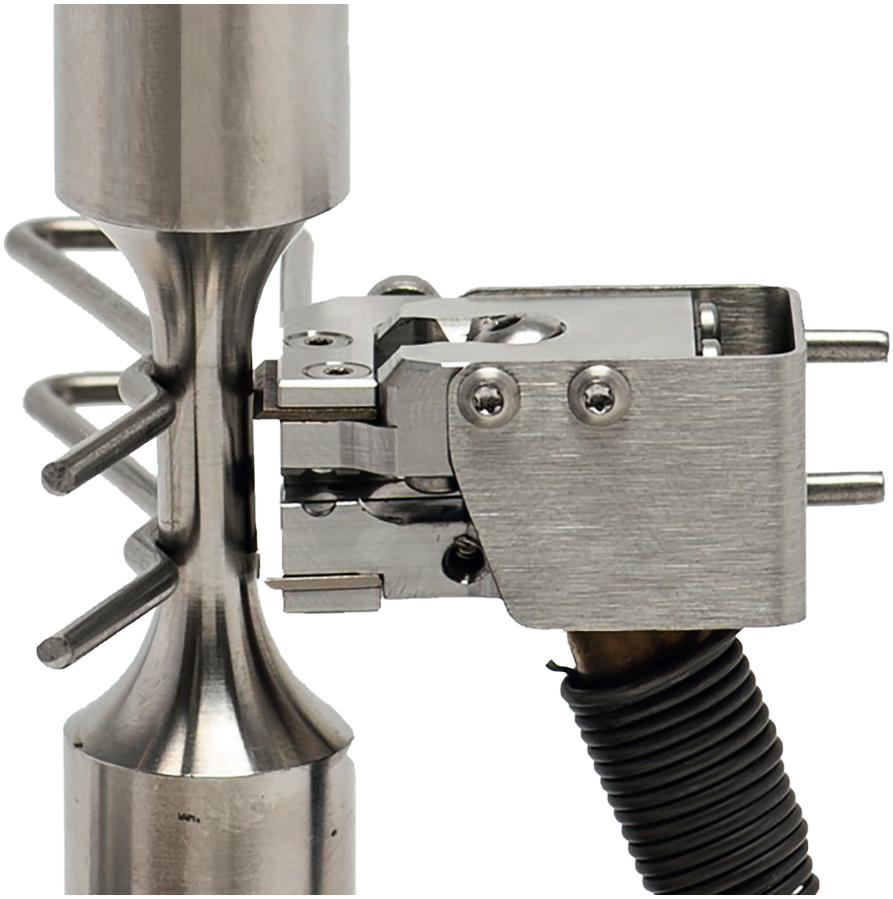
700°C High-Temperature Un-Cooled Capacitive Extensometers for Environmental Chambers

Series 7642

The 7642 Models of High-Temperature Extensometers are perfect for tensile, compression or cyclic testing of metals, advanced composites, metals, polymers, and other materials at elevated temperatures inside environmental chambers.

These extensometers use a high-temperature capacitive sensor with the ability to withstand high temperatures without any cooling up to maximum temperature limit.

The dual-flexure design makes the 7641 models very durable and allows them to be left on the specimen through failure. These extensometers are easy to mount and feature integral spring clips hold the unit safe on round and flat specimens. accuracy and for tests having small elongations.



The extensometer come standard with a freestanding sensor conditioner unit providing a electric calibration 0-10 V signal output with exceptionally low noise that can be connected to the strain channel of the controller of the testing system. This conditioner system provides a number of functional enhancements, including high speed digital output, built in calibration and tare functions, analogue and digital filters, and more.

