General Purpose Piezoelectric Accelerometers

Applications

- Product Qualification Studies
- Vibration Control
- Impulse Response Measurements
- Quality Assurance (End of Line Testing)
- Machinery Studies

Piezoelectric accelerometers offer tremendous versatility for shock and vibration measurements. These rugged sensors can withstand adverse environmental conditions. A wide variety of configurations are available to support multiple application requirements. Specialty units are also available through mechanical or electrical design adjustments or additional qualification testing.

There are two broad categories for piezoelectric accelerometers – those that contain built-in signal conditioning electronics (ICP® type) and those that do not (Charge Output type). Generally, ICP® accelerometers are preferred, due to ease of use and lower system cost. Charge Output accelerometers are used for high temperature environments, which would otherwise destroy the electrical components contained in an ICP® type.

Triaxial accelerometers offer simultaneous measurements in three orthogonal directions permitting the entire vibration being experienced by a structure to be analyzed. Each unit incorporates three separate sensing elements that are oriented at right angles with respect to each other. Multi-pin electrical connectors, individual cable leads, or multiple coaxial connectors provide the signal outputs for the x, y, and z-axis acceleration.

The use of triaxial accelerometers has gained popularity since the desire for in-depth structural vibration analysis has increased and multi-channel data acquisition costs have declined. These devices are vital tools for structural analysis testing requirements.

Photo Courtesy of Clemson University

General Purpose Single Axis Accelerometers

Motion of a rigid body can be characterized within six degrees of freedom. Providing mechanical excitation to simulate all of this motion as may be encountered in the real world can entail a variety of test machines. Regardless of the apparatus, the goal is always to ensure that the product under test can adequately perform, and reliably survive, in the environment in which it will be deployed, or to which it will be exposed during transport. PCB® accelerometers provide the measurement signals needed to control the vibratory input and to analyze the product's reaction to such testing. Did the test achieve the acceleration amplitudes and frequencies desired? Did the product react in a consistent manner? Did any components or mounting techniques become altered? These are just a few of the questions that can be verified by analyzing the signals generated by PCB® accelerometers.

Photo Courtesy of Dayton T. Brown, Inc.

General Purpose Single Axis Accelerometers

Photos Shown Actual Size					
Model Number	**352B70**	**352A60**	**352C04**	**352C33**	**353B03**
Sensitivity	1 mV/g	10 mV/g	10 mV/g	100 mV/g	10 mV/g
Measurement Range	± 5000 g pk	± 500 g pk	± 500 g pk	± 50 g pk	± 500 g pk
Broadband Resolution	0.025 g rms	0.002 g rms	0.0005 g rms	0.00015 g rms	0.003 g rms
Frequency Range (± 5%)	0.7 to 9k Hz	5.0 to 60k Hz [1]	0.5 to 10k Hz	0.5 to 10k Hz	1 to 7k Hz
Resonant Frequency	≥ 55 kHz	≥ 95 kHz	≥ 50 kHz	≥ 50 kHz	≥ 38 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +200 °F -54 to +93 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Quartz/Shear
Electrical Connector	10-32 Coaxial Jack	5-44 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	Yes	No	No	No	No
Housing Material	Titanium	Stainless Steel	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	4.3 gm	6.0 gm	5.8 gm	5.8 gm	10.5 gm
Size	3/8 x 0.90 in 3/8 in x 22.9 mm	3/8 x 0.81 in 3/8 in x 21.6 mm	7/16 x 0.88 in 7/16 in x 22.4 mm	7/16 x 0.62 in 7/16 in x 15.7 mm	1/2 x 0.81 in 1/2 in x 20.6 mm
Mounting	10-32 Thread	10-32 Stud	10-32 Thread	10-32 Thread	10-32 Thread
Supplied Accessories					
Wax	—	—	080A109	080A109	080A109
Adhesive Mounting Base	080A04	—	080A	080A	080A
Mounting Stud/Screw	081B05, M081B05	—	081B05, M081B05	081B05, M081B05	081B05, M081B05
Additional Versions					
Metric Mounting Thread	—	M352A60	—	—	—
Alternate Connector Position	—	—	352C03-Side	352C34-Top	353B04-Top
Additional Accessories					
Magnetic Mounting Base	080A27	080A179	080A27	080A27	080A27
Triaxial Mounting Adaptor	080A17	080A17	080B10	080B10	080B10
Mating Cable Connector	EB	AG	EB	EB	EB
Recommended Cables	002, 003 CE	018 Flexible, 003 CE	002, 003 CE	002, 003 CE	002, 003 CE
Note					
[1] Frequency range ±3dB					

Tips from Techs

Why select accelerometers with a through hole configuration?

The main advantage of a Through Hole configuration is the control over the orientation of the electrical connector and mating cable assembly. This can be essential when a screw mount is required in a confined location.

In addition, all PCB® Through Hole units include an off-ground isolation base and cap screw, which provides electrical ground isolation on a conductive test structure.

General Purpose Single Axis Accelerometers

Applications:

- Routine Vibration Testing
- Product Testing
- Structural Testing
- Vibration Control
- Package Drop Testing

General Purpose Single Axis Accelerometers

Photos Shown Actual Size						
Model Number	**357B03**	**355B02**	**355B03**	**357A05**	**355B34**	**355B33**
Sensitivity	10 pC/g	10 mV/g	100 mV/g	17 pC/g	10 mV/g	100 mV/g
Measurement Range	± 2000 g pk	±500 g pk	±50 g pk	± 500 g pk	± 500 g pk	± 50 g pk
Broadband Resolution	[1]	0.0005 g rms	0.0001 g rms	[1]	0.001 g rms	0.0005 g rms
Frequency Range (± 5%)	9 kHz [2]	1 to 10k Hz	1 to 10k Hz	10k Hz [2]	2 to 5k Hz	2 to 5k Hz
Resonant Frequency	≥ 38 kHz	≥ 35 kHz	≥ 35 kHz	≥ 35 kHz	≥ 25 kHz	≥ 25 kHz
Temperature Range	-95 to +500 °F -71 to +260 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +350 °F -54 to +177 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Quartz/Shear	Quartz/Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	No	Yes	Yes	Yes	Yes	Yes
Housing Material	Titanium	Titanium	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	11 gm	10 gm	10 gm	10 gm	11 gm	11 gm
Size	1/2 x 0.81 in 1/2 in x 20.6 mm	0.40 x 0.95 x 0.63 in 10.2 x 24.1 x 16.0 mm	0.95 x 0.63 in 24. x 16.0 mm	0.4 x 0.95 x 0.63 in 10.2 x 24.1 x 16 mm	0.40 x 0.70 x 0.63 in 10.2 x 17.8 x 15.9 mm	0.40 x 0.70 x 0.63 in 10.2 x 17.8 x 15.9 mm
Mounting	10-32 Thread	Through Hole	Through Hole	Through Hole	Through Hole	Through Hole
Supplied Accessories						
Wax	080A109	080A109	080A109	080A109	080A109	080A109
Mounting Stud/Screw	081B05, M081B05	081B45	081B45	081B45	081B45	081B45
Additional Versions						
Metric Mounting Thread	—	M355B02	M355B03	M357A05	M355B34	M355B33
Alternate Connector Position	357B04-Top	—	—	—	—	—
Additional Accessories						
Adhesive Mounting Base	080A	—	—	—	—	—
Magnetic Mounting Base	080A27	—	—	—	—	—
Triaxial Mounting Adaptor	080B10	—	—	—	—	—
Mating Cable Connector	EB	EB	EB	EB	EB	EB
Recommended Cables	003 CE	002, 003 CE	002, 003 CE	003 CE	002, 003 CE	002, 003 CE
Note						
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics						

General Purpose Single Axis Accelerometers

Packaging a product for safe transport is essential to ensure its survival from the factory to the end-user. A good package design requires testing to determine its effectiveness at restraining or cushioning the product from transport and accidental forces. PCB® accelerometers are instrumental in measuring both the impact and vibration experienced by the outer container and the product. The difference between these measurements provides useful data for quantifying the effectiveness of the packaging materials and the package design.

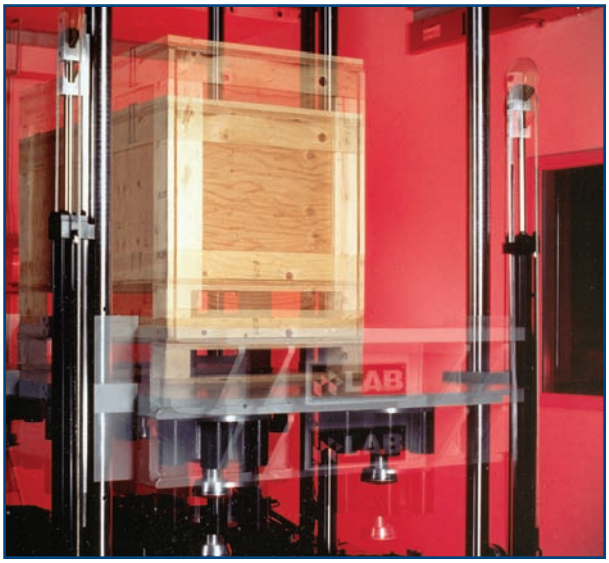


Photo Courtesy of Sun Microsystems Advanced Product Testing Laboratory

General Purpose Single Axis Accelerometers

				
Model Number	**353B31**	**357B22**	**353B33**	**357B33**
Sensitivity	50 mV/g	30 pC/g	100 mV/g	100 pC/g
Measurement Range	± 100 g pk	± 1500 g pk	± 50 g pk	± 150 g pk
Broadband Resolution	0.001 g rms	[1]	0.0005 g rms	[1]
Frequency Range (± 5%)	1 to 5k Hz	6 kHz [2]	1 to 4k Hz	3 kHz [2]
Resonant Frequency	≥ 30 kHz	≥ 23 kHz	≥ 22 kHz	≥ 13 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-95 to +500 °F -71 to +260 °C	-65 to +250 °F -54 to +121 °C	-95 to +500 °F -71 to +260 °C
Sensing Element	Quartz/Shear	Ceramic/Shear	Quartz/Shear	Ceramic/Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	20 gm	21 gm	27 gm	45 gm
Size	3/4 x 0.85 in 3/4 in x 21.6 mm	5/8 x 1.16 in 5/8 in x 29.3 mm	3/4 x 0.93 in 3/4 in x 23.6 mm	3/4 x 1.00 in 3/4 in x 25.4 mm
Mounting	10-32 Thread	10-32 Thread	10-32 Thread	10-32 Thread
Supplied Accessories				
Wax/Adhesive	080A109	080A109	080A109	080A109
Adhesive Mounting Base	080A12	—	080A12	—
Mounting Stud/Screw	081B05, M081B05	081B05, M081B05	081B05, M081B05	081B05, M081B05
Additional Version				
Alternate Connector Position	353B32-Top	357B21-Side	353B34-Top	—
Additional Accessories				
Adhesive Mounting Base	—	080A12	—	080A12
Magnetic Mounting Base	080A27	080A27	080A27	080A27
Triaxial Mounting Adaptor	080B11	080B11	080B11	080B11
Mating Cable Connector	EB	EB	EB	EB
Recommended Cables	002, 003 CE	003 CE	002, 003 CE	003 CE
Note				
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics				

General Purpose Triaxial Accelerometers

Photos Courtesy of Clemson University

General Purpose Triaxial Accelerometers

TEDS IEEE 1451.4 COMPATIBLE

Photos Shown Actual Size

Model Number	356A02	356A25	356A26	356A15
Sensitivity	10 mV/g	25 mV/g	50 mV/g	100 mV/g
Measurement Range	± 500 g pk	± 200 g pk	± 100 g pk	± 50 g pk
Broadband Resolution	0.0005 g rms	0.0002 grms	0.0002 grms	0.0002 g rms
Frequency Range (± 5%)	1 to 5k Hz	1 to 5k Hz	1 to 5k Hz	2 to 5k Hz
Resonant Frequency	≥ 25 kHz	≥ 25 kHz	≥ 25 kHz	≥ 25 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack
Electrical Ground Isolation	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	10.5 gm	10.5 gm	10.5 gm	10.5 gm
Size	0.55 in Cube 14 mm Cube	0.55 in Cube 14 mm Cube	0.55 in Cube 14 mm Cube	0.55 in Cube 14 mm Cube
Mounting	10-32 Thread	10-32 Thread	10-32 Thread	10-32 Thread
Supplied Accessories				
Cable	—	—	—	—
Wax/Adhesive	080A109/080A90	080A109	080A109/080A90	080A109/080A90
Adhesive Mounting Base	080A12	080A12	080A12	080A12
Mounting Stud/Screw	081B05, M081B05	081B05, M081B05	081B05, M081B05	081B05, M081B05
Additional Versions				
Built-in Low Pass Filter	356A66	—	—	—
Extended Low Frequency	—	—	—	356A14
Additional Accessories				
Magnetic Mounting Base	080A27	080A27	080A27	080A27
Removal Tool	039A10	039A10	039A10	039A10
Mating Cable Connector	AY	AY	AY	AY
Recommended Cable	034	034	034	034
Note				
[1] Frequency range ±1dB				

