

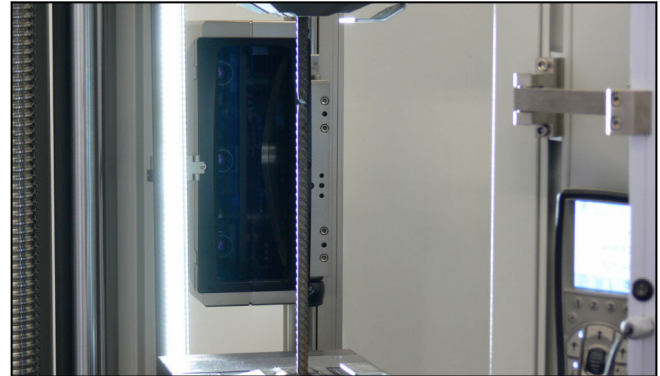
Product Information

videoXtens 3-320 P/HP

CTA: 147687 195943



videoXtens 3-320 P, Similar to picture



videoXtens 3-320 P, Similar to picture

Applicable for materials with medium to high strain at high resolution, such as tensile tests on metals, concrete-reinforcing steel, foils/films, textile ropes and belts.

Advantages and features

- Efficiency gain through mark-free measurement and automatic pattern recognition of specimens with surface texture through blue contrast light technology.
- Significant time and cost savings since the time-consuming application of gauge marks is no longer necessary.
- Accuracy classes 0.5 and 1 to EN ISO 9513. Zwick-Roell extensometers exceed standards requirements, and are calibrated over the entire measurement range in accordance with ISO 9513. Proven standard compliance with the first calibration point starting at 10 µm.
- Accuracy class B1 and B2 to ASTM E83 from an initial gauge length of 15 mm.
- Start testing right away: easy-to-learn, intuitive operation and the advantages of automated functions reduce training requirements and ensure measurement consistency.
- Materials with high break energy and specimens prone to whipping can be tested up to the point of break without causing damage to the extensometer.
- The videoXtens is fully integrated in testXpert. The extensometer and the materials testing machine are controlled with a single software solution.
- Resistant to environmental influences (e.g. air currents, variations in lighting): a flexible tunnel minimizes signal interference.
- Robust, low-vibration mounting system with ergonomic operation. With automatic tracking, the testing operation automatically stays in focus and makes optimum use of the measuring range.

Application example:

Tensile test on metals to ISO 6892-1 and ASTM E8 including strain rate control and stress rate control, expandable for the determination of vertical anisotropy (r-value to ISO 10113 & ASTM E517) and the hardening exponent (n-value to ISO 10275 & ASTM E646)

Testing of belts and ropes made of textile, e.g. L₀ 100 and L₀ 200 mm

Specific advantages in the application:

- Meets the requirements for closed loop strain rate control to ISO 6892-1 Method A1 and ASTM E8 Method B. This results in globally reproducible test results and saves on preliminary tests.
- In addition, the system covers Methods A2 and B according to ISO 6892-1 and Methods C and A according to ASTM E8.

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- Every test is valid: According to ISO 6892-1, the fracture point of a tensile specimen should be in the center range of the initial gauge length. A fractured specimen with fracture point in the range smaller $L_0/3$ to the virtual measuring mark is invalid. This is remedied by Annex I of ISO 6892-1, according to which the longer part of the broken tensile specimen can be used for manual evaluation. Annex I of ISO 6892 is intelligently implemented in the testExpert III testing software and is applied automatically. By symmetrizing the initial gauge length around the fracture position, a previously invalid test can be converted into a valid test.
- Cost savings in specimen material: no specimen is wasted because of breaks that occur outside of L_0 . With the test re-run option and pattern recognition, L_0 can be moved retrospectively and the test can be recalculated, whereby the break then lies within L_0 . Alternative: strain distribution in the above-mentioned option automatically sets the L_0 in the range of the highest strain, if various gauge marks were set prior to the test.