The application range includes:

Tension
Compression
Low Cycle Fatigue
Thermo Mechanical Fatigue
Through Zero Fatigue
Cyclic tests up to 100 Hz
Strain-controlled Testing

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Features

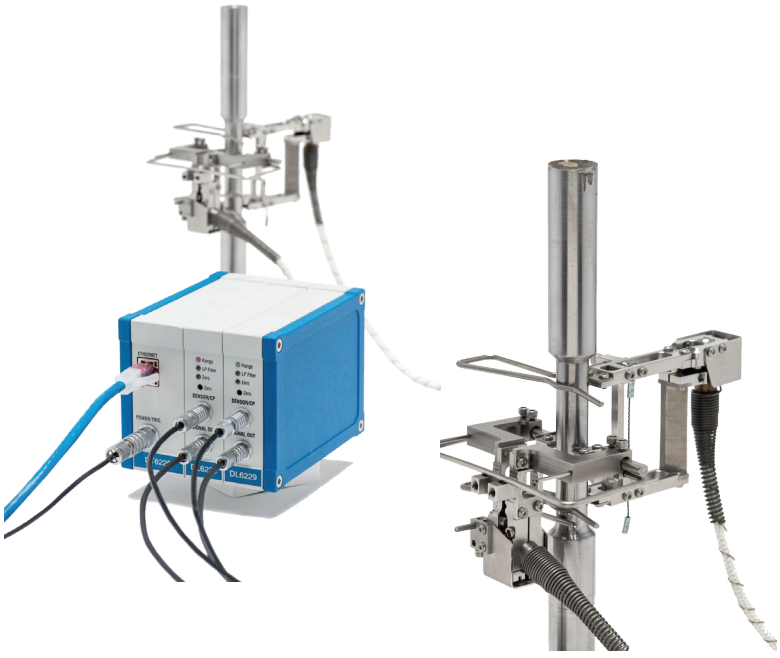
- Can be left on through specimen failure
- Improved performance at high temperature.
- Standard configurations meet ISO 9513 class 0,5 and ASTM E83 class B-1 requirements for accuracy.
- Cyclic Testing >25 Hz typical, up to 100 Hz with small travel units, @ 0.5 mm p-p
- Reduced size and weight, and improved high frequency performance up to 100 Hz.
- Improved noise rejection.
- Conditioner and power supply included. Provides high level DC voltage output with low noise. Easily interfaced to test controllers, data acquisition boards and chart recorders.
  - Includes high speed analogue and digital outputs
  - Intuitive web-based user interface for setup, calibration, and data acquisition
  - Built-in calibration reference and auto-zero features
  - Multiple extensometer calibration files may be loaded for use with one controller
  - Multiple temperature-specific calibrations may be stored
  - Selectable analog and digital filter options from 2 Hz to 3 kHz
- Ships fully calibrated with electronics with user specified voltage output (traceable to NPL).
- All models can measure in both tension and compression and may be used for cyclic testing.
- Mechanical over-travel stops.
- Hardened tool steel knife edges are easily replaced. A spare set comes with every extensometer.
- Rugged, dual flexure design for strength and improved performance. Much stronger than single flexure designs, this also allows cyclic testing at higher frequencies.
- Analog Output: User specified, ±5 VDC or ±10VDC typical, ±10.8VDC rail
- Digital Output: 24 bit high speed Ethernet output with built-in web interface
- Linearity: 11 point linearization, ≤0.1% FS typical linearity
- Resolution: <55 PPM (0.006%FS) RMS @ 4 kHz, <6 PPM (0.0006%FS) @ 100 Hz
- Analog Filter: Selectable 100 Hz analog and 2 Hz – 3 kHz digital filters
- Temperature Range: Ambient to 700 °C (1300 °F). Use up to 800 °C is possible – contact Epsilon for details. Wire forms may require periodic adjustment or replacement after long-term testing above ~600 °C.
- Temperature Sensitivity (Gain): <100 PPM / °C (0.01%FS/°C) typical
- Temperature Sensitivity (Offset): 20 PPM / °C (0.002%FS/°C) typical
- Sensor Cable: 0.7 m (2.5 ft) tri-axial high temperature cable, plus 1.5 m (5 ft) room temperature extension cable
- Standard Quick Attach Kit: Fits round samples up to Ø15 mm (0.60"). Fits flat samples up to 50 mm (2.0") wide with thicknesses up to 6.35 mm (0.25"), and up to 19 mm (0.75") wide with thicknesses from 6.35 mm (0.25") to 12.5 mm (0.50").
- Operating Force: <100 g typical
- Environment: Recommended for elevated temperature testing in dry air or inert / non-corrosive gases

