INSTRON®

The difference is measurable®

AVE3

Advanced Video Extensometer

ONE DEVICE
ENDLESS APPLICATIONS

As Instron's premier extensometer solution, the AVE3 is unrivaled in versatility – offering precision strain measurement for tensile, compression, and bend testing. Delivering unparalleled flexibility, the AVE3 can be used for testing small to large gauge lengths, low to high elongations, flat and round specimens, and sensitive materials like films – eliminating the need to purchase and maintain multiple clip-on devices. It's even compatible with temperature chambers and fluid baths for non-ambient applications. As a non-contacting solution, there's no cumbersome attachment step prior to testing, and strain can be tracked through failure without risking damage to the device, even when testing explosive failures of composites. The AVE3's compliance to ISO 9513 and ASTM E83, paired with its real-time 500 Hz data rate, allows you to test to the most stringent standards.

ROBUST IN ANY ENVIRONMENT

Eliminating Environmental Influences

Did you know that the environmental conditions in your lab create air disturbances that negatively impact your test data? The optical experts at Instron identified areas that introduce noise to the strain signal and designed the AVE3 to produce consistent strain data without the need for extensive filtering. The AVE3 uses patent-pending Constant Density Air Tunnel (CDAT) technology that mitigates thermal and environmental effects on your strain data. This technology shields your strain signal from environmentally induced noise for improved accuracy in real-time, allowing you to perform tests in strain rate control.

Reducing Strain Variability

While contacting extensometers offer accurate strain measurement, they can have an adverse effect on results due to operator variability, knife edge slippage on the specimen, or premature breaks at the knife edges. With contacting devices, you also have to account for wear on moving parts and be mindful to remove the device before break to avoid damage.

As a non-contacting solution, the AVE3 removes operator influence from your strain data – delivering more consistent strain results across all your labs.

APPLICATION RANGE

- Compatible with nearly any material: plastics, metals, composites, textiles, films, elastomers, paper, components, and biomaterials
- Types of loading: tensile, compression, bend

TEST STANDARDS

The AVE3 conforms to the most rigorous international testing standards, such as:

Metals Standards

- ISO 6892, ASTM E8, JIS Z 2241, GB 228.1
  - Strain rate control: 0.00025/s GLs ≥ 25mm
- r-Value (AverEdge32™ recommended): ISO 10113, ASTM E517, JIS Z 2254, GB/T 5027

Plastics Standards

- ISO 527-2, ASTM D638, JIS K 7161-2, GB/T 1040.2
- Flexural tests: ISO 178, JIS K 7171, GB/T 9341

Composite Standards

- ISO 527-4/5, ASTM D3039, GB/T 3354

Elastomer Standards

- ISO 37, ASTM D412, JIS K 6251, GB/T 528

Film and Foil Standards

- ASTM E345, ASTM D882, GB/T 1040.3

STANDARD FEATURES

Patent-pending Constant Density Air Tunnel (CDAT) technology protects your test data

Adaptive lighting technology acts independently of lab lighting to eliminate influences on your test data

Enhanced control to ensure that fans operate only while testing is in progress

Can be used on nearly ANY Instron system in your lab

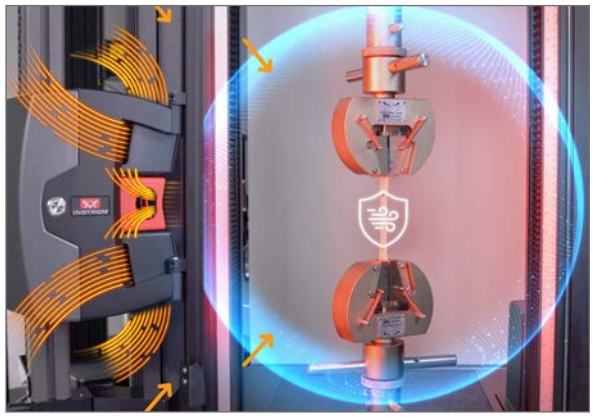
Mounts easily to the test frame and can quickly be moved from a machine to a chamber

Fully integrated into Bluehill® Universal testing software

On-board measurement technology means that data is processed in real-time (500 Hz data rate), capable of meeting strain control requirements

Elastomer Testing on 68SC


Metals Testing on 68FM


Patent-Pending CDAT Technology for up to 5x Accuracy Improvement


Easily Mounts to Chamber

OPTIONAL ADVANCED FEATURES

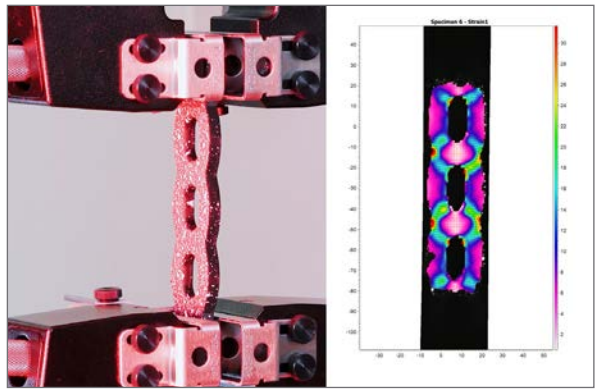
AverEdge32™

For those requiring r-value for sheet metal testing, the optional AverEdge32 provides best-in-class transverse strain accuracy by averaging 32 measurements from within the specimen gauge length. Recommended for sheet metal testing per ISO 10113 and ASTM E517.