General Purpose Triaxial Accelerometers

Applications:

- Modal Analysis
- Micro Machining
- Motors & Pumps
- Vibration Isolation

General Purpose Triaxial Accelerometers

Photos Shown Actual Size					
Model Number	**356A16**	**356A17**	**354C02**	**354C03**	**356B18**
Sensitivity	100 mV/g	500 mV/g	10 mV/g	100 mV/g	1000 mV/g
Measurement Range	± 50 g pk	± 10 g pk	± 500 g pk	± 50 g pk	± 5 g pk
Broadband Resolution	0.0001 g rms	0.00006 g rms	0.0005 g rms	0.0002 g rms	0.00005 g rms
Frequency Range (± 5%)	0.5 to 4.5k Hz	0.5 to 3k Hz	0.5 to 2k Hz	0.5 to 2k Hz	0.5 to 3k Hz
Resonant Frequency	≥ 25 kHz	≥ 14 kHz	≥ 12 kHz	≥ 12 kHz	≥ 20 kHz
Temperature Range	-65 to +176 °F -54 to +80 °C	-65 to +176 °F -54 to +80 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-20 to +170 °F -29 to +77 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack	1/4-28 4-Pin Jack
Electrical Ground Isolation	No	No	Yes	Yes	No
Housing Material	Anodized Aluminum	Anodized Aluminum	Titanium	Titanium	Anodized Aluminum
Sealing	Epoxy	Epoxy	Hermetic	Hermetic	Epoxy
Weight	7.4 gm	9.3 gm	15.5 gm	15.5 gm	25 gm
	0.55 in Cube 14 mm Cube	0.55 in Cube 14 mm Cube	13/16 x 0.45 in 13/16 in x 11.4 mm	13/16 x 0.45 in 13/16 in x 11.4 mm	0.8 in Cube 20.3 mm Cube
Mounting	10-32 Thread	5-40 Thread	Through Hole	Through Hole	10-32 Thread
Supplied Accessories					
Wax	080A109	080A109	080A109	080A109	080A109
Adhesive Mounting Base	080A12	080A145	—	—	080A68
Mounting Stud/Screw	081B05, M081B05	081A27, M081A27	081B60	081B60	081B05, M081B05
Additional Version					
Metric Mounting Thread	—	—	M354C02	M354C03	—
Additional Accessories					
Magnetic Mounting Base	080A27	—	080M162	080M162	080A27
Removal Tool	039A10	039A10	—	—	—
Mating Cable Connector	AY	AY	AY	AY	AY
Recommended Cable	034	034	034	034	034

General Purpose Triaxial Accelerometers

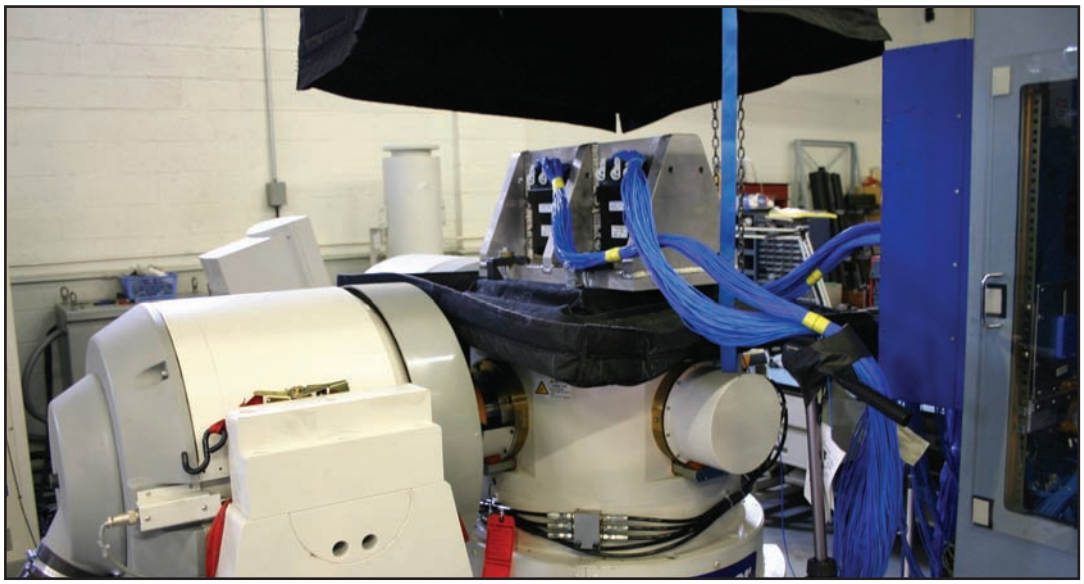


Photo Courtesy of Spectrum Technologies

General Purpose Triaxial Accelerometers

Photos Shown 3/4 Size			
Model Number	**356A70**	**340A50**	**356A71**
Sensitivity	2.7 pC/g	2.7 pC/g	10 pC/g
Measurement Range	± 500 g pk	± 1000 g pk	± 500 g pk
Broadband Resolution	[1]	[1]	[1]
Frequency Range (± 5%)	5 kHz [2]	8 kHz [2]	5 k Hz [2]
Resonant Frequency	≥ 35 kHz	≥ 25 kHz	≥ 25 kHz
Temperature Range	-94 to +490 °F -70 to +254 °C	-94 to +500 °F -70 to +260 °C	-95 to +490 °F -70 to +254 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	5-44 Coaxial Jack	M3 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	No	No	No
Housing Material	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic
Weight	7.9 gm	11.0 gm	22.7 gm
Size	0.4 x 0.73 x 0.9 in 10.2 x 18.5 x 22.9 mm	0.4 x 0.85 x 0.5 in 10.2 x 21.6 x 12.7 mm	0.5 x 0.96 x 1.0 in 12.7 x 24.4 x 25.4 mm
Mounting	Through Hole	Through Hole	Through Hole
Supplied Accessories			
Wax/Adhesive	080A90	080A109/080A90	080A90
Adhesive Mounting Base	—	080A147	080A170
Mounting Stud/Screw	081A46	081A95	081A94
Additional Version			
Metric Mounting Thread	M356A70	—	M356A71
Additional Accessories			
Mating Cable Connectors	AF, AG	EP	EB
Recommended Cables	003	003	003
Notes			
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics			

Miniature Piezoelectric Accelerometers

Highlights

- No moving parts provides durability
- Rigidity imparts high frequency range
- Lightweight construction minimizes mass loading
- Numerous configuration options
- Mount by screw, stud, or adhesive
- Available with both Quartz elements (for thermal stability) or Ceramic elements (for high measurement resolution)

Applications

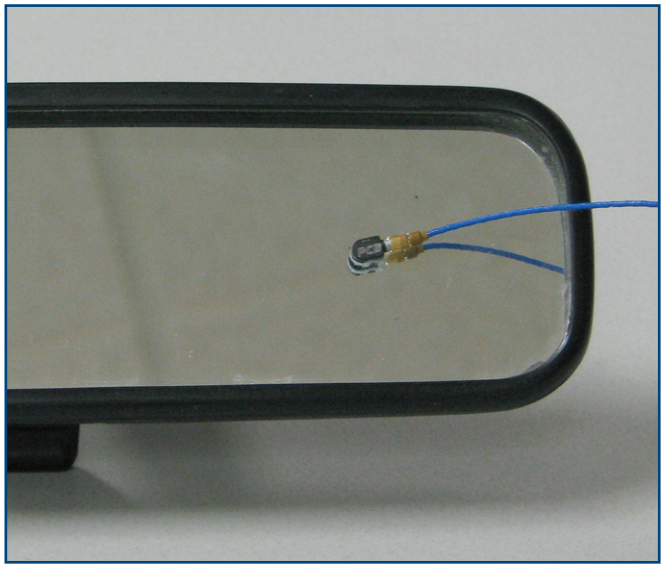
- Drop Testing & Package Testing
- Small Component Qualification Testing
- Low Amplitude Vibration Measurements
- High Frequency Applications
- Space Restricted Installations

Structured with highly sensitive piezoceramic sensing elements, Ceramic Shear ICP® Accelerometers have an excellent signal-to-noise ratio, high measurement resolution, and are ideal for conducting low-level vibration measurements. Due to their inherent higher sensitivity, a ceramic ICP® accelerometer can be assembled with a smaller mass than comparable quartz units, resulting in a sensor that is lighter in weight, has a higher frequency response, and has a lower noise floor.

To further reduce the mass of the sensors, all ceramic shear accelerometers are housed in either tough, lightweight, laser-welded, hermetically sealed, titanium or aluminum housings. By minimizing the mass of the sensor, mass loading effects are reduced, which maximizes the accuracy of the data obtained.

Charge Output minature accelerometers are capable of operation to +500 °F (+260 °C), permitting measurements in extreme environments and with existing charge amplified systems.

Triaxial accelerometers are available in a variety of sensitivities to suit specific application requirements. Choose miniature, lightweight units for high-frequency response, minimized mass loading, and when installation is in space restricted locations. Low profile designs are ideal for on-road or wind tunnel testing of exterior body panels. Through-hole mount units simplify axis and electrical connector orientation while controlling cable routing along the test specimen. Filtered output units avoid high frequency overload as may be encountered with engine NVH and drive train measurements.



Miniature Single Axis Accelerometers

Miniature piezoelectric accelerometers are required for applications demanding high frequency range, small size, and low weight.

Applications:

- Environmental Testing
- Component Qualification
- Structural Testing
- Operational Behavior Studies
- Fatigue Testing
- Vibration & Sound Cancellation

Miniature Single Axis Accelerometers

Photos Shown Actual Size		CE 	
Model Number	**357A08**	**352C23**	**352A73**
Sensitivity	0.35 pC/g	5 mV/g	5 mV/g
Measurement Range	± 1000 g pk	± 1000 g pk	± 1000 g pk
Broadband Resolution	[1]	0.003 g rms	0.002 g rms
Frequency Range (± 5%)	12 kHz [2]	2 to 10k Hz	2 to 10k Hz
Resonant Frequency	≥ 70 kHz	≥ 70 kHz	≥ 70 kHz
Temperature Range	-100 to +350 °F -73 to +177 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	3-56 Coaxial Jack	3-56 Coaxial Jack	Integral Cable
Electrical Ground Isolation	Yes	Yes	No
Housing Material	Anodized Aluminum	Anodized Aluminum	Titanium
Sealing	Epoxy	Epoxy	Hermetic
Weight	0.16 gm	0.2 gm	0.3 gm
Size	0.11 x 0.16 x 0.27 in 2.8 x 4.1 x 6.9 mm	0.11 x 0.34 x 0.16 in 2.8 x 8.6 x 4.1 mm	0.11 x 0.34 x 0.16 in 2.8 x 8.6 x 4.1 mm
Mounting	Adhesive	Adhesive	Adhesive
Supplied Accessories			
Cable	030A10	030A10	—
Wax	080A109	080A109	080A109
Removal Tool	039A29	039A26	039A26
Additional Version			
Titanium Housing	357A19	—	—
Additional Accessories			
Triaxial Mounting Adaptor	080A194	080A194	080A194
Connector Adaptor	070A02	070A02	070A02
Mating Cable Connector	EK	EK	AL
Recommended Cable	030	030	—
Note			
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics			

Miniature Single Axis Accelerometers

Photo Courtesy of Clemson University

Tips from Techs

Should my mini accelerometer be titanium or aluminum?

