



AUTOMOTIVE APPLICATIONS



ADVANCED SENSORS FOR A DYNAMIC WORLD



AUTOMOTIVE TEST AND NVH

Dytran offers a comprehensive line of AC and DC sensors for internal and external NVH in full-vehicle, component, and sub-assembly tests. Improve vehicle reliability, durability, safety, and ride quality with Dytran automotive test sensors.

Noise, Vibration, and Harshness (NVH)

3023A Series: Triaxial Accelerometer

Features: Adhesive mount or tapped hole options, titanium, lightweight, IEPE, high-temp options, TEDS available

- Sensitivities (mV/g): 1, 5, 10
- 1.62 to 4000 Hz (-5 to +15%)



3225F Series: Miniature Teardrop Accelerometer

Features: IEPE, titanium, adhesive mount, low outgassing, high-temp. options

- Sensitivities (mV/g): 1, 5, 10, 100
- 1.6 to 10000 Hz frequency range ($\pm 10\%$)



3413A Series: Triaxial IEPE Accelerometer

Features: Case isolated, IEPE, titanium, hermetic, TEDS options

- Sensitivities (mV/g): 5, 50
- 3.3 to 3000 Hz frequency range ($\pm 5\%$)



Model 3093M27: High-Temp. Triaxial Accelerometer

Features: Case isolated, IEPE, titanium, hermetic, TEDS available, 320°F (160°C) operation

- 10 mV/g sensitivity
- 3.3 to 3000 Hz frequency range ($\pm 5\%$)



3023AH Series: High-Temp. Triaxial Accelerometer

Features: Miniature size, lightweight, adhesive mount, IEPE, titanium, hermetic, 325°F (162°C) operation

- Sensitivities (mV/g): 1, 5, 10
- 1.5 to 10000 Hz frequency range (-5/+15%)



Road Load, Durability and Ride Quality

Dytran sensors put objective data behind subjective ride quality impressions under any load condition. DC-MEMS sensors provide excellent phase response between measurement points. Rugged, hermetically sealed designs survive tough 4-poster shaker testing.

Model 2013D: IEPE Sound Pressure Sensor

Features: High natural frequency, fast rise time, IEPE, titanium, hermetic

- 2000 mV/Psi sensitivity
- 10 to 5000 Hz frequency range ($\pm 5\%$)



7500A Series: High Precision DC MEMS Accelerometer

Features: Differential mode, ultra low noise, hermetic

- Sensitivities (mV/g): 1000, 400, 200, 80, 40, 20, 10, 5
- 0-400 to 0-4000 Hz frequency range ($\pm 3\text{dB}$)



7503D Series: Triaxial DC MEMS Accelerometer

Features: Differential output (differential mode), high resolution, ultra-low noise, titanium, hermetic

- Sensitivities (mV/g): 2000, 800, 400, 160, 80, 40, 20, 10
- 0-400 to 0-4000 Hz frequency range ($\pm 3\text{dB}$)



7600B Series: High Precision MEMS Accelerometer

Features: Differential mode, power supply identical to strain gauge sensors, titanium, hermetic

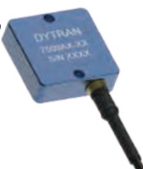
- Sensitivities (mV/g): 100, 50, 20, 10, 5, 2.5
- 0-400 to 0-1750 Hz frequency range ($\pm 3\text{dB}$)



7509A Series: VC Response Accelerometer

Features: Differential output, industry standard thru-hole, integral cable, low noise

- Sensitivities (mV/g): 2000, 800, 400, 160, 80, 40, 20, 10
- 0-300 to 0-2000 Hz frequency range ($\pm 3\text{dB}$)



7583A Series: Sensor with Extended Frequency Response

Features: VC-MEMS, measures extended frequency response, differential output, hermetic

- Sensitivities (mV/g): 2000, 800, 400, 133, 80, 40, 20
- 0-1150 to 0-7000 Hz frequency range ($\pm 3\text{dB}$)



Brake, Transmission and Powertrain Testing

Sensors in this category are used in test cell environments to evaluate, improve and smooth rotating components and assemblies to eliminate unwanted oscillations/imbalances/gear mesh noise that can affect the full vehicle.

