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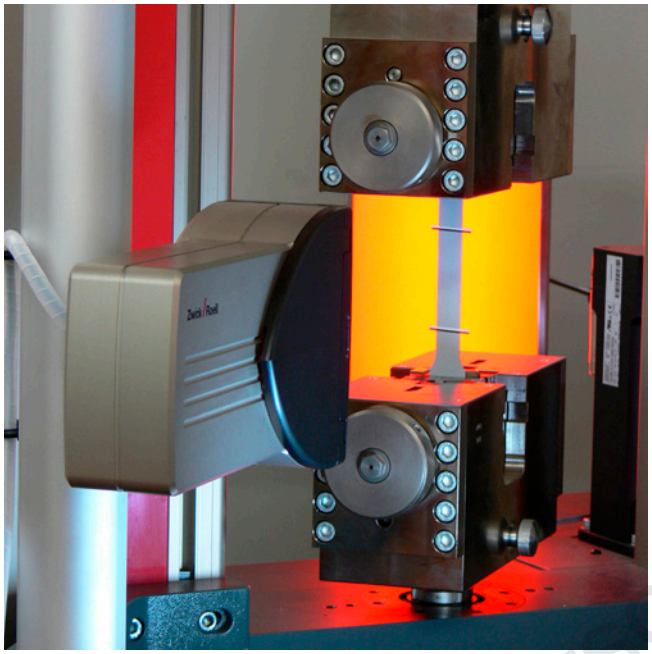
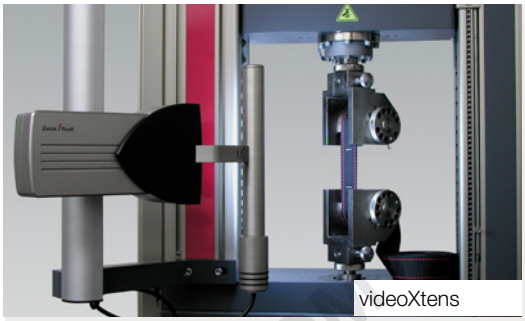
Materials Testing

Product Information

videoXtens - High precision without contact!





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Range of applications

videoXtens provides non-contact, high-resolution measurement of tensile, compression and flexure deformations on all types of plastics, metals, rubber, composites, films and foils. It is also suitable for determining transverse strain, r & n-values to ISO 10113 and ISO 10275 and offset yield in tensile tests to ISO 6892-1.

Advantages of the videoXtens

- The videoXtens does not have any influence on the material characteristic as it is a non-contact extensometer.
- It is the ideal measuring system for elongation measurements of whipping materials (safety belts, steel ropes, rubber ropes, etc.).
- Biaxial measurement: extension as well as transverse strain are possible at the same time
- Simple adjustment and alignment with respect to the test axis
- Can easily be used with a temperature chamber

High accuracy and resolution

- Accuracy class 1 according to EN ISO 9513
- The resolution and measuring accuracy are high over the entire field of view
- Test paths are variable and very large, according to the selection of the picture size or objective

Unique functionalities

- Automatic test mark recognition and acquisition of the initial gage length L_0
- Strain controlled tests are possible
- Preparation-free testing of specimens with a textured surface by pattern tracking
- Different distances from the specimen surfaces to the camera (e.g. with tensile shearing tests or components) can be compensated.
- You can follow the complete test sequence at the monitor.

Outstanding options

- Test Re-Run allows recorded image sequences to be used for subsequent recalculation of the strain values with other initial gage lengths.
- Determination of strain distribution and strain at break according to ISO 6892-1 annex H
- Measurement of transverse strain and deflection in 3- or 4-point flexure tests without the need of additional hardware
- The 2D dot matrix identifies local strains and inhomogenities of a plane specimen surface in 2 dimensions.
- Video Capturing: Recording of the test, synchronized with the measurement curve, permitting a later viewing of the test.

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Description					Item no.
videoXtens					**034106**
Includes measurement head with digital camera, software for image aquisition and analysis, accessories case with adjustment jigs and markings. Measurement path dependent upon the field of view:					
Field of view	50 mm	100 mm	200 mm	500 mm	
Resolution	0.25 µm	0.5 µm	1 µm	2.5 µm	
L_0 = 5 mm to 500 mm approx.; max. test speed: 1000 mm/min; max. measuring rate 166 Hz; weight 7.5 kg					
Accuracy grade 1, according to EN ISO 9513 for FOV <= 200 mm. True for field of view > 200 mm: The smallest measurement value in accuracy grade 1 is FOV/1000.					
Additional camera for existing videoXtens housing.					**034026**
Additional camera, including separate videoXtens housing.					**034027**
videoXtens Array (3 cameras)					**063466**
Expanded measuring head with three digital cameras, image acquisition and evaluation software, and accessories case with alignment and marking tools. The measurement displacement depends on the total field of view:					
Total field of view	140 mm	230 mm	340 mm		
Resolution	0.25 µm	0.4 µm	0.6 µm		
L_0 = 5 mm to 300 mm; maximum test speed: 1,000 mm/min; max. measured-value rate 100 Hz; weight 15 kg					
Accuracy grade 1, according to EN ISO 9513					
					084039
ProLine videoXtens, same as videoXtens, only: minimum resolution is 0.5 µm, max. measuring rate is 650 Hz					**013561**