Application example:

Tensile test on films according to ISO 527-3 and ASTM D638

Testing of belts and ropes made of textile, e.g. L_0 100 and L_0 200 mm

Specific advantages in the application:

- Pattern recognition: sensitive specimens such as films are often marked by dotting or stamping and the pattern generated is used for pattern recognition purposes. With ropes, the natural texture of the specimen surface is often used and manual specimen marking is not required.
- Cost savings in specimen material: no specimen is wasted because of breaks that occur outside of L_0 . With the test re-run option and pattern recognition, L_0 can be moved retrospectively and the test can be recalculated, whereby the break then lies within L_0 . Alternative: strain distribution in the above-mentioned option automatically sets the L_0 in the range of the highest strain if various gauge marks were set prior to the test.
- Transverse strain measurements can be easily expanded via the software's transverse strain option.

Function description

The videoXtens 3-320 P/HP features patented array technology for high-accuracy testing in a wide measurement range.

The extensometer is optimized for measuring axial strain using three cameras with high resolution. The overlapping fields of view of the individual cameras are combined into one large field of view via our ZwickRoell array technology. Virtual markings leaving the field of view of one camera are automatically transferred to that of the next camera. This results in one large field of view with high resolution.

For highly accurate measurement of transverse strain, an additional camera can be optionally integrated in the housing.

The flexible tunnel can be extended or retracted to suit individual requirements. By minimizing environmental influences, it creates the right conditions required for a low-noise measurement signal. In addition, it has an integrated blue contrast light which uniformly illuminates the specimen.

Measuring without gauge marks and automatic pattern recognition

Specimens with surface texture: The natural surface texture of the specimen is enhanced into a high-contrast surface pattern by blue contrast light technology and used as virtual gauge marks. A virtual gauge mark is an area on the specimen surface that is defined by the software. The pattern within this defined area is tracked during the test. This eliminates the process of manually marking the specimen and allows for mark-free measurements. Specimens without surface texture: markings are often created by dotting or stamping and the pattern generated is used for automatic pattern recognition. Optionally, manual gauge marks can be applied. The system is designed accordingly and includes an optical filter for measurement with gauge marks.

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videoXtens 3-320 P/HP

Technical data

Type Item No.	videoXtens 3-320 P 1119739	videoXtens 3-320 HP 1119740	
Field of view (FOV)			
With test area width 440 mm [Allround-Line]	350 x 110	350 x 60	mm
With test area width 640/1040 mm [Allround-Line]	320 x 90	320 x 60	mm
Initialgauge length			
With test area width 440 mm [Allround-Line]	5 ... 280	5 ... 280	mm
With test area width 640/1040 mm [Allround-Line]	5 ... 260	5 ... 260	mm
Measurement travel, max.			
With test area width 440 mm [Allround-Line]	330 - initial gauge length	330 - initial gauge length	mm
With test area width 640/1040 mm [Allround-Line]	300 - initial gauge length	300 - initial gauge length	mm
Measurement travel, max. at 50 mm initial gauge length			
With test area width 440 mm [Allround-Line]	280 (560% strain)	280 (560% strain)	mm
With test area width 640/1040 mm [Allround-Line]	250 (500% strain)	250 (500% strain)	mm
Measurement travel, max. at 80 mm initial gauge length			
With test area width 440 mm [Allround-Line]	250 (310% strain)	250 (310% strain)	mm
With test area width 640/1040 mm [Allround-Line]	220 (275% strain)	220 (275% strain)	mm
Strain rate control to ISO 6892-1			
For test speed 0.00025/s	-	From L0 25	mm
For test speed 0.00007/s	-	From L0 80	mm
Resolution at ambient temperature	0.6	0.2	µm
Resolution to ISO 9513 in the ZwickRoell temperature chamber			
At -20 ... +250 °C	0.6	0.6	µm
At -40 °C	0.9	0.9	µm
At -55 °C	1.2	1.2	µm
System distance (distance between reference plane and center of test axis)			
Table-top testing machine, test-area width 440 mm	450	450	mm
Table-top/floor-standing testing machine, test-area width 640/1040 mm	570	570	mm
Frame rate / measured-value acquisition rate, max.	500	500	fps / Hz

