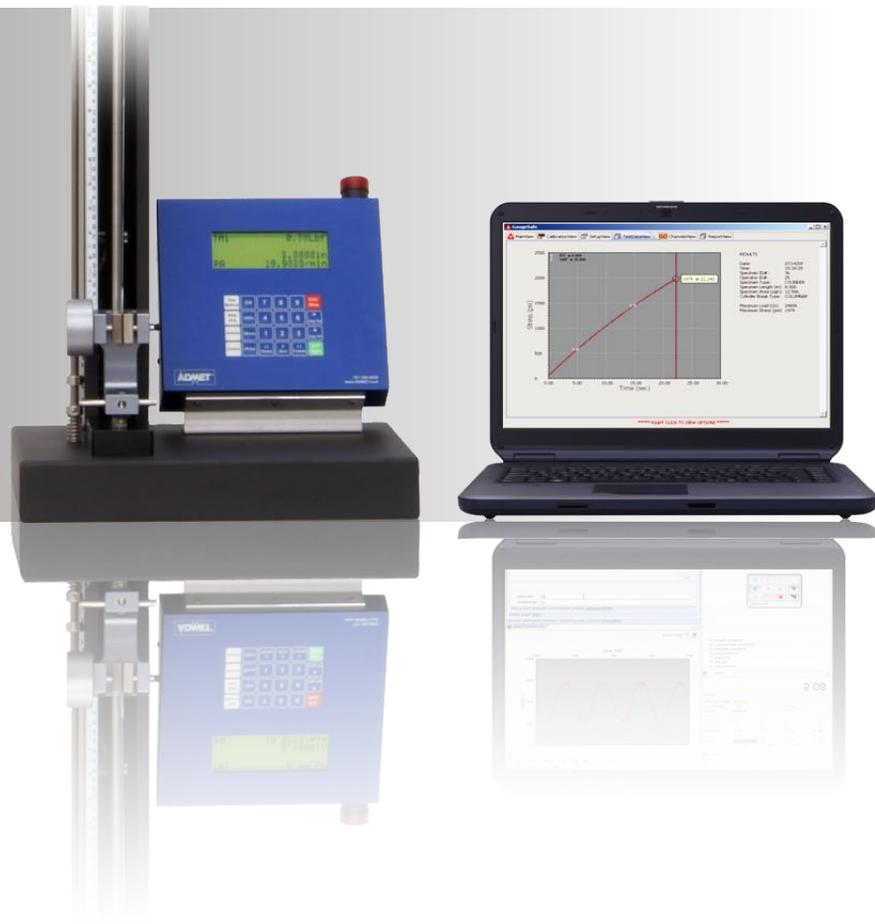# eP2 + GaugeSafe

Materials Testing System

System Brochure

ADMET

eP2 + GaugeSafe   Materials Testing System

Simplicity, Repeatability, and Accuracy.

A standalone presettable controller that simplifies materials and product testing.

