



AUTOMOTIVE APPLICATIONS

Advanced sensors for a dynamic world

Dytran by HBK designs and delivers accelerometers for automotive product development testing and embedded solutions, which enables design engineers to use critical data to help improve vehicle reliability, durability, safety, and ride quality.



Automotive Test and NVH

Dytran by HBK offers a comprehensive line of AC and DC sensors for internal and external noise, vibration, and harshness (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)

3023B Series: Triaxial Miniature Accelerometer

Features: Titanium, hermetic, lightweight, TEDS options, High temp options, IEPE

- Sensitivities (-10%/+15%): 1, 5, 10 mV/g
- Ranges ($\pm$): 5,000, 1,000, 500 g pk
- Frequency ranges ($\pm 5\%$): 2.43-4,000 Hz
- Weight: 3 grams



3093D Series: High Temp Triaxial Accelerometer

Features: Case isolated, IEPE, titanium, hermetic

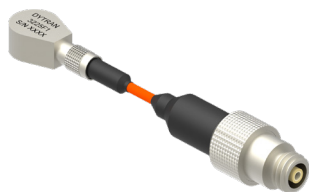
- Sensitivities: 10 mv/g, 50 mv/g, 100 mv/g
- Frequency ranges ($\pm 5\%$): 0.6-5,000 Hz



Model 3225F1: High Sensitivity Miniature Accelerometer

Features: Titanium, miniature and ultra-miniature tear drop designs, high temp options, low outgassing options, TEDS options, charge mode options

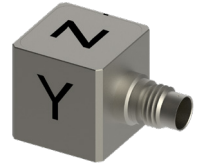
- Sensitivity ($\pm 10\%$): 10 mV/g
- Range ($\pm$): 500 g pk
- Frequency ranges ($\pm 10\%$): 1.6-10,000 Hz
- Weight: 0.8 grams



3413A Series: Triaxial IEPE Accelerometer

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

- Sensitivities (mV/g): 5, 50
- Frequency ranges ($\pm 5\%$): 3.3 to 3,000 Hz



3133A Series: Ultra Miniature Triaxial IEPE Accelerometer

Features: Eliminates the need for a charge amplifier in harsh environments, reduces mass loading, adhesive mount, ideal low frequency response, 3 ft integral cable, titanium, hermetic

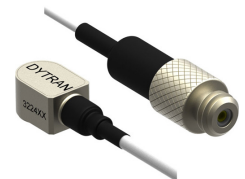
- +320°F (+160°C) operation
- Frequency ranges ($\pm 10\%$): 0.27 to 10,000 Hz
- Sensitivities : 0.2, 0.7, 2, 5, 10 mV/g
- 0.8 grams



3224A Series: Ultra Miniature Accelerometer

Features: Titanium, ultra-miniature teardrop design, IEPE

- Sensitivities: 0.2, 1, 2 - 5, 5 - 10, 9 - 14 mV/g
- Ranges ($\pm$): 500, 1,000, 2,500, 5,000, 25,000 g pk
- Frequency ranges ($\pm 10\%$): 0.3 to 20,000 Hz
- 0.2 grams



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.

7500A Series: High Precision DC MEMS Accelerometer

Features: Differential output, ultra low noise, hermetic

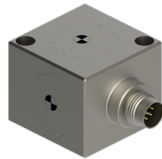
- Sensitivities: 1,000, 400, 200, 80, 40, 20, 10, 5 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0-400 to 0-4,000 Hz



7503D Series: Triaxial DC MEMS Accelerometer

Features: Differential output, high resolution, ultra-low noise, titanium, hermetic

- Sensitivities: 2,000, 800, 160, 80, 40, 10 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0-400 to 0-4,000 Hz



7600B Series: High Precision MEMS Accelerometer

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

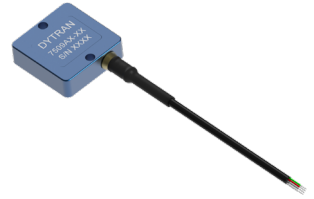
- Sensitivities: 20, 10, 2.5 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0-900 to 0-1,750 Hz