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videoXtens 3-320 P/HP

Type	videoXtens 3-320 P	videoXtens 3-320 HP	
Item No.	1119739	1119740	
Test speed, max.	1000	1000	mm/min
Dimensions			
Height	350	350	mm
Width	415	415	mm
Depth	140	140	mm
Specimen thickness	0 ... 50	0 ... 50	mm
Weight, approx.	15	15	kg
Minimum version	testXpert III V1.8 and above	testXpert III V1.8 and above	
Accuracy class			
To EN ISO 9513	1	0.5	
Scope of delivery			
Measuring head with three digital cameras, incl. three lenses and optical filter disc			
Software for image acquisition and evaluation			
Accessory case with alignment and marking aids			
INC module (for tC: RS module)			

Accessories required

Basic packages (1x required)

A basic package is required for the installation of testXpert III and operation of the videoXtens. When working with testXpert III, we recommend a second monitor.

Description	ArticleNumber
Basic package Win 10 videoXtens L and videoXtens, core i7, includes PC multilingual workstation with software installation incl. in scope of delivery (testXpert III, videoXtens L, videoXtens); core i7 processor; graphics card for support of two monitors; Ethernet port for testControl II; 27" TFT monitor; Windows 10 / 64 – multilingual ¹⁾	1123961

1) Can easily be upgraded to windows 11.

Mounting videoXtens 3-320 P/HP onto AllroundLine testing machine (1x required)

Mounting occurs via a connection to the crosshead. With this connection the videoXtens tracks at half crosshead speed, keeping the testing operation automatically in focus and making optimum use of the measuring range.

Description	ArticleNumber
Fixed mounting set at 45° front left on the AllroundLine table top & floor-standing testing machine with connection to the crosshead	1031329
Fixed mounting set at 45° rear left on the AllroundLine table top & floor-standing testing machine with connection to the crosshead Required for mounting with temperature chamber.	1031330

Optional accessories

Measurement of change in width or transverse strain

Description	ArticleNumber
Transverse strain software option for acquisition of transverse strain/change in width. If change in width is to be measured on the specimen edges, a backlight is required.	013582

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Transverse strain camera hardware option for videoXtens, type 3-220 HP

Description	ArticleNumber
<p>Transverse strain camera hardware option; additional high-resolution camera with lens, which is specially aligned for measurement of change in width, with highly accurate, intelligent algorithm for mark-free measurement at the specimen edge.</p> <p>Field of view, (width x height): 80x 190 mm for AllroundLine with test area width 440 mm Field of view, (width x height): 80 x 160 mm for AllroundLine with test area width 640 mm Scope of delivery: Transverse strain camera with lens for installation in the existing housing with installation kit, software license for transverse strain determination via testXpert.</p> <p>A backlight is required for this option!</p>	1121756

Software options

Description	ArticleNumber
<p>Test re-run and strain distribution testXpert II Version 3.4 or higher is required, for which a testXpert II Master Test Program or the option Export Editor (Item No. 1035618) is needed.</p>	325932
<p>Option 2D DIC - Digital Image Correlation 2D DIC module for display and evaluation of strain conditions, fully integrated in testXpert III</p>	1018509
<p>2D DIC test license, at not cost for a limited time of 6 months</p>	1055361
<p>Software option 2D dot matrix for videoXtens For determination of local strains and inhomogeneities of a level specimen surface in two axes (2D). Up to 100 measurement dots in any desired arrangement or in matrix form, measurement of the X/Y coordinates or the distances between dots Required: Channel Editor or master test program (already includes the Channel Editor) testXpert II version 3.5 or higher. Note: Only one camera is used for this function, even for videoXtens Array systems</p>	077059
<p>Software option Flexure test for videoXtens in 3- and 4-point flexure test Measurement of deflection in the test axis, measurement of the curve, measurement using incident light on marks on the specimen, measurement using backlight on the specimen lower edge Required: Incident lighting for measuring with marks or backlight for measuring on the specimen edge Note: Only one camera is used for this function, even for videoXtens Array systems.</p>	077060
<p>videoXtens software package; applicable with videoXtens, not with ProLine videoXtens. Includes the software options: transverse strain software option, test re-run and strain distribution, 2D dot matrix, flexure test</p>	1028367

