Simultaneously measures in-plane bi-axial strains at high temperatures on specimens tested in X-Y bi-axial machines. For use with materials testing furnaces or induction heating up to 1600 °C (2900 °F). May be used for bi-axial strain controlled fatigue. Slide mounting system enables mounting to hot specimens in seconds.

Model 7651 extensometers measure combined in-plane strains in flat cruciform specimens tested in machines capable of simultaneous X and Y (perpendicular) axial loading and on standard flat samples tested in pure tension. All models are capable of bi-directional displacement in both axes and may be used for strain-controlled fatigue testing under fully reversed load and strain conditions at frequencies up to 10 Hz.

All 7651 models mount rigidly on the load frame and incorporate slide mounting to bring the extensometer into contact with the specimen. The gauge length is set automatically before mounting on the test specimen, which allows for hot mounting after thermal equilibrium has been reached.

These units are specifically designed to eliminate crosstalk between axes and to provide high accuracy, high resolution measurements. They incorporate capacitive sensors for low operating force and include electronics with programmable filtering and multi-point linearization for improved performance and accuracy. The overall design minimizes, and in many cases virtually eliminates, any influence from common lab environment vibrations.

These water-cooled extensometers are equipped with high purity alumina rods with conical rod tips for specimen contact when testing to 1200 °C (2200 °F). Silicon carbide rods are used for the 1600 °C (2900 °F) high temperature option.

The Model 7651 is often customized for specific test needs. Contact Epsilon for a configuration that matches your requirement.
Features

- Hot mountable and retractable.
- Self-setting gauge length with fine adjustment feature.
- All models can measure in both tension and compression and may be used for cyclic testing at test frequencies up to 10 Hz.
- Standard units meet ASTM class B-1 requirements for accuracy. A test certificate is included. ISO 9513 class 0.5 test certificates are available upon request.
- Ships fully calibrated with calibration that is traceable to NPL; voltage output may be user-specified (typically 0-10V).
- Excellent ambient vibration rejection; primary vibration mode >100 Hz typical
- Digital controller 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 analog and digital outputs.
- Web-based user interface for setup and data acquisition.
- Selectable analog and digital filter options from 2 Hz to 3 kHz.
- Built-in calibration reference and auto-zero features.
- Multiple extensometer calibration files may be loaded for use with one controller.
- Can be used with specimens at elevated temperatures while only requiring room temperature calibration.
- Quick-disconnect water cooling fittings and signal cables.
- Includes high quality foam lined case and a spare set of rods.

Specifications

Analog Output: User specified, ±10VDC typical, ±10.8 VDC rail
Digital Output: 24 bit high speed Ethernet output with built-in web interface
Cyclic Testing: up to 10 Hz, depending on test system and test amplitude
Linearity: 11 point digital linearization, ±0.1% FS typical linearity
Hysteresis: ≤0.1% FS typical
Crossstalk: none
Resolution: <75 PPM (0.0075%/FS) RMS @ 4 kHz, <6PPM (0.0006%/FS) @ 100 Hz at gauge length
Filter: Selectable 100 Hz analog and 2 Hz - 3 kHz digital filters
Temperature Range: Standard (-ST) is to 1200 °C (2200 °F), optional (-HT) 1600 °C (2900 °F)
Sensor Cables: 2 m (6.5 ft) room temperature cables
Output Cables: 2.4 m (8 ft) analog output cables
Specimen Size: Fits any flat cruciform or axial-only test specimen with a test area larger than the extensometer GL
Operating Force: <30 grams typical
Contact Force: <560 grams typical
Environment: Recommended for testing in dry air, inert / non-corrosive gases, or vacuum
Power: Includes power supply for your country

Options

High temperature option (-HT suffix) for use to 1600 °C
Load frame mounting brackets
Bulkhead adapters for use in vacuum chambers
Model 2050 constant temperature water re-circulating bath
Connectors to interface to nearly any brand test equipment

Ordering Information

Ceramic rod lengths are made to fit furnaces as required. Specify load frame configuration, loading axis orientation, furnace dimensions, and electrical outlet type at time of ordering.

Requires external mounting brackets and 110 - 240VAC / 4W electrical power.

Water cooling is recommended; required for 1000 °C and above.

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

Model Number 7651-

Gauge Length (X & Y):

<table>
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<tr>
<th>METRIC</th>
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Example: 7651-025M-020M-ST: 25 mm gauge length, +2.0 mm / -1.0 mm measuring range, standard temperature range (room temperature to 1200 °C)

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