The eP2 Digital Controller performs mechanical tests on materials, products and components. It is a presettable unit that operates both electromechanical and servo hydraulic testing systems. The eP2 can also be used to retrofit/upgrade virtually any manufactures testing machine regardless of age or machine type. It is a less expensive and easier to use alternative to PC based materials testing systems and is capable of performing tests in tension, compression, bend and torsion. The eP2 features load and crosshead position inputs plus enhanced closed loop servo control capabilities for accurate and repeatable testing. An optional axial strain input channel can be added for accommodating extensometry.
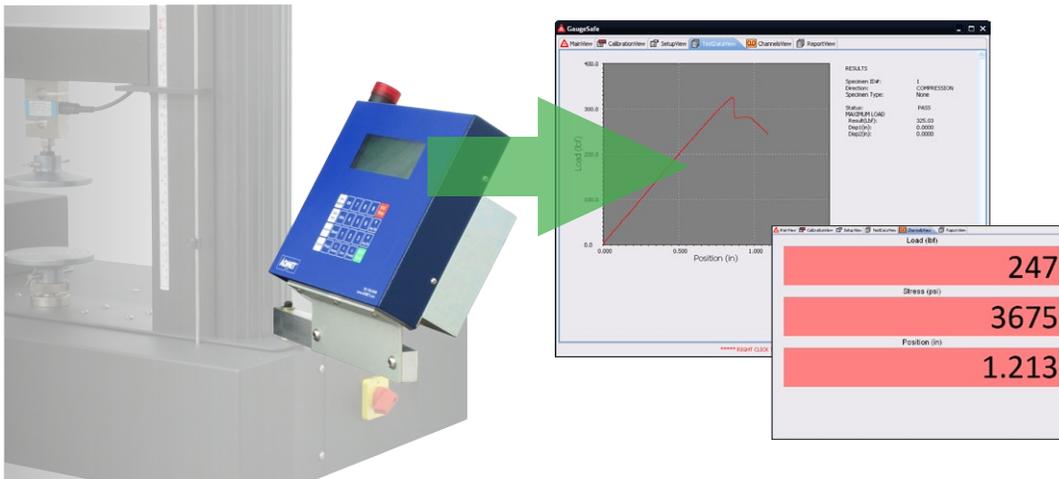
Combining the eP2 controller with the PC based GaugeSafe Data Exchange software makes it easy to create and store unlimited number of test methods; save, export and print test results including stress vs. strain curves; import results and XY data into common spreadsheet and database programs for further analysis and reporting.

◄ Features

- Display load, position, axial strain (optional), and test rate during tests.

- Display measured mechanical properties at test completion.

- Calculate key mechanical properties such as ultimate strength, modulus, offset yield, percent elongation and more. Calculations are in accordance with ASTM and ISO testing standards.

- Upload results and XY data via the GaugeSafe Data Exchange program to a Windows based PC for viewing and reporting.

- Store up to six test methods internally. Access unlimited number of test methods through the Gauge Safe Data Exchange software.

- Specify high and low limits for each mechanical property for pass/fail indication.

- Protect from inadvertent test method changes through password only accessible supervisor/operator modes.

- Select between English, Metric and SI engineering units.

- Specify ramp to break, ramp to hold and cyclic sawtooth and squarewave closed-loop servo control profiles.

- Perform load rate, position rate and strain rate controlled tests.

- Calibrate load and axial strain channels in accordance with ASTM E4 and E83 standards, respectively. Load accuracy exceeds ASTM E4 standards down to 1/200th load cell capacity.