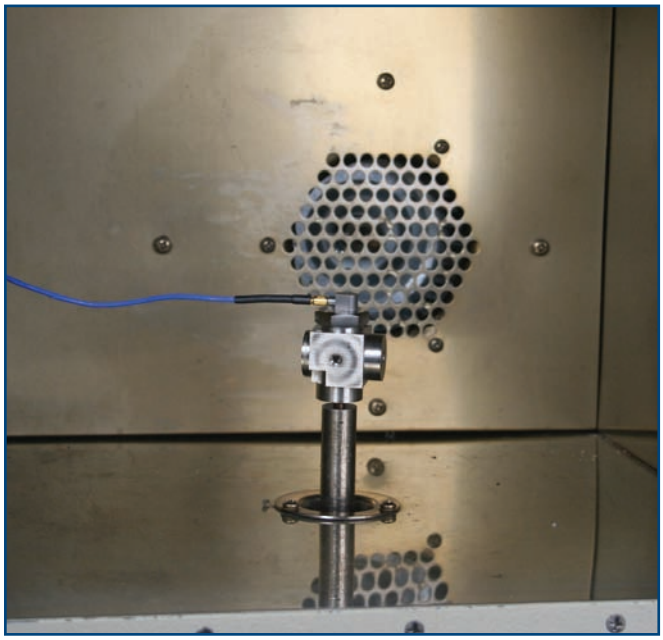
PCB® offers miniature "Teardrop" accelerometers in both titanium and aluminum. Titanium has the benefit of being a stronger base material, making it more robust for repeated installations & removals. The advantages of aluminum include a slightly lower mass, and an anodized finish to provide electrical isolation.

With either material it is essential to use the removal tool supplied with each sensor along with the appropriate de-bonding agent.

Miniature Single Axis Accelerometers

Photos Shown Actual Size	CE 	CE 		
Model Number	**352A25**	**352C22**	**357C10**	**352A71**
Sensitivity	2.5 mV/g	10 mV/g	1.7 pC/g	10 mV/g
Measurement Range	± 2000 g pk	± 500 g pk	± 500 g pk	± 500 g pk
Broadband Resolution	0.01 g rms	0.002 g rms	[1]	0.003 g rms
Frequency Range (± 5%)	1 to 10k Hz	1 to 10k Hz	10 kHz [2]	0.5 to 10k Hz
Resonant Frequency	≥ 80 kHz	≥ 50 kHz	≥ 50 kHz	≥ 65 kHz
Temperature Range	-65 +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-100 to +350 °F -73 to +177 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	3-56 Coaxial Jack	3-56 Coaxial Jack	3-56 Coaxial Jack	Integral Cable
Electrical Ground Isolation	No	Yes	Yes	No
Housing Material	Titanium	Anodized Aluminum	Anodized Aluminum	Titanium
Sealing	Epoxy	Epoxy	Epoxy	Hermetic
Weight	0.6 gm	0.5 gm	0.5 gm	0.6 gm
Size	0.14 x 0.45 x 0.25 in 3.6 x 11.4 x 6.4 mm	0.14 x 0.45 x 0.25 in 3.6 x 11.4 x 6.4 mm	0.14 x 0.45 x 0.25 in 3.6 x 11.4 x 6.4 mm	0.14 x 0.41 x 0.25 in 3.6 x 10.4 x 6.4 mm
Mounting	Adhesive	Adhesive	Adhesive	Adhesive
Supplied Accessories				
Cable	030A10	030A10	030A10	—
Wax	080A109	080A109	080A109	080A109
Removal Tool	039A27	039A27	039A27	039A32
Additional Versions				
Built-in Low Pass Filter	—	—	—	352A72
Titanium Housing	—	352A21	357A09	—
Additional Accessories				
Connector Adaptor	070A02	070A02	070A02	070A02
Mating Cable Connector	EK	EK	EK	AL
Recommended Cable	030	030	030	—
Note				

[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics



Miniature Single Axis Accelerometers

Applications:

- Circuit Boards
- Components
- Small Assemblies

Miniature Single Axis Accelerometers

Photos Shown Actual Size					
Model Number	**352B01**	**352B10**	**352A24**	**357A07**	**352A56 [1]**
Sensitivity	1 mV/g	10 mV/g	100 mV/g	1.7 pC/g	100 mV/g
Measurement Range	± 5000 g pk	± 500 g pk	± 50 g pk	± 2000 g pk	± 50 g pk
Broadband Resolution	0.02 g rms	0.003 g rms	0.0002 g rms	[2]	0.0006 g rms
Frequency Range (± 5%)	2 to 10k Hz	2 to 10k Hz	2 to 8k Hz	15 kHz [3]	0.5 to 10k Hz
Resonant Frequency	≥ 65 kHz	≥ 65 kHz	≥ 30 kHz	≥ 60 kHz	≥ 45 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-100 to +500 °F -73 to +260 °C	-65 +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	Integral Cable	Integral Cable	3-56 Coaxial Jack	M3 Coaxial Jack	5-44 Coaxial Jack
Electrical Ground Isolation	No	No	Yes	No	No
Housing Material	Titanium	Titanium	Anodized Aluminum	Titanium	Titanium
Sealing	Hermetic	Hermetic	Epoxy	Hermetic	Hermetic
Weight	0.7 gm	0.7 gm	0.8 gm	1.0 gm	1.8 gm
Size	0.32 x 0.24 in 8.1 x 6.1 mm	0.32 x 0.24 in 8.1 x 6.1 mm	0.19 x 0.48 x 0.28 in 4.8 x 12.2 x 7.1 mm	0.195 x 0.42 x 0.25 in 4.9 x 10.7 x 6.4 mm	0.26 x 0.57 x 0.3 in 6.6 x 14.5 x 7.6 mm
Mounting	Adhesive	Adhesive	Adhesive	Adhesive	Adhesive
Supplied Accessories					
Cable	—	—	030A10	030B10	—
Wax/Adhesive	080A109/080A90	080A109/080A90	080A109	080A109	080A109
Removal Tool	—	—	039A28	039A28	039A31
Additional Accessories					
Connector Adaptor	070A02	070A02	070A02	070A02	—
Mating Cable Connector	AL	AL	EK	EP	AG
Recommended Cables	—	—	030	030	018 Flexible, 003 CE
Notes					

[1] Incorporates TEDS per IEEE P1451.4 [2] Resolution is dependent upon cable length and signal conditioner [3] Low frequency response determined by external electronics

Miniature Single Axis Accelerometers

In competitive sports, the slightest advantage can make the difference between winning and losing. Biomechanical studies can be helpful in gaining an understanding of overall capabilities, fine-tuning physical techniques for optimal performance, as well as determining healing progress and effectiveness after an injury. PCB® accelerometers have been used to satisfy a multitude of measurement requirements including product testing, design validation, structural analysis, and even animal behavior.

Miniature Single Axis Accelerometers

Photos Shown Actual Size	CE 			
Model Number	**353B16**	**352C66**	**353B17**	**352C67**
Sensitivity	10 mV/g	100 mV/g	10 mV/g	100 mV/g
Measurement Range	± 500 g pk	± 50 g pk	± 500 g pk	± 50 g pk
Broadband Resolution	0.005 g rms	0.00016 g rms	0.005 g rms	0.00016 g rms
Frequency Range (± 5%)	1 to 10k Hz	1 to 10k Hz	1 to 10k Hz	5 to 10k Hz
Resonant Frequency	≥ 70 kHz	≥ 35 kHz	≥ 70 kHz	≥ 35 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 +200 °F -54 to +93 °C	-65 to +250 °F -54 to +121 °C	-65 +200 °F -54 to +93 °C
Sensing Element	Quartz/Shear	Ceramic/Shear	Quartz/Shear	Ceramic/Shear
Electrical Connector	5-44 Coaxial Jack	5-44 Coaxial Jack	Integral Cable	Integral Cable
Electrical Ground Isolation	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	1.5 gm	2.0 gm	1.7 gm	2.0 gm
Size	9/32 x 0.67 in 9/32 in x 17 mm	9/32 x 0.67 in 9/32 in x 17 mm	9/32 x 0.59 in 9/32 in x 14.9 mm	9/32 x 0.55 in 9/32 in x 13.9 mm
Mounting	5-40 Stud	5-40 Stud	5-40 Stud	5-40 Stud
Supplied Accessories				
Wax	080A109	080A109	080A109	080A109
Adhesive Mounting Base	080A15	080A15	080A15	080A15
Additional Versions				
Metric Mounting Thread	M353B16	M352C66	M353B17	M352C67
Alternative Sensitivity	(M)353B12 - 5 mV/g	—	(M)353B77 - 2 mV/g (M)353B13 - 5 mV/g	—
Additional Accessories				
Magnetic Mounting Base	080A30	080A30	080A30	080A30
Triaxial Mounting Adaptor	080B16, 080A196	080B16, 080A196	080B16, 080A196	080B16, 080A196
Mating Cable Connector	AG	AG	AL	AL
Recommended Cables	018 Flexible, 003 CE	018 Flexible, 003 CE	—	—
Connector Adaptor	—	—	070A02	070A02

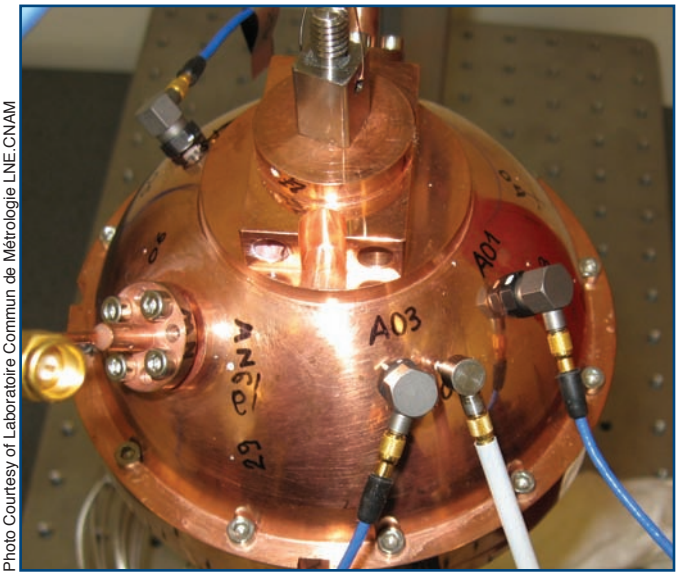


Photo Courtesy of Laboratoire Commun de Métrologie LNE.CNAM

Miniature Single Axis Accelerometers

Highlights

- Small size
- High frequency range
- Light weight
- Available in robust titanium or lightweight aluminum housing

Miniature Single Axis Accelerometers

Photos Shown Actual Size						
Model Number	**353B18**	**352C68**	**357B14**	**353B15**	**352C65**	**357B11**
Sensitivity	10 mV/g	100 mV/g	3 pC/g	10 mV/g	100 mV/g	3.0 pC/g
Measurement Range	±500 g pk	±50 g pk	± 2300 g pk	± 500 g pk	± 50 g pk	± 2300 g pk
Broadband Resolution	0.005 g rms	0.00016 g rms	[1]	0.005 g rms	0.00016 g rms	[1]
Frequency Range (± 5%)	1 to 10k Hz	0.5 to 10k Hz	12 kHz [2]	1 to 10k Hz	0.5 to 10k Hz	12 kHz [2]
Resonant Frequency	≥ 70 kHz	≥ 35 kHz	≥ 50 kHz	≥ 70 kHz	≥ 35 kHz	≥ 50 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 +200 °F -54 to +93 °C	-95 to +500 °F -71 to +260 °C	-65 to +250 °F -54 to +121 °C	-65 +200 °F -54 to +93 °C	-95 to +500 °F -71 to +260 °C
Sensing Element	Quartz/Shear	Ceramic/Shear	Ceramic/Shear	Quartz/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	5-44 Coaxial Jack	5-44 Coaxial Jack	5-44 Coaxial Jack
Electrical Ground Isolation	No	No	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	1.8 gm	2.0 gm	2.0 gm	2.0 gm	2.0 gm	2.0 gm
Size	9/32 x 0.64 in 9/32 in x 16.3 mm	9/32 x 0.64 in 9/32 in x 16.3 mm	9/32 x 0.64 in 9/32 in x 16.3 mm	5/16 x 0.43 in 5/16 in x 10.9 mm	5/16 x 0.43 in 5/16 in x 10.9mm	5/16 x 0.43 in 5/16 in x 10.9 mm
Mounting	5-40 Stud	5-40 Stud	5-40 Stud	5-40 Stud	5-40 Stud	5-40 Stud
Supplied Accessories						
Wax	080A109	080A109	—	080A109	080A109	—
Adhesive Mounting Base	080A15	080A15	—	080A15	080A15	—
Additional Versions						
Metric Mounting Thread	M353B18	M352C68	M357B14	M353B15	M352C65	M357B11
Alternative Sensitivity	(M)353B14 - 5 mV/g	—	—	(M)353B11 - 5 mV/g	—	—
Additional Accessories						
Magnetic Mounting Base	080A30	080A30	080A30	080A30	080A30	080A30
Triaxial Mounting Adaptors	080B16, 080A196	080B16, 080A196	080B16, 080A196	080B16, 080A196	080B16, 080A196	080B16, 080A196
Mating Cable Connector	EB	EB	EB	AG	AG	AG
Recommended Cables	002, 003 CE	002, 003 CE	003 CE	018 Flexible, 003 CE	018 Flexible, 003 CE	003 CE
Notes						
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics						

Miniature Single Axis Accelerometers

Product testing is necessary in today's competitive marketplace in order to optimize designs, reduce defects, and improve customer acceptance and satisfaction. Shock and vibration testing offers a structured approach for verifying survivability in environmental influences that may be encountered during service and for precipitating incipient failures so they are not encountered by the end-user. PCB® accelerometers are used extensively for monitoring an object's response to a programmed vibration input and for controlling the vibration profiles during testing.

