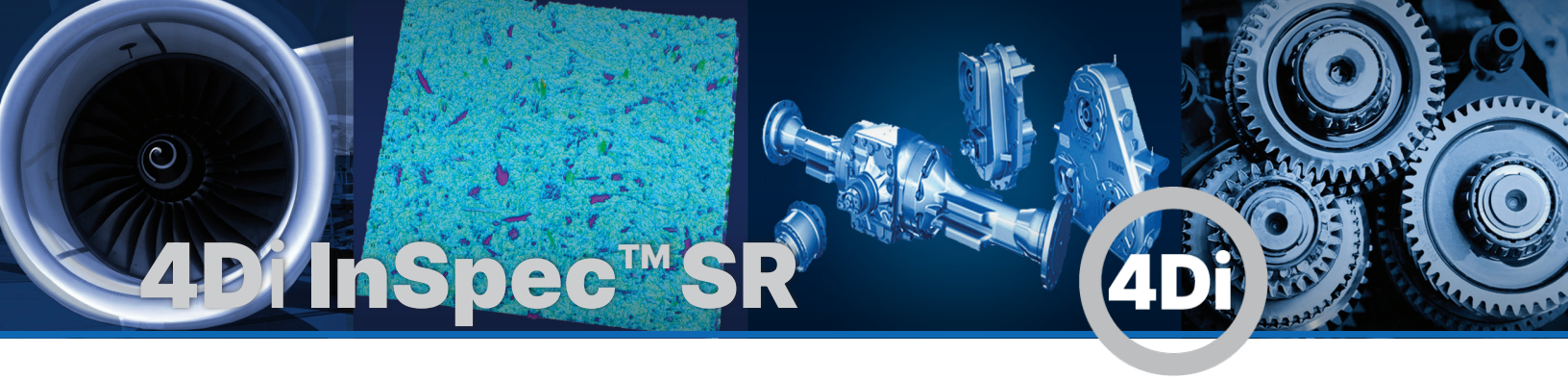




Roughness Measurement System

- Vibration Insensitive 3D Surface Measurement
- Measure Roughness on Small & Large Components Directly
- Easily Measure Complex Geometries
- Scratch-Free Measurement
- Real-Time Decision Making
- Portable, Workstation, or Robotic Operation



The 4Di InSpec SR Surface Roughness Gauge is the first portable, precision instrument for 3D measurement of surface roughness. Rugged and easy to use, the system accurately measures roughness right on the shop floor, in a wide range of environmental conditions.

The 4Di InSpec SR is based on patented optical technology that enables measurement despite vibration. The technology enables, fast, areal roughness measurements with millions of data points.

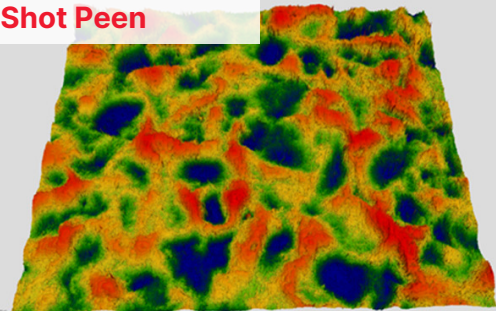
Use the 4Di InSpec SR to directly measure roughness on large components—without the need for replication. Scratch-free optical technology eliminates surface damage, enabling measurement on most materials, including carbon fiber, metal, composites, plastics, cast iron, silicon, and rubber. It's the only portable 3D optical system that can provide standards-compliant roughness parameters for surfaces from ultra-finish through rough and corroded metals.

The 4Di InSpec SR can measure in any orientation to reach difficult-to-access locations, tight corners, and large surfaces. One-button operation makes it easy to align and measure. The measurement head can also be mounted in a workstation configuration, or it can be robot-mounted for fast, automated inspection of complex components.

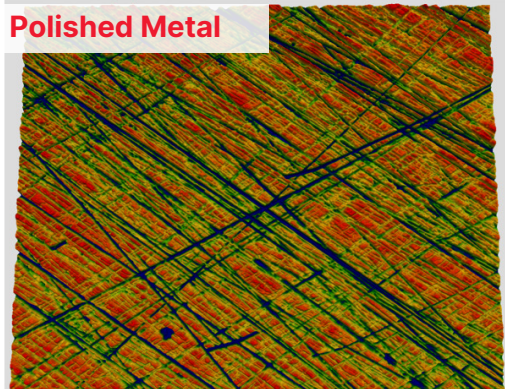
The included 4Sight Focus software offers an intuitive, touchscreen interface for setup, operation, analysis, and data transfer to quality control systems. 3D compliance of standard ISO filters and roughness parameters ensures seamless adoption into your operation.

