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StrainSmart

Software for Stress Analysis Testing



StrainSmart is ready-to-use, Windows-based software system for acquiring, reducing, presenting and storing measurement data from strain gauges, strain-gauge-based transducers, thermocouples, temperature sensors, LVDT's, potentiometers, piezoelectric sensors and other commonly used transducers. And, it is designed to function seamlessly with a variety of Measurements Group instrumentation hardware, including both System 5000 and System 6000 StrainSmart Data Systems.



Description



Ready-to-use StrainSmart software makes test setup fast and easy for strain gauges, strain-gauge-based transducers, thermocouples, temperature sensors, LVDT's, potentiometers, piezoelectric sensors and other commonly used transducers. Using the parameters input for sensors, materials and instrumentation hardware, StrainSmart automatically outputs the results of the test data in engineering units. Test setups and measurement data can also be permanently stored for offline display or for use in databases, word processors and spreadsheets.

StrainSmart has the capability to reduce data in both the time and frequency domains. FFT analysis may be elected for data acquired at scanning rates of 100 samples per second, or more.

Accurate strain measurements require attention to the unique characteristics of the strain gauge and measurement system - thermal output, temperature coefficient of gauge factor and transverse sensitivity of strain gauges, as well as nonlinearity errors inherent in the Wheatstone bridge. StrainSmart software takes these into account automatically.

All strain-gauge bridges are scaled for the number of active bridge arms. Data from measurements with delta, rectangular and tee rosettes can be reduced to principal strains and stresses, as well as the equivalent stresses for common failure mode criteria.

Fully reduced and corrected measurement data can be monitored online and recorded at predetermined limits or at user-defined intervals.

Complete software specifications are available in Bulletin 256S.

The StrainSmart Advantage

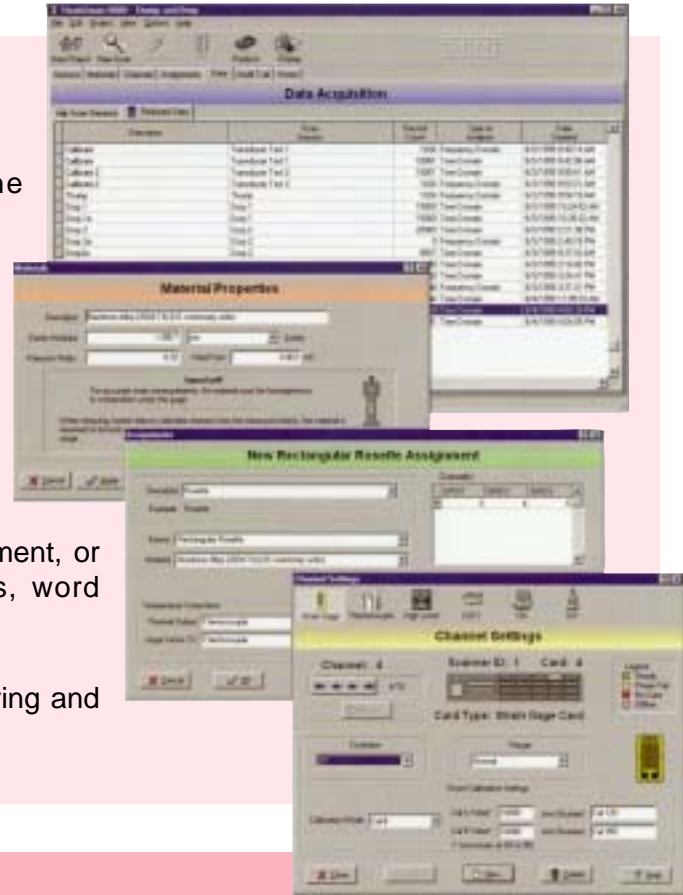
Strain gauge technology is the stress/strain measurement technique most widely used around the world. Over the years, through our Micro-Measurements Division, we have developed the tools necessary for accurate acquisition and understanding of strain gauge measurements. The primary factors affecting strain gauge and instrument performance are incorporated into our extensive selection of Tech Notes, Tech Tips, Instruction Bulletins and other technical publications that are recognized and used as the authoritative references for strain gauge measurement by practitioners throughout the world. StrainSmart software automatically applies the techniques and corrections covered by these publications to your test measurements.