Model 3443C: High-Temperature Triaxial Accelerometer

Features: Charge mode, low profile, titanium, hermetic, 500°F (260°C) operation

- 2.7 pC/g sensitivity
- 10000 Hz upper frequency range ($\pm 10\%$)*



Use with:
Series 4753B or 4754B: In-Line Charge Amplifier

3133A Series: Ultra Miniature Triaxial Accelerometer

Features: High sensitivity, ideal low frequency response, low mass, IEPE, titanium, TEDS available

- Sensitivities (mV/g): 10, 2, 5, 1, 0.2
- 0.34 to 6000 Hz frequency range ($\pm 5\%$)



3224A Series: Ultra Miniature Accelerometer

Features: High sensitivity, ultra miniature size, IEPE, titanium

- Sensitivities (mV/g): 9 to 14, 2 to 5, 5 to 10, 1 to 2.5
- 0.3 to 20000 Hz frequency range ($\pm 10\%$)



Model 3310C: High-Temperature Accelerometer

Features: Removable cable, ultra miniature size, charge mode, base isolated, titanium, hermetic, 500°F (260°C) operation

- 1.0 - 1.3 pC/g sensitivity
- 7000 Hz upper frequency range ($\pm 5\%$)*



3133D Series: Triaxial Accelerometer

Features: Miniature size, low base strain sensitivity, adhesive mount, low outgassing, IEPE, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 10, 2, 5, 0.7, 0.25
- 0.25 to 10000 Hz frequency range ($\pm 5\%$)



3623AXT Series: Triaxial Submersible Sensor

Features: IP68 rated, case isolated, integral water blocked cable, 10-32 stud mount, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 10, 100, 50
- 1.4 to 3000 Hz frequency range ($\pm 5\%$)



Modal Analysis

Accelerometers used for modal analysis of frames, panels, and body-in-white studies must be lightweight, exhibit very low amplifier noise, and have an excellent low-frequency response. Dytran modal sensors assure a clean response signal, and their small size and low mass prevent structural mass loading effects.

3333A Series: Triaxial Accelerometer

Features: Extended low frequency response, low noise, miniature size, IEPE, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 10, 100, 50
- 0.54 to 10000 Hz frequency range ($\pm 15/-10\%$)



3273A Series: Low Noise Triaxial Accelerometer

Features: Extended low frequency response, low noise JFET electronics, miniature design, IEPE, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 10, 100, 50
- 0.5 to 3000 Hz frequency range ($\pm 5\%$)



7576A Series: Analog 6DoF Sensor

Features: DC response, variable capacitance technology, titanium, hermetic

- Accel. sensitivity (mV/g): 470, 235, 78.33, 11.75, 1175
- Accel. range: $\pm 2g$, $\pm 5g$, $\pm 10g$, $\pm 30g$, $\pm 200g$
- Gyro sensitivity (mV/°/sec): 25, 12.5, 7, 0.1, 25
- Accel. frequency ranges ($\pm 3dB$) from: 0-1150 Hz to 0-3800 Hz



Model 3225F7: Miniature Accelerometer

Features: Low outgassing, adhesive mount, IEPE, titanium, 250°F (121°C) operation

- 100 mV/g sensitivity
- 10000 Hz upper frequency range ($\pm 10\%$)



* Low frequency response and phase response are a function of the charge amplifier used.

Exhaust System Testing

Automotive exhaust systems are a major source of vibration and noise and must be characterized to eliminate unwanted NVH inputs to the vehicle structure and to passengers. Dytran high-temperature accelerometers can be mounted anywhere on the system, from the manifold to the tailpipe, to measure frequencies and amplitudes through the operating temperature range of the system.

Model 3316M3: Ultra High-Temp. Accelerometer

Features: Patented Silver Window™ technology, Inconel™ housing, charge mode, miniature, hermetic, 1000°F (538°C) operation

- 1 to 2 pC/g sensitivity
- 10000 Hz upper frequency range ($\pm 10\%$)*



Use with:
Series 4753B or 4754B: In-Line Charge Amplifier



Model 3335C: Extreme High-Temperature Accelerometer

Features: Inconel™ housing, integral hardline cable, low mass, charge mode, hermetic, 1200°F (649°C) operation