SSD hard drive (1x required for test re-run option or 2D DIC in connection with multi-camera system)

Description	ArticleNumber
<p>Additional SSD hard drive with very high lifespan and fast write speed for the 2D DIC option and the test re-run option</p>	1097529

Optical slide-in filter for videoXtens, type 3-320 P/HP

Description	ArticleNumber
<p>Optical slide-in filter for videoXtens, type 3-320 P/HP; for glare reduction and contrast enhancement of the specimen surface when measuring with marks; for automatic gauge-mark recognition and recording of the initial-gauge length L_0</p>	1121755

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Accessories for specimen marking

Description	ArticleNumber
Gauge marks (strips) for room temperature (+10 to +35°C), self-adhesive, 100 pieces	353379
Gauge marks (strips) for temperature range -55 to +250°C), self-adhesive, 100 pieces	077061
Gauge marks (black dot on white background) for temperature range -55 to +250°C), self-adhesive, 100 pieces	1015510
Marker pen for temperature range -40 to +250°C	077062
Stencil for marking plastic specimens	010406
Stencil for marking metal specimens	010407
Marking spray for applying a pattern to the specimen	057317

Backlight

Backlight is used for flexure tests or for measuring change in width directly at the specimen edge.

Description	ArticleNumber
Backlight Screen, 420 mm x 190 mm (L x W)	3021583

Screen / uniform specimen background

- For a uniform specimen background, recommended for disruptive background contrasts or narrow specimens (for example ≤ 5 mm with videoXtens)
- Screen to shield eyes from incident light or laser light
- Two colors: white on front for dark specimens, black on back for light specimens
- Mounting directly into T-slot of the table-top or floor-standing testing machine profile

Description	ArticleNumber
Screen/uniform specimen background, swivelable, white on front and black on back, dimensions 420 x 190 mm	086060

Measuring plunger for determining deflection

Description	ArticleNumber
Measuring plunger for videoXtens for determining deflection, i.e. on plastics, fiber-reinforced composites, wood. Installation in ZwickRoell flexure test kit; measurement of deflection by adhering strip gauge marks; maximum height from upper edge of flexure table 99 mm; maximum measurement displacement 25 mm; temperature range -70 ... +200 °C. For this flexure test, we recommend a FOV of at least 30 mm and deactivation of the connection to the crosshead. Additional information in PI 395.	1090625

Testing in temperature chamber

Can only be used with the current temperature chambers for AllroundLine testing machines from the series portfolio. For testing in the ZwickRoell temperature chamber a tunnel adapter is required.

Description	ArticleNumber
Tunnel adapter for connection of the videoXtens to the ZwickRoell temperature chamber Magnetic tunnel adapter with sealing lip for videoXtens for connection to the temperature chamber glass module (view window).	1047285

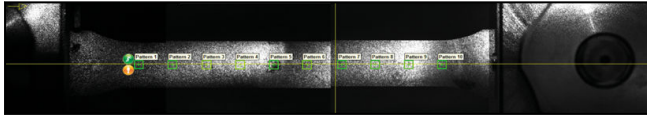
Software option Test Re-Run and strain distribution

The optional Test ReRun module enables subsequent recalculation of strain on the basis of an image series recorded during a test, using a different initial gauge-length (provided multiple markings are present). This can be particularly advantageous in component testing, for example, when it is necessary to evaluate local strain at different locations, or in standard tensile tests when specimen necking has occurred outside the original initial gauge-length.