Photo courtesy of Sun Microsystems Advanced Product Testing Laboratory

Miniature Single Axis Accelerometers

Photos Shown Actual Size	CE 			CE 	
Model Number	**352C41**	**352C42**	**357B45**	**355B12**	**357B06**
Sensitivity	10 mV/g	100 mV/g	2.6 pC/g	10 mV/g	5 pC/g
Measurement Range	± 500 g pk	± 50 g pk	± 500 g pk	± 500 g pk	± 500 g pk
Broadband Resolution	0.0008 g rms	0.0005 g rms	[1]	0.0005 g rms	[1]
Frequency Range (± 5%)	1 to 9k Hz	1 to 9k Hz	8 kHz [2]	1 to 10k Hz	10 kHz [2]
Resonant Frequency	≥ 30 kHz	≥ 30 kHz	≥ 30 kHz	≥ 50 kHz	≥ 50 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-100 to +350 °F -73 to +177 °C	-65 to +250 °F -54 to +121 °C	-65 to +500 °F -54 to +260 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	5-44 Coaxial Jack	5-44 Coaxial Jack
Electrical Ground Isolation	No	No	No	Yes	Yes
Housing Material	Titanium	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	2.8 gm	2.8 gm	2.8 gm	2.3 gm	2.3 gm
Size	3/8 x 0.38 in 3/8 in x 9.7 mm	3/8 x 0.38 in 3/8 in x 9.7 mm	3/8 x 0.38 in 3/8 in x 9.7 mm	0.23 x 0.65 x 0.38 in 5.84 x 16.4 x 9.6 mm	0.23 x 0.65 x 0.38 in 5.8 x 16.4 x 9.6 mm
Mounting	Adhesive	Adhesive	Adhesive	Through Hole	Through Hole
Supplied Accessories					
Wax/Adhesive	080A109/080A90	080A109/080A90	080A109	—	—
Mounting Stud/Screw	—	—	—	081B36	081B36
Additional Versions					
Electrical Ground Isolation	352C43	352C44	—	—	—
Metric Mounting Thread	—	—	—	M355B12	M357B06
Additional Accessories					
Mating Cable Connector	EB	EB	EB	AG	AG
Recommended Cables	002, 003 CE	002, 003 CE	003	018 Flexible, 003 CE	003 CE
Notes					
[1] Resolution is dependent upon cable length and signal conditioner [2] Low frequency response determined by external electronics					

Miniature Triaxial Accelerometers

Tips from Techs

Is the cable assembly for my triaxial accelerometer included or do I need to order it separately?

PCB® currently offers four different configurations:

- Integral Cable – Any unit with an integral cable normally has a 5 ft. length cable. In addition, a mating 5 ft. extension cable is provided that terminates in (3) BNC Plugs.
- 8-36 4-Pin Jack – Any unit with this connector is provided with a 10 ft. mating cable assembly that terminates in (3) BNC Plugs
- ¼-28 4-Pin Jack – Any unit with this connector is not provided with a cable assembly, as this connector is more universal than the 8-36 configuration mentioned above.
- (3) Independent Coaxial Jacks – This configuration is used on the Charge Output accelerometers. Cable assemblies are not included with these sensors because coaxial cables are very common.

A listing of all of the accessories that are supplied with each particular sensor can be found in the "Supplied Accessories" section of each accelerometer table, as well as on the published specification sheet at www.pcb.com.

Miniature Triaxial Accelerometers

Photo Shown Actual Size				
Model Number	**356A01**	**356A24**	**356B20**	**356B21**	**356B11**
Sensitivity	5 mV/g	10 mV/g	1 mV/g	10 mV/g	10 mV/g
Measurement Range	± 1000 g pk	± 500 g pk	± 5000 g pk	± 500 g pk	± 500 g pk
Broadband Resolution	0.003 grms	0.002 g rms	0.03 g rms	0.003 grms	0.003 g rms
Frequency Range (± 5%)	2 to 5k Hz	1 to 9k Hz	2 to 7k Hz	2 to 7k Hz	2 to 7k Hz
Resonant Frequency	≥ 50 kHz	≥ 45 kHz	≥ 55 kHz	≥ 55 kHz	≥ 55 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	Integral Cable	8-36 4-Pin Jack	8-36 4-Pin Jack	8-36 4-Pin Jack	Integral Cable
Electrical Ground Isolation	No	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	1 gm	3 gm	4 gm	4 gm	4 gm
Size	0.25 in Cube 6.35 mm Cube	0.28 x 0.47 x 0.47 in 7 x 12 x 12 mm	0.4 in Cube 10.2 mm Cube	0.4 in Cube 10.2 mm Cube	0.4 in Cube 10.2 mm Cube
Mounting	Adhesive	Adhesive	5-40 Thread	5-40 Thread	5-40 Thread
Supplied Accessories					
Cable	034G05	034K10	034K10	034K10	034G05
Wax/Adhesive	080A109/080A90	080A109/080A90	080A109	080A109	080A109
Adhesive Mounting Base	—	—	080A	080A	080A
Mounting Stud/Screw	—	—	081A27, M081A27, 081A90	081A27, M081A27, 081A90	081A27, M081A27, 081A90
Additional Versions					
Alternate Cable Type	356A13-Twisted 4-Cond.	—	—	—	—
Built-in Low Pass Filter	—	—	—	—	356A61
Integral Cable	—	—	356B10	—	—
Additional Accessories					
Magnetic Mounting Base	—	—	080A30	080A30	080A30
Removal Tool	—	—	039A08	039A08	039A08
Mating Cable Connector	AY	EH	EH	EH	AY
Recommended Cable	034	034	034	034	034

Miniature Triaxial Accelerometers

Highlights

- Lightweight Titanium
- Hermetic Seal
- Screw, Stud, or Adhesive Mount

Photos Courtesy of Clemson University

Miniature Triaxial Accelerometers

Photo Shown Actual Size					
Model Number	**354C10**	**356A33**	**356A31**	**356A34**	**356A32**
Sensitivity	10 mV/g	10 mV/g	10 mV/g	50 mV/g	100 mV/g
Measurement Range	± 500 g pk	±500 g pk	± 500 g pk	± 100 g pk	± 50 g pk
Broadband Resolution	0.003 g rms	0.003 rms	0.002 g rms	0.0003 g rms	0.0003 g rms
Frequency Range (± 5%)	2 to 8k Hz	2 to 7k Hz	1 to 10k Hz	0.7 to 4k Hz	0.7 to 4k Hz
Resonant Frequency	≥ 40 kHz	≥ 55 kHz	≥ 70 kHz	≥ 25 kHz	≥ 25 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	Integral Cable	¼-28 4-Pin Jack	8-36 4-Pin Jack	¼-28 4-Pin Jack	8-36 4-Pin Jack
Electrical Ground Isolation	Yes	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic	Hermetic
Weight	5 gm	5 gm	5 gm	7 gm	5 gm
Size	0.3 x 0.55 x 0.55 in 7.6 x 14 x 14 mm	0.4 in Cube 10.2 mm Cube	0.45 in Cube 11.4 mm Cube	0.45 in Cube 11.4 mm Cube	0.45 in Cube 11.4 mm Cube
Mounting	Through Hole	5-40 Thread	Adhesive	Adhesive	5-40 Thread
Supplied Accessories					
Cable	034G05	—	034K10	—	034K10
Wax/Adhesive	—	080A109	080A109	080A109	080A109
Adhesive Mounting Base	—	080A	—	—	080A
Mounting Stud/Screw	081B93	081A27, M081A27, 081A90	—	—	081A27, M081A27, 081A90
Additional Versions					
Built-in Low Pass Filter	—	356A63		—	—
Integral Cable	—	—	—	—	356A12
Alternate Sensitivity	—	—	356A30 - 5 mV/g	356A36 - 10 mV/g	—
Alternate Sensitivity	—	—	—	356A35 - 100 mV/g	—
Metric Mounting Thread	M354C10	—	—	—	—
Additional Accessories					
Magnetic Mounting Base	—	—	—	—	080A30
Removal Tool		039A08	039A09	039A09	039A09
Mating Cable Connector	AY	AY	EH	AY	EH
Recommended Cable	034	034	034	034	034

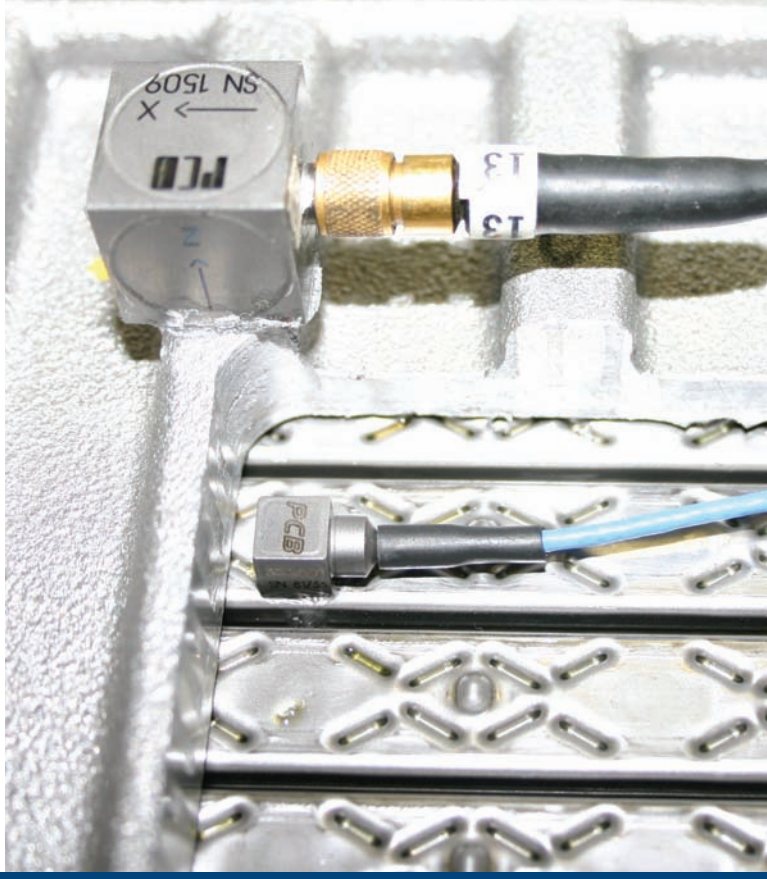
High Temperature ICP® Accelerometers (+325 ºF/+163 ºC)

Applications

- Quality Assurance (HALT, HASS, ESS)
- High Temperature
- Thermal Stress Screening
- Environmental Testing
- Combined Environmental Chambers

PCB® offers specially designed and tested ICP® accelerometers for conducting vibration and shock measurements under demanding environmental conditions. These sensors combine proven quartz, and ceramic shear sensing technology with specialized, built-in, microelectronic signal conditioning circuitry to achieve dependable operation in extreme temperatures and through repetitive temperature cycling. Laser-welded, hermetically sealed, lightweight titanium or stainless steel housings offer further protection from the environment.