- 1 to 2 pC/g sensitivity
- 3500 Hz upper frequency range ($\pm 10\%$)*



3055D Series: High Temp. General Purpose Sensor

Features: Base isolated, ideal low frequency response, IEPE, titanium, hermetic, TEDS available, 325°F (163°C) operation

- Sensitivities (mV/g): 500, 200, 100, 50, 20, 10, 5, 1
- 1 to 10000 Hz frequency range ($\pm 10\%$)



3056D Series: High Temp. General Purpose Sensor

Features: Base isolated, ideal low frequency response, IEPE, titanium, hermetic, TEDS available, 325°F (163°C) operation

- Sensitivities (mV/g): 500, 200, 100, 50, 20, 10, 5, 1
- 1 to 10000 Hz frequency range ($\pm 10\%$)



Whole-Body and Hand-Arm Vibration Measurements

Study Whole Body Vibration (WBV) and Hand-Arm Vibration (HAV) to validate occupational health and safety standards or ride quality characteristics in automobiles, buses, farm & heavy equipment, trucks, and construction vehicles. Dytran's low noise, low frequency accelerometers are ideal for WBV frequencies in the 1-8 Hz range, and for HAV frequencies in motorcycles and mountain bikes up to the highest limit of structure-borne resonance frequencies.

3097A Series: Miniature Accelerometer

Features: Low noise JFET electronics, TEDS available, IEPE, titanium, hermetic

- Sensitivities (mV/g): 10, 100, 500
- 0.3 to 5000 Hz frequency range ($\pm 5\%$)



Model 3305A Series: Miniature Accelerometer

Features: Low noise JFET electronics, adhesive mount, excellent linearity, IEPE, titanium, hermetic

- Sensitivities (mV/g): 10, 100, 500
- 0.3 to 5000 Hz frequency range ($\pm 5\%$)



Model 3056B9: IEPE Accelerometer

Features: Mechanically and electrically filtered for high frequency and high energy dissipation, lightweight, titanium, hermetic

- 10 mV/g sensitivity
- 1 to 10000 Hz frequency range ($\pm 15\%$)



Model 3143D1T: Triaxial Accelerometer with TEDS

Features: 360° cable orientation, case isolated, low profile, IEPE, titanium, hermetic

- 100 mV/g sensitivity
- 0.4 to 3000 Hz frequency range ($\pm 5\%$)



Model 5313A: Triaxial Seat Pad Accelerometer

Features: Conforms to ISO 8041, rubber pad, IEPE, hermetic

- 100 mV/g sensitivity
- 0.5 to 3000 Hz frequency range ($\pm 5\%$)



12 inch diameter

Small Structures/ Mounting Plates

Small structures resonate at higher frequencies and the quality of the measurement can be adversely affected by the mass of response accelerometers. Excessive mass can change the natural response of the structure or test article by imparting unwanted damping effects. When studying modal responses of small structures, it is critical to select accelerometers of the lowest possible mass. The accelerometers in this section are among the lowest mass sensors in the industry, assuring a proper measurement response.

3224A Series: Ultra Low Mass Accelerometer

Features: Integral cable, high sensitivity, IEPE, titanium

- Sensitivities (mV/g): 9 to 14, 5 to 10, 2 to 5, 1 to 2.5
- 0.3 to 20000 Hz frequency range ($\pm 10\%$)



3225F Series: Miniature Teardrop Accelerometer

Features: Low outgassing, adhesive mount, IEPE, titanium, high-temp. options

- 100 mV/g sensitivity
- 2 to 10000 Hz frequency range ($\pm 10\%$)



3274A Series: Miniature Accelerometer with TEDS

Features: Case isolated, IEPE, titanium, hermetic

- Sensitivities (mV/g): 25, 10, 5
- 1.1 to 10000 Hz frequency range ($\pm 10\%$)



3133A Series: Ultra Miniature Triaxial Accelerometer

Features: Adhesive mount, IEPE, titanium, TEDS available

- Sensitivities (mV/g): 10, 5, 2, 0.7, 0.2
- 0.7 to 10000 Hz frequency range ($\pm 10\%$)



Model 7531A: DC MEMS Single-Axis Accelerometer

Features: Low current consumption, wide supply voltage range, broad operating temperature, isolated, miniature, aluminum

- Sensitivities (mV/g): 420, 300, 174, 57, 6.5
- 0 to 1600 Hz frequency range (-3dB)



Sensors for Electric Vehicle Testing

Determine the long-term durability and performance of electric vehicle components with our rugged shock and vibration sensors. We offer an expansive line of piezoelectric and Variable Capacitance (VC) MEMS accelerometers that feature electrical isolation to prevent ground loops and help you find the sources of gear whine, motor noise and structure-borne noise.