- ADMET provides all calibration passwords for streamlining maintenance costs.
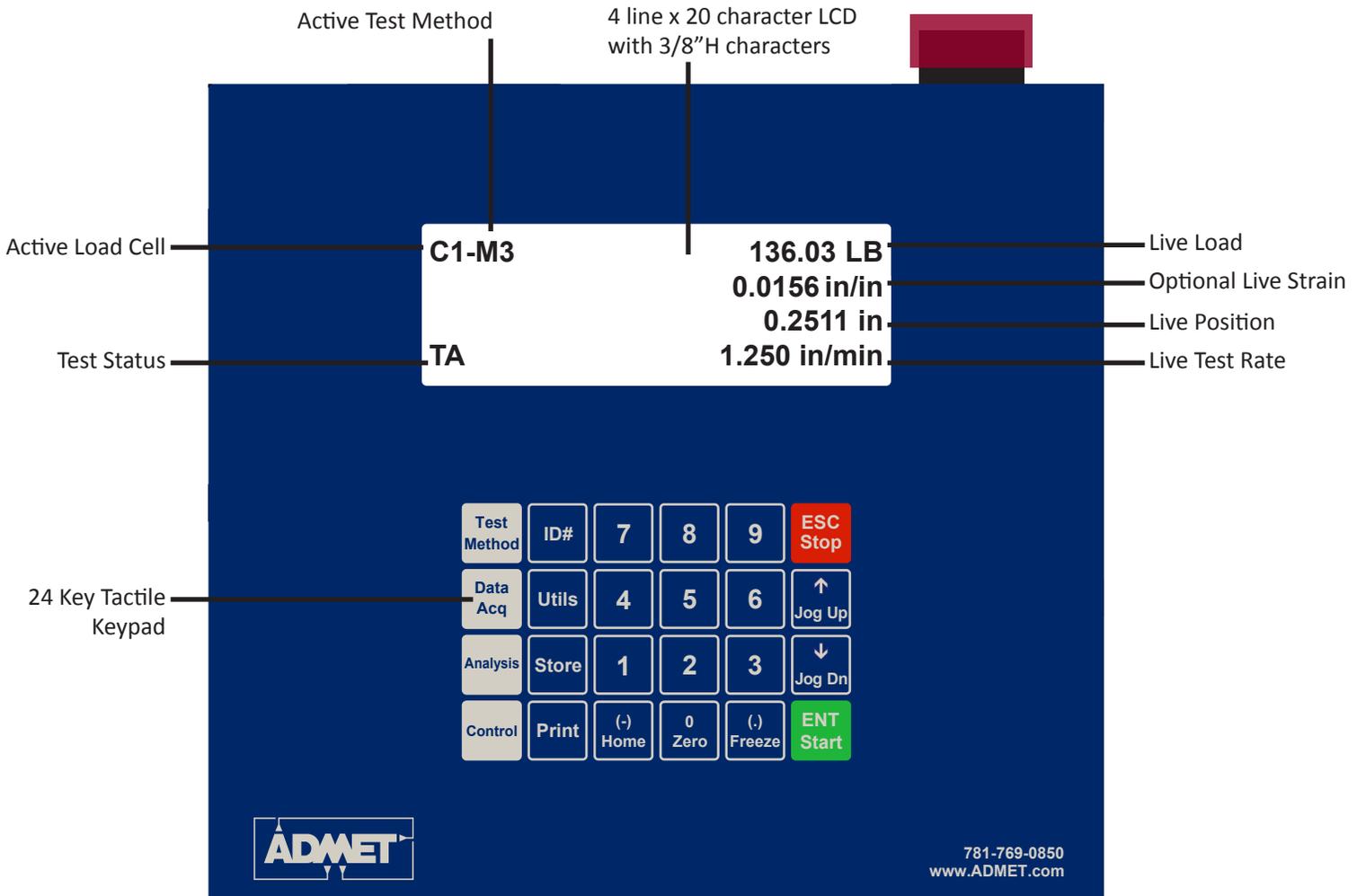
Test with Certainty.

eP2 + GaugeSafe

Materials Testing System

Simplicity, Repeatability, and Accuracy.

The eP2 Digital Controller comes standard with one analog load and one digital encoder type crosshead position input. An optional axial strain input channel is available for use with contacting and non-contacting extensometers. The load and axial strain input channels feature up to 5 calibration tables to accommodate multiple load cells and extensometers. Each channel comes equipped with automatic transducer recognition. The eP2 front panel features a 24 key tactile keypad and an easy to read four line by 20 character LCD.

Active Test Method

4 line x 20 character LCD with 3/8"H characters

Active Load Cell — C1-M3   136.03 LB — Live Load
0.0156 in/in — Optional Live Strain
0.2511 in — Live Position
Test Status — TA   1.250 in/min — Live Test Rate

Test Method	ID#	7	8	9	ESC Stop
Data Acq	Utils	4	5	6	↑ Jog Up
Analysis	Store	1	2	3	↓ Jog Dn
Control	Print	(-) Home	0 Zero	(.) Freeze	ENT Start

24 Key Tactile Keypad

781-769-0850
www.ADMET.com

Test with ADMET.

The parameters that define test procedures are found under the Acquisition, Analysis, and Servo Control menus. Each menu has a dedicated key on the keypad for quick access and ease of use.

Simple Menu Driven Programming - Intuitive menu hierarchy insures fast learning cure in setting up test methods.