7509A Series: VC Response Accelerometer

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

- Sensitivities: 2000, 800, 400, 160, 80, 40, 20, 10 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0-300 to 0-2,000 Hz



7583A Series: Sensor with Extended Frequency Response

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

- Sensitivities (mV/g): 800, 400, 133, 40
- Frequency ranges ($\pm 3\text{dB}$): 0-1,900 to 0-5,000 Hz



7576A Series: Analog Six Degrees of Freedom (6DoF) Sensor

Features: Available in various ranges, great bias stability, hermetic

- Accel sensitivities: 470, 235, 78.33, 1,175, 1,200 mV/g
- Accel range: 5g, 10g, 30g, 2g
- Gyro sensitivities: 25, 12.5, 7, 25, 12.5 mV/°/sec
- Accel. frequency ranges ($\pm 3\text{dB}$) from: 0-1,150 Hz to 0-3,800 Hz
- 55 grams



7531A Series: DC Response Accelerometer

Features: Low cost, wide supply voltage range, low current consumption

- Sensitivities: 300, 174, 57 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0 to 1,600 Hz
- -40 to +185°F (-40 to +85°C)



7533A Series: Triaxial DC Response Accelerometer

Features: Triaxial, low cost, wide supply voltage range, low current consumption

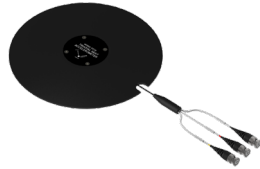
- Sensitivities:
420, 174, 57, 6.5, 20 mV/g
- Frequency ranges (-3dB):
0 to 1,600 (x,y); 0 to 550 (z),
0 to 1,300 (x,y); 0 to 1,000 (z)
- -40 to +185°F (-40 to +85°C)



Model 5313A: Triaxial Seat Pad Accelerometer

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

- Sensitivity: 100 mV/g
- Frequency ranges ($\pm 5\%$):
0.45 to 3,000 Hz



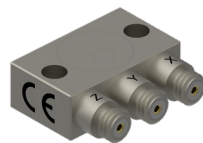
BRAKE, TRANSMISSION, AND POWERTRAIN TESTING

Sensors in this category are used in test cell environments to evaluate, improve and smooth rotating components and assemblies to eliminate unwanted oscillations/imbalance/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

- Sensitivity: 2.7 pC/g
- Upper-frequency range ($\pm 10\%$): 10,000 Hz*
- Weight: 10 grams



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



3133A Series: Ultra Miniature Triaxial Accelerometer

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

- Sensitivities:
10, 2, 5, 0.7, 0.2 mV/g
- Frequency ranges ($\pm 5\%$):
0.34 to 6,000 Hz



3224A Series: Ultra Miniature Accelerometer

Features: Ultra-miniature size, IEPE, titanium

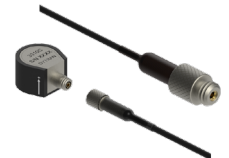
- Sensitivities: 9 to 14, 2 to 5,
5 to 10, 1 to 2.5 mV/g
- Frequency ranges ($\pm 10\%$):
0.3 to 20,000 Hz



Model 3310C: High-Temperature Accelerometer

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

- Sensitivities: 1.0 - 1.3 pC/g
- Upper-frequency range ($\pm 5\%$): 7,000 Hz*



3133D Series: Triaxial Accelerometer

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

- Sensitivities:
10, 5, 0.7, 0.25 mV/g
- Frequency ranges ($\pm 10\%$):
0.25 to 10,000 Hz

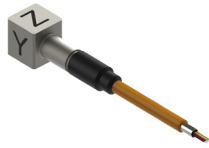


* Low frequency response and phase response are a function of the charge amplifier used.

