INSTRON®

The difference is measurable®

DIC REPLAY

2D Digital Image Correlation Software



Digital Image Correlation (DIC) is an advanced optical method that delivers full-field strain and displacement measurements across the surface of a test specimen. With DIC, materials testing professionals gain deeper insight into how materials behave—revealing localized strain, deformation patterns, and failure mechanisms that traditional measurements can miss.

Instron's DIC Replay software transforms complex DIC data into clear, actionable results. Built specifically for materials testing workflows, it combines an intuitive interface with seamless synchronization to test data—including load, position, and strain—so users can quickly move from raw images to meaningful analysis without added complexity.

KEY CAPABILITIES THAT ACCELERATE INSIGHT

Full-Field Visualization for Complete Understanding

Visualize strain and displacement across the entire surface of a 2D specimen* to better understand material behavior. View key measurements such as axial and transverse strain and displacement, shear strain, and maximum/minimum normal strain with intuitive display options.

Virtual Gauges

Quickly place and adjust virtual strain gauges or extensometers to evaluate localized behavior or measure strain between points with precision

Reusable Methods for Consistency and Efficiency

Save analysis methods and apply them across multiple specimens to ensure repeatability, standardization, and faster workflows.

Seamless Integration with Test Data

Instantly correlate DIC results with load, displacement, and other measurements collected in Bluehill® software—eliminating manual synchronization and reducing analysis time.

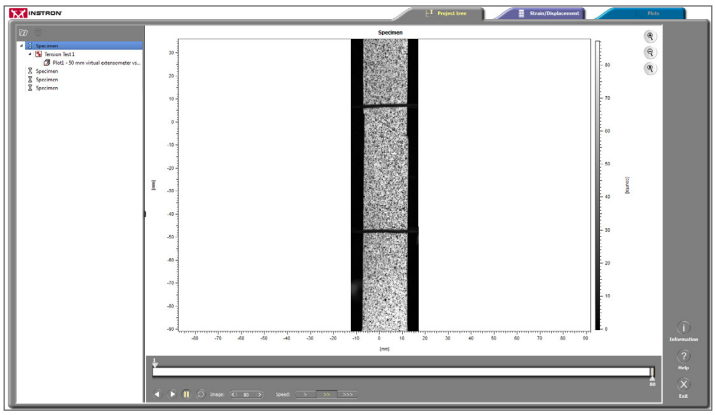
Flexible Access to Your Data

Install DIC Replay on multiple PCs and securely access it using a portable USB license. The dongle enables analysis on any authorized computer—at the test system, in the office, or offline—providing the flexibility to process data wherever it's most convenient.

* 2D analysis is appropriate where surface height deformation is negligible

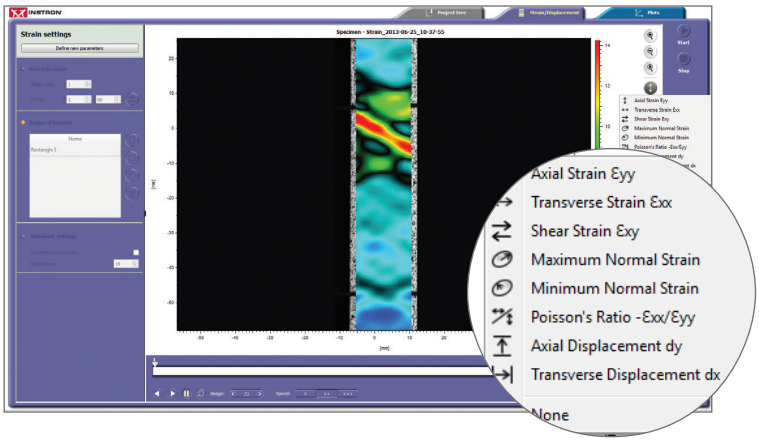
PURPOSE-BUILT SOFTWARE FOR EFFICIENT POST-TEST ANALYSIS

DIC Replay is a self-contained 2D DIC analysis solution designed to simplify post-processing. Using images and calibration data captured by Instron's Advanced Video Extensometer (AVE3), it enables fast, reliable analysis without disrupting your testing workflow..