Acquisition Menu

1. **Threshold**
   Specify the load at which data logging begins
2. **Sample Break**
   Define the end of test by entering drop in load as a percentage of peak load
3. **Specimen Type**
   Select specimen geometry and enter dimensions
4. **Log Rate**
   Select a data log rate from 0.2 to 1,000 Hz
5. **Local Overload**
   Select a load value less than or equal to the capacity of the active load cell
6. **Engineering Units**
   Specify load, stress, displacement, and time units

Servo Control Menu

1. **Test Profile**
   Specify up to two test control segments. Test rates and endpoint values can be based on load, position, or strain.
2. **Direction**
   Specify a tension or compression test
3. **Post Test**
   At test completion, stop or automatically return to home
4. **Jog Rate**
   Input speed for manual jogging of test frame
5. **Home Location**
   Input home location
6. **Home Rate**
   Input speed for returning to home
7. **Pre Load**
   Input pre load value
8. **Pre Load Rate**
   Input position rate during pre load
9. **Control Gains**
   Specify PID control gains for load, position and strain channels. Password protected

Analysis Menu

1. **Select Analysis**
   Turn on/off the mechanical properties to report at test completion
2. **Set Limits**
   Set high and low limits for each mechanical property for pass/fail determination
3. **Auto Transmit Results**
   Activate auto transmit results immediately after test completion. Results are transmitted via USB computer port
4. **Calculate Results**
   At test completion recalculate mechanical properties. Useful when an analysis setup parameters has been changed after test completion
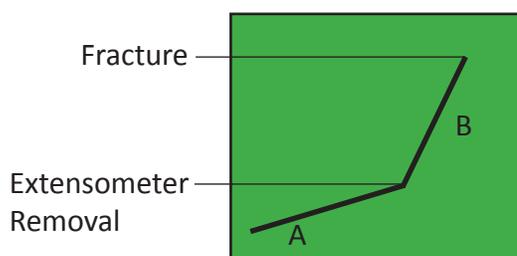
www.ADMET.com

◀ Servo Control

The eP2 controller features a digital PID filter with 1khz servo update rates. Users can specify test rates and end point values based on force, position or strain. Multi segment test profiles are possible including ramp to break, ramp to hold, and cyclic sawtooth or squarewave profiles.

Example Servo Profiles

Metals Test
Segment A: up until and through yield move at a strain rate of 0.015 in/in/min. After acquiring enough strain data for determining yield properties, the eP2 will automatically freeze the extensometer and notify the user to remove it from the specimen. The eP2 will then automatically switch to segment B.

Segment B: move at a position rate equivalent to 0.05 in/in/min until specimen fracture

Post Test: remove specimen from grips and return to starting grip separation at 3 in/min by pressing the HOME key.
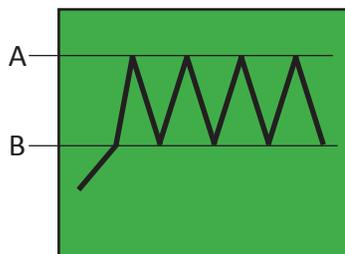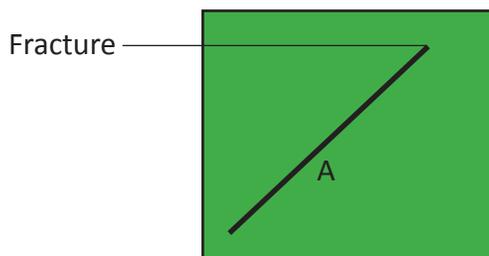

Cyclic Compressive Foam Test
Pre Load 1: move at a position rate of 50 mm/min until 1N

Segment A: load at a position rate of 300 mm/min to 20N

Segment B: unload at a position rate 300 mm/min to 0.00 mm position. Repeat 5 times and record position at 20 N on the 5th cycle
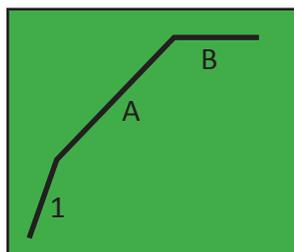
Post Test: at 500 mm/min, automatically go to a height above the thickness of the foam.

