



## A REVOLUTION IN STRAIN MEASUREMENT

The second generation Advanced Video Extensometer (AVE 2) utilizes patented measurement technology in the fastest, most accurate non-contacting strain measurement device commercially available. The fully-integrated device easily adapts to the normal fluctuations of environmental conditions in your lab and is easily adapted to any testing machine on the market. The device dramatically reduces errors from thermal and lighting variations that are common in most labs.

## ONE DEVICE, ENDLESS APPLICATIONS

Do you wish you had one device for use at ambient, high/low temperatures, or for use with specimens and components submersed in a bath? Do you need a device that can meet the needs of your lab over the next five years? The versatility of the new AVE 2 allows for testing under multiple environmental conditions, and can be used for advanced strain measurement with Digital Image Correlation (DIC). Additionally, the AVE 2 conforms to the most rigorous testing standards, such as ISO 527 and ASTM D638.

## DESIGNED BY CUSTOMERS, ENGINEERED BY INSTRON

How often do you find that your testing equipment isn't quite what you need or expected? Learning what is critical for our customers allows us to develop technology that is intuitive and eliminates unnecessary steps and complicated set up procedures. Every interaction that our global sales and service teams have with customers allows us to gain valuable insight into customer problems, providing the input for us to engineer customized solutions that address these important customer concerns.

## MEETING YOUR ENDLESS APPLICATIONS

- Meets a broad range of international testing standards, including ISO 527, ASTM D638, and ASTM D3039
- Utilize the real-time 490 Hz data rate to capture quickly changing measurement events
- Measure both modulus and strain to failure of almost any material including plastics, metals, composites, textiles, films, elastomers, paper, components, and bio-materials
- Record images of the test for synchronized playback or for post-analysis with Digital Image Correlation
- A single device in your lab now accommodates test specimens with multiple gauge lengths or varied elongations

## OPTIONAL ADVANCED FEATURES

- AverEdge32 for improved r-value testing of sheet metal. Utilizes markless edge-detection to provide a real-time average value from 32 transverse gauge widths. Recommended method per ISO 10113.
- Instron's DIC Replay software for full-field 2D strain maps synchronized with all test data
- Dynamic Strain Measurement and Control. Capable of tracking displacement at up to 500mm/s with cyclic test frequencies up to 20Hz.

## CONVENIENTLY INSTALLS ON ANY INSTRON MACHINE IN YOUR LAB

- Its versatility allows for testing specimens and components at ambient and high/low temperatures, or while submersed in a bath
- Can be used on nearly ANY Instron system in your lab
- Mounts easily to testing frame and can quickly be moved from machine to machine within the lab

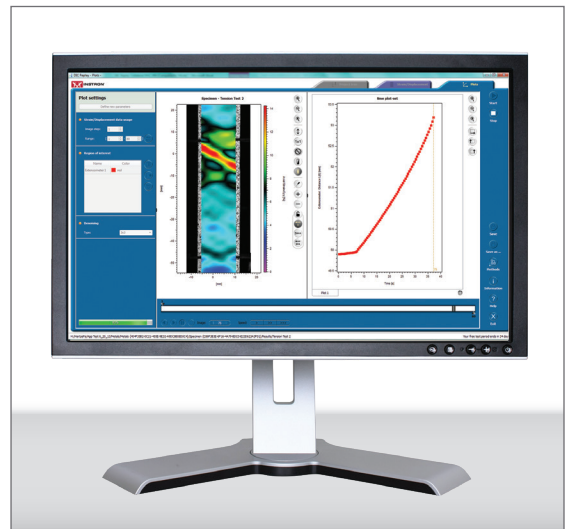
## DELIVERING A ROBUST SOLUTION WITH POTENTIAL FOR FUTURE EXPANSION

- Depending on your application, you can now take measurements using a variety of marking methods — dots, lines, speckle, or even natural patterns
- Plug-and-play installation dramatically reduces dependency upon PC requirements
- Streamlined operator controls are integrated directly into Bluehill® Universal Software, removing confusing and unnecessary steps
- Patented\* technology reduces errors from thermal and lighting fluctuations that are common in most labs
- On-board measurement technology means that data is processed in real time

\* Instron holds US and European patents for the control of air currents between the camera and specimen that eliminates noise caused by refraction of light; and for the low-voltage LED illumination system that ensures optimum lighting under all lighting conditions. US 7,047,819 B2, US 7,610,815 B2, and EP 1,424,547, B1.



AVE 2 Mounted on a Temperature Chamber



Adaptable with Digital Image Correlation - Instron DIC Replay Software



One Device, Endless Applications

## SPECIFICATIONS

## Axial Measurement

Lens Focal Length	mm	35	16	9	6
Field of View for Tabletop Static and Dynamic Systems <sup>1</sup>	mm	100	240	425	620
	in	3.94	9.45	16.73	24.41
Field of View for Floor Model Static Systems <sup>2</sup>	mm	130	310	560	840
	in	5.11	12.2	22.04	34.46
Resolution	µm	0.5	0.5	1.5	3
Accuracy	µm	±1 or 0.5% of Reading*	±1 or 0.5% of Reading*	±3 or 1% of Reading*	±9 or 1% of Reading*
Data Rate	Hz	490	490	490	490
Minimum Gauge Length	mm	5	6	12	15
	in	0.2	0.23	0.47	0.59
Maximum Following Speed	mm/min	2500	2500	2500	2500
	in/min	98.4	98.4	98.4	98.4
Resolution with Chamber	µm	0.5 + 0.5/25 °C	0.5 + 0.5/25 °C	1.5 + 1/25 °C	3 + 1/25 °C
Accuracy with Chamber	µm	±2 or twice resolution or (0.5% + 0.015%/50 °C)*	±3 or twice resolution or (0.5% + 0.015%/50 °C)*	±10 or twice resolution or (1% + 0.03%/50 °C)*	±27 or twice resolution or (1% + 0.03%/50 °C)*

Transverse Measurement Option<sup>3</sup>

Field of View for Tabletop Static and Dynamic Systems <sup>1</sup>	mm	13	33	57	85
	in	0.51	1.29	2.24	3.34
Field of View for Floor Model Static Systems <sup>2</sup>	mm	16	40	70	110
	in	0.62	1.57	2.75	4.33
Resolution	µm	0.5	0.5	1.5	3
Accuracy	µm	±2.5 or 0.5% of Reading*	±2.5 or 0.5% of Reading*	±7.5 or 1% of Reading*	±22.5 or 1% of Reading*
Minimum Gauge Width	mm	5	6	12	15
	in	0.2	0.23	0.47	0.59

## Classification to Standards

Classification to ISO 9513:2012	mm	Class 0.5	Class 0.5	Class 1 (Travel > 0.3)	Class 2 (Travel > 10)
Classification to ASTM E83-16	mm	Class B-1 (G.L. > 10)	Class B-1 (G.L. > 10)	Class C (G.L. > 15)	Class C (G.L. > 25)

## HARDWARE AND SOFTWARE REQUIREMENTS

The AVE 2 runs on the same PC as the testing machine software. The minimum specification for the PC is: 3.06 GHz Pentium 4 with 4 GB memory and Microsoft® Windows® 7 Professional (32 and 64 bit).

\*Whichever is greater

Notes:

- 334X, 34SC, 336X, 34TM, 594X, 68SC, standard width 596X and 68TM, ElectroPuls™, and 8800MT Systemss
- Standard width 3382, 5982, 5984, 5985
- Transverse Option not available for 3300 and 5500 systems

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