

General Overview:

The highly versatile "4-in-1" multi device under test (multi-DUT) automated accelerometer calibration system (MDAC) from MB Dynamics can simultaneously, efficiently, and accurately perform calibrations of up to four piezoelectric (charge or PE), IEPE (low-impedance voltage mode), or variable capacitive (VC) accelerometers (DUT's) of the same model and type, each weighing up to 20 grams, over frequencies from 1 Hz to 4000 Hz. The "4-in-1" MDAC can additionally perform automated single-DUT calibrations of PE, IEPE, velocity, piezoresistive and VC accelerometers, as well as vibration sensors and transducers, over frequencies from 1 Hz to 10 kHz, utilizing the MB Dynamics CAL50 calibration vibration exciter.



"4-in-1" MDAC mounted with four (4) PE accelerometers

"4-in-1" MDAC Automated Accelerometer Calibration System Features:

- Simultaneous automated calibrations of up to four piezoelectric (charge or PE), IEPE, or VC accelerometers (DUT's) of the same model and type, each weighing up to 20 grams, within a single test
- Multi-DUT frequency range: 1 Hz to 4000 Hz
- Single-DUT automated PE, IEPE, voltage, PR, VC and velocity calibrations over frequencies from 1 Hz to 10 kHz
- 35 Gpk bare table acceleration, capable of 10 Gpk with four (4) accelerometers mounted on exciter (each <20 gm)
- Single- and multi-DUT Expanded System Uncertainty (ESU) of $\pm 1.2\%$ at 100 Hz (minimum 3 mV signal), estimated in accordance with ISO 16063-21 standard
- Includes two (2) Test Instrument Mounting Fixtures (TIMF's), one (1) four-DUT TIMF and one (1) single-DUT TIMF
- Features five (5) internal reference accelerometers (REF's), one REF mounted in a single-DUT location and four (4) REF's mounted underneath the DUT in the four-simultaneous configuration
- Optional integration into customer-specified database
- Internal removable REF's with 100 mV/g sensitivity and usable frequency range to 10 kHz, traceable to national standards and ISO 17025

"4-in-1" MDAC Automated Accelerometer Calibration System Components:

A complete turnkey system, including:

- CAL50 calibration vibration exciter
- Model 405/407 multi-channel signal conditioner
- Four (4) internal removable REF's with 100 mV/g sensitivity and usable frequency range to 10 kHz, traceable to national standards and ISO 17025
- Single-DUT and Four-DUT TIMF's
- MB 500VI power amplifier
- Win475 "4-in-1" MDAC software and NI DAQ card
- Windows 10 PC, monitor, keyboard and printer
- User manuals
- Calibration accessory kit
- Installation, start-up and training



CAL50 Calibration Vibration Exciter

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Model 405/407 Signal Conditioner Features:

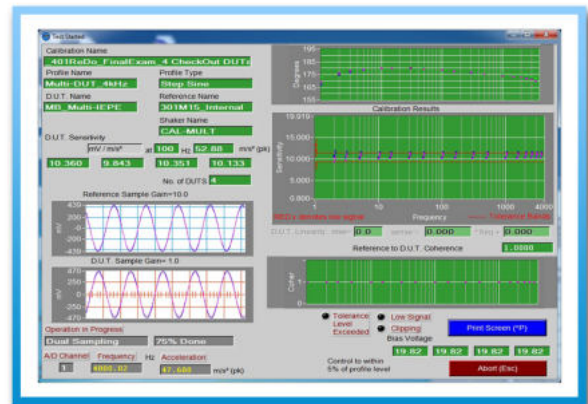
- Provides necessary system excitation
- Supports PE, IEPE, VC and voltage input accelerometers in MULTI-DUT calibration mode
- Dual unit featuring a standard 405X signal conditioner with all standard 405X features, plus additional channels necessary to support REF's and DUT's in MULTI-DUT calibration mode for four (4) accelerometers
- Supports TEDS (IEEE 1451) and electronic ID devices, such as "1-Wire" Dallas ID memory chips
- Automatic gain adjustments of REF and DUT channels to maximize signal-to-noise ratio and reduce measurement uncertainty
- Gains of X1, X10, and X100 all under Win475 automatic software control



Model 405/407 Multi-Channel Signal Conditioner

"4-in-1" MDAC Win475 Software Features:

- Sine calibration with FFT processing at calibration frequency
- PC-controlled signal conditioner, with automatic gain adjustments for REF and DUT, for minimized errors
- Optional software engineering services for linking a customer database to WIN475 MDAC software
- Automated storage and retrieval of test specifications, calibration results and accelerometer data
- NIST traceability
- No operator adjustments required for gain, vibration levels, etc.
- Software-control virtually eliminates operator error, enhances repeatability, ensures optimum signal-to-noise ratio and minimizes uncertainty



Win475 MULTI-DUT ACCEL-CAL software screen display of four (4) PE sensors undergoing calibration at 4 kHz.

Key System Benefits:

- Automated multi-DUT accelerometer calibrations offer time savings, as compared to single-DUT calibrations
- Saves money by replacing traditional outsourced calibration services
- Small uncertainty + affordable price = outstanding value
- Unique self-check feature quickly verifies system operation
- Facilitates in-house calibrations on-demand with expedited turnaround times
- Ensures proper calibration processes and aids in simplified, accurate in-house record-keeping for ISO audit compliance
- Increased calibration frequency ensures good test data and reduced measurement uncertainty
- Automation minimizes the risks of human errors inherent to manual calibration systems
- Expedites calibrations to free up end-users for other measurement tasks
- Available with full technical support from MB Dynamics

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