3623A Series: Triaxial Submersible Sensor

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

- Sensitivities:
10, 100, 50 mV/g
- Frequency ranges ($\pm 5\%$):
1.4 to 3,000 Hz



3035B Series: Miniature Accelerometer

Features: Stainless steel construction, hermetically sealed for reliable operation in high humidity and dirty environments, IEPE.

- Sensitivities ($\pm 10\%$):
10, 50, 100 mV/g
- Range ($\pm$): 500, 100, 50 g pk
- Frequency ranges ($\pm 10\%$):
0.34-10,000 Hz
- Weight: 2.5 gram



MODAL ANALYSIS

Accelerometers used for modal analysis of frames, panels, and body-in-white studies must be lightweight, exhibit 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:
10, 100, 50, 1, 5, 25 mV/g
- Frequency ranges ($\pm 15/-10\%$):
0.54 to 10,000 Hz



3273A Series: Low Noise Triaxial Accelerometer

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

- Sensitivities:
10, 100, 50 mV/g
- Frequency ranges ($\pm 5\%$):
0.5 to 3,000 Hz



Model 3225F7: Miniature Accelerometer

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

- Sensitivity: 100 mV/g
- Upper-frequency ranges ($\pm 10\%$):
2 to 10,000 Hz



3133A Series: Ultra Miniature Triaxial Accelerometer

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

- Sensitivities:
10, 2, 5, 0.7, 0.2 mV/g
- Frequency ranges ($\pm 5\%$):
0.34 to 6,000 Hz



3224A Series: Ultra Miniature Accelerometer

Features: Ultra-miniature size, IEPE, titanium

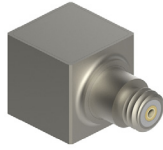
- Sensitivities:
9 to 14, 2 to 5,
5 to 10, 1 to 2.5 mV/g
- Frequency ranges ($\pm 10\%$):
0.3 to 20,000 Hz



3097A Series: Miniature Accelerometer

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

- Sensitivities: 10, 100, 500 mV/g
- Frequency ranges ($\pm 5\%$): 0.3 – 5,000 Hz



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 3316C7: High Temperature Accelerometer

Features: Hermetically Sealed, Miniature Size, High Temperature Operation

- +1,100°F (+593°C) operation
- Sensitivities: 1 to 2 pC/g
- Upper-frequency range (10%): 10,000 Hz*
- Weight: 6.0 grams



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

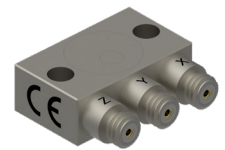
- Sensitivities: 1 to 2 pC/g
- Upper-frequency range ($\pm 10\%$): 2,000 Hz*



Model 3443C: High-temperature Triaxial Accelerometer

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

- Sensitivity: 2.7 pC/g
- Upper-frequency range ($\pm 10\%$): 10,000 Hz*
- Weight: 10 grams



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, IEPE, titanium

- Sensitivities: 9 to 14, 5 to 10, 2 to 5, 1 to 2.5 mV/g
- Frequency ranges ($\pm 10\%$): 0.3 to 20,000 Hz

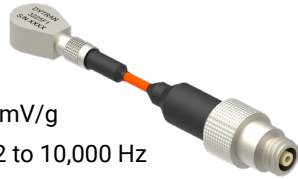


* Low frequency response and phase response are a function of the charge amplifier used.

