Electro Standards Laboratories
ADVANCED SYSTEMS DESIGN & SERVICES

APPLICATION NOTE

CellMite® Quad
Model 4336
Catalog No. 304336

CellMite® Quad - Model 4336 Intelligent Digital Signal Conditioner for Soil Testing Applications

- Simultaneous operation of all LVDT and Strain Gage channels
- Direct to PC with RS232 Data
- Data logging with multiple recording profiles
- Data compatible with Excel
- Automatic and manual triggering

What is the CellMite® Quad?

The CellMite® Quad AC/DC is a 4-channel intelligent digital signal conditioner that connects directly to two AC LVDT transducers and two DC strain gage force transducers and provides direct digital data input into the serial port of a standard PC. Precision AC sine wave excitation voltages to power the LVDT's and precision DC excitation voltages to power the force strain gage bridges are generated by the unit. Internal signal conditioning with filtering is applied to all channels and the digitized data is sent in serial form to a standard PC.

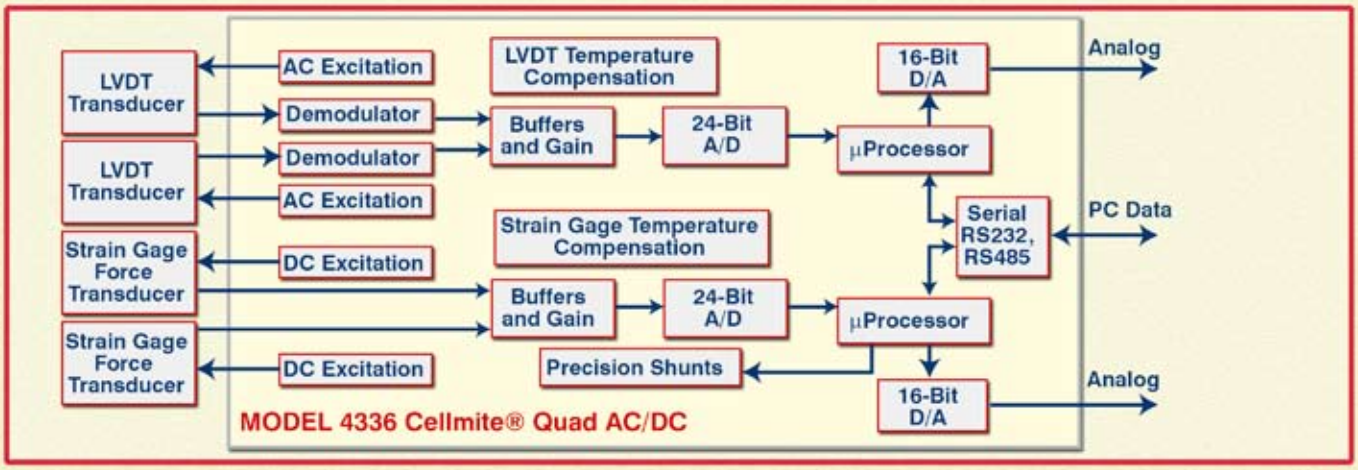
What does the CellMite® Quad do?

The CellMite® Quad simultaneously generates two +/-10V analog outputs; one that tracks a user-selected LVDT channel and one that tracks a user-specified force channel. When used in combination with the CellView Multi-Display GUI software, a complete data acquisition system is formed with synchronized data storage for all channels in an Excel compatible file, and real-time simultaneous viewing of all channels utilizing up to 8 user-specified software displays.

What differentiates the CellMite® Quad from other conditioners?

The CellMite® Quad AC/DC independently compensates each channel's transducer nonlinearities using its integrated 6-point calibration capability not found in standard signal conditioners. The unit has full range tare capability for the LVDT and strain gage force channels, and dual internal precision shunt resistors for the force channels.

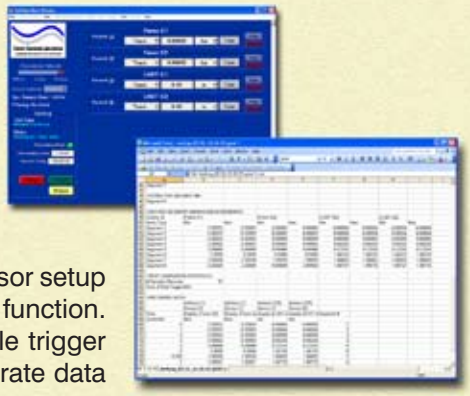
The CellMite® Quad features include nonvolatile memory for parameter and calibration storage, the ability to select between 3 stored LVDT calibrations for the two LVDT channels, and the ability to select between 3 stored force transducers for the two strain gage force channels. Also featured are multi-point and mV/V calibration, remote sense excitation, 24-bit internal resolution with 16-bit analog output, and RS232 serial data output that is compatible with off-the-shelf serial to USB converter cables.