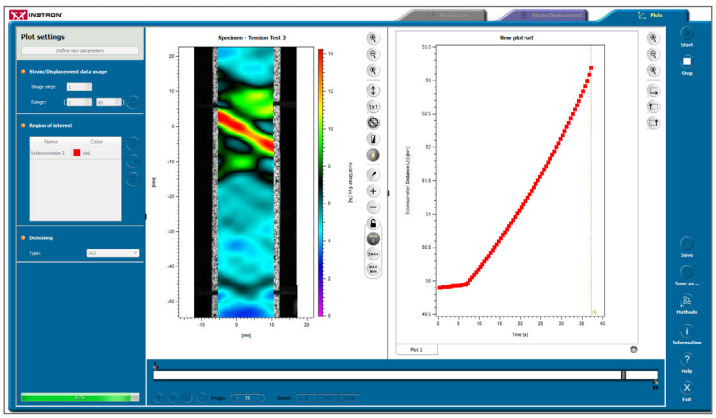
Sort Data with a Logical Project Tree

- Browse and play raw image sequences from tested specimens
- Explore calculated full-field displacement and strain maps
- Find saved line plots showing virtual extensometer and virtual strain gauge data



Analyze Strain and Displacement Maps

- Define a region of interest with simple "click-and-drag" shape tools or let the wizard select the speckled region automatically
- Calculate strain and displacement maps over the entire sequence or from a region of interest
- Choose the type of strain or displacement values to display using intuitive visual icons
- Save processing settings and apply them to future specimens

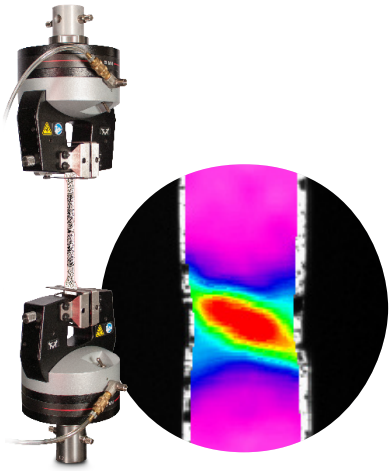


Create Simple Line Plots

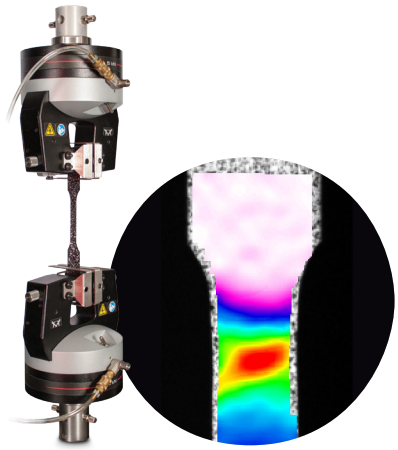
- Place virtual extensometers or strain gauges anywhere on the specimen to evaluate localized or average strain
- Display average strain (strain gauge) or strain between two points (extensometer) using simple line plots
- Plot virtual gauges against synchronized measurement data collected during the test
- Configure a range of plots using X/Y axis settings and simple worksheet tabs
- Export images and video of the animated strain and displacement maps

APPLICATIONS: GAIN DEEPER INSIGHT ACROSS YOUR TESTS

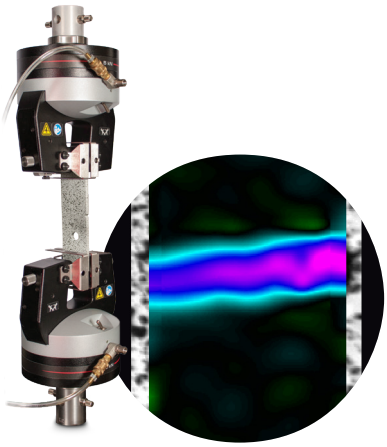
2D full-field strain and displacement maps provide valuable insight across a range of applications, including visualizing material behavior on coupons or components, checking specimen alignment, ensuring localized strain remains within the gauge length of a conventional extensometer, and identifying localized deformation or damage.



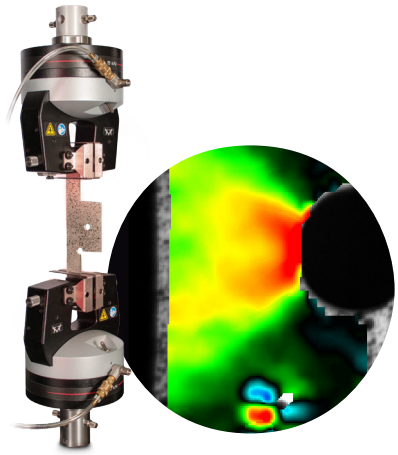
Check specimen preparation techniques by comparing one specimen to the next and looking for localized strain concentrations.