Prior to shipment, each sensor undergoes a battery of tests to ensure survivability for its intended use. Such tests include temperature soak at elevated temperatures, temperature cycling, and exposure to highly accelerated screening procedures with hydraulically actuated shakers.



Photos Courtesy of Spectrum Technologies

High Temperature Single Axis ICP® Accelerometers

Environmental testing chambers play a vital role for many products during development and testing. These tools permit accelerated life cycle testing of products under extreme conditions to build confidence in reliability and longevity. Temperature, humidity, and altitude are prevalent simulated environments accommodated by such chambers. Vibration stimulus is often combined with temperature cycling to more closely approximate real-world operating environments. When vibration control or response measurements are needed for such combined-environment tests, PCB® offers high temperature ICP® accelerometers that have been qualified against their own vibration stress screening and thermal cycling regimen to withstand the extreme test chamber conditions.

Photo Courtesy of Sun Microsystems Advanced Product Testing Laboratory

High Temperature ICP® Accelerometers

Photos Shown Actual Size	CE 	CE 	CE 	CE 
Model Number	**320C15**	**320C18**	**320C03**	**320C33**
Sensitivity	10 mV/g	10 mV/g	10 mV/g	100 mV/g
Measurement Range	± 500 g pk	± 500 g pk	± 500 g pk	± 50 g pk
Broadband Resolution	0.005 g rms	0.005 g rms	0.005 g rms	0.0003 g rms
Frequency Range (± 5%)	2 to 10k Hz	2 to 10k Hz	1 to 6k Hz	1 to 4k Hz
Resonant Frequency	≥ 60 kHz	≥ 60 kHz	≥ 35 kHz	≥ 22 kHz
Temperature Range	-100 to +325 °F -73 to +163 °C	-100 to +325 °F -73 to +163 °C	-100 to +325 °F -73 to +163 °C	-100 to +325 °F -73 to +163 °C
Sensing Element	Quartz/Shear	Quartz/Shear	Quartz/Shear	Quartz/Shear
Electrical Connector	5-44 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	No	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	2 gm	2 gm	11 gm	20 gm
Size	5/16 x 0.43 in 5/16 in x 10.9 mm	9/32 x 0.74 in 9/32 in x 18.8 mm	1/2 x 0.81 in 1/2 in x 20.6 mm	3/4 x 0.85 in 3/4 in x 21.6 mm
Mounting	5-40 Stud	5-40 Stud	10-32 Thread	10-32 Thread
Supplied Accessories				
Wax	080A109	080A109	080A109	080A109
Adhesive Mounting Base	080A15	080A15	—	080A12
Mounting Stud/Screw	—	—	081B05, M081B05	081B05, M081B05
Additional Versions				
Metric Mounting	M320C15	M320C18	—	—
Alternate Connector Position	—	—	320C04 - Top	320C34 - Top
Additional Accessories				
Magnetic Mounting Base	080A30	080A30	080A27	080A27
Triaxial Mounting Adaptors	080B16, 080A196	080B16, 080A196	080B10	080B11
Mating Cable Connector	AG	EB	EB	EB
Recommended Cables	002, 003 CE	002, 003 CE	002, 003 CE	002, 003 CE

High Temperature ICP® Accelerometers

High Temperature ICP® Accelerometers




Model Number	300A12	320C20	339A30	339A31
Sensitivity	10 mV/g	10 mV/g	10 mV/g	10 mV/g
Measurement Range	± 250 g pk	± 500 g pk	± 500 g pk	± 500 g pk
Broadband Resolution	0.002 g rms	0.006 g rms	0.008 g rms	0.008 g rms
Frequency Range (± 5%)	10 to 10k Hz	2 to 5k Hz	2 to 8k Hz	2 to 8k Hz
Resonant Frequency	≥ 60 kHz	≥ 60 kHz	≥ 25 kHz	≥ 25 kHz
Temperature Range (sensor)	-100 to +500 °F -73 to +260 °C	-100 to +325 °F -73 to +163 °C	-65 to +325 °F -54 to +163 °C	-65 to +325 °F -54 to +163 °C
Sensing Element	Ceramic/Shear	Quartz/Shear	Shear	Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	8-36 4-Pin Jack	8-36 4-Pin Jack
Housing Material	Stainless Steel	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight (sensor)	5.4 gm	6.5 gm	4 gm	5.5 gm
Size (sensor)	3/8 x 0.87 in 3/8 in x 22.1 mm	3/8 x 0.87 in 3/8 x 22.1 mm	0.4 in Cube 10.2 mm Cube	0.55 x 0.4 x 0.4 in 14 mm x 10.2 mm x 10.2 mm
Mounting	10-32 Stud	10-32 Thread	Adhesive	5-40 Stud
System Components				
Accelerometer	357M50	—	—	—
Cable	16950-01	—	034K10	034K10
Charge Converter	422M136	—	—	—
Supplied Accessories				
Wax/Adhesive	—	080A109	080A109/080A90	080A109/080A90
Adhesive Mounting Base	—	080A	—	080A
Mounting Stud/Screw	—	—	—	081A27, M081A27
Additional Versions				
Metric Mounting	—	M320C20	—	—

High Temperature Accelerometers (> +500 ºF/+260 ºC)

Applications

- High Temperature Vibration Measurements
- Engine Compartment Studies
- Exhaust Component Vibration Tests
- Steam Turbine Testing
- Engine Vibration Analysis

PCB®'s Charge Output accelerometers utilize piezo-ceramic sensing elements to directly output an electrostatic charge signal that is proportional to applied acceleration.

Charge Output accelerometers do not contain built-in signal conditioning electronics. As a result, external signal conditioning is required to interface their generated measurement signals to readout or recording instruments. The sensor's charge output signals can be conditioned with either a laboratory style, adjustable charge amplifier or, for an economical approach, with an in-line, fixed charge converter.

Since there are no electronics built into Charge Output accelerometers, they can operate and survive exposure to very high temperatures (up to +1200 °F/+649 °C for some models). In addition, Charge Output accelerometers are used for thermal cycling requirements or to take advantage of existing charge amplifier signal conditioning equipment.

It is important to note that measurement resolution and low-frequency response for charge output, acceleration sensing systems are dependent upon the noise floor and discharge time constant characteristics of the signal conditioning and readout devices used.

High Temperature Single Axis Accelerometers

High Temperature, Single Axis Accelerometers

				
Model Number	**357B69**	**357C90**	**357B61**	**357B53**
Sensitivity	3.5 pC/g	5 pC/g	10 pC/g	100 pC/g
Measurement Range	± 500 g pk	± 1000 g pk	± 1000 g pk	± 150 g pk
Broadband Resolution	[1]	[1]	[1]	[1]
Frequency Range (± 5%)	6 kHz [2]	2.5 kHz [2]	5 kHz [2]	3 kHz [2]
Resonant Frequency	≥ 35 kHz	≥ 14 kHz	≥ 24 kHz	≥ 12 kHz
Temperature Range	-65 to +900 °F -54 to +482 °C	-67 to +1200 °F -55 to +649 °C	-65 to +900 °F -54 to +482 °C	-95 to +550 °F -71 to +288 °C
	</= 10^8 rad </= 10^{10} N/cm^2	</= 10^8 rad </= 10^{10} N/cm^2	</= 10^8 rad </= 10^{10} N/cm^2	</= 10^8 rad </= 10^{10} N/cm^2
Sensing Element	Ceramic/Compression	Ceramic/Shear	Ceramic/Compression	Ceramic/Shear
Electrical Connector	10-32 Coaxial Jack	Integral Cable	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	No	Yes	No	Yes
Housing Material	Inconel	Inconel	Inconel	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	16 gm	75 gm	30 gm	51 gm
Size	0.45 x 0.875 in 11.4 in x 22.2 mm	0.66 x 1.26 x 0.66 in 16.7 x 32 x 16.7 mm	5/8 x 1 in 5/8 in x 25.4 mm	3/4 x 1.13 in 3/4 in x 28.7 mm
Mounting	10-32 Thread	Through-hole	10-32 Thread	10-32 Thread
Supplied Accessories				
Cable	023A10	—	023A10	—
Mounting Stud/Screw	081A107, M081A107	081A108	081A107, M081A107	081B05, M081B05
Additional Version				
Alternate Connector Position	—	—	—	357B54 - Top
Additional Accessories				
Adhesive Mounting Base	080A12	—	080A12	080A12
Magnetic Mounting Base	080A27	—	080A27	080A27
Triaxial Mounting Adaptor	080B11	—	080B11	080B11
Mating Cable Connector	FZ	FZ	FZ	FZ
Recommended Cable	023	023	023	023
Note				

[1] Resolution is dependent upon cable length and signal conditioner [2] Low Frequency response determined by external electronics

High Sensitivity ICP® Accelerometers

Applications

- Building Vibration Monitoring
- Earthquake Detection
- Structural Testing of Bridges
- Floor Vibration Monitoring
- Geological Formation Studies
- Foundation Vibration Monitoring

High sensitivity, ICP® accelerometers are specifically designed to enable the detection of ultra-low-level, low-frequency vibrations associated with very large structures, foundations, and earth tremors. These sensors typically possess exceptional measurement resolution as the result of a comparatively larger size, which furnishes a stronger output signal and a lower noise floor.

Both ceramic and quartz sensing elements are utilized in seismic accelerometer designs. Model 393C, with a quartz sensing element, offers the best low-frequency response in this series. Ceramic element styles with built-in, low-noise, signal conditioning circuitry offer the greatest measurement resolution. The model 393B31 leads the way, providing 1 µg rms broadband resolution.

All units are hermetically sealed in either a titanium or stainless steel housing. Models that include a 2-pin, military style connector provide the added benefit of being electrically case isolated for superior RF and EMI protection.

High Sensitivity ICP® Accelerometers

Vibration monitoring of civil structures and treasured monuments can be an essential practice for ensuring the safety of occupants or protecting the structure from catastrophic demise. Studies have shown that crowds of people in a stadium grandstand or theater balcony can impart tremendous forces and harmonic motion to the structure when the crowd acts in a synchronous manner. Earth tremors, foot traffic, and trucks & trains can impart vibration, which can cause a structure to sway, shift, crumble, or collapse. Permanent-monitoring high-sensitivity accelerometers are useful for trending, analyzing, and alerting when structural motion exceeds established safety limits to enable corrective or evasive action.

High Sensitivity ICP® Accelerometers

				
Model Number	**355B04**	**352B**	**393B04**	**393B05**
Sensitivity	1000 mV/g	1000 mV/g	1000 mV/g	10 V/g
Measurement Range	± 5 g pk	± 5 g pk	± 5 g pk	± 0.5 g pk
Broadband Resolution	0.0001 g rms	0.00008 g rms	0.000003 g rms	0.000004 g rms
Frequency Range (± 5%)	1 to 8k Hz	2 to 10k Hz	0.06 to 450 Hz	0.7 to 450 Hz
Resonant Frequency	≥ 30 kHz	≥ 25 kHz	≥ 2.5 kHz	≥ 2.5 kHz
Temperature Range	-65 to +200 °F -54 to +93 °C	-65 to +200 °F -54 to +93 °C	0 to +176 °F -18 to +80 °C	0 to +176 °F -18 to +80 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Flexural	Ceramic/Flexural
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Electrical Ground Isolation	Yes	No	No	No
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	11 gm	25 gm	50 gm	50 gm
Size	0.40 x 0.95 x 0.63 in 10.2 x 24 x 16 mm	3/4 x 1.10 in 3/4 in x 28 mm	0.99 x 1.22 in 25 x 31 mm	0.99 x 1.22 in 25 x 31 mm
Mounting	Through Hole	10-32 Thread	10-32 Thread	10-32 Thread
Supplied Accessories				
Wax/Adhesive	080A109	080A109	—	—
Adhesive Mounting Base	—	080A12	—	—
Mounting Stud/Screw	081B45	081B05, M081B05	081B05, M081B05	081B05, M081B05
Additional Accessories				
Magnetic Mounting Base	—	080A27	—	—
Triaxial Mounting Adaptor	—	080B11	—	—
Mating Cable Connector	EB	EB	EB	EB
Recommended Cables	002, 003 CE	002, 003 CE	002, 003 CE	002, 003 CE

High Sensitivity ICP® Accelerometers

Decaying infrastructures, particularly bridges, have received heightened awareness in recent years. Among the several techniques for determining the health and longevity of such civil structures are vibration measurements for continuous monitoring, modal analysis, and structural integrity investigation. High sensitivity accelerometers are utilized for generating signals in response to a variety of stimuli including traffic, wind, and programmatic impulse. When analyzed, these signals provide insight for determining the condition and safety of the structure. Such an investigative analysis can lead to a recommendation for remedial construction or further monitoring.

