mtiinstruments

A worldwide leader in precision measurement solutions

Precision Measurement

and Mechanical Testing Solutions

MTI/ Fullam

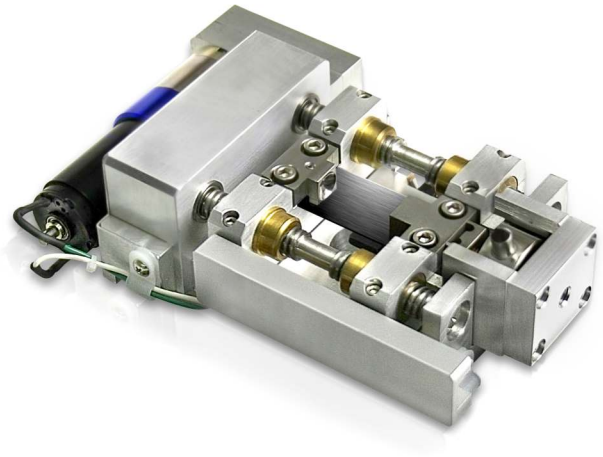
SEMTester Series

MTI Instruments/ Fullam

Advanced Mechanical Testing Systems

for LMs, SPMs, SEMs, XRDs and Benchtop Use

Utilizing The Most Advanced Encoder Provides The Highest Accuracy Possible!

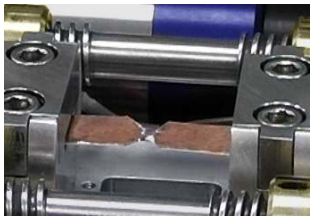


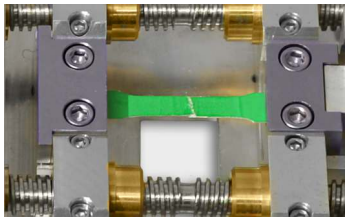
- Measures stage movement directly on the axis of travel, eliminating lead screw and gear train tolerance error
- An advanced encoder system that requires no field calibration typically required by other measurement systems
- Linear scale resolution is factory programmable from 1.22nm to 5.00 µm per count
- High resolution strain measurement capability
- Able to achieve very low strain rates
- The advanced encoder packaging is significantly smaller so the stage can fit in smaller systems

Applications

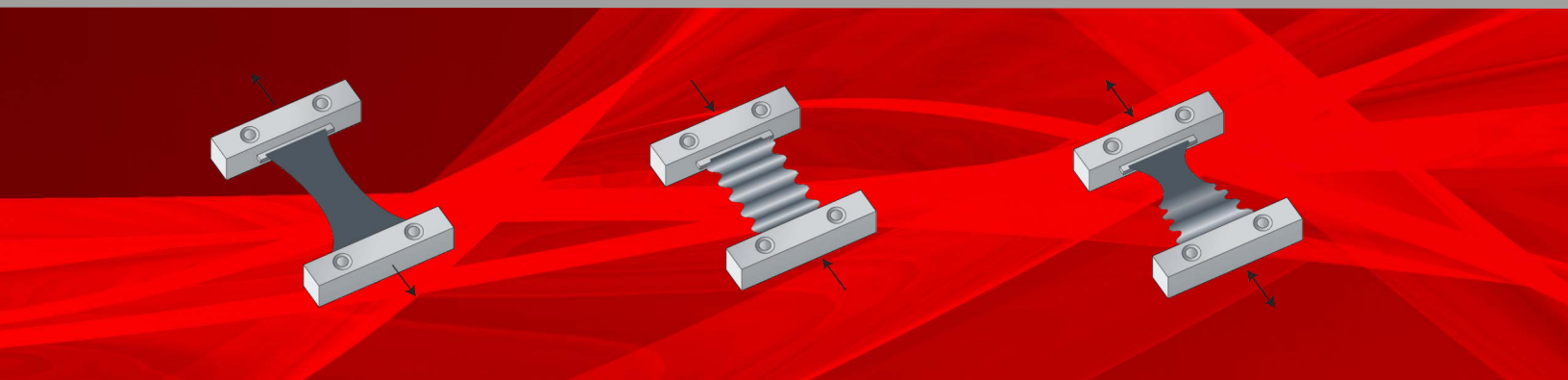
The SEMtester line of products is capable of performing tensile, compression, bending, creep and fatigue tests on a variety of materials. Deformation and relaxation behavior can be observed under dynamic or static loading. Optional sample heaters or thermoelectric heater/coolers can be used during testing to simulate actual operating conditions. A variety of specimen clamps are available to accept virtually any sample configuration. This versatility makes the SEMtester product line suitable for testing a range of materials:

