

810LE Electrodynamic Test System For Static, Fatigue, Dynamic Testing

Force Ratings to 55 kN (12,400 lb)
Speed Range: Static to 15 Hz

System Overview

The 810LE test system is used to characterize and test materials, devices and components over a wide spectrum of load, strain and stroke. Each system is configured from a wide number of actuators and transducers to serve specific customer needs. When configured with short travel LVDT's or small load cells – the package delivers unmatched accuracy and control in micromechanical test applications.

810LE Systems include:

- 810 Series Dual Column load frame
- E4, E5 and E6 Series Electrodynamic Actuators with Power Pack
- Load cell and encoder - optional extensometer and LVDT
- 2370 Servocontroller
- TestBuilder & MachineBuilder Software Products
- PC with USB port

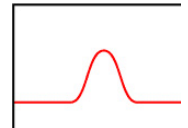


Static, Dynamic or Fatigue Tests

Monotonic Static and Dynamic Tests

Tensile, Compressive, Flexural, Stress Relaxation, Indentation or Creep Tests

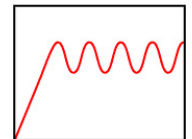
Slow or quick ramps in load, strain or position control. Set up and collect force, strain, and displacement data for materials characterization, stress – strain plotting, and calculate strength properties. Special applications software products available to automate multi-step creep and stress relaxations tests to get more data out of each test run. Generate impact loads and capture high speed force, strain, and displacement data for materials characterization or product performance.



Fatigue, Fracture & Cyclic Tests

Tension / Tension, Compression / Compression, Tensile / Compression (thru zero) Fatigue Tests

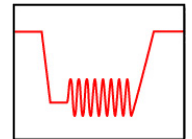
Run load or strain controlled cyclic fatigue tests to determine cycles to failure or to prove your device meets endurance requirements. Adaptive peak valley control feature adjusts amplitude as test sample responds. Optional metals research application software includes full suite of LCF and fracture mechanics software programs.



Dynamic Characterization Tests

Tension, Compression, Shear

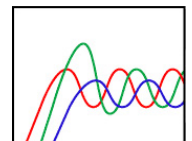
Sweep time and temperature, change strain and load rates and gather accurate stress and strain data to measure time-dependent characteristics of viscoelastic materials using special test software. Analyze and report the full dynamic properties of gels, elastomers, polymers, tissues and biomaterials.



Multiaxial Tests

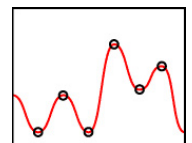
Planar Biaxial Characterization and Fatigue Tests, Combined Axial / Torsion Tests

Combine Tension, Compression, Torsion, Pressure or whatever channels you wish with the expansive 2370 controller and characterize your new material by testing it in the final application. Use as many modes of control as you wish and perform in-phase or out-of-phase modeling,



Random Spectrum

Point loading - Create your own test, Mix n' match - Import your loading profile from a spreadsheet and produce customized point by point waveforms. You can mix ramps and sinusoids, switch control modes during a test condition, or customize your data collection process.



Dual Column Load Frame & Servo-all-electric actuator

The 810 Series dual column load frames are feature a compact tabletop construction to minimize use of critical lab space. The moveable crosshead enables adjustable test space and our mechanical lift option makes it easy to adjust. Load frame column width and length are configured to your test sample requirements. The test machine requires single phase 220V. Actuator stroke options to 18 inches.

2370 Control Hardware

- High Speed (300 MIPS) Digital Signal Processor
- 24 bit Analog Data Conversion
- 32 bit Digital Data acquisition
- 40 bit Servo-Loop Calculations

The 2370 Series offers the latest in electronic performance, functionality and cost savings. The 2370 controller combined with Global Data Sharing (GDS) software, offers the test engineer a unique, flexible, and modular test control system.

Each 2370 includes three strain bridge feedback channels for load cells or extensometers, one channel to provide user choice of AC type signal conditioner for an LVDT position transducer or any transducer that can provide a high level 10V analog input signal. The fifth feedback and control channel is for the actuators digital encoder which offers high resolution (better than 1 micron) control.

2370 controllers control two actuators so expansion to a second channel is included at no extra charge. Eight digital input and eight output channels provide drive and device control. Test data can be acquired at speeds up to 5000 samples per second on all feedback channels concurrently.

810L Configurations

Linear Actuators - Overview

The following list shows popular actuator ratings. Other actuators are available to match up to specifications that Select a linear actuator to match long term force, speed and stroke requirements. Linear actuators include a digital position encoder with 1 micron or better resolution. The table below highlights standardized configurations.

Series	E2 Family	E3 Family	E4 Family	E5 Family	E6 Family
Max Force	± 2.5 kN (570 lb)	± 6 kN (1350 lb)	± 17.5 kN (4000 lb)	± 38 kN (8500 lb)	± 55 kN (12400 lb)
Max Velocity	850 mm/s (33 in/s)	625 mm/s (25 in/s)	950 mm/s (37 in/s)	1 m/s (40 in/s)	1 m/s (40 in/s)
Stroke	Most common: ± 75 mm (6 in) – Optional Strokes ± 225 mm (18 in)				
Position Resolution	0.1 micron				
Speed Range	0.00001 to 15 Hz				

Note – Actuator family ratings provide overview of family attributes. The optimal configuration and specific model is determined between customers and application engineers. Specific models within a family have varying load and speed specifications. Fatigue rating information is available separately.

2370 Software

2370 Software Products are all compatible with Global Data Sharing (GDS) which requires a PC with Microsoft Operating System. Each system includes:

MachineBuilder Software which configures the machine transducers and actuators and enables servotuning, calibration, and global limit setting. The system is user configurable. The addition of a second actuator can result in two stations, one biaxial station or both scenarios.

TestBuilder Software makes it possible to set up, launch, and monitor tests. Captured test data may be saved and exported to Excel for reports. Separate panels are available for static and fatigue tests. Create, store and execute tests including command signal, data acquisition and export of data to Excel.

Application Development Options include an applications development software toolkit that allows users to develop software components (extensions to the base control software) using Visual Basic, C+ or Labview and also made to order software programs supplied by TestResources.

NOTE -- R Controller configurations also available.

Dimensional and Utility Requirements

Load Frame Model	810-36	810-MTO
Column Clearance	405 mm (16 inches)	To 810 mm (32 inches)
Column Length	900 mm (36")	To 1500 mm (60")
Vertical Test space	0 to 810 mm (32")	To 1350 mm (54")
Footprint without outriggers	165 mm (6.5") D x 560 mm (22") W	165 mm (6.5") D x 660 mm (26") W
Weight	45 kg (100 lb)	-

Applications



Many materials and products require static and fatigue tests to determine their fit to design requirements. Many options are available, including T slotted tables, grips, and chambers, as well as the addition of a second actuator to produce biaxial motions (torsional or planar).