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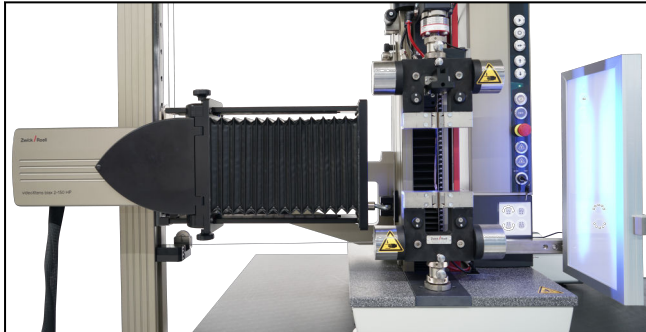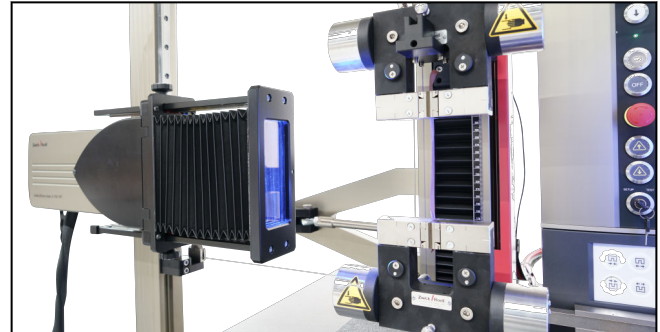
Product Information
videoXtens 2-150 HP

videoXtens 2-150 HP

videoXtens 2-150 HP, tunnel

Typical applications

Tensile test on plastics to ISO 527-1 and ASTM D638 including exact measurement of the tensile modulus

Tensile tests on filament strands and laminates of fiber composites to ISO 527-4/-5, ASTM D3039 and ASTM D4018

In-plane shear tests (±45° method): in-plane shear response to ISO 14129 and ASTM D3518 (transverse strain software option required).

Application benefits

- The videoXtens 2-150 HP is the first and only optical system that meets the high calibration requirements for the determination of the tensile modulus to ISO 527-1 (annex B and C).
- High-accuracy measurement of the tensile modulus, even under temperature conditions: unique accuracy grade of 1 µm at temperature in the ZwickRoell temperature chamber.
- With a single testing system you can perform tensile, shear (IPS) and flexure tests on composites.
- Efficiency gain through mark-free measurement and automatic pattern recognition of specimens with surface texture through blue contrast light technology.
- Accuracy class 0.5 to EN ISO 9513. ZwickRoell extensometers exceed the requirements of the standards and are calibrated over the entire measurement range to ISO 9513, in accuracy class 0.5. Proven standard compliance with the first calibration point starting at 10 µm.
- Accuracy class B1 to ASTM E83 from initial gauge length of 15 mm.
- The testing system covers tests at ambient temperature and in the ZwickRoell temperature chamber, guaranteeing reproducible test results.

- Start testing right away: easy-to-learn, intuitive operation and the advantages of automated functions reduce training requirements and ensure measurement consistency.
- Brittle-fracturing plastics and fiber composites can also be tested up to the point of break without causing damage to the extensometer.
- The dust proof housing also protects from small particles and conductive dust, and against loss of adjustment.
- 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): 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.

Function description

The videoXtens 2-150 HP features patented array technology for high-accuracy testing in a wide measurement range.

The extensometer is optimized for measuring axial strain using two high-resolution cameras. 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.

Transverse strain measurements can be easily expanded via the transverse strain software option (required for the in-plane shear response to ISO 14129 and ASTM D3518)

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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.

The system can also be easily attached to a ZwickRoell temperature chamber via a tunnel adapter. This results in a closed system, minimizing signal interference due to air currents.

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 2-150 HP
Can be mounted on a zwickiLine and an AllroundLine materials testing machine

Type Item No.	videoXtens 2-150 HP 1119738	
Field of view (FOV)		
With test area width 440 mm [Allround-Line] and zwickiLine	Min. 155 x 55	mm
With test area width 640/1040 mm [AllroundLine]	Min. 175 x 65	mm
Initialgauge length		
With test area width 440 mm [Allround-Line] and zwickiLine	5 ... 135	mm
With test area width 640/1040 mm [AllroundLine]	5 ... 150	mm
Measurement travel, max.		
With test area width 440 mm [Allround-Line] and zwickiLine	145 - initial gauge length	mm
With test area width 640/1040 mm [AllroundLine]	160 - initial gauge length	mm
Measurement travel, max. at 50 mm initial gauge length		
With test area width 440 mm [Allround-Line] and zwickiLine	95 (190% strain)	mm
With test area width 640/1040 mm [AllroundLine]	110 (220% strain)	mm
Measurement travel, max. at 75 mm initial gauge length		
With test area width 440 mm [Allround-Line] and zwickiLine	70 (90% strain)	mm
With test area width 640/1040 mm [AllroundLine]	85 (110% strain)	mm
Resolution at ambient temperature	0.15	µm
Resolution to ISO 9513 in the ZwickRoell temperature chamber		
At -40 ... +250 °C	Max. 0.4	µm
At -55 °C	Max. 0.6	µm
At +250 ... +360 °C	Max. 0.5	µm
Frame rate / measured-value acquisition rate, max.	500	fps / Hz
Test speed, max.	1000	mm/min
Dimensions		
Height	250	mm
Width	455 ... 705	mm
Depth	91	mm
Specimen thickness	0 ... 20	mm
Weight, approx.	10	kg
Minimum version	testXpert III V1.8 and above	

Product Information
videoXtens 2-150 HP

Type	videoXtens 2-150 HP
Item No.	1119738
Accuracy class	
To EN ISO 9513	0.5
To ASTM E83	B1 from gauge length 15 mm
Scope of delivery	
Measuring head with 2 digital cameras incl. 2 lenses	
Tunnel for minimizing negative environmental conditions (e.g. air currents) with integrated blue contrast lighting	
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 (1x required)
Mounting involves connection to the crosshead. This allows videoXtens to track at half crosshead speed, keeping the testing operation automatically in focus and making optimum use of the measuring range.

Description	ArticleNumber
videoXtens mounting on AllroundLine testing machine	
Rigid mounting kit at 45° front left on AllroundLine table-top & floor-standing testing machines with connection to crosshead	1032724
Rigid mounting kit at 45° rear left on AllroundLine table-top & floor-standing testing machines with connection to crosshead Required for mounting with temperature chamber	1032726
videoXtens mounting on zwickiLine testing machine	
Rigid mounting kit at 90° left on zwickiLine, with support on table and connection to crosshead	1047180
Rigid mounting kit at 90° left on zwickiLine, with support on floor and connection to crosshead	1071005

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

All data at ambient temperature.   Subject to change in the course of further development.

Software options

Description	ArticleNumber
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.	325932
Option 2D DIC - Digital Image Correlation 2D DIC module for display and evaluation of strain conditions, fully integrated in testXpert III	1018509
2D DIC test license, at not cost for a limited time of 6 months	1055361
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	077059
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.	077060
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	1028367

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

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 chamber for AllroundLine testing machines form the Series portfolio Tunnel plus tunnel adapter required for tests in the ZwickRoell temperature chamber.

| Description	ArticleNumber
Tunnel adapter for attaching videoXtens to ZwickRoell temperature chamber Magnetic tunnel adapter with sealing lip for attaching videoXtens to the temperature chamber glass module (viewing port).	1047285

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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.
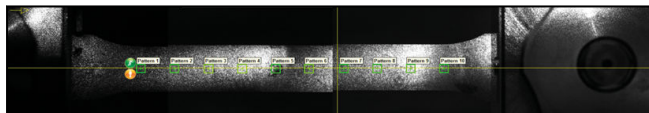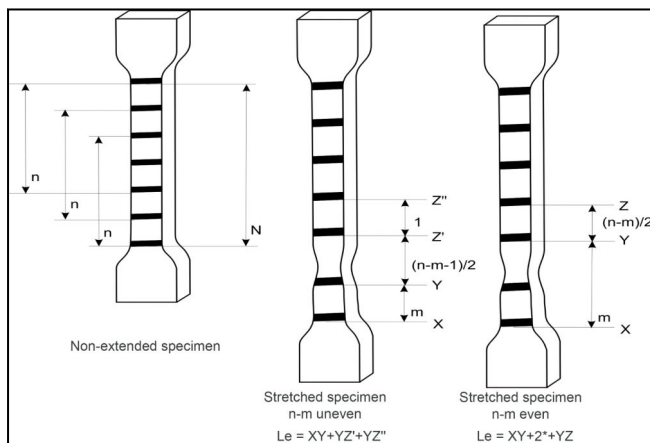

Automatic symmetrical adjustment of strain around necking to ISO 6892-1, Annex I

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).

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.

All data at ambient temperature.   Subject to change in the course of further development.

Zwick / Roell

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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.

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).

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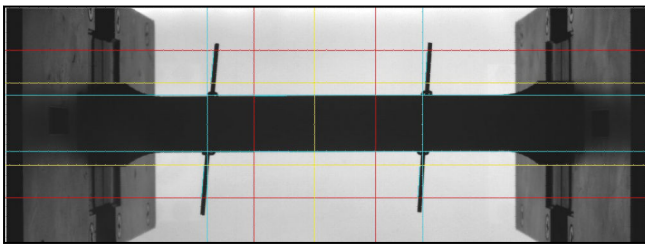
Recording change in width at specimen edges using backlight

CTA: 44317
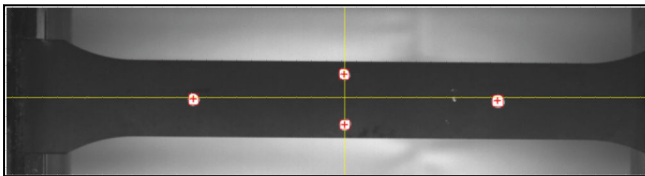
Recording transverse strain with dot marks on the specimen surface.