Plastic Film or Elastomer Tensile Test
Segment A: move at a position rate of 20 in/min until specimen break

Post Test: automatically return to the starting grip separation at 40 in/min

Stress Relaxation or Creep Test
Pre Load 1: pre load at 25 mm/min until 0.5 N

Segment A: move at 5 mm/min until 12 mm elongation

Segment B: hold position for 4 hrs and record load drop-off

Post Test: automatically return to the starting grip separation at 10 mm/min

www.ADMET.com

◀ **Reporting**

At test completion the eP2 will display calculated mechanical properties on the LCD. A pass/fail message based on user specified high/low limits is also included on the display. Users can setup the eP2 to automatically store the results to permanent memory; later the results can be transferred to a PC running ADMET's PC based GaugeSafe Data Exchange program. At test completion, the XY data can also be transferred to GaugeSafe for viewing or printing stress vs strain curves.

GaugeSafe Data Exchange Software ▶

Single Test Reports

At test completion, upload raw test data from the eP2 into GaugeSafe for viewing of single test reports. Included in the report is an XY plot plus the calculated mechanical properties, specimen geometry and test parameters. Generate hardcopy printouts or .jpeg and .pdf file images. Export the raw test data in ASCII delimited format for further analysis in common spreadsheet programs.

Group Test Reports

After saving the test results from a group of like tests to permanent memory inside the eP2, upload the results to GaugeSafe. View the results including a statistical summary for each mechanical property in tabular form. Generate a hardcopy printout or .jpeg and .pdf image files. Export the results in ASCII delimited format for easy import into common spreadsheet and database programs.

Multi-Plot

Compare a group of like tests by plotting the stress vs strain curves for each test on the same set of graph axes. Generate a hardcopy printout or .jpeg and .pdf image

Unlock the power of the eP2 Digital Controller with GaugeSafe. The Windows XP/Vista/7 compatible program will communicate with your eP2 via a USB flash (thumb) drive or directly through the USB computer port.

◄ GaugeSafe Software Cont.