High Sensitivity ICP® Accelerometers

				
Model Number	**393A03**	**393B12**	**393B31**	**393C**
Sensitivity	1000 mV/g	10 V/g	10 V/g	1000 mV/g
Measurement Range	± 5 g pk	± 0.5 g pk	± 0.5 g pk	± 2.5 g pk
Broadband Resolution	0.00001 g rms	0.000008 g rms	0.000001 g rms	0.0001 g rms
Frequency Range (± 5%)	0.5 to 2000 Hz	0.5 to 2000 Hz	0.1 to 200 Hz	0.02 to 800 Hz
Frequency Range (± 10%)	0.3 to 4000 Hz	0.1 to 2000 Hz	0.07 to 300 Hz	0.01 to 1200 Hz
Resonant Frequency	≥ 10 kHz	≥ 10 kHz	≥ 700 Hz	≥ 3.5 kHz
Temperature Range	-65 to +250 °F -54 to +121 °C	-50 to +180 °F -45 to +82 °C	0 to +150 °F -18 to +65 °C	-65 to +200 °F -54 to +93 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Flexural	Quartz/Compression
Electrical Connector	2-Pin MIL-C-5015	2-Pin MIL-C-5015	2-Pin MIL-C-5015	10-32 Coaxial Jack
Electrical Case Isolation	Yes	Yes	Yes	No
Housing Material	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	210 gm	210 gm	635 gm	885 gm
Size	1 3/16 x 2.21 in 1 3/16 in x 56.1 mm	1 3/16 x 2.21 in 1 3/16 in x 56.1 mm	2.25 x 2.8 in 57.2 x 71.1 mm	2.25 x 2.16 in 57.2 x 54.9 mm
Mounting	1/4-28 Thread	1/4-28 Thread	1/4-28 Thread	10-32 Thread
Supplied Accessories				
Mounting Stud/Screw	081B20, M081B20	081B20, M081B20	081B20, M081B20	081B05, M081B05
Additional Accessories				
Magnetic Mounting Base	080A54	080A54	—	080A21
Triaxial Mounting Adaptor	080A57	080A57	080M189	080M16
Mating Cable Connector	AP	AP	AP	EB
Recommended Cables	024	024	024	002, 003 CE

Structural Test ICP® Accelerometers

Applications

- Structural Vibration Testing
- Multi-channel Modal Analysis
- Analytical Model Correlation
- Design Studies
- Force Response Simulation

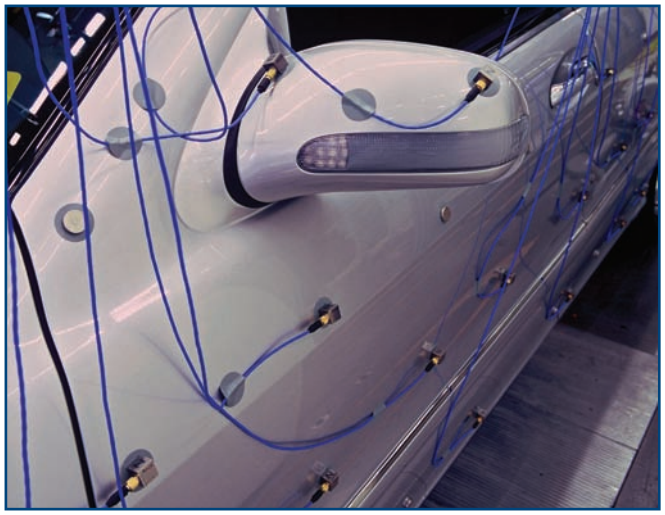
The Series 333 ICP® accelerometers, and their accessories, have been specifically designed to address the needs of multi-point modal and structural test measurement applications. This equipment has been developed in conjunction with the world renowned University of Cincinnati Structural Dynamics Research Laboratory and proven in real-world testing situations.

All accelerometers feature high-output, piezoceramic sensing elements for strong output signal levels when measuring lower-amplitude input vibrations. All reduce mass-loading effects by employing ultra-lightweight casing materials. All exhibit minimal phase deviation, an important consideration for mode shape analysis.

Each unit in this family includes TEDS functionality as an option. A sensor incorporating a Transducer Electronic Data Sheet (TEDS) is a mixed-mode (analog/digital) sensor with a built-in read/write memory that contains information about the sensor and its use. A TEDS sensor has an internal memory that includes information about the manufacturer, specifications and calibration, defined by IEEE standard 1451.4, effectively giving it the ability of "plug-and-play" self-identification within a measurement system. Using the same two-wire design of traditional piezoelectric with internal charge amplifier transducers, the TEDS sensor can flip between analog and digital modes, functioning with either a typical analog output, or with a digital bit stream output. Although a TEDS sensor can be connected to any ICP® sensor signal conditioner, only a TEDS-capable ICP® signal conditioner and data acquisition equipment support the digital communication mode.

Mounting pads, multi-conductor signal cables, and patch panels all help to control and organize the cable bundles of sensor arrays. This helps to minimize set-up time and potential errors that are often the result of cable tangles encountered during multi-channel structural testing.

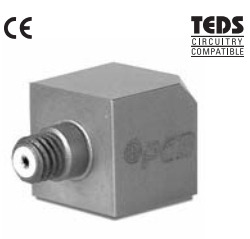
Structural Test ICP® Accelerometers



Highlights

- High output piezoceramic sensing element for strong output signal
- Lightweight casing materials to minimize mass loading effects
- Available in a variety of packages, mounting and cable options

Structural Test ICP® Accelerometers

Photos Shown Actual Size				
Model Number	**333B**	**333B30**	**333B40**	**333B50**
Sensitivity	100 mV/g	100 mV/g	500 mV/g	1000 mV/g
Measurement Range	± 50 g pk	± 50 g pk	± 10 g pk	± 5 g pk
Broadband Resolution	0.00007 g rms	0.00015 g rms	0.00005 g rms	0.00005 g rms
Frequency Range (± 5%)	2 to 1k Hz	0.5 to 3k Hz	0.5 to 3k Hz	0.5 to 3k Hz
Resonant Frequency	≥ 5 kHz	≥ 40 kHz	≥ 20 kHz	≥ 20 kHz
Temperature Range	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	3-Pin Socket	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack
Housing Material	Polymer	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	5.6 gm	4.0 gm	7.5 gm	7.5 gm
Size	0.48 x 0.84 in 11.9 x 21.3 mm	0.4 in Cube 10.2 mm Cube	0.45 in Cube 11.4 mm Cube	0.45 in Cube 11.4 mm Cube
Mounting	Adhesive	5-40 Thread	5-40 Thread	5-40 Thread
Supplied Accessories				
Wax/Adhesive	—	080A109/080A90	080A109/080A90	080A109/080A90
Adhesive Mounting Base	—	080A25	080A25	080A25
Mounting Stud/Screw	—	081A27, M081A27	081A27, M081A27	081A27, M081A27
Additional Versions				
Alternate Mounting	—	333B32 - Adhesive	333B42 - Adhesive	333B52 - Adhesive
Alternate Connector Position	—	333B35 - Top	333B45 - Top	—
Additional Accessories				
Adhesive Mounting Base and Cable	080B37, 080B38, 080B40	—	—	—
Triaxial Mounting Adaptor	080B55, 080A141	—	—	—
Removal Tool	—	039A08	039A09	—
Mating Cable Connector	—	EB	EB	EB
Recommended Cables	080B38	002, 003 CE	002, 003 CE	002, 003 CE

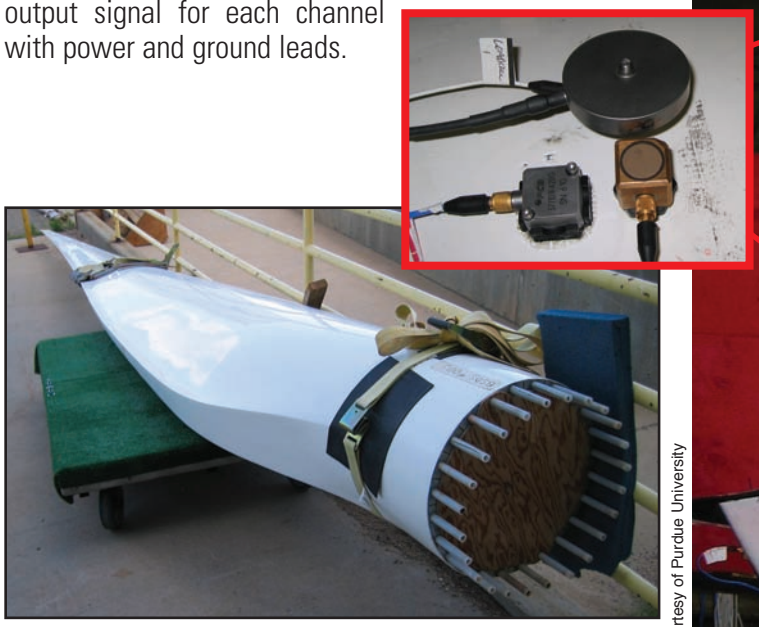
■ See models 356A16, 356A17, & 356B18 listed on page 8 for Triaxal Configuration of Structural Test ICP® Accelerometers.

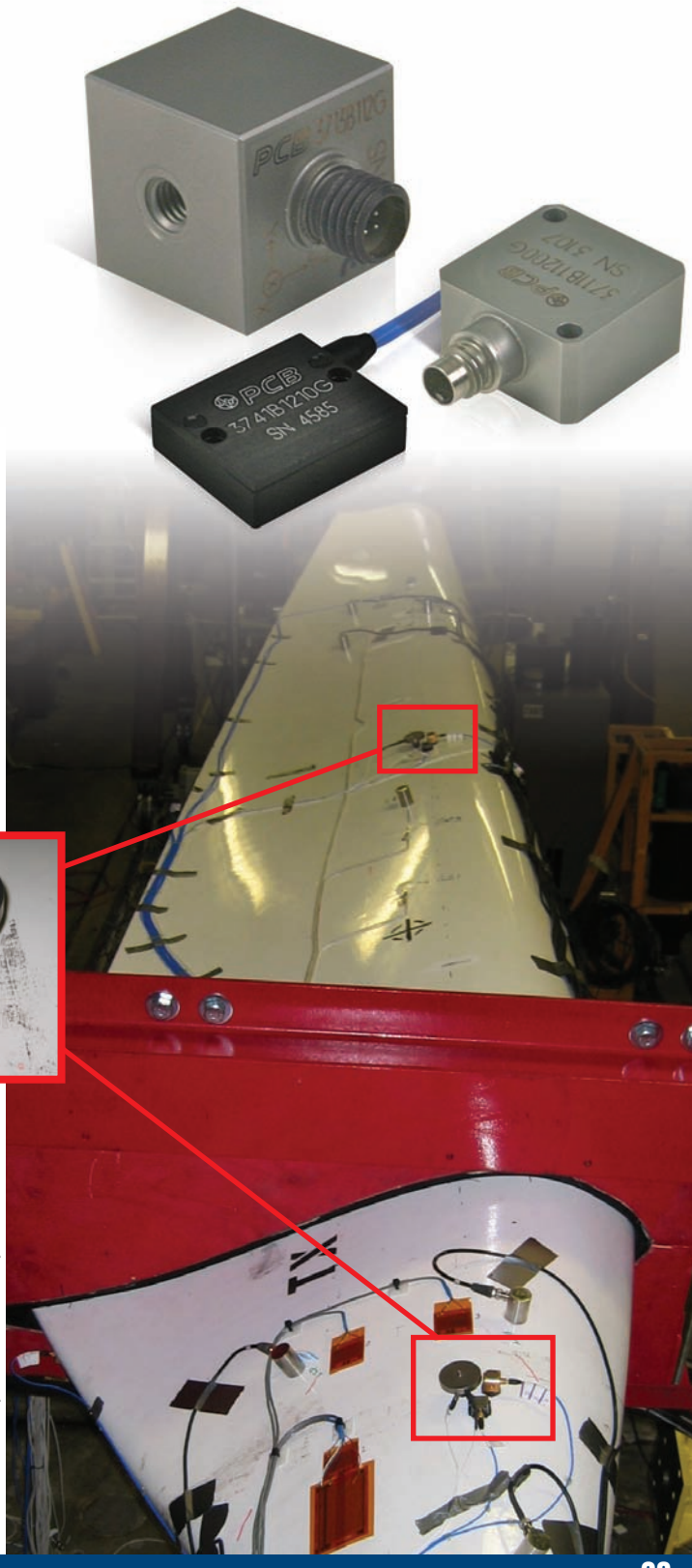
MEMS DC Response Accelerometers

When analysis of very low frequency motion or constant acceleration is required, MEMS accelerometers are necessary. Unlike piezoelectric accelerometers, these sensors respond to 0 Hz and are, therefore, often referred to as DC response sensors.