- Composites
- Metals
- Plastics
- Polymers
- Fibers
- Textiles
- Hairs
- Foods
- Minerals
- Concrete
- Biomaterials
- Ceramics
- Wood
- Glass
- Paper
- Tire rubber





Tensile *Compression* *Fatigue*



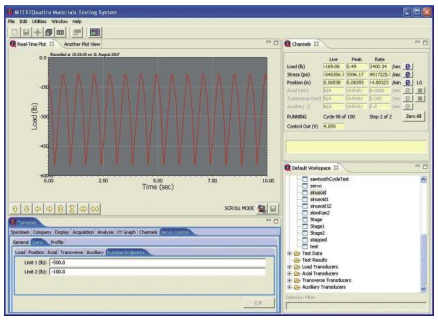
Advanced Mechanical Testing Systems for LMs, SPMs, SEMs, XRDs and Benchtop Use

Obtain fast, accurate and reliable information about the mechanical properties of materials with MTII/Fullam's SEMtester series of tensile and compression testers. Specifically designed for use in Scanning Electron Microscopes (SEMs), Scanning Probe Microscopes (SPMs) and Light Microscopes (LMs), these miniature testers are ideal for performing experiments under magnification. This provides greater insight into early stages of material failure and a better overall understanding of how specific materials perform. In addition, grain dislocation and crack propagation can be observed in real time, revealing more information about deformation than traditional, post-failure analysis techniques.

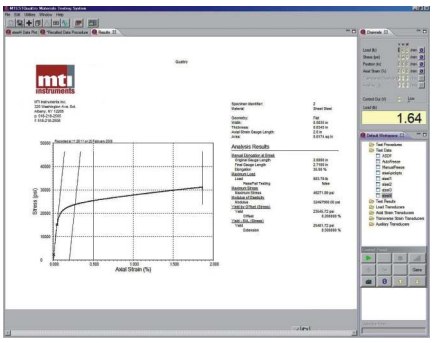
Intuitive Operating Package

To control experiments and collect data, MTII/Fullam uses a proprietary Windows®-based control and material testing software system that complies with ASTM specifications. This powerful package provides a user-friendly interface to set system test parameters and analyze data. Specimen dimensions are defined along with strain rates and thresholds (load, elongation, time), which are then used to perform automated tests and calculations.

These parameters are stored as files that can be called upon again for future tests. Results are provided in real time and stress-strain curves generated while testing is in progress. Key parameters such as peak load/stress, yield points, modulus of elasticity and other measurements are reported. Raw test data and results can be exported in standard formats, making it easy to integrate with other data analysis and laboratory management systems.

