

## Product Information

High-Temperature Extensometer from Ambient Temperature to 1,200 °C/1,600 °C/2,000 °C

CTA: 210318



laserXtens 2-120 HP/TZ

### High-temperature extensometer

This PI covers the optimal extensometers for strain measurement in high-temperature testing. The following non-contact and contact extensometers are available:

- laserXtens 2-120 HP/TZ (non-contact)
- Extensometer, fixed (contact)

### Non-contact laserXtens 2-120 HP/TZ up to 2,000 °C

#### Applications

The laserXtens 2-120 HP/TZ measures deformations on different materials in various environmental conditions, without making contact. The measurement principle eliminates the need to apply gauge marks.

The laserXtens 2-120 HP/TZ is ideal for the deformation measurement of specimens with gauge lengths from 1.5 to 120 mm in accuracy class 0.5 to EN ISO 9513 in a wide range of applications. This extensometer can be used in the same way as the laserXtens 1-32 HP/TZ for any environmental condition, but it has a larger measurement range.

- Tensile, compression and flexure testing
- Tests on specimens for which specimen contact is undesirable or not possible due to specimen condition or properties
- Deformation measurements on specimens that would damage a contact measuring system due to their high break energy
- An extensometer for any environmental condition
- Testing at ambient temperature

- Testing in temperature chambers
- Testing at high temperature
  - Furnaces up to 1,600 °C
  - Induction up to 1,600 °C
  - Vacuum up 2,000 °C

### High precision and resolution

- The laserXtens 2-120 HP/TZ features high precision in micro and macro measurement ranges
- The resolution is 0.11 µm
- Automatically adjustable initial gauge lengths  $L_0$  from 1.5 mm to 120 mm can be tested with high accuracy
- The laserXtens 2-120 HP/TZ satisfies the requirements of class 0.5 to ISO 9513 (class B1 to ASTM E83)
- Since high-temperature materials sometimes display nonlinear strain increase, we recommend that you perform pre-tests for high-temperature tensile tests to ISO 6892-2, Method A1 closed loop.

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#### No specimen contact - no specimen marking

The laserXtens 2-120 HP/TZ does not make mechanical contact with the specimen, and provides the following benefits:

- The specimen is not influenced by the laser light
- Even at elevated temperatures, sensitive specimens are not influenced by the extensometer
- Maintenance-free, sensor arms are not exposed to a risk of breakage
- Temperature chambers and high-temperature furnaces can remain completely closed. Openings are thermally sealed with glass windows.

- Specimen markings are not required. This provides various benefits:

- Time saving, especially with high specimen throughput, e.g. carousel solutions
- Easy adjustment of the initial gauge length in the testing software

#### Prominent functions

- The laserXtens 2-120 HP/TZ can be used for tests to ISO 6892-2 (high-temperature) and ISO 6892-1 (ambient temperature).
- Measurement of the change in width and deflection without additional markings and without required hardware expansion is possible as a software option.

#### Technical Data

Type	laserXtens 2-120 HP/TZ
Item No.	1061538
Laser safety class to DIN EN 60825-1 (11-2001)	2 <sup>1)</sup>
L <sub>0</sub> with one camera	1.5 ... 25 mm
L <sub>0</sub> with two cameras	25 ... 120 mm
Measurement travel with speckle tracking <sup>2)</sup>	
1.5 ... 25 mm	32 mm - initial gauge length
25 ... 120 mm	30 mm (with fixed assembly)   60 mm (with automatic tracking)
After reaching maximum measurement travel	Switch to flow measurement
Resolution to EN ISO 9513	0.11 µm
Accuracy class to EN ISO 9513	0.5
Strain-rate control <sup>3)</sup>	To ISO 6892-1, -2 Method A1
Temperature range	-80 to +2,000°C
Measurement frequency for standard setting	70 Hz
Measurement speed, max. at the measuring point	500 mm/min
Scope of delivery	Measuring head with motorized gauge length adjustment (autom. L <sub>0</sub> setting), 2 digital cameras including high resolution telecentric lenses, 2 laser light sources green, high-temperature tunnel for the reduction of environmental influences, software image acquisition, evaluation of the cross correlation and transfer to testXpert II (Version 3.71 or higher) or testXpert III, accessories case with adjustment module, INC module (for tC: RS module). Incl. connection to crosshead: the extensometer is tracked at half test speed The laserXtens 2-120 HP/TZ works exclusively with testXpert II (Version 3.71 or higher) or testXpert III and in combination with testControl and testControl II. The required tC-RS module or INC module is included in the scope of delivery. A plug-in slot is required for this in testControl / testControl II.