3225F Series: Miniature Teardrop Accelerometer

Features: Low outgassing, adhesive mount, IEPE, titanium

- Sensitivities: 1, 10, 50, 100 mV/g
- Frequency ranges ($\pm 10\%$): 2 to 10,000 Hz



3274A Series: Miniature Accelerometer with TEDS

Features: Base isolated, IEPE, titanium, hermetic

- Sensitivities: 10, 5 mV/g
- Frequency ranges ($\pm 10\%$): 1.1 to 10,000 Hz



3133A Series: Ultra Miniature Triaxial Accelerometer

Features: Adhesive mount, IEPE, titanium, TEDS available

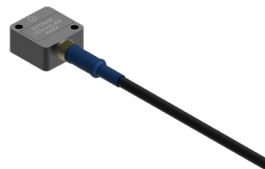
- Sensitivities: 10, 5, 2, 0.7, 0.2 mV/g
- Frequency ranges ($\pm 10\%$): 0.7 to 10,000 Hz



Model 7531A: DC MEMS Single-Axis Accelerometer

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

- Sensitivities: 420, 300, 174, 57, 6.5 mV/g
- Frequency ranges (-3dB): 0 to 1,600 Hz, 0 to 1,300 Hz



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.

Model 3823A: Case Isolated Triaxial Accelerometer

Features: Titanium, hermetic, case isolated, triaxial, IEPE

- Sensitivity: 10 mV/g
- Frequency ranges ($\pm 10\%$): 2.5 to 2,000 Hz
- Range: 500g



3055F 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
- Frequency range ($\pm 10\%$): 1 to 10,000 Hz



3056F Series: General Purpose Accelerometer

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

- Sensitivities: 500, 200, 100, 50, 20, 10, 5 mV/g
- Frequency ranges ($\pm 10\%$): 1 to 10,000 Hz



MEDIUM STRUCTURES / AUTO FRAME / CASTINGS

Medium-size structures need a wide range of impulse excitation due to their broadband response to high frequency and 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.

3263A Series: Triaxial Accelerometer

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

- Sensitivities: 100, 50, 10 mV/g
- Frequency ranges ($\pm 5\%$): 0.5 to 4,000 Hz



7500A Series: High Precision DC MEMS Accelerometer

Features: Differential output, ultra low noise, hermetic

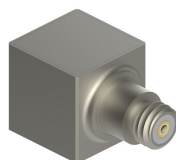
- Sensitivities: 1,000, 200, 80, 40, 20, 10 mV/g
- Frequency ranges ($\pm 3\text{dB}$): 0 to 400 Hz, 0 to 3,000 Hz



3097A Series: Miniature Accelerometer

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

- Sensitivities: 10, 100, 500 mV/g
- Frequency ranges ($\pm 5\%$): 0.3 to 5,000 Hz



3055F Series: General Purpose Accelerometer

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

- Sensitivities: 500, 200, 100, 50, 20, 10, 5, 1 mV/g
- Frequency ranges ($\pm 10\%$): 1 to 10,000 Hz



3056F Series: General Purpose Accelerometer

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

- Sensitivities: 500, 200, 100, 50, 20, 10, 5, 1 mV/g
- Frequency ranges ($\pm 10\%$): 1 to 10,000 Hz



3273A Series: Low Noise Triaxial Accelerometer

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

- Sensitivities: 100, 50, 10 mV/g
- Frequency ranges ($\pm 5\%$): 0.5 to 3,000 Hz



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 and CE certification pending.

VibraCorder™ II: 4401A Series

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

- Ranges ($\pm$): 5g, 16g
- Battery Life: 24 hrs
- Sampling Rates: 250, 1,200, 4,280 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

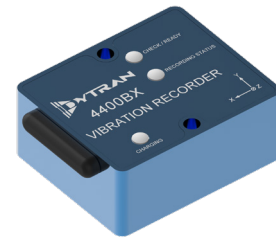
- Ranges ($\pm$): 10g
- Battery Life: 24 hrs
- Sampling Rates: 120, 250, 256, 500, 512, 720, 1,024, 1,200 Samples/sec
- IP 67 rated



VibraCorder™: 4400B Series Vibration Recorder

Features: General purpose vibration recorder with a built-in triaxial MEMS accelerometer, synchronization capabilities, triggered data acquisition, available in three ranges

- Ranges ($\pm$): 2g, 19g, 200g
- Battery life: 15 hrs
- Sampling rates: 100, 500, 1,000, 5,000, 10,000 samples/sec
- IP 64 rated