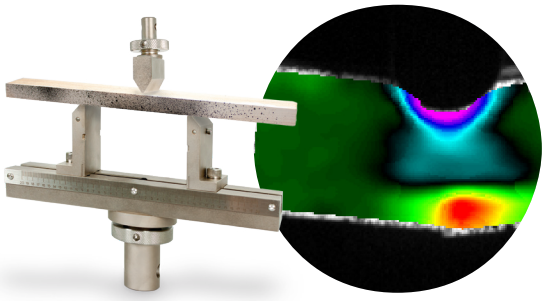
Check for standards compliance by identifying localized strain that falls outside of the standard gauge length or clip-on extensometer.



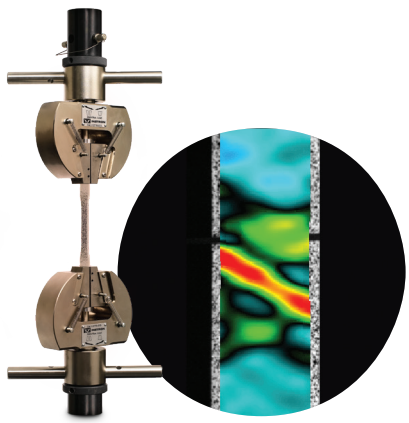
Visualize and detect cracks that are not visible to the eye or are in the raw images under tension or compression loading.



Analyze strain and displacement on the flat surface of a part or component where traditional extensometers are impractical.



Visualize the side profile of a flexure or compression specimen to observe tension and compression strain behavior.



View materials testing phenomena such as discontinuous yielding, localized necking, and more.

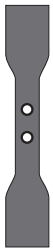
MODES OF OPERATION



Speckle Only
Analyze specimens after the test using the DIC Replay Software



Mixed Mode
Capture average strain in real-time (large dots) and use background speckle for DIC post-test processing



Real-Time Strain
Turn off DIC mode to run traditional tests (capturing average axial or transverse strain in real time)

EXPECTED ACCURACY FOR DIC COMPUTATIONS - AVE3

Field of View (FOV) - up to[1]:	**mm**	85	202	367	522
Lens Focal Length	**mm**	35	16	9	6
Virtual Extensometer (5 mm GL)	**± µm**	1	1	3	7

Notes
1. Determined at table model mounting distance
2. Refer to AVE literature for accuracy of real-time strain.
3. Accuracy figures reflect ambient conditions and do not apply to tests conducted within chambers.

EXPECTED ACCURACY FOR DIC COMPUTATIONS - AVE2

Field of View (FOV) - up to:	**mm**	100	170	240	400	425	700	840
Lens Focal Length	**mm**	35	35	16	16	9	9	6
Virtual Extensometer (5 mm GL)	**± µm**	1	1	1	1.5	3	4	7

Notes
1. Refer to AVE literature for accuracy of real-time strain.
2. Accuracy figures reflect ambient conditions and do not apply to tests conducted within chambers.

HARDWARE AND SOFTWARE REQUIREMENTS AND SPECIFICATIONS

Compatibility	Instron® AVE2, AVE3, and Bluehill® Universal Software
Minimum PC Specifications	Intel i3 @ 3.0GHz, minimum 16GB RAM, Windows® 10 (64 bit) Build 1607 or greater, excluding Home Edition. Windows® 11 (64 bit), excluding Home Edition.
Image Collection Rate	User defined up to 50 Hz

INSTRON®

Worldwide Headquarters
825 University Ave, Norwood, MA 02062-2643, USA
Tel: +1 800 564 8378 or +1 781 575 5000

European Headquarters
Coronation Road, High Wycombe, Bucks HP12 3SY, UK
Tel: +44 1494 464646

Instron is a registered trademark of Illinois Tool Works Inc. (ITW). Other names, logos, icons and marks identifying Instron products and services referenced herein are trademarks of ITW and may not be used without the prior written permission of ITW. Other product and company names listed are trademarks or trade names of their respective companies. Copyright © 2026 Illinois Tool Works Inc. All rights reserved. All of the specifications shown in this document are subject to change without notice.