<sup>1)</sup> No safety measures required.

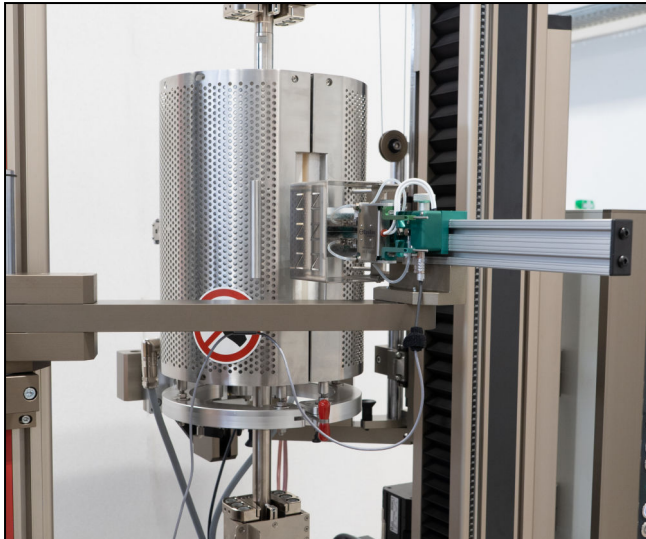
<sup>2)</sup> Where applicable, limited by furnace or temperature chamber design

<sup>3)</sup> Pre-tests required

## Product Information

High-Temperature Extensometer from Ambient Temperature to 1,200 °C/1,600 °C/2,000 °C

CTA: 257888



High-temperature contact extensometer up to 1,200°C

### High-temperature contact extensometer up to 1,800 °C

This high-temperature contact extensometer can be used in combination with high-temperature furnaces and induction heating systems up to 1,200 °C. The extension on the specimen is measured through contact.

#### Advantages and features

- One-sided measurement with strain gauges
- Incrementally adjustable initial gauge length

- Sensor arms and spacers are available for various specimen shapes and initial gauge lengths (measurement range dependent on base gauge length)
- Innovative guide rail allows for lateral attachment of the extensometer through the furnace port, once the test temperature has been reached.
- Usable up to the point of specimen break
- Ideal for cyclic tests

Description	Extensometer, fixed	Extensometer, fixed
Item No.	1130411	1130409
Temperature, max.	1200°C <sup>1)</sup>	1200°C <sup>1)</sup>
Accuracy class	Class 0.5 to ISO 9513	Class 0.5 to ISO 9513
Initial gauge length (L <sub>0</sub> )	25 mm <sup>2)</sup>	50 mm <sup>2)</sup>
Measurement range	± 10% <sup>3)</sup> or +20%/ -10% or +50%/ -10% or +100%/ -5% of L <sub>0</sub> <sup>4)</sup>	± 10% <sup>3)</sup> or +20%/ -10% or +50%/ -10% or +100%/ -5% of L <sub>0</sub> <sup>4)</sup>
Resolution	< 0.1 µm	< 0.1 µm

1) This extensometer is also available up to +1600°C upon request

2) Spacers are also needed to set an additional L<sub>0</sub>

3) Not available with 10 mm or 12.5 mm initial gauge length

4) Not available with 50 mm initial gauge length

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### Accessories for contact extensometer

Description	ArticleNumber
<b>Extension arm and swivel unit</b> Installation kit for side-attaching contact extensometer	<b>1130413</b>
<b>Spacers</b> Any gauge length between 10 and 50 mm can be set. Additionally, a set of spacers is required for each gauge length.	<b>1130414</b>