Test Methods

Test methods define the type of test, how it is performed, what mechanical properties are calculated and how the results are displayed. Create, edit and store an unlimited number of test methods in GaugeSafe then upload the methods into the eP2 Digital Controller. This ensures like tests are performed the same way each time. Test methods can also be downloaded from the eP2 into GaugeSafe for archival and editing.
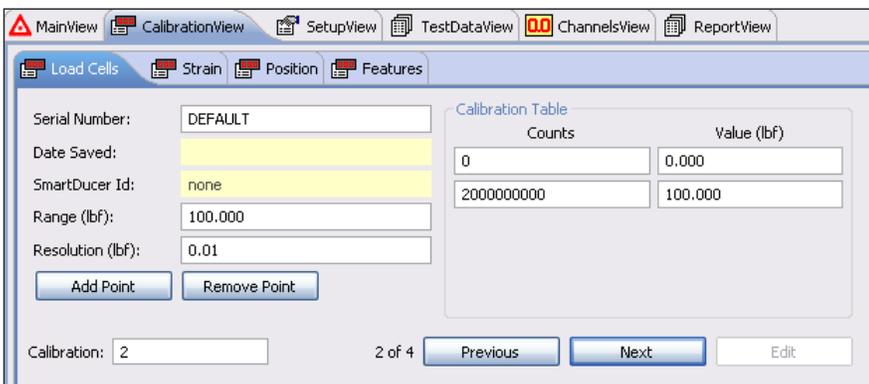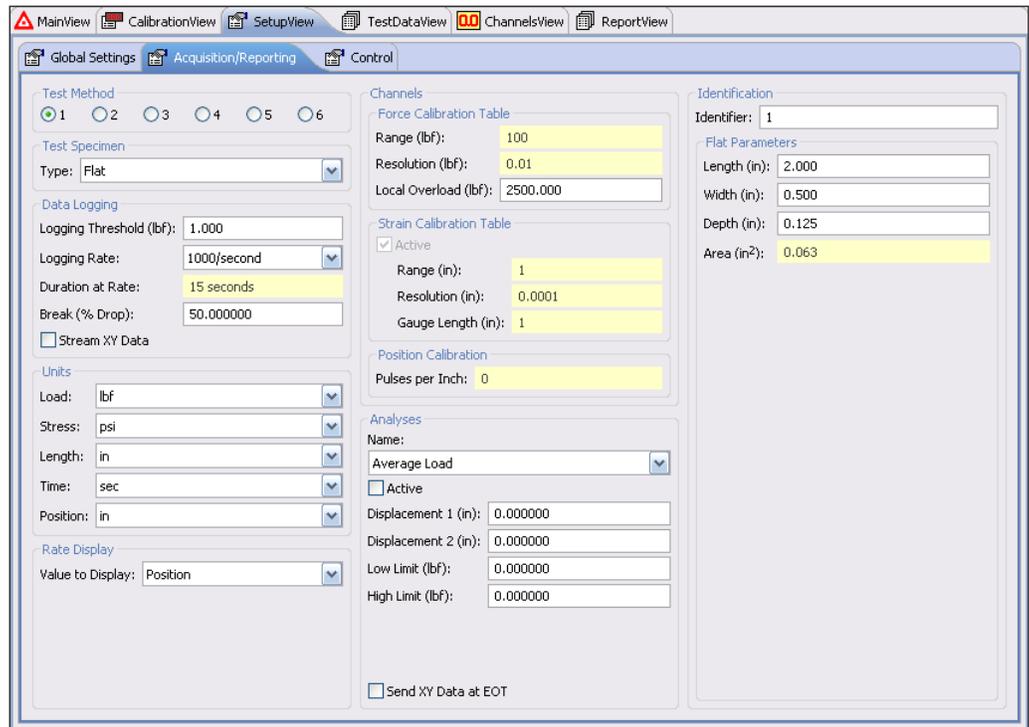
Force and Strain Calibrations