Discover our
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dytran.com/EV-Testing



Model 3823A
Case Isolated Triaxial
Accelerometer



AUTOMOTIVE TEST AND NVH

Medium Structures/ Airframes/ Auto Frame/ Castings

Medium-size structures need a wide range of impulse excitation due to their broadband response to high frequency & low frequency events. High sensitivity, single axis and triaxial, adhesive mounted accelerometers with excellent high and low frequency response cover the broadband response needed for test articles in this category.

Model 3312A2T: Extended Low Frequency Sensor

Features: Ideal low frequency response, TEDS available, IEPE, titanium, hermetic

- 100 mV/g sensitivity
- 0.1 to 4000 Hz frequency range ($\pm 5\%$)



3263A Series: Triaxial Accelerometer

Features: High sensitivity, miniature size, low noise, IEPE, titanium, hermetic

- Sensitivities (mV/g): 100, 50, 10
- 0.5 to 4000 Hz frequency range ($\pm 5\%$)



7500 Series: High Precision DC MEMS Accelerometer

Features: Differential mode, ultra low noise, hermetic

- Sensitivities (mV/g): 1,000, 400, 200, 80, 40, 20, 10, 5
- 0 to 400 Hz frequency range ($\pm 3\text{dB}$)



3097A Series: Miniature Accelerometer

Features: Multi-face mounting, low noise, IEPE, titanium, hermetic

- Sensitivities (mV/g): 500, 100, 10
- 0.3 to 5000 Hz frequency range ($\pm 5\%$)



3055D Series: General Purpose Accelerometer

Features: Base isolated, ideal low frequency response, IEPE, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 500, 200, 100, 50, 20, 10, 5, 1
- 1 to 10000 Hz frequency range ($\pm 10\%$)



3056D Series: General Purpose Accelerometer

Features: Base isolated, ideal low frequency response, IEPE, titanium, hermetic, TEDS available

- Sensitivities (mV/g): 500, 200, 100, 50, 20, 10, 5, 1
- 1 to 10000 Hz frequency range ($\pm 10\%$)



Model 3255C: High-Temperature Accelerometer

Features: Charge mode, titanium, hermetically sealed, 375°F (190°C) operation

- 15 pC/g sensitivity
- 5000 Hz upper frequency range ($\pm 5\%$)*



3273A Series: Low Noise Triaxial Accelerometer

Features: Low noise JFET electronics, extended low frequency response, miniature design, IEPE, titanium, hermetic

- Sensitivities (mV/g): 100, 50, 10
- 0.5 to 3000 Hz frequency range ($\pm 5\%$)



* Low frequency response and phase response are a function of the charge amplifier used.

Portable Vibration Recorders

Our line of portable vibration recorders offer an innovative cost-effective solution for capturing critical vibration data in real-world applications! Offered in various configurations, these compact, and lightweight units include easily installed user-configurable software that optimizes data collection. Internal accelerometers eliminate the need for external cable runs and complex signal conditioning. Robust anti-aliasing filters ensure data integrity. Test data is stored on a convenient removable memory SD card that plugs directly into your laptop. All VibraCorder™ products feature internal rechargeable batteries and remote power options for short and long duration tests. RoHS & CE certification pending.

VibraCorder™ II: 4401A Series

Features: Captures 6DoF, static, & dynamic acceleration measurements, software controlled relay for the operation of external components such as cameras & indicator lights

- Ranges (\pm): 5g, 16g
- Battery Life: 24 hrs
- Sampling Rates: 250, 1200, 4280 Samples/sec
- IP 65 rated



VibraCorder™ III: 4404A Series

Features: Captures 6DoF data for whole-body vibration measurements in extreme environments, 3% transverse sensitivity, remote triggering capabilities

- Ranges (\pm): 2g, 5g, 10g, 30g, 200g
- Battery Life: 24 hrs
- Sampling Rates: 120, 250, 256, 500, 512, 720, 1024, 1200 Samples/sec
- IP 67 rated