PCB® Series 3741 DC response accelerometers are offered in a variety of full-scale ranges, from ± 2 to ± 200 g. The units feature silicon MEMS sensing elements for uniform, repeatable performance. Gas damping, mechanical over range stops, and a low profile, hard-anodized, aluminum housing are utilized for added durability. Electrically, the units offer a differential output signal for common-mode noise rejection.

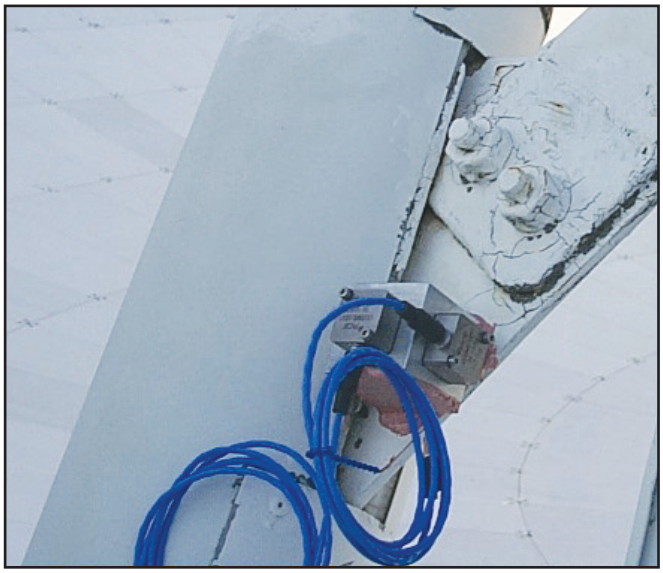
PCB® Series 3711 (single axis) and 3713 (triaxial) DC response accelerometers are designed to measure low frequency vibration and motion, and are offered in full-scale ranges from ± 2 to ± 200 g, to accommodate a variety of requirements. The units feature gas-damped, silicon MEMS sensing elements that provide performance, while hermetically sealed titanium housings provide protection from harsh contaminants. These units are inherently insensitive to base strain and transverse acceleration effects, and offer high frequency overload protection. Electrically, the units offer a single-ended output signal for each channel with power and ground leads.





Photos Courtesy of Purdue University

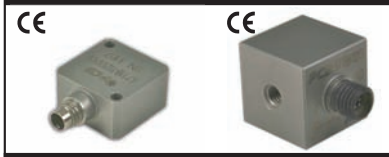
MEMS DC Response Accelerometers



Highlights

- Single axis and triaxial configurations
- Integral cable or multi-pin electrical connectors
- Simple, DC-power excitation schemes
- Single-ended or differential output signal formats

MEMS DC Response Accelerometers

Series 3741	Sensitivity	Measurement Range (pk)	Frequency (± 5%)	Broadband Resolution (rms)
	10 mV/g	± 200 g	0 to 2000 Hz	5.1 mg
	20 mV/g	± 100 g	0 to 2000 Hz	4.5 mg
	40 mV/g	± 50 g	0 to 2000 Hz	2.5 mg
	66.7 mV/g	± 30 g	0 to 2000 Hz	2.5 mg
	200 mV/g	± 10 g	0 to 200 Hz	1.1 mg
	1000 mV/g	± 2 g	0 to 150 Hz	0.3 mg
Series 3711 and 3713				
	10 mV/g	± 200 g	0 to 850 Hz	21.1 mg
	40 mV/g	± 50 g	0 to 1000 Hz	6.0 mg
	66.7 mV/g	± 30 g	0 to 1000 Hz	3.5 mg
	200 mV/g	± 10 g	0 to 1000 Hz	1.2 mg
	1000 mV/g	± 2 g	0 to 250 Hz	0.2 mg

Model Number	3741 Single Axis	3711 Single Axis	3713 Triaxial
Output Configuration	Differential	Single-Ended	Single-Ended
Overload Limit (Shock)	± 5,000 g pk	± 3000 g pk	± 3000 g pk
Temperature Range	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54.0 to +121 °C	-65 to +250 °F -54 to +121 °C
Excitation Voltage	6 to 30 VDC	6 to 30 VDC	6 to 30 VDC
Housing Material	Anodized Aluminum	Titanium	Titanium
Sealing	Epoxy	Hermetic	Hermetic
Size	0.30 x 1.00 x 0.85 in 7.62 x 25.4 x 21.6 mm	0.45 x 0.85 x 0.85 in 11.4 x 21.6 x 21.6 mm	0.8 in Cube 20.3 mm Cube
Weight Connector style Integral cable style	— 10 gm	16.3 gm 65.0 gm	17.3 gm 119.0 gm
Electrical Connector	10 ft. (3 m) Integral Cable	1/4-28 4-Pin or 10 ft. (3 m) Integral Cable	9-Pin or 10 ft. (3 m) Integral Cable
Model No. - Multi-pin Connector	—	3711B11xxxG [1]	3713B11xxxG [1]
Model No. - Integral Cable	3741D4HBxxxG [1]	3711B12xxxG [1]	3713B12xxxG [1]
Supplied Accessories			
Easy Mount Clip	—	080A152	—
Adhesive Base	—	—	080A12
Mounting Screw/Stud	081A103 M081A103	081A113 M081A113	081B05 M081B05
Additional Accessories			
Triaxial Mounting Block	080A208	080A153	—
Mounting Cable Connector	—	AY	EN
Recommended Cable	—	010	037
Note			
[1] xxx corresponds to measurement range			

MEMS Sensor Signal Conditioners

MEMS Sensor Signal Conditioners

				
Model Number	**478A01**	**478B05**	**478A16**	**482C27**
Channels	1	3	16	4
Sensor Input Type(s)	Single-ended MEMS Capacitive	Single-ended MEMS Capacitive	Single-ended MEMS Capacitive	Diff./Single-ended MEMS/Bridge, ICP®/Voltage
Compatible Sensor Series	3711, 3713	3711, 3713	3711, 3713	350x, 360x, 371x, 374x, Load Cells
Gain	Unity	Unity	Unity	x0.1 to x2000; x0.1 to x200 [5]
Output Range	±5 V	±5 V	±10 V	±10 V
Frequency Response (±5%) (Unity Gain)	DC to 2k Hz	DC to 2k Hz	DC to 70k Hz [3]	DC to 100k Hz
Temperature Range	+32 to +120 °F 0 to +50 °C	+32 to +120 °F 0 to +50 °C	+32 to +120 °F 0 to +50 °C	+32 to +120 °F 0 to +50 °C
Excitation Voltage	>16 VDC	17.3 VDC	18 VDC	0 to 12 VDC Unipolar or Bipolar [6]
Broadband Electrical Noise (1 to 100,000 Hz) (Gain x1)	8 µV rms [1]	5 µV rms	70 µV rms	50 µV rms
Power Required	27 VDC	33-38 VDC [2]	100 to 240 VAC, 50 to 400 Hz	9 to 18 VDC [2]
Input Connectors	4-Pin Jack	4-Pin Jack	(16) 4-Pin Jacks, (1) DB50 Female	(4) 8-Socket Mini DIN, (4) BNC Jacks
Output Connectors	BNC Jack	BNC Jacks	(16) BNC Jacks, (1) DB37 Female [4]	BNC Jacks
Size (Height x Width x Depth)	4.0 x 2.9 x 2.4 in 10.2 x 7.4 x 6.1 cm	6.3 x 2.4 x 11 in 16.0 x 6.1 x 28.0 cm	3.5 x 19 x 16.25 in 8.9 x 48.3 x 41.3 cm	3.2 x 8.0 x 5.9 in 8.1 x 20 x 15 cm
Weight	0.69 lb 312 gm	1.67 lb 756 gm	8.5 lb 3.9 kg	2.5 lb 1.13 kg
Supplied Accessories				
Power Cord	—	017AXX	017AXX	017AXX
Universal Power Adaptor	—	488B04/NC	—	488B14/NC
MCSC Control Software	—	—	—	EE75
Additional Versions				
Line Powered with Gain	445C01	—	—	—
Base Configurable Model with Selectable Options	—	—	478A17	—
8-channel	—	—	478A18	—
8-channel Base Configurable Model with Selectable Options	—	—	478A19	—
Screw Terminal Input Connector	—	478A05	—	—
3-Channel Differential Input Only	—	—	—	478A30
Additional Accessories				
AC Power Source	488A03 or F488A03	—	—	—
Battery Charger	488A02 or F488A02	—	—	—
9 VDC Ultralife Lithium Batteries (3)	400A81	—	—	—
DC Power Pack	—	488B07	—	—
Auto Lighter Adaptor	—	488A11	—	488A13
Input Mating Connector	AY	AY	AY, DB50 Male	8-pin Mini DIN, AC
Notes				
[1] Noise measured from 0.1 Hz to 10k Hz [2] Supplied with 85 to 264 VAC, 47 to 400 Hz Universal Power Adaptor [3] ±1% DC to 40 kHz (minimum) [4] BNC jacks on both front and rear panels [5] Maximum gain for bridge/MEMS input is x2000 and for ICP®/voltage is x200 [6] In bipolar mode, +Vexc track each other. They are equal and opposite. User selectable in 0.1V incrememts				

Shock ICP® Accelerometers

Applications:

- Pile Driver Monitoring
- Simulated Pyroshock Events
- Recoil and Penetration
- Impact Press Monitoring
- Explosive Studies
- Shaker Impact Monitoring

Shock accelerometers are specifically designed to withstand and measure extreme, high-amplitude, short-duration, transient accelerations. Such accelerations characteristically exceed the 1000 g boundary imposed on typical accelerometer designs. Shock acceleration events may reach 100,000 g or more with pulse durations of less than 10 microseconds. The extremely fast transient and volatile nature of a shock event imposes special demands on the design of a shock accelerometer.

PCB® shock accelerometers represent extensive research in materials, assembly techniques, and testing techniques to ensure survivability and faithful representation of the shock event. An automated Hopkinson Bar Calibration Station is utilized to evaluate shock sensor performance by simulating actual, high amplitude measurement conditions. This investment allows PCB® to assess and improve upon individual sensor characteristics, such as zero shift, ringing, and non-linearity.

Shear mode quartz and ceramic sensing elements are used in shock accelerometer designs to minimize the effects of base strain and thermal transients. Ceramic elements yield a smaller, lighter weight sensor with higher amplitude range and frequency limits. Quartz elements offer a wider operating temperature, thereby allowing for a more general purpose measurement device. Built-in signal conditioning circuitry permit these ICP® sensors to operate from constant-current signal conditioners for reliable operation and simplicity of use. The addition of mechanical and electrical filtering, in some designs, assists in resonance suppression to eliminate high-frequency "ringing" in the output signal.

A general purpose charge mode unit is available for systems employing external charge amplifiers and where adjustability through a wide measurement range is desired, such as with near- and far-field pyroshock testing.

