

840LE Electrodynamic Test System

Force Range: 0.0001 N to 2500 N (580 lb)

Frequency Range (E2 Series): Static to 15 Hz

Frequency Range (M Series): Static to 75 Hz

System Overview

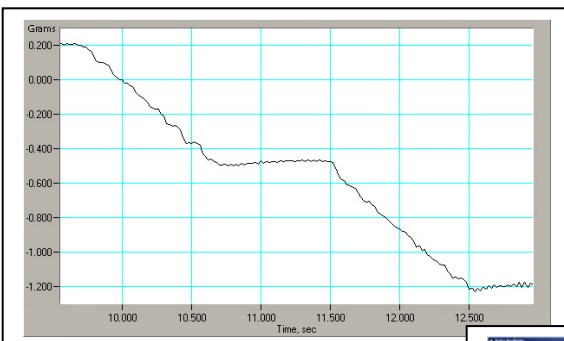
The 840LE test system is used to characterize and test materials, devices and components over a wide spectrum of load, strain and stroke. Each system is configured from a wide number of actuators and transducers to serve specific customer needs. When configured with small load cell, the 840 delivers unmatched accuracy and control

840LE Systems include:

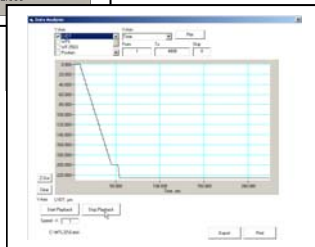
- 840 Series Dual Column load frame
- E2 & M25 Series Electrodynamic Actuators
- Load cells, encoders, extensometers, LVDTs
- 2370 Servocontroller
- TestBuilder & MachineBuilder Software
- Computer

Ideal for Micromechanical Static, Dynamic & Fatigue Test Applications

The 840LE test system has been used with low force load cells to decrease the force range of the test system and to produce load controlled test applications at sub-gram load levels. In tissue engineering research, low or micromechanical load and position controlled dynamic and fatigue tests are common. The 840LE, with 24 bit measurement and control resolution has proven load control to better than 0.5 grams (see plot below).



Characterizing materials for their viscoelastic properties involves performing stress relaxation, creep and dynamic characterization tests. Applications software is available for the 2370 Controller.



In tissue engineering applications, the test machine needs to be placed inside an incubator chamber. The 840LESS version features a stainless steel construction for long term corrosion protection. In other test setups, the bath is placed in the machine, as shown.



Compact Load Frame with choice of actuator

The 840 Series dual column load frames feature a compact tabletop construction to minimize use of critical lab space. The moveable crosshead enables adjustable test space and column length is configured to your test sample requirements. The test machine requires single phase 220V (or optional 110V). Long stroke actuators are also available.

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.

840L Electrodynamic Test System

Specifications of Common Configurations

Model	840LE216	...E246	...M25-3
Characteristics	Most Popular	Higher Speed	High Frequency
Static Force Rating	± 2.5 kN (580 lb)	± 600 N (145 lb)	± 140 N (31 lb)
Fatigue Rating	± 1.5 kN (350 lb)	± 600 N (145 lb)	± 200 N (45 lb)
Peak Load (o)	± 1.5 kN (350 lb)	± 600 N (145 lb)	± 1100 N (250 lb)
Velocity Max	200 mm/s (8 in/s)	850 mm/s (33 in/s)	4.5 m/s (180 in/s)
Stroke	± 75 mm (±3")		± 37 mm (± 1.5")
Cyclic Range	Static to 15 Hz		Static to 75 Hz

* Actuators are matched to specific test requirements and specifications shown are general in nature. Multiple options are available to satisfy specific customer needs. Performance curves and life predictions for fatigue testing applications are available. Discuss all critical specifications with an application engineer.

Dimensional and Utility Requirements

Load Frame Model	840
Column Clearance	200 mm (8 inches)
Vertical Test space	Made to requirements

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.



840L Horizontal Setup