VibraCorder™: Model 4600A

Features: 3 channels of IEPE data acquisition using standard 10-32 coaxial connectors, environmentally sealed, ruggedized aluminum package

- Battery: 1,400mAh (Rechargeable)
- Sampling Rates: 100, 500, 1,000, 5,000, 10,000, 25,000
- Weight: 150 grams
- IP64 rated



VibraCorder™: Model 4601A With Display

Features: Compact, multi-channel data logger designed for use with IEPE Sensors, micro-SDHC card compatible, dual mounting configurations, integrated anti-aliasing filters.

- Battery life: 8 hrs
- Sampling rates: 100, 500, 1000, 5000, 10,000, 25,000 samples/sec



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

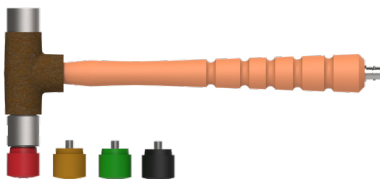
- Sensitivity: 100 mV/LbF
- 50 LbF range
- 0.34oz (9.8g) head weight



Model 5805A: 1-Pound Impulse Hammer

Features: BNC connector, IEPE

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



5800B Series: Dynapulse™ Impulse Hammer

Features: BNC connector, TEDS available, IEPE

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



Model 5802A: 3-Pound Impulse Hammer

Features: BNC connector, IEPE

- Sensitivity: 1 mV/LbF
- 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: 1, 10, 100 mV/LbF
- 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

- Sensitivity: 1 mV/LbF
- 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

- Sensitivity: 100 mV/LbF
- 50 LbF range



Model 5860B: Impedance Head

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

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



1053V Series: IEPE Dynamic Force Sensor

Features: High natural frequency, stainless steel

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



1061V Series: IEPE Dynamic Force Sensor

Features: High natural frequency, stainless steel

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



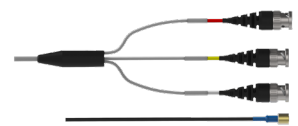
CABLES

Dytran designs and manufactures a wide variety of cables for your testing and monitoring requirements.

We offer a broad range of standard products as well as custom cables made to customer specifications.

6811A Series: General Purpose Triaxial Cable Assembly

- Four conductor
- 4-pin plug (1/4-28) to (3) BNC plugs
- Teflon™ jacket
- -67 to +230°F (-55 to 110°C) operation



6019A Series: Low Noise Cable Assembly

- Coaxial
- 10-32 plug to BNC plug
- Teflon™ jacket
- -67 to +230°F (-55 to +110°C) operation (BNC), -148 to +392°F (-100 to +200°C) operation (10-32)



6011A Series: General Purpose Cable Assembly

- Coaxial
- 10-32 plug to BNC plug
- Teflon™ jacket
- -67 to +230°F (-55 to +110°C) operation (BNC),
-148 to +392°F (-100 to +200°C) operation (10-32)



6964A Series: General Purpose Cable Assembly

- Eight conductor
- General purpose
- Teflon™ jacket
- Compatible with 7503D, 7563A, 7576A



60033A Series: Splash Proof Triaxial Cable Assembly

- Four conductor
- IP64 rated 1/4-28 4-pin connector to (3) BNC plugs
- Teflon™ jacket
- -67 to +275°F (-55 to +135°C) operation (1/4-28),
-67 to +230°F (-55 to +110°C) operation (BNC)



Model 6828A: Low Outgassing Triaxial Cable Assembly

- Four conductor
- 4-pin long nose connector to (3) 10-32 plugs
- Polyimide jacket
- -67 to +392°F (-55 to +200°C) operation



ACCESSORIES

We are known for designing and manufacturing industry-leading accessories that enhance the performance of your sensors.

Model 6677: Rotational Mounting Base



Model 6552 Triaxial Mounting Block



Model 6223 Isolated Mounting Base

