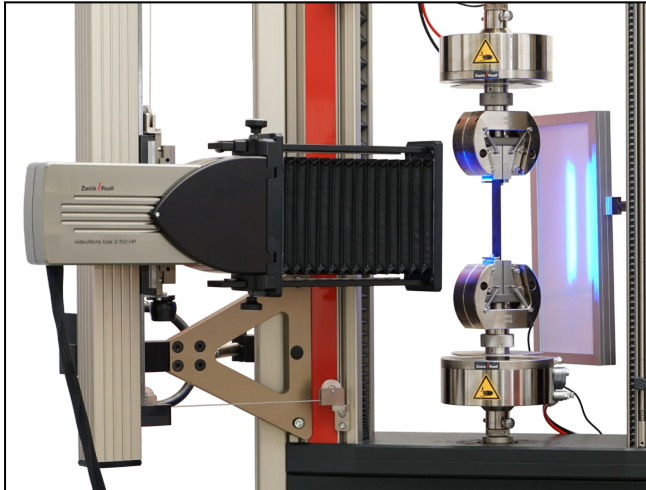


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videoXtens biax 2-150 HP

CTA: 208141 206108



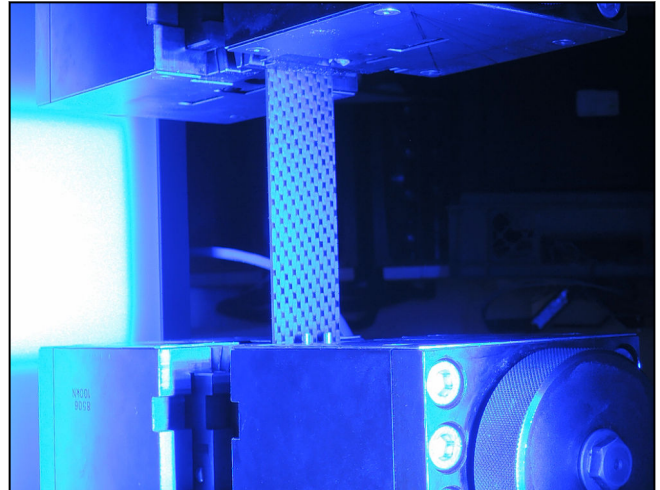
videoXtens biax 2-150 HP for determination of the tensile modulus and Poisson's ratio

Application example – fiber-reinforced composites to ISO 527 or ASTM D3039, including accurate measurement of tensile modulus values and Poisson's ratio

- Tensile tests on filament strands and laminates of fiber composites, e.g. to ISO 527-1/-4/-5, ASTM D3039, ASTM D4018.
- In-plane shear tests ($\pm 45^\circ$ method): In-plane shear response to ISO 14129 and ASTM D3518.

Specific advantages in the application:

- Significant time and cost savings since the videoXtens can test without gauge marks.
- The videoXtens biax 2-150 HP is the first and only optical system that meets the high calibration requirements for the determination of the tensile modulus and Poisson's ratio to ISO 527-1 (Appendix B and C).
- High-accuracy measurement of tensile modulus and Poisson's ratio, even at temperature: Unique accuracy grade of $1 \mu\text{m}$ at temperature in the ZwickRoell temperature chamber.
- Proven standard compliance: To meet ISO 527, reliable proof is provided during calibration through additional calibration support points at the beginning and end of the tensile modulus and recorded in the calibration record.
- With a single testing system you can perform tensile, shear (IPS) and flexure tests on composites.
- The testing system covers the tests at room temperature and elevated temperatures, whereby comparable test results are guaranteed.
- The videoXtens biax 2-150 HP can be flexibly implemented for different applications due to its wide measurement range and simultaneous high resolution.