USB Powered

VibraScout™: Model 5384 6DOF USB Vibration Measurement System

Features: Can plot recorder data, zoom and select a specific time frame of recorded data for post-processing, portable, compact, hermetic, no external power supply or signal conditioning needed, 8-pole anti-aliasing filter and embedded micro-controller

- Range (\pm): 14g
- VibraScout™ 6DOF System includes:
 - Model 7586A2 USB powered accelerometer
 - Cable 6330A15: 4-pin to USB cable
 - 9013 VibraScout™ Software Toolkit (Windows 10 Compatible)



Plug and Play

Impulse Hammers

The hammers in this section are designed with interchangeable impact tips of various durometers and hardness to allow structural engineers and dynamicists to arrive at the correct combination of pulse width and frequency content of the forcing function to efficiently excite all of the modes of a test article or structure.

Model 5800SL: Ultra Miniature Impulse Hammer

Features: 10-32 connector, high sensitivity, high frequency, compact, IEPE

- 100 mV/LbF sensitivity
- 50 LbF range
- 3.0 oz (85.05 g) head weight



Model 5805A: 1-Pound Impulse Hammer

Features: BNC connector, IEPE

- 1 mV/LbF sensitivity
- 5,000 LbF range
- 1.0 lbs (0.45 kg) head weight



5800B Series: Dynapulse™ Impulse Hammer

Features: BNC connector, TEDS available, IEPE

- Sensitivities (mV/LbF): 100, 50, 10, 5
- Range (LbF): 50, 100, 500, 1,000
- 3.5 oz (100 g) head weight



Model 5802A: 3-Pound Impulse Hammer

Features: BNC connector, TEDS available, IEPE

- 1 mV/LbF sensitivity
- 5,000 LbF range
- 3.0 lbs (1.36 kg) head weight



Model 5850B: Three Range Dynapulse™ Impulse Hammer

Features: 3-position sensitivity toggle switch, BNC connector, IEPE

- Sensitivities (mV/LbF): 1, 10, 100
- Selectable range (LbF): 5,000, 500, 50
- 5.3 oz (150 g) head weight



Model 5803A: 12-Pound Impulse Hammer

Features: BNC connector, TEDS available, IEPE

- 1 mV/LbF sensitivity
- 5,000 LbF range
- 12.0 lbs (5.44 kg) head weight



Forcing Function

Model 1022V: IEPE Mini Force Sensor

Features: Low mass, miniature size, titanium

- 100 mV/LbF sensitivity
- 50 LbF range



Model 5860B: Impedance Head

Features: Simultaneously measures force and acceleration, IEPE, stainless steel

- Sensitivities: 100 mV/lbf, 100 mV/g
- 1 to 8,000 Hz frequency range ($\pm 5\%$)



1053V Series: IEPE Dynamic Force Sensor

Features: High natural frequency, stainless steel

- Sensitivities (mV/LbF): 500, 100, 50, 10, 5, 1
- Compression ranges (LbF): 10, 50, 100, 500, 1,000, 5,000



1061V Series: IEPE Dynamic Force Sensor

Features: Wide natural frequency, voltage mode, stainless steel

- Sensitivities (mV/LbF): 10, 5, 1, 0.5, 0.2, 0.1
- Compression ranges (LbF): 500; 1,000; 5,000; 10,000; 25,000; 50,000





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Sensor Select™ Inventory Stocking Program & Lifetime Warranty

The program ensures availability & rapid delivery of our most popular selling models.



Sensor Exchange™ Qualified Sensor Trade-In Program

Customers are offered an additional 15% off the purchase of a new Dytran sensor to replace a qualifying competitor's model.



The Educational Sensor Donation Program

Engineering students & faculty members may obtain Dytran sensors for their thesis papers & research projects, free of charge.

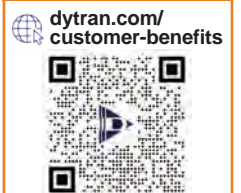


5-2-1 Warranty Program

We guarantee our products to be free of defects in materials and workmanship as follows:

Standard Products: 5 years from date of shipment | Modified "M-Number" Products: 2 years from date of shipment | Cables and Accessories: 1 year from date of shipment

Learn more



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