AverEdge32

Digital Image Correlation

The AVE3 can also record images of your testing to be used with Instron's Digital Image Correlation (DIC) software for full-field strain maps of your specimens that are synchronized with your Bluehill® Universal test data.



AVE3 Pairs with Instron's DIC Software

LENS OPTIONS

35 mm - Short Field of View

Suitable for low-strain materials such as composites, metals, and rigid or filled plastics.

16 mm - Standard Field of View

Suitable for materials such as plastics, metals, sheet metals, and foils. Preferred lens for metals customers requiring strain rate control and average transverse strain measurement (AverEdge32).

6 mm (Extra-Long Field of View) and 9 mm (Long Field of View)

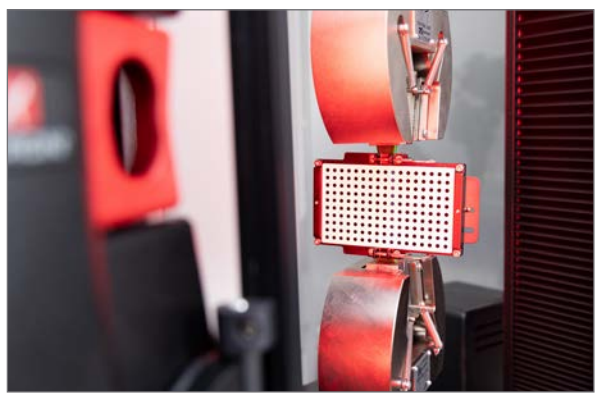
Suitable for materials with high elongations such as rubbers, elastomers, films, and some plastics.

** When selecting your lens, ensure you know your minimum and maximum gauge length requirements as well as total elongation of the range of specimens you plan to test.

Easily Replace Lenses Using Kinematic Mounting

KINEMATIC MOUNTING

The AVE3 adapts to your testing needs – allowing you to quickly change out the lens to accommodate a wide variety of gauge lengths and elongations. And with the new kinematic mounting, lenses automatically snap into the factory-calibrated location – ensuring consistent setup to capture accurate data every time.



Clip-On Calibration Plate

SPECIFICATIONS

AXIAL MEASUREMENT

Lens Focal Length	mm	35	16	9	6
Field of View for Table Model Static Systems [1]	mm	85	202	367	522
	in	3.34	7.95	14.45	20.55
Field of View for Floor Model Static Systems[2]	mm	112	261	477	685
	in	4.41	10.28	18.78	29.87
Resolution	µm	0.25	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	500	500	500	500
Minimum Gauge Length [1]	mm	2[5]	4	6	7
	in	0.08	0.16	0.24	0.28
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[3]

Field of View for Table Model Static Systems[1]	mm	14	33	58	82
	in	0.55	1.29	2.28	3.23
Field of View for Floor Model Static Systems[2]	mm	19	43	76	109
	in	0.75	1.69	2.99	4.29
Resolution	µm	0.25	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*
Minimum Gauge Width	mm	2[5]	4	6	7
	in	0.08	0.16	0.24	0.28

*Whichever is greater

CLASSIFICATION TO STANDARDS

		35 mm	**16 mm**	**9 mm**	**6 mm**
Classification to ISO 9513:2012/Cor 1:2013 [4]	mm	Class 0.5 (G.L. ≥ 5)	Class 0.5 (G.L. ≥ 10)	Class 1 (G.L. > 12)	Class 2 (G.L. > 15)
Classification to ASTM E83-23 [4]	mm	Class B-1 (G.L. ≥ 5)	Class B-1 (G.L. ≥ 10)	Class C (G.L. > 12)	Class C (G.L. > 15)

HARDWARE AND SOFTWARE REQUIREMENTS

The AVE3 runs on the same PC as the testing machine software. The minimum specification for the PC is: 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.

Notes:

1. 334X, 34SC, 336X, 34TM, 594X, 68SC, standard width 596X and 68TM
2. Standard width 3382, 34FM, 5982, 5984, 5985, 68FM
3. Transverse option not available for 3300 Series systems
4. Ambient table and floor model systems
5. Field verification can only be preformed down to 4 mm

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