

General Overview:

The CRASH-CAL automated calibration system from MB Dynamics is designed to calibrate the piezoresistive accelerometers used in automotive crash test applications. The system can efficiently and accurately calibrate anywhere from 1 to 8 units of the same piezoresistive sensor model, with frequencies up to 4000 Hz, utilizing the MB Dynamics CAL25AB air bearing calibration vibration exciter. In addition to its piezoresistive accelerometer calibrations, the CRASH-CAL supports automated piezoelectric, IEPE (ICP), and other vibration sensor calibrations, in frequency ranges from 5 Hz to 10 kHz, one sensor at a time.



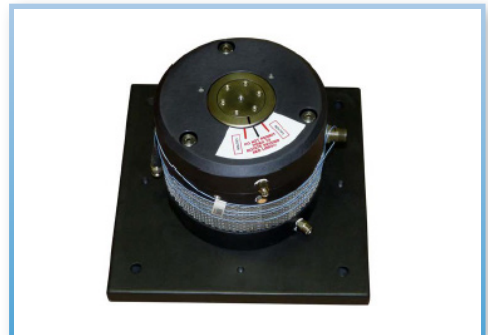
CRASH-CAL with 8 Piezoresistive Accelerometers Mounted

CRASH-CAL Features:

- Simultaneous calibration of up to 8 piezoresistive accelerometers
- Multiple device under test (DUT) frequency range: 10 Hz to 4000 Hz (note: sensors must be of the same model during a single calibration test and weigh less than 10 grams)
- Single-DUT frequency range: 5 Hz to 10 kHz
- Amplitude range: up to 14 g rms
- Uncertainty budget: Expanded System Uncertainty (ESU) $\pm 1.2\%$ at 100 Hz (minimum 3 mV signal), in accordance with ISO 16063-21
- 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
- Data results may be saved in a text (.txt) file for use in other software programs
- Optional integration into customer specific databases and database formats
- Internal removable reference (REF) accelerometer with 100 mV/g sensitivity and usable frequency range to 10 kHz, traceable to national standards and ISO 17025
- Incorporates the Model 407-8X signal conditioner and Win475 CRASH-CAL software (features below)

System configuration consists of:

- CAL25AB air bearing calibration vibration exciter
- Model 407-8X signal conditioner
- MB 500VI amplifier
- CRASH-CAL software
- 475PCM module



CAL25AB Air Bearing
Calibration Vibration Exciter

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MB-CRASH-CAL-1018

Model 407-8X Signal Conditioner Features:

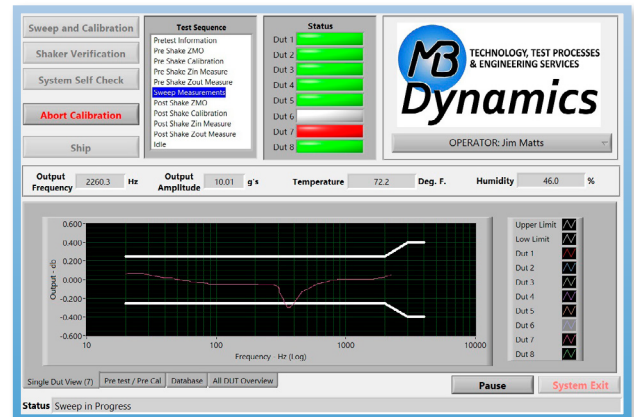
- Provides necessary excitation voltage for up to 8 piezoresistive crash test accelerometers
- Standard excitation voltage: 10 VDC
 - Optional excitation voltages: 5 VDC and 2 VDC
 - All DUTs calibrated simultaneously will have their own excitation voltage
- Measurement of piezoresistive accelerometer DC characteristics, including: Zero Measurand Offset (ZMO), Input & Output Impedance (Zin & Zout) and shunt calibration
- Shunt calibration performed with user-selected precision resistor (up to 7 fixed choices) and across user-selected leg of resistive bridge
- Supports TEDS (IEEE 1451) and electronic ID devices, such as “1-Wire” electronic serial number chips
- Automatically adjusts gain of REF and DUT channels to maximize signal-to-noise ratio and reduce measurement uncertainty



Model 407-8X Signal Conditioner

Win475 CRASH-CAL Software Features:

- Sine calibration with FFT processing at calibration frequency
- PC-controlled signal conditioner for minimized errors
- DC measurements; ZMO and shunt calibration



Win475 CRASH-CAL Software

Key System Benefits:

- Small uncertainty + affordable price = outstanding value
- Saves money by replacing traditional outsourced calibration services
- Facilitates in-house calibrations on-demand with expedited turnaround times
- Proper calibration processes and accurate recordkeeping aid in ISO audit compliance
- Increased calibration frequency ensures good test data and reduced measurement uncertainty
- Automation eliminates risks of human error inherent to manual calibration systems
- Expedited calibrations free up users for other measurement tasks
- Simplifies record-keeping
- Available with full technical support from MB Dynamics

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