36 Western Industrial Drive, Cranston, RI 02921
Tel: 401-943-1164 Fax:401-946-5790
www.ElectroStandards.com
E-mail:eslab@ElectroStandards.com

Pub. 4282-01

What about the CellView Multi-Display Software?



Using CellView Multi-Display Software makes setting up the fully digital CellMite® Quad signal conditioner simple. CellView Multi-Display Software is comprehensive and creates a turnkey simultaneous data acquisition system. The software supports mix and match usage of LVDT and strain gage channels. CellView allows the user to define 8 simultaneous data displays from multiple channels. This software saves data, calibration, and sensor test information to Excel spreadsheets. The intuitive software guides the user through sensor calibrations. The user can select and name individual LVDT and strain gage channel sets. It's easy to save and load units and sensor setup information. You can set output data with user-defined 5th order polynomial function. You can setup a test to start and/or stop automatically with user-selectable trigger events and delayed triggering. CellView Multi-Display offers multi-sample rate data acquistion via user-definable data logging profiles. Statistics and comments are embedded in data log files. This software offers user-programmable analog output voltages for LVDT and strain gage sensor sets. The units are In, Cm, mm, %, Lb, mV/V, and User-defined.

What is TEDS-Tag® and how does it work?

The CellMite® Quad AC/DC features Electro Standards exclusive TEDS-Tag® Auto Identification. The TEDS-Tag® Auto-ID System retains the self-identification feature of the Institue of Electrical and Electronics Engineers (IEEE) TEDS standards, but is simple to implement on any load cell; and when connected to the CellMite® Quad becomes transparent to the user. Multi load cell - multi instrument matched pair calibrations are also supported, a critical advantage in field calibration services.

1) With TEDS-Tag® system, a small, inexpensive electronic identification chip is placed in the cable extending from the load cell or it can be mounted within the load cell housing. This chip contains the unique electronic serial number that can be read by the CellMite® Quad to identify the load cell.

2) The load cell is then connected to the unit and a standard calibration procedure is performed. The instrument automatically stores the calibration data inside the unit itself along with the unique load cell identification number from the microchip.

3) Whenever that load cell is reconnected to the CellMite® Quad, it automatically recognizes the load cell and self-installs the appropriate calibration data. True plug-and-play operation is achieved.

With this system, the calibration data can automatically include compensation for the particular instrument so that high-precision matched systems are realized. If the load cell is moved to another instrument, that instrument recalls the calibration data that it has stored internally for that load cell. CellMite® Quad can store multiple load cell calibration entries.

When a TEDS-Tag® capable sensor is connected to the CellMite® Quad, that sensor is immediately identified by the CellMite® Quad and its stored calibration data are automatically loaded. If that sensor is removed and another TEDS-Tag® sensor is connected, then its calibration data are automatically loaded. This feature makes it very easy to change sensors. Unlike other units in its class, TEDS-Tag® auto sensor identification requires no user intervention and prevents field personnel from making costly mistakes due to incorrect sensor calibration. The CellMite® Quad can be operated with a computer or simply setup by a computer and then used as a standalone conditioner with an analog output.

CellMite® Quad with CellView Multi-Display Software - designed to test soil -

The CellMite® Quad AC/DC has two LVDT channels and two strain gage channels and is designed for soil test applications. The CellView Multi-Display software allows data logging of all four channels simultaneously, as well as four other values such as peaks or valleys. In order to facilitate soil testing, the software allows a test to be divided into 8 segments, each of which can be run at different logging rates. The maximum logging rate for all four channels simultaneously is 1 sample/sec. Other logging rates are user selectable at slower sampling multiples.

The CellView Multi-Display Software is designed so that masses can be applied to the soil under test and the masses and soil movement can be monitored. The user can setup a test to start and/or stop automatically with user-selectable trigger events and delayed triggering. The user can pause a test, change the masses and resume the test with the same or with different logging rates. The user can enter comments for each segment as well. The generated data is Excel compatible. All data can be logged. In addition, maximum and minimum statistics for each logging segment are summarized and comments are shown. All data is marked so the user knows which logging segment it is associated with. If a specific test requires only one channel of data logging only, the maximum logging rate is automatically increased to 60 samples/sec. If only two channels of LVDT are needed, the maximum logging rate is 7.5 samples/sec. If only two channels of strain gage are needed, the maximum logging rate is 7.5 samples/sec. If the user needs to record LVDT and strain gage simultaneously, the maximum logging rate is 1 sample/sec. The data is monitored in real time by up to eight numeric displays on the GUI panel. These eight displays can be set to monitor any channel; they have selectable units conversion, peak and valley data. The user can define coefficients for a 5th order polynomial that is based on one of the standard inputs if a user selectable unit is needed.

For technical assistance on the CellMite® Quad, contact Electro Standards Laboratories at 401-943-1164, email: eslab@electrostandards.com, or visit our Web site: www.ElectroStandards.com

By: Dr. Raymond B Sepe, Jr.