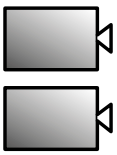
videoXtens variants

videoXtens
This is the basic version with one housing and one camera.

videoXtens with second camera
This variant enables measurements in wide and fine ranges with jolt free switching.
One camera focusses the initial range what gives a high resolution, a great advantage especially for small initial gage lengths. The second camera observes the complete range, thus a large measurement path can be realized.

Alternatively the second camera can be used for transverse strain measurement. Or two cameras can be used as array, with overlapping fields of view. This results in an enlarged FOV without reducing the resolution.

videoXtens with second camera in extra housing
The separate housings of the cameras enable an independent placement.
At high measurement lengths the upper and lower measurement mark can be observed separately and a high local resolution is achieved.
The minimum distance between the two cameras is 180 mm.



Array: Multi-camera measuring systems
For applications with large measurement range combined with very high resolution, the Array variant of the videoXtens offers a flexible solution: Here, the overlapping fields of view from several cameras are combined to form one large field of view. Markings leaving the one camera's field of view are automatically forwarded to the next camera's field of view, etc. The videoXtens Array is moved with half crosshead speed, so the test process remains in its focus and the measurement range is used to full capacity.

ProLine videoXtens
The ProLine videoXtens is developed especially for ProLine testing machines and their functionality concept.

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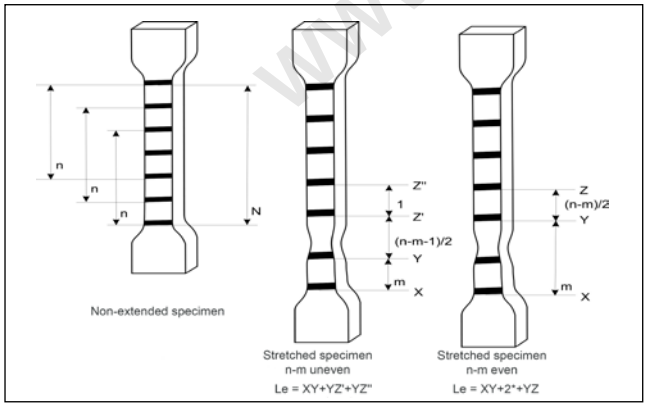
Software-Options
(not for ProLine videoXtens)

Test Re-Run and strain distribution (325932)
The optional Test Re-Run module allows an image series recorded during a test to be used for subsequent recalculation of the strain with a different initial gage length (if several markings are present).
This can be especially advantageous if local strains must be evaluated at different locations in component testing or if the necking of the specimen in a standard tensile test occurred outside the original initial gage length.

The option strain distribution is used to determine localized strains at several measuring locations along the gage length on the specimen. The strains are then available as channels in *testXpert*® II. Up to 16 measurement marks are recognized automatically and evaluated online during the test. In addition, a balancing of the beginning gage length can be performed in order to follow the necking-in automatically in real time (according to ISO 6892-1, annex H).

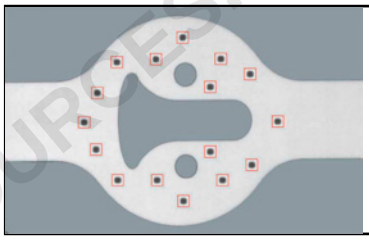


Automatic balancing of strains for a necking-in according to ISO 6892-1, annex H

Measurement of the deflection in 3- and 4-point flexure tests (077060)
Depending on the type of test and/or the specimen properties the flexion is measured with incident light on specimen markings on the specimen or on specimens bottom edge with backlight.