Keep calibrations safe and minimize potential downtime by downloading load cell and extensometer calibrations from the eP2 into GaugeSafe. Archive the calibration tables on the computer running GaugeSafe. Restore calibration tables in the eP2 by uploading them from GaugeSafe.
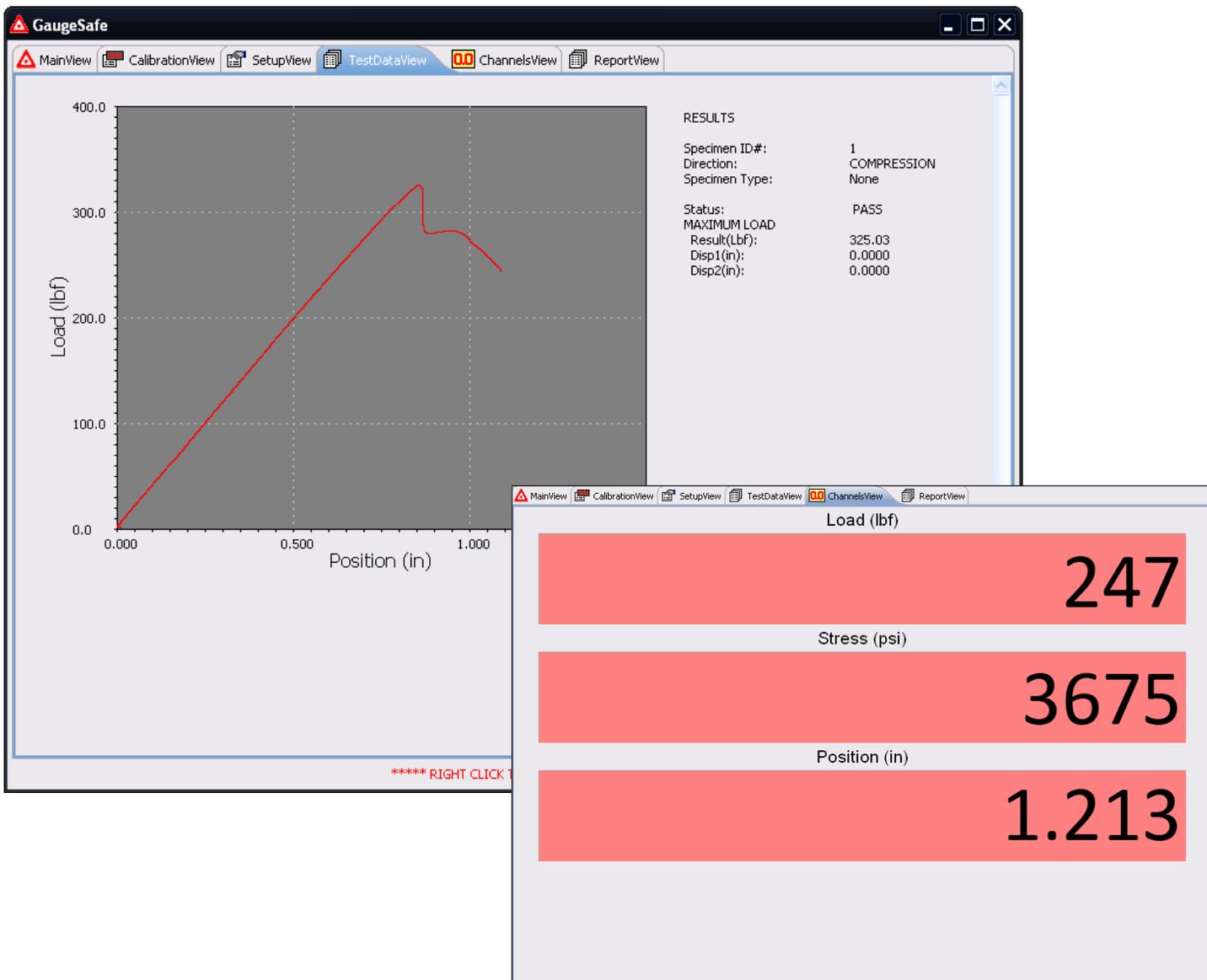
◄ **GaugeSafe Software Cont.**

Real-time XY Plot and Digital Readout (Option)

Activate the live data transfer feature in the eP2 Digital Controller and display in real-time stress vs. strain curves and live numerical load and strain values on your computer running GaugeSafe.

◄ GaugeSafe Software Cont.

Multiple Supervisor/Operator Modes

GaugeSafe offers three levels of password protected access. The access levels relate to test methods, test results and raw XY data only. A separate and unique password is used for editing calibration data. The three access levels are:

View Only: The most restrictive access level will only allow the user to view test methods, results or XY plots.

View and Save: Allows the user to view, create, edit test methods plus manually save test methods, results and XY plots.

View, Save and Upload: Allows the user to view, create, edit test methods. Manually save test methods, results and XY plots. Upload test methods and calibrations into the eP2 Digital Controller.

GaugeSafe allows test methods, calibrations, test results and raw test data to be automatically stored when uploaded. Auto storing data is a fail-safe way to ensure that no test data is lost. The auto store functions are independent of access rights. Access rights and data storage are found in the Main tab.

Three versions of GaugeSafe are offered to meet your needs.

Version	Basic	Plus	Live
Test Methods - Edit, Store, Upload/ Download	X	X	X
Calibrations - Edit, Store, Upload/ Download	X	X	X
Test Results - Store, View, Print, Export in ASCII delimited format	X	X	X
Raw Test Data - Store, Export in ASCII delimited format	X	X	X
XY Plots - View, Print, Export		X	X
Live XY Plot of force or stress vs. time or force or stress vs. strain.			X
Live Numeric Values (large font) of active channels plus stress.			X