Non-contact measurement without gauge marks, blue pattern technology

- Brittle-fracturing fiber composites can be tested up to break without damaging the extensometer.
- The videoXtens is fully integrated in testXpert III.
- The dust proof housing also protects from small particles and conductive dust, and against loss of adjustment.
- ZwickRoell extensometers exceed the requirements of the standards and are calibrated over the entire measurement range to ISO 9513, in accuracy class 0.5.
- Resistant to environmental influences (e.g. air currents, variations in lighting): flexible tunnel minimizes signal interference.
- Optimum, uniform specimen illumination by blue contrast light incorporated into the tunnel.
- 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 biax 2-150 HP features the patented array technology for high-accuracy testing in a wide measurement range.

The extensometer includes two high-resolution cameras for the measurement of axial extension. Their overlapping fields of view are combined into one large field of view via our ZwickRoell array technology. Markings leaving the field of view of one camera are automatically transferred to that of the next camera, creating one large FOV with high resolution.

For highly accurate measurement of transverse strain, there is an additional camera in the housing. It is

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mounted between the two cameras for axial strain measurement.

The flexible tunnel can be extended or retracted to suit individual requirements. By minimizing environmental influences it creates the conditions required for a low-noise 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

Composite specimens have a surface structure. With the blue contrast light the structure of the specimen

becomes visible enough to be used as virtual gauge marks. A virtual gauge mark is an area on the specimen surface that is defined by the software. The pattern inside of the defined area is tracked during the test, making manual specimen marking unnecessary.

A required condition for measurement without gauge marks is a non-transparent specimen such as CFRP, as well as a certain surface structure that is normally present on composite specimens. If these requirements are not met, measurement can be performed using markings.

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Technical data

Type	videoXtens biax 2-150 HP	
Item No.	1078869	
Longitudinal strain		
Field of view (FOV)		
With test area width 440 mm [AllroundLine] and zwickiLine	155 x 55	mm
With test area width 640/1040 mm [AllroundLine]	175 x 65	mm
Initialgauge length		
With test area width 440 mm [AllroundLine] 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 [AllroundLine] 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 [AllroundLine] and zwickiLine	90 (180% 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 [AllroundLine] and zwickiLine	65 (85% strain)	mm
With test area width 640/1040 mm [AllroundLine]	85 (110% strain)	mm
Resolution at ambient temperature	0.15	µm
Dehnratenregelung nach ISO 6892-1		
Für Prüfgeschwindigkeit 0,00025/s	ab L0 25	mm
Für Prüfgeschwindigkeit 0,00007/s	ab L0 50	mm
Transverse strain		
Field of view (FOV)		
With test area width 440 mm [AllroundLine] and zwickiLine	70 x 50	mm
Specimen width, max.	40	mm
With test area width 640/1040 mm [AllroundLine]	85 x 65	mm
Specimen width, max.	55	mm
Resolution at ambient temperature	0.10	µm
General Information		
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
Accuracy class		
To EN ISO 9513	0.5	
To ASTM E83	B1 from gauge length 15 mm	
Test speed, max.	1000	mm/min
Specimen thickness	0 ... 20	mm

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Type	videoXtens biax 2-150 HP	
Item No.	1078869	
Dimensions		
Height	250	mm
Width	455 ... 705	mm
Depth	91	mm
Minimum version	testXpert III V 1.51	
Scope of delivery	Measuring head with 3 digital cameras incl. 3 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
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 (1 x 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
Mounting the videoXtens on the AllroundLine testing machine	
Fixed mounting set at 45° front left on the AllroundLine table top & floor-standing testing machine with connection to the crosshead	1032724
Fixed mounting set at 45° rear side left on the AllroundLine table top & floor-standing testing machine with connection to the crosshead Required for mounting with temperature chamber	1032726

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

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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

Optional accessories

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

Metal facing

Description	ArticleNumber
Metal facing for protection of the front pane on the videoXtens biax 2-150 HP Easy adaptation via magnetic support.	1078876

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

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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 Export Editor option (Item No. 1035618) is needed.	325932
2D digital image correlation option 2D DIC module fully integrated in testXpert III, for display and evaluation of strain conditions	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

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

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