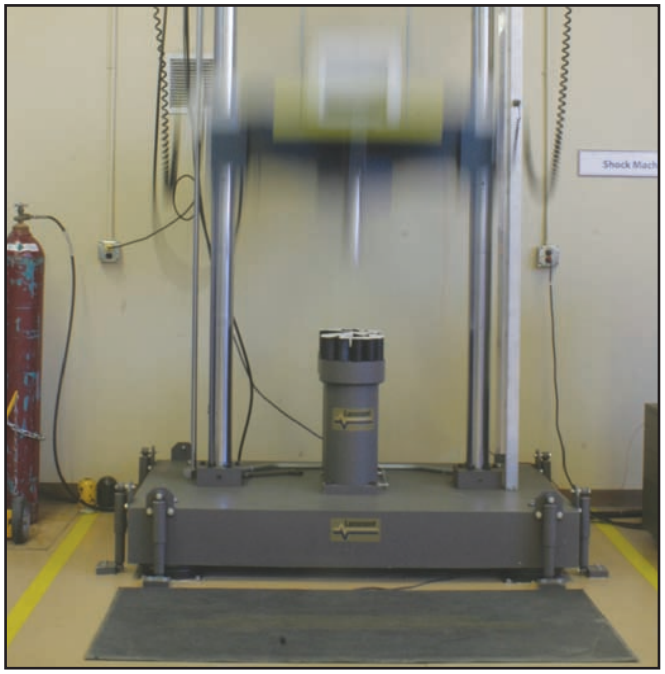


Photo Courtesy of Clemson University

Shock ICP® Accelerometers

Applications

- Body Armor Piercing
- Impact Testing
- Metal-to-Metal
- Helmet Testing

Shock Accelerometers

Photo Shown Actual Size

Model Number	350B21	350C02	350B23	350B24
Sensitivity	0.05 mV/g	0.1 mV/g	0.5 mV/g	1 mV/g
Measurement Range	± 100,000 g pk	± 50,000 g pk	± 10,000 g pk	± 5000 g pk
Broadband Resolution	0.3 g rms	0.5 g rms	0.04 g rms	0.02 g rms
Frequency Range (± 1 dB)	1 to 10k Hz	4 to 10k Hz	0.4 to 10k Hz	0.4 to 10k Hz
Electrical Filter Corner	—	13 kHz (-3 dB)	13 kHz (-3 dB)	13 kHz (-3 dB)
Mechanical Filter Resonance	—	23 kHz	23 kHz	23 kHz
Resonant Frequency	≥ 200 kHz	≥ 100 kHz	≥ 100 kHz	≥ 100 kHz
Temperature Range	-65 to +200 °F -54 to +93 °C	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear	Ceramic/Shear
Electrical Connector	Integral Cable	Integral Cable	Integral Cable	Integral Cable
Electrical Ground Isolation	Yes	Yes	Yes	Yes
Housing Material	Titanium	Titanium	Titanium	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	4.4 gm	4.2 gm	4.5 gm	4.5 gm
Size	3/8 x 0.73 in 3/8 in x 18.4 mm	3/8 x 0.75 in 3/8 in x 19.1 mm	3/8 x 0.75 in 3/8 in x 19.1 mm	3/8 x 0.75 in 3/8 in x 19.1 mm
Mounting	1/4-28 Stud	1/4-28 Stud	1/4-28 Stud	1/4-28 Stud
Additional Version				
Metric Mounting Thread	M350B21	M350C02	M350B23	M350B24
Additional Accessories				
Adhesive Mounting Bases	080M217, M080M217	080M217, M080M217	080M217, M080M217	080M217, M080M217
Triaxial Mounting Adaptors	080A180, M080A180	080A180, M080A180	080A180, M080A180	080A180, M080A180
Mating Cable Connector	AL	AL	AL	AL
Connector Adaptor	070A02	070A02	070A02	070A02

Shock ICP® Accelerometers

Highlights

- Built-in Mechanical & Electrical Filters
- Lightweight Integral Cable or 10-32 Coaxial Jack
- Measurement Ranges From 5,000 g's to 100,000 g's

Shock Accelerometers				Triaxial Configuration
Photos Shown Actual Size				
Model Number	**350B03**	**350B04**	**350A14**	**350B50**
Sensitivity	0.5 mV/g	1 mV/g	1 mV/g	0.5 mV/g
Measurement Range	± 10,000 g pk	± 5000 g pk	± 5000 g pk	±10,000 g pk
Broadband Resolution	0.04 g rms	0.02 g rms	0.02 g rms	0.03 g rms
Frequency Range (± 1 dB)	0.4 to 10k Hz	0.4 to 10k Hz	0.4 to 7.5k Hz [1]	3 to 10k Hz
Electrical Filter Corner	13 kHz (-3dB)	13 kHz (-3dB)	7.5 kHz (-10%)	20 kHz (-3dB)
Mechanical Filter Resonance	23 kHz	23 kHz	—	—
Resonant Frequency	≥ 100 kHz	≥ 100 kHz	≥ 50 kHz	≥ 60 kHz
Temperature Range	0 to +150 °F -18 to +66 °C	0 to +150 °F -18 to +66 °C	-65 to +250 °F -54 to +121 °C	-65 to +250 °F -54 to +121 °C
Sensing Element	Ceramic/Shear	Ceramic/Shear	Quartz/Shear	Ceramic/Shear
Electrical Connector	10-32 Coaxial Jack	10-32 Coaxial Jack	10-32 Coaxial Jack	Integral Cable
Electrical Ground Isolation	No	No	No	Yes
Housing Material	Titanium	Titanium	Stainless Steel	Titanium
Sealing	Hermetic	Hermetic	Hermetic	Hermetic
Weight	4.5 gm	4.5 gm	17.9 gm	8.6 gm
Size	3/8 x 1.02 in 3/8 in x 25.9 mm	3/8 x 1.02 in 3/8 in x 25.9 mm	1/2 x 1.45 in 1/2 in x 36.8 mm	0.33 x 0.69 x 0.69 in 8.4 x 17.5 x 17.5 mm
Mounting	1/4-28 Stud	1/4-28 Stud	1/4-28 Stud	Through Hole
Additional Version				
Metric Mounting Thread	M350B03	M350B04	M350A14	—
Additional Accessories				
Adhesive Mounting Base	080M217, M080M217	080M217, M080M217	—	—
Triaxial Mounting Adaptor	080A180, M080A180	080A180, M080A180	—	—
Mating Cable Connectors	EB, AW	EB, AW	EB, AW	AY
Recommended Cables	002, 003 CE, 031 Flexible	002, 003 CE, 031 Flexible	002, 003 CE, 031 Flexible	034G05 (Included)
Note				
[1] Range shown is ± 10%				

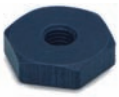
Mounting Accessories

Adhesive Mounting Bases

Adhesive mounting bases are utilized to facilitate adhesively mounting an accelerometer to a test surface. The base is secured to the test object with a suitable adhesive such as epoxy, glue or wax. The accelerometer is then stud mounted to the adhesive mounting base. The use of the adhesive mounting base eliminates the adhesive from being in direct contact with the sensor and potentially clogging the tapped mounting hole. Accelerometers may be easily moved to multiple bases installed in various locations. All bases are machined of lightweight aluminum with a grooved side for applying the adhesive and a hardcoat finish which provides electrical isolation between the test object and the accelerometer. For proper mounting, match the hex size on the accelerometer to the hex size on the adhesive base. Use the next larger adhesive base hex size if a match is not available.

Adhesive Mounting Bases

Model 080A



Model 080A12

Model 080A178

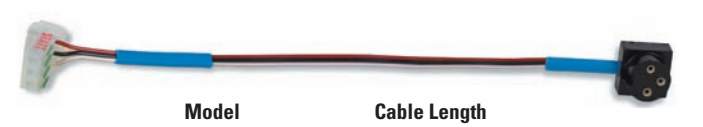
Model 080A19

Model Number	Hex size	Thickness	Mounting	Material
080A14	5/16 in	0.32 in (8.1 mm)	10-32 Thread	Hardcoat Aluminum
M080A14	5/16 in	0.32 in (8.1 mm)	M5 x 0.8 Thread	Hardcoat Aluminum
080A15	5/16 in	0.125 in (3.18 mm)	5-40 Thread	Hardcoat Aluminum
M080A15	5/16 in	0.125 in (3.18 mm)	M3 x 0.50 Thread	Hardcoat Aluminum
080A04	3/8 in	0.200 in (5.08 mm)	10-32 Thread	Hardcoat Aluminum
M080A04	3/8 in	0.200 in (5.08 mm)	M6 x 0.75 Thread	Hardcoat Aluminum
080A25	7/16 in	0.125 in (3.18 mm)	5-40 Thread	Hardcoat Aluminum
M080A25	7/16 in	0.125 in (3.18 mm)	M3 x 0.50 Thread	Hardcoat Aluminum
080A178	1/2 in	0.120 in (3.05 mm)	10-32 Stud	Hardcoat Aluminum
080A	1/2 in	0.187 in (4.75 mm)	10-32 Thread	Hardcoat Aluminum
M080A	1/2 in	0.187 in (4.75 mm)	M6 x 0.75 Thread	Hardcoat Aluminum
080A145	3/4 in	0.200 in (5.08 mm)	5-40 Thread	Hardcoat Aluminum
080A12	3/4 in	0.200 in (5.08 mm)	10-32 Thread	Hardcoat Aluminum
M080A12	3/4 in	0.200 in (5.08 mm)	M6 x 0.75 Thread	Hardcoat Aluminum
080A13	3/4 in	0.200 in (5.08 mm)	1/4-28 Thread	Hardcoat Aluminum
080A19*	3/4 in	0.375 in (9.53 mm)	10-32 Thread	Hardcoat Aluminum
080A68	7/8 in	0.200 in (5.08 mm)	10-32 Thread	Hardcoat Aluminum
M080A68	7/8 in	0.200 in (5.08 mm)	M6 x 0.75 Thread	Hardcoat Aluminum
080A147	7/8 in	0.274 in (6.96 mm)	(2) M3 x 0.5 Thread	Hardcoat Aluminum
080A170	1.0 in	0.350 in (8.89 mm)	(2) 6-32 Thread	Hardcoat Aluminum
080A190	1.25 in	0.250 in (6.35 mm)	10-32 Thread	Stainless Steel
080M227*	1.15 in	0.625 in (15.9 mm)	10-32 Thread	Ceramic

* Suitable for use as a stud mounted, electrical isolation base with a 10-32 accelerometer mounting stud inserted into each end.

Mounting Pads for Array Accelerometers

Specially designed mounting pads are for use with array accelerometers that incorporate their electrical connection within their mounting surface.



Model	Cable Length
080B40	10 ft (3 m)
080B37	25 ft (7.6 m)
080B38	50 ft (15.2 m)

Mounting pad with 3-socket adhesive base with integral cable that terminates with a 3-socket IDC connector for use with Model 333B (available with BNC plug termination by specifying suffix /AC to model number, e.g., 080B40/AC)

Model 080A140
Mounting pad with 10-32 electrical connector for use with Model 333B31

Model 080A115
Mounting pad with integral 10 ft (3 m) cable and BNC plug termination for use with Model 333B31

Easy-mount Clips

Easy-Mount Clip

Models 080A160, 080A172, 080A173

Shown with sensor (sensor not included)

Model Number	080A172	080A173	080A160
Compatible Cube Size	0.40 in 10.2 mm	0.45 in 11.4 mm	0.55 in 14.0 mm
Size	0.55 x 0.55 x 0.25 in 14 x 14 x 6.4 mm	0.6 x 0.6 x 0.25 in 15.2 x 15.2 x 6.4 mm	0.81 x 0.81 x 0.32 in 20.6 x 20.6 x 8.1 mm
Weight	0.5 gm	0.6 gm	1.4 gm
Frequency Limit (± 5%) (Grease Mount)	2k Hz	2k Hz	2k Hz
Frequency Limit (± 10%) (Grease Mount)	4k Hz	3k Hz	2.5k Hz
Frequency Limit (± 5%) (Dry Mount)	1k Hz	1k Hz	1k Hz
Frequency Limit (± 10%) (Dry Mount)	1.3k Hz	1.3k Hz	1.3k Hz
Temperature Range (Continuous)	-65 to +125 °F -54 to +52 °C	-65 to +125 °F -54 to +52 °C	-65 to +125 °F -54 to +52 °C
High Temperature Limit (Short Term Exposure)	+175 °F +79 °C	+175 °F +79 °C	+175 °F +79 °C
Compatible Accelerometers	333B32, 333B33, 356B11, 356B21	333B42, 333B53, 356A12, 356A22	356A02, 356A15, 356A16, 356A17
Ordering Information			
100-Piece Bag of Easy-Mount Clips	080A181	080A183	080A185
Notes			
Actual attainable frequency limits may be higher than specified, particularly for lower weight accelerometers, and may differ depending on axis of motion. An interface of silicone grease between clip and accelerometer aids in mechanical coupling to improve attainable frequency range.			

Easy-mount clips offer practical and economical installation techniques for accelerometers in multi-channel vibration measurement applications.

The clips can be attached to the test structure via double sided tape or adhesive. Once the clips are installed, accelerometers are simply snapped into the clips and are ready to