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CTA: 44010

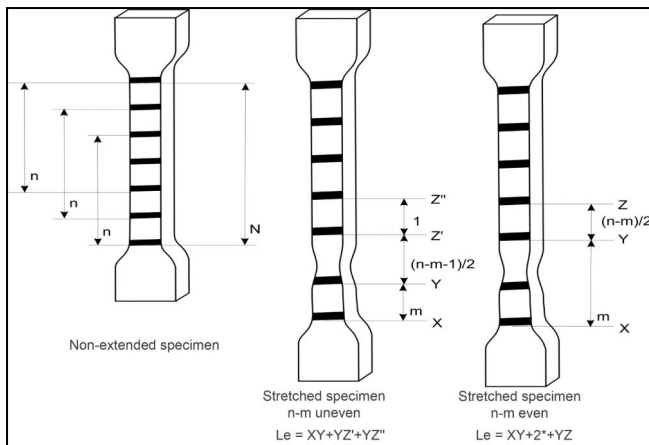


Automatic symmetrical adjustment of strain around necking to ISO 6892-1, Annex I

The recalculated strain can, of course, be synchronized subsequently with the other measurement values via the testXpert testing software.

The Strain Distribution option enables determination of local strains at multiple measuring locations along the specimen gauge-length. These are available as channels in testXpert. Up to 16 measuring locations are automatically recognized and evaluated during the test. This option also allows automatic real-time symmetrical adjustment of the initial gauge-length around the necking (to ISO 6892-1, Annex I).

CTA: 44327



Strain Distribution option: automatic symmetrical adjustment of the initial gauge-length around the necking to ISO 6892-1, Annex I

Software option 2D dot matrix

This option allows two-dimensional measurement of dots applied to a planar specimen surface. This enables determination of local strains and specimen inhomogeneities under load. X and Y coordinates, as well as the distances between dots, are available as measured values.

Up to 100 measurement dots can be measured in any desired arrangement or in matrix form. Display in testXpert III is limited to 15 channels.

This option uses only one camera for measurement; any other cameras present are switched off beforehand.

Transverse strain software option

With this option, biaxial measurements can be performed: In addition to the longitudinal strain, transverse strains can also be recorded—for example the change in width. Alternatively, change in width can of course also be measured alone.

Two versions are available for measurement of transverse strain:

- Direct measurement on the specimen edge without additional markings (required for the determination of the r-value). For this version a backlight is required.
- Measurement of the specimen surface with dot markings or sprayed-on pattern. For this version the specimen is illuminated with an incident light lamp.

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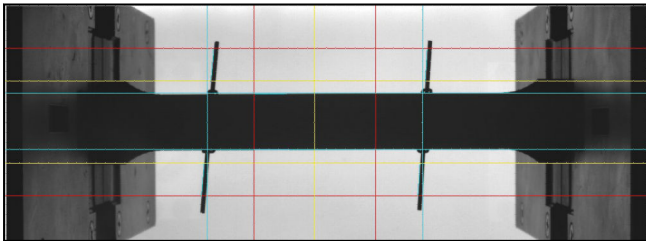
Software option measurement of deflection in 3 and 4-point flexure tests

videoXtens can also be used for flexure tests. There are several options for measuring specimen deflection, depending on the type of test and the specimen condition and properties:

- Measurement using incident light via marks on the specimen
- Measurement using backlight on the specimen lower edge
- Measurement of deflection in the test axis or of the polynomial approximation of the curve

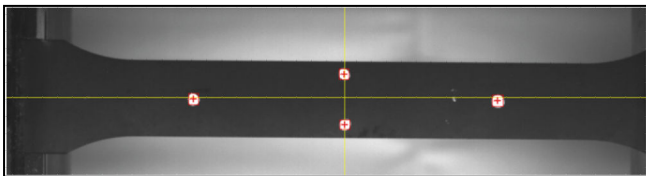
Maximum deflection that can be measured: with videoXtens the maximum deflection corresponds to the FOV; with videoXtens Array to 1/3 of the total FOV (in this case deflection is measured with one camera only).

CTA: 44341



Recording change in width at specimen edges using backlight

CTA: 44317



Recording transverse strain with dot marks on the specimen surface.