The 4Di InSpec SR accurately measures surface roughness on most materials and surface finishes

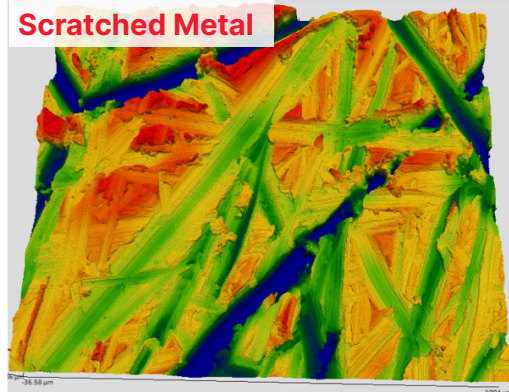
Shot Peen



Polished Metal



Scratched Metal





Specifications

Basic Specifications

Acquisition	Vibration-insensitive, 3D dynamic scanning
Light Source	LED with 100,000-hour MTBF
Field of View (module)	0.04 in x 0.03 in (1.0 mm x 0.8 mm)
Lateral Sampling	16 μ m (0.42 μ m)
Camera	5.0 Mpx
Mounting	Portable, adjustable arm, or robotic automation
Part Contact	Contact part via Teflon pad for measurement
Working Distance	0.079 in (2 mm)
Depth of Focus	118 μ m (3 μ m)
Sample Reflectivity	0.5%–100%
Measurable Roughness Range (Sa)	0.47 μ m to 0.001 in (12 nm – >30 μ m)
Maximum Scan Length	0.01 in (0.3 mm)

Software

Operating System	Windows 11 Pro or above, 64-bit
Instrumentation Software	4Di InSpec SR control and analysis software
Measurement Modes	Snapshot or Vertical Scanning
Roughness Parameters	Sa, Sq, St, Sv, Ssk, Sku, Sp, Sz, Ra
Filters	Box Car, Median, Frequency Cutoff, Gaussian, Robust Gaussian
Shape Removal	Tilt, Tilt + Cylinder, Tilt + Curvature
Data Output	3D surface map and roughness parameters
Data Displays	Contour, 3D, XY Slice, Ra Trace
Data Masking	Analysis mask editor; Masking based on signal to noise ratio
Data Export	Export data to .4D, .OPD, .QED, .DAT, .XYZ, .frame, .CSV, .STL

Electrical/Mechanical

Dimensions (instrument)	13.3 in x 3.4 in x 2.7 in (338 mm x 87 mm x 69 mm)
Weight (instrument)	6.8 lbs (3.1 kg) metrology head
Power Consumption	< 12 W instrument; < 250W with computer, 120VAC
Operating Temperature	60–110° F (15–43° C)
Storage Temperature	32–100° F (0–40° C)
Operating Humidity	< 98% non-condensing
Ingress Protection (IP Rating)	IP53
Cable Length	10 ft (3m) standard

Performance

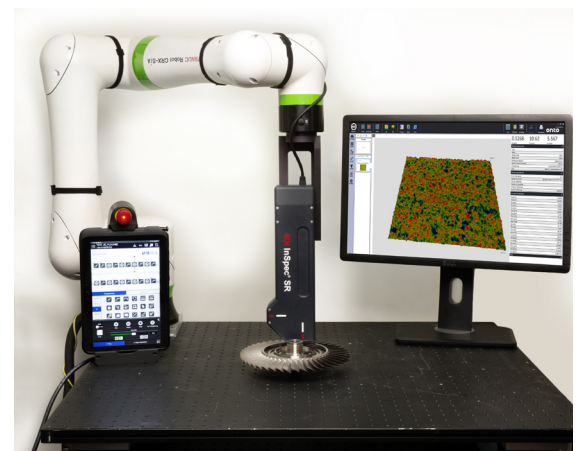
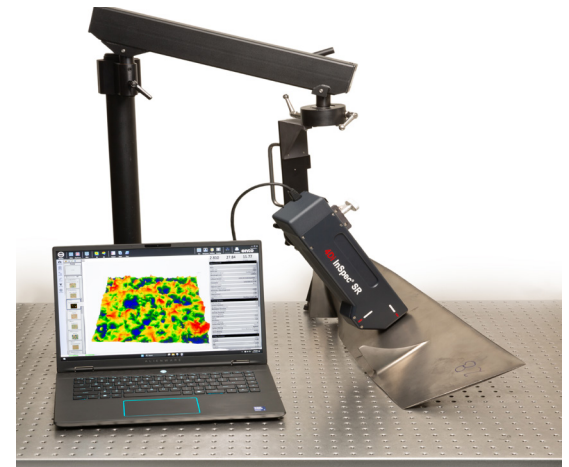
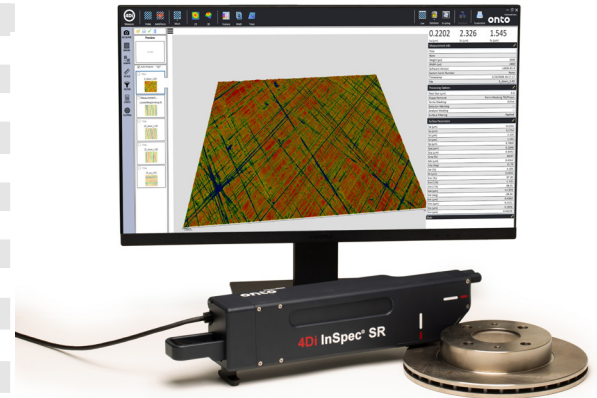
Vertical Resolution ¹	0.47 μ m (12 nm)
Step Height and Roughness Accuracy ²	< 0.5%
Step Height and Roughness Repeatability ³	< 0.1%

Warranty One year, limited

1. Average Sa of difference between two measurements on 4D calibration sample.
2. Difference vs. certified Ra on 3 μ m Ra sine-wave roughness standard
3. 1 σ standard deviation on 30 measurements of sine-wave roughness standard

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4D Technology

Patents US Patent 7,230,717. Others pending.
 All specifications subject to change without notice.
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