Features

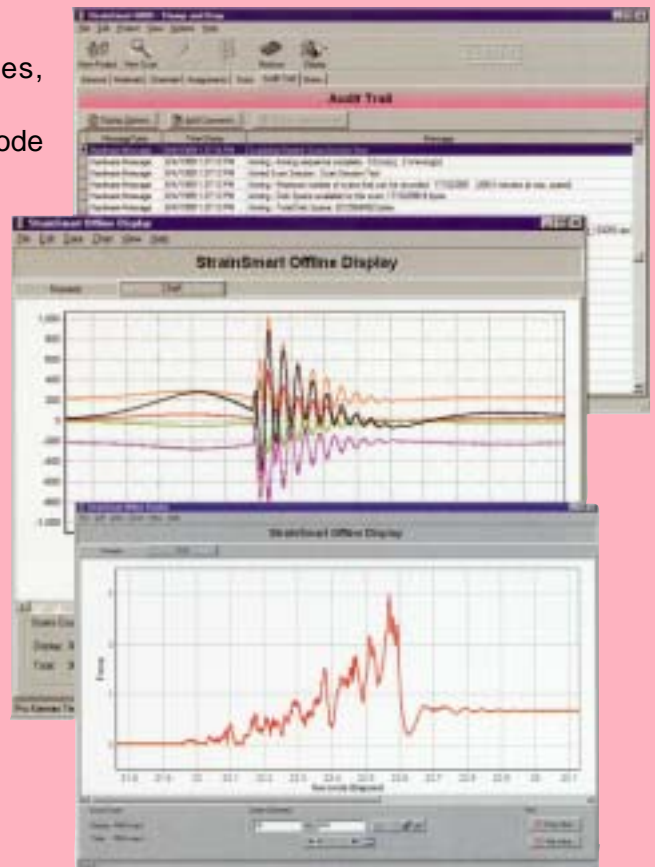
StrainSmart Software

- Complete Windows-based software designed for the experimental stress analyst.
- Easy-to-use StrainSmart Wizards for fast test setup and for data acquisition, reduction and presentation.
- Sensor-specific assignment of inputs (strain gauges, thermocouples, etc.), as well as user-defined assignments for mathematical manipulation of measurement data.
- One-touch autobalance.
- Shunt calibration of strain-gauge inputs.
- Reduced data available offline as Paradox data tables, ASCII text, HTML or Microsoft Office (Word, Excel, Access) document, or online by OLE Automation connection to spreadsheets, word processors, LabView and other third-party applications.
- Online interactive Help system.
- Test setup and commonly used parameters available for saving and reuse for subsequent testing.



StrainSmart Software

- Data reduction for delta, rectangular and tee rosettes, including the conversion of principal strains to stresses.
- Calculation of equivalent stresses for common failure mode criteria.
- Online monitoring of key channels and/or rosettes in fully reduced and corrected numeric and graphic formats.
- Offline presentation of all reduced data in numeric and graphical formats.
- FFT analysis (System 6000).
- Thermal output compensation.
- Correction for temperature coefficient of gauge factor.
- Wheatstone bridge nonlinearity correction.
- Transverse sensitivity correction.
- Thermocouple linearization.
- Scaling for number of active bridge arms.
- Data storage for later analysis and processing.
- Record on limits or user-defined time intervals.
- Automatic audit trail.



Multi-Channel Measurements... Never Easier

Through StrainSmart software, the appropriate setup information is entered - gauge factors, materials properties, transducer sensitivities, etc. Using these parameters, StrainSmart automatically outputs the results of test data in engineering units. Setup information and measurement data can also be permanently retained for offline display or for export to databases, word processors and spreadsheets.