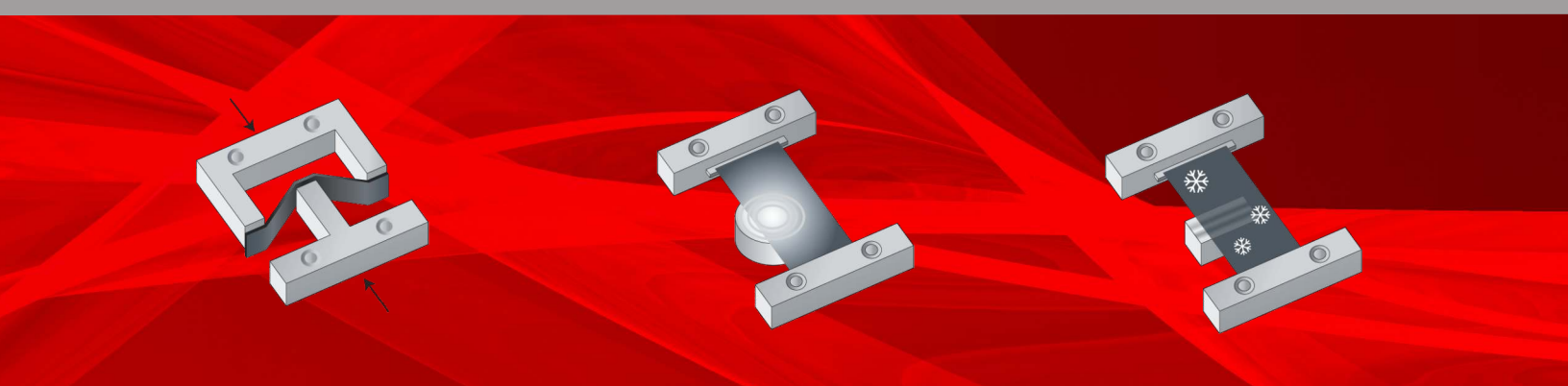


Real-time plots of test parameters



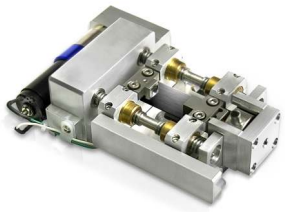
Easily exportable, customized analysis reports of test results

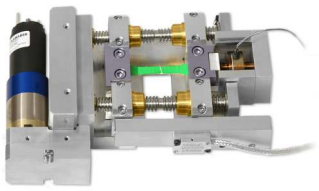
Bending ***Optional Heating*** ***Optional Cooling***



Flexible Design

MTII/Fullam offers a variety of manual, semi-automated and fully automated platforms to fit any budget. Load frame capacities of 100 lb (450 N), 1000 lb (4500 N) and 2000 lb (9000 N) are available with selectable load cells to improve accuracy and sensitivity, and to match customer requirements. Extended strain travel versions are available allowing longer, more ductile samples to be tested. Both horizontal and angled specimen clamps provide the flexibility to operate with typical microscopes and those with EBSD systems. Quick-connect mounting adapters are provided and designed for seamless integration into most major microscopy tools. Customized port covers allow users to install systems without modifications to SEM vacuum chambers or microscope platforms.





Options and Accessories

Since not all applications are alike, instruments used in research and development environments must be flexible and easily configured for different tests. Whether it's a basic manual tester or a completely automated servo control and data acquisition package, we have a solution to fit your needs. MTII/Fullam offers a number of standard and custom options including the following:

- Interchangeable load cells
- Specimen heaters and coolers
- Compression anvils
- 3- and 4-point bend fixtures
- Vacuum port covers
- Load and strain readout systems
- Round, threaded and stud type specimen clamps
- Water cooling systems
- Gearboxes for faster or slower speeds
- Quick-connect mounting fixtures

Specifications

Model	SEMtester 100	SEMtester 1000	SEMtester 1000 EBSD	SEMtester 2000	SEMtester 2000 EBSD
Max Load Capability	100 lb (450 N)	1000 lb (4500 N)	1000 lb (4500 N)	2000 lb (9000 N)	2000 lb (9000 N)
Dimensions L x W x H	169 x 114 x 38 mm	173 x 120 x 48 mm	140 x 132 x 49 mm	204 x 136 x 73 mm	207 x 136 x 72 mm
Weight	1 kg	1.5 kg	1.5 kg	2.2 kg	2.2 kg
Max. Sample Size[1] (Thick x L x W)	1mm x 71.5mm x 10mm	2.5 mm x 73mm x 10mm	2.5mm x 53mm x 10mm	3.0mm x 88mm x 10mm	2.5 mm x 64mm x 10mm
Min. Sample Size[2] (L x W)	44.5mm x 10mm	44.5mm x 10mm	43mm x 10mm	54mm x 10mm	54mm x 10mm[3]
Max Strain Travel	27mm	28.5mm	10mm	34mm	10mm
Load Cell Accuracy	±0.2% of full scale load range				
Linear Scale Accuracy	±20 nm resolution				
Power Requirements	100-240 Vac, 50-60 Hz				
Sample Heater	Ambient to 1200°C (±5.0°C control)				
Controller Environment	10°C to 43°C non-condensing				
Storage Environment	-18°C to 65°C non-condensing				
Data Acquisition Rate	Adjustable to 1 kHz max				
Computing Requirements	Windows XP, Vista or 7, 2 Gb DRAM or greater				
Export Capabilities	.csv, .pdf, .jpg, .bmp				

[1]Compression Only
[2]Tension Only
[3]40x10mm without heater

CE

Typical parameters. Subject to change according to application requirements.

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