Supplied Parts

- Includes one set of spare knife edges
- Includes power supply for your country (specify)
- Includes high quality foam lined case

Important Note

- Unit Calibration at specific high-temperature available on request
- This extensometer can be used together with Transverse Extensometer for Environmental Chambers 7675



Specification:

Analog Output:	User specified, ±5 VDC or ±10VDC typical, ±10.8VDC rail
Digital Output:	24 bit high speed Ethernet output with built-in web interface
Accuracy:	Standard configurations meet ASTM E83 class B-1 and ISO 9513 class 0,5 requirements for accuracy. A test certificate is included.
Linearity:	11 point linearization, ≤0.1% FS typical linearity
Resolution:	<55 PPM (0.006%FS) RMS @ 4 kHz, <6 PPM (0.0006%FS) @ 100 Hz
Cyclic Testing:	>25 Hz typical, up to 100 Hz with small travel units, @ 0.5 mm p-p
Analog Filter:	Selectable 100 Hz analog and 2 Hz – 3 kHz digital filters
Temperature Range:	Ambient to 700 °C (1300 °F). Use up to 800 °C is possible – contact Epsilon for details. Wire forms may require periodic adjustment or replacement after long-term testing above ~600 °C.
Temperature Sensitivity (Gain):	<100 PPM / °C (0.01%FS/°C) typical
Temperature Sensitivity (Offset):	20 PPM / °C (0.002%FS/°C) typical
Sensor Cable:	0.7 m (2.5 ft) tri-axial high temperature cable, plus 1.5 m (5 ft) room temperature extension cable
Standard Quick Attach Kit:	Fits round samples up to Ø15 mm (0.60″). Fits flat samples up to 50 mm (2.0″) wide with thicknesses up to 6.35 mm (0.25″), and up to 19 mm (0.75″) wide with thicknesses from 6.35 mm (0.25″) to 12.5 mm (0.50″).
Operating Force:	<100 g typical
Environment:	Recommended for elevated temperature testing in dry air or inert / non-corrosive gases
Power:	Includes power supply for your country (specify)

Technical Data

Model 7642 Available Versions: ANY combination of gauge length, measuring range and temperature range listed below is available, except as noted.

Other configurations may be available with special order; please contact Epsilon to discuss your requirements.

Model Number 7642 – _ _ _ _ – _ _ _ _

Gauge Length:	
-010M	10.0 mm
-012M	12.0 mm
-0125M	12.5 mm
-020M	20.0 mm
-025M	25.0 mm
-050M	50.0 mm

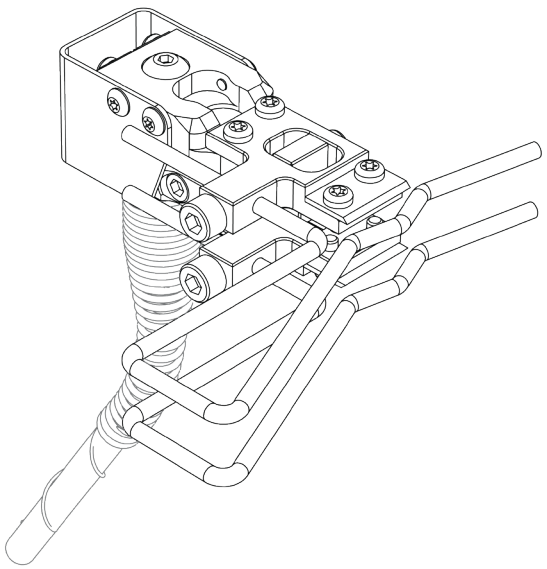
Measuring Range	
-025M	+2.5/-0.5 mm*
-075M	+7.5/-1.5 mm**
-0125M	+12.5/-1.5 mm**

* Tilted cable exit
** Vertical cable exit

Example: 7642-010M-025M: 10.0 mm gauge length, +2.5/-0.5 mm* measuring range

Options:

- Gauge length adapter kits (for use at temperatures ≤ 300 °C (570 °F))
- Bulkhead adapters for vacuum chambers
- Dual-channel sensor conditioner available in order the extensometer can be used together with transverse environmental extensometer 7675



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