Connect Sensors



Create Project



Enter Sensor Information

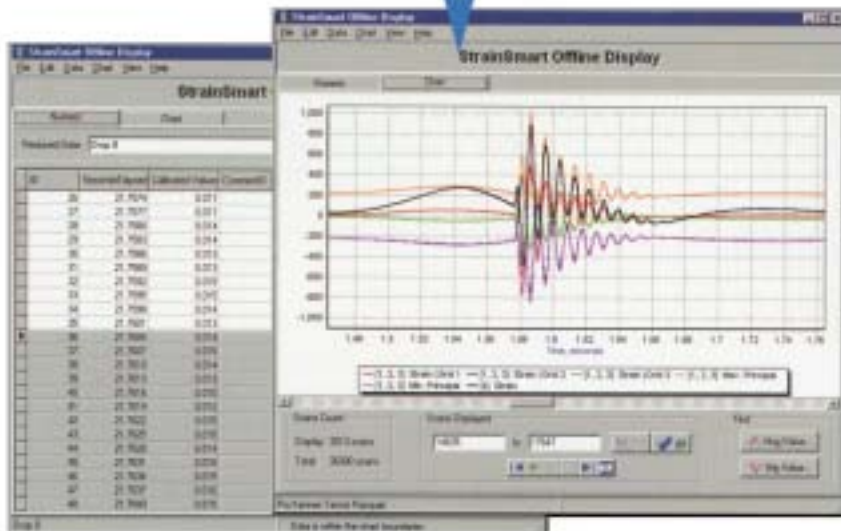


Enter Materials Properties



Select Hardware & Enter Settings

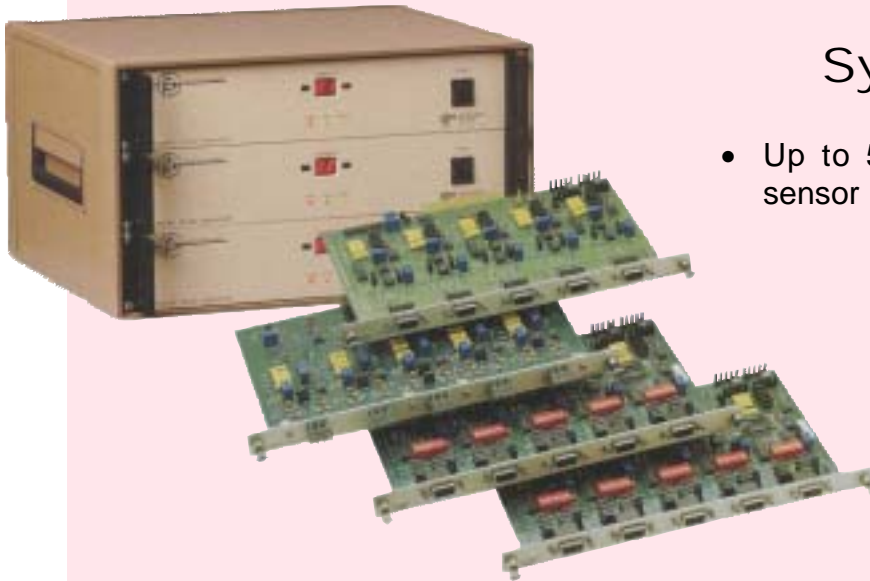
Create Assignments of Sensors, Materials & Channels



Scan & Display Fully Corrected Test Data

StrainSmart Data Systems

StrainSmart software is designed to function with a variety of instrumentation hardware to meet your specific requirements.



System 5000

- Up to 50 scans per second per sensor

See Bulletin 257 for complete details.

System 6000

- 10 to 10,000 scans per second per sensor
- Selectable digital filtering of measurement signals
- Time and frequency domain analysis
- Desktop and remote operation

See Bulletin 257 for complete details.