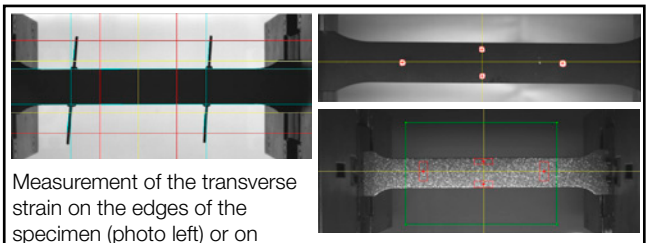
Software option: 2D dot-matrix (077059)
This option enables measurement in two dimensions for measurement points attached on a plane specimen surface. Thereby it is possible to identify local strains and inhomogenities of the specimen under strain. X- and Y-coordinates as well as the distances between points are available as measurement values.

Up to 100 measuring points in any desired configuration or arranged in matrix form can be dimensioned. *testXpert*® II displays up to 15 measurement channels.



Component specimen with dots for 2D measurement

Second measurement axis (013582)
This option enables simultaneaously measurement of extension and transverse strain as changes in width. The measurement can be made via backlight directly at the specimen edge without additional marking (necessary for determination of the r-value) or via incident light on the specimen´s surface with point-shaped markings or a sprayed pattern.



Measurement of the transverse strain on the edges of the specimen (photo left) or on specimen´s surface by point-shaped markings / sprayed pattern (photo right top/bottom)

Video Capturing for videoXtens (049467)
If additionaly a recording of the test is required (without subsequent recalculation) we recommend the software option *testXpert*® II Video Capturing for videoXtens. The recording is synchronized with the measurement curve, permitting a later viewing of the test.

Note: Option Test Re-Run/strain distribution, 2D dot matrix and deflection in *testXpert*® II from version 3.4

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Accessories				Item number
Basic package for videoXtens: The basic package includes a multilingual workstation, Windows operating system (Windows XP or Windows 7 / 32 bit can be choosed), 23" TFT- screen and manual in English or German.				**various**
A separate monitor is recommended in order to be able to follow the live image from the videoXtens in parallel with the *testXpert*® II display.				
Lighting				
LED incident light lamp 300 mm, incl. optical filter (not available for videoXtens Array)				**063467**
LED incident light lamp 500 mm, incl. optical filter (for videoXtens Array 2 additional optical filters are required)				**063468**
Optical filter for further lenses in combination with LED incident light lamp				**063469**
Backlight 420 x 190 mm, incl. mounting unit				**013593**
Backlight 840 x 190 mm, incl. mounting unit (not available for videoXtens Array)				**013596**
Objective lenses				
	for videoXtens / ProLine videoXtens		for videoXtens Array	
Test area width	...440 mm	...630 / 640 mm	independent from test area width	
	FOV / resolution	FOV / resolution	total FOV / resolution	
Objective 8 mm	415 mm / 2.1 µm	515 mm / 2.6 µm	-	**355617**
Objective 12 mm	270 mm / 1.4 µm	340 mm / 1.7 µm	-	**355619**
Objective 16 mm	200 mm / 1.0 µm	250 mm / 1.3 µm	-	**326276**
Objective 25 mm	120 mm / 0.6 µm	155 mm / 0.8 µm	340 mm / 0.6 µm	**355621**
Objective 35 mm	84 mm / 0.4 µm (1	105 mm / 0.5 µm	230 mm / 0.4 µm (1	**013606**
Objective 50 mm	54 mm / 0.27 µm (1	70 mm / 0.4 µm (1	140 mm / 0.25 µm (1	**355623**
Objective 75 mm	31 mm / 0.25 µm(1	42 mm / 0.25 µm (1	-	**018253**
	(1 0.5 µm for ProLine videoXtens			
Lens correction targets to the correction of geometrical lens distortions for objectives with focal distance <= 16 mm				**various**
Mounting				**various**
Holding frames / mounting kits for 45° front-left / rear-left mounting at Allround-Line testing machines (ProLine only front-left mounting). Alternatively a stand is available for separate installation.				
Specimen marking				
Marking templates for plastics specimens				**010406**
Marking templates for metal specimens				**010407**
Measurement marks to videoXtens				**353379**
Specimen marking spray to apply a pattern on the specimen				**057317**
Measurement marks for temperature range -40 °C...+250 °C				**077061**
Marking pen for temperature range -40 °C...+250 °C				**077062**
Z-axis By mounting the videoXtens on the Z-axis, the distance to the specimen can be adjusted variable. In that way the field of view can be adapted steplessly to the test requirements. This functionality is very helpful for frequently changing test requirements as often occuring in test laboratories.				**326223**
Stand-Alone operation: Control of the extensometer is via its own software.				
High performance D/A converter, 4 outputs				**021661**
High performance AD/DA converter, 2 outputs for export of measurement channels and 4 inputs for import of external channels, e.g. for a collective presentation in Excel				**032319**

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