## Specifications

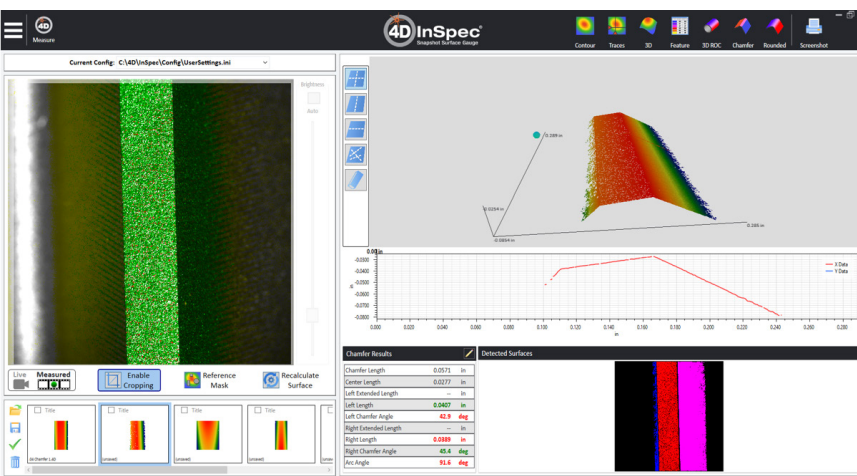
| Description                  | 4Di InSpec AT  |
|------------------------------|--|
| <b>Measurement</b>           |  |
| Acquisition                  | Automated, instantaneous, non-contact 3D surface measurement   |
| Measurable Range             | 4D InSpec: defects and features 0.0002-0.1 in (5 µm-2.5 mm) deep/tall<br>4D InSpec XL: defects and features 0.0003-0.33 in (7 µm-8.5 mm) deep/tall |
| Field of View ( module)      | 4D InSpec: 0.3 × 0.3 in (7.7 × 7.7 mm)<br>4D InSpec XL: 0.6 × 0.6 in (15.2 × 15.2 mm)  |
| Standoff Distance            | 1.4 in (35 mm)   |
| Mounting                     | Robotic arm on table or rigid surface  |
| <b>Automation</b>            |  |
| Robot                        | UR3 or UR5 6-axis collaborative robot  |
| Work Table                   | 24 × 36 in (610 × 813mm) rectangular table or<br>36 in (813 mm) diameter rotary table  |
| Max Reach                    | UR3: Max 19.7 in (500 mm)<br>UR5: 33.5 in (850 mm)   |
| Max Load Capacity            | Rotary Table: 770 lb (349.3 kg)  |
| Software                     | 4D InSpec measurement software, software automation package  |
| <b>Electrical/Mechanical</b> |  |
| Power Requirements           | ~ 200 W robot plus instrument, 100-240 VAC, 50-60 Hz   |
| Weight                       | ~ 44 lbs (20 kg) instrument and robot  |
| Operating Temperature        | 4D InSpec and 4D InSpec XL: 50-105° F (10-40.6° C)<br>Robot: 32-122° F (0-50°C)  |
| Operating Humidity           | < 98% non-condensing   |
| Shock resistance             | 150G (1*10 <sup>-9</sup> /kg/s <sup>2</sup> )  |
| <b>Warranty</b>              | 4D InSpec/4D InSpec XL and robot: One year, limited  |



4D InSpec and 4D InSpec XL Surface Gages



The 4Di InSpec AT system rapidly measures features such as edge break, and defects such as wear and corrosion. Measure directly on small or large components and over complex geometries. Automatic feature finding, 2D traces and 3D plots make it easy to analyze surface features and defects.



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