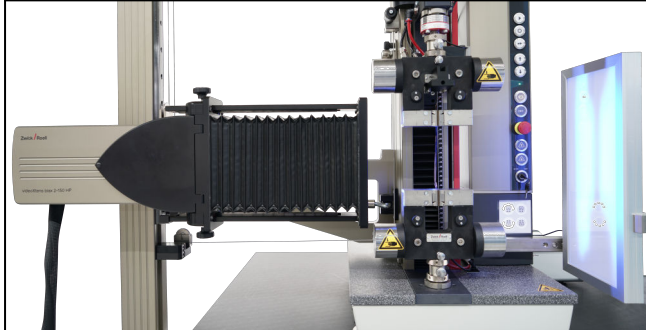


Product Information

videoXtens 2-150 HP

CTA: 302210 302212



videoXtens 2-150 HP

Typical applications

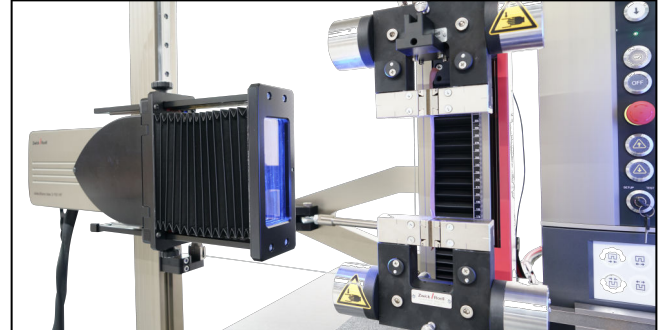
Tensile test on plastics to ISO 527-1 and ASTM D638 including exact measurement of the tensile modulus

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

In-plane shear tests ($\pm 45^\circ$ 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.



videoXtens 2-150 HP, tunnel

- 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)

Product Information

videoXtens 2-150 HP

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.

Product Information

videoXtens 2-150 HP

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 |
| Strain rate control to ISO 6892-1 | | |
| For test speed 0.00025/s | From LO 25 | mm |
| For test speed 0.00007/s | From LO 50 | 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 |

Product Information

videoXtens 2-150 HP

| Type | videoXtens 2-150 HP | |
|--|------------------------------|----|
| Item No. | 1119738 | |
| Weight, approx. | 10 | kg |
| Minimum version | testXpert III V1.8 and above | |
| 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 environ- mental 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 |
| Basic package Win 11 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 11 / 64 – multilingual | 1130955 |

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 <u>45° front left</u> on AllroundLine table-top & floor-standing testing machines with connection to crosshead | 1032724 |
| Rigid mounting kit at <u>45° rear left</u> 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, <u>with support on table</u> and connection to crosshead | 1047180 |
| Rigid mounting kit at 90° left on zwickiLine, <u>with support on floor</u> and connection to crosshead | 1071005 |

Product Information

videoXtens 2-150 HP

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 |

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 |

Backlight

The backlight is required for flexure tests or for measurement of the change in width directly at the specimen edge.

| Description | ArticleNumber |
|---|---------------|
| Backlight 420 x 190 mm, incl. mounting arm, required for measurement at specimen edge | 013593 |
| Backlight 840 x 190 mm, incl. mounting arm, required for measurement at specimen edge | 013596 |

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 |

Product Information

videoXtens 2-150 HP

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

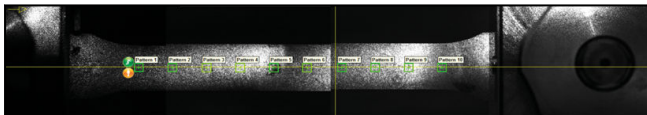
Can only be used with the current temperature chambers for AllroundLine testing machines from the series portfolio. A tunnel and tunnel adapter are required for testing in the ZwickRoell temperature chamber.

| 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). Only HP versions, 1-270 P and videoXtens modular system | 1047285 |

Software-option Test Re-Run

The optional Test Re-Run module enables subsequent recalculation of strain using an image series recorded during a test but employing a different initial gauge length (provided multiple marks 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.

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.

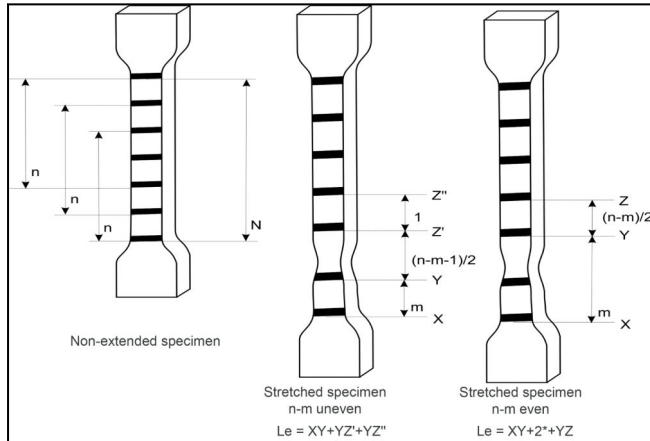
Strain distribution option

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 (as per ISO 6892-1, Annex I).

Product Information

videoXtens 2-150 HP

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 64 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 naturally 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.

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:

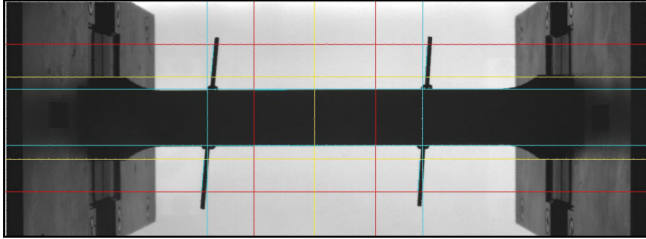
- measurement using incident light via marks on the specimen
- measurement using backlight on the specimen lower edge
- measurement of deflection in the test axis or of the polynomial approximation of the curve.

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).

Product Information

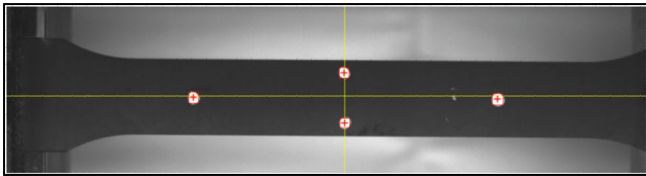
videoXtens 2-150 HP

CTA: 44341



Recording change in width at specimen edges using backlight

CTA: 44317



Recording transverse strain with dot marks on the specimen surface.