

## Win475 MULTI-DUT CRASH-CAL (MDCC)

Automated Multi-DUT Calibrations of Piezoresistive Accelerometers and Single-DUT Vibration Sensors

### General Overview:

The Win475 MULTI-DUT CRASH-CAL (MDCC) from MB Dynamics is a highly versatile automated calibration system. It simultaneously, efficiently and accurately calibrates anywhere from one (1) to eight (8) piezoresistive (PR) accelerometers (DUT's) of the same model, such as those used in automotive safety laboratories and crash testing, over frequencies from 10 Hz to 4000 Hz. The MDCC further supports automated single-DUT calibrations of piezoelectric, IEPE, voltage, velocity, and other accelerometer and vibration sensor types, over frequencies from 5 Hz to 15 kHz, all utilizing the MB Dynamics CAL25AB air bearing calibration vibration exciter.



Win475 MDCC mounted with eight (8) piezoresistive accelerometers

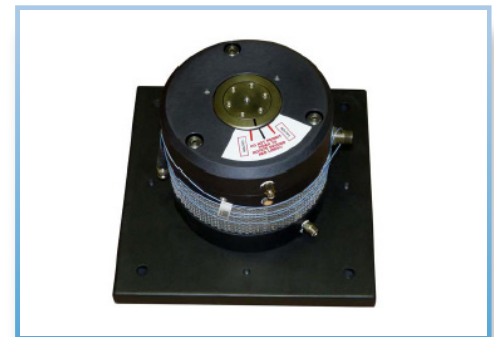
### Win475 MDCC Automated Calibration System Features:

- Simultaneous automated calibrations of up to eight (8) PR bridge-type accelerometers in a single test
- Multiple DUT frequency range: 10 Hz to 4000 Hz
- Single-DUT automated piezoelectric, IEPE, voltage, and velocity calibrations over frequencies from 5 Hz to 15 kHz
- 18 grms bare table acceleration, capable of 10 grms with 8 PR accelerometers mounted on exciter (<10 grams each)
- Choice of seven (7) individual (six internal, one external) high-precision resistors for shunt calibration
- Single- and Multi-DUT Expanded System Uncertainty (ESU) of  $\pm 1.2\%$  at 100 Hz (minimum 3 mV signal), in accordance with ISO 16063-21 standard
- Supports any single axis translational accelerometers complying with SAE J211 or SAE 2570 standard
- Print utility allows for display of SAE J211 and SAE 2570 tolerance bands on calibration certificate
- Optional integration into customer-specified database
- Internal removable reference (REF) accelerometer with 100 mV/g sensitivity and usable frequency range to 15 kHz, traceable to national standards and ISO 17025

### Win475 MDCC Automated Calibration System Components:

A complete turnkey system, including:

- CAL25AB air bearing calibration vibration exciter
- Model 407-8X multi-channel signal conditioner
- Internal removable reference (REF) accelerometer with 100 mV/g sensitivity and usable frequency range to 15 kHz, traceable to national standards and ISO 17025
- Eight (8) DUT TIMF adaptor plate
- Single-DUT TIMF
- MB 500VI power amplifier
- Win475 MDCC software and NI DAQ card
- 475PCM module
- Windows 10 PC, monitor, keyboard and printer
- User manuals
- Calibration accessory kit
- Installation, start-up and training



CAL25AB Air Bearing Calibration Vibration Exciter

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### Model 407-8X Signal Conditioner Features:

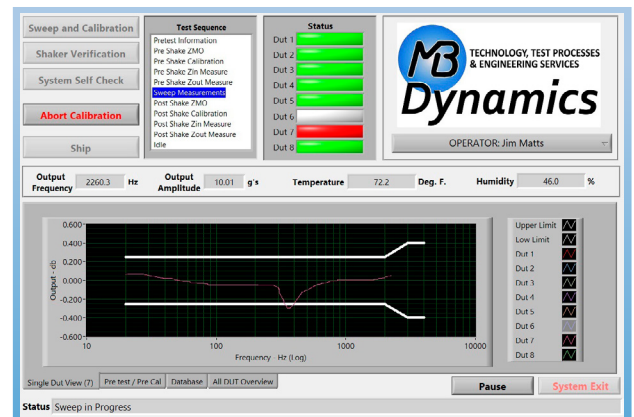
- Provides necessary excitation voltage for up to eight (8) PR bridge-type accelerometers
- Standard bridge excitation voltage: 10 VDC
  - Adjustable excitation voltage: 2.5 VDC to 15 VDC
  - All DUT's calibrated simultaneously will have their own excitation voltage
  - Provides REF excitation & voltage input
  - Provides single DUT IEPE & PE excitation & voltage input
- Measurement of PR accelerometer DC characteristics, including: Zero Measurand Offset (ZMO), Input & Output Impedance (Zin & Zout) & shunt calibration
- Shunt calibration performed with user-selected precision resistor (up to 7 fixed choices) & across user-selected leg of resistive bridge
- Supports TEDS (IEEE 1451) and electronic ID devices, such as "4-Wire" Dallas ID memory chips
- Automatically adjusts gain of REF and DUT channels to maximize signal-to-noise ratio and reduce measurement uncertainty



Model 407-8X Multi-Channel Signal Conditioner

### Win475 MDCC Software Features:

- Calibration data is written to standard MS Access database and may be queried with standard SQL commands
- 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 MDCC calibration 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 CRASH-CAL Software

### Key System Benefits:

- Automated multi-DUT calibrations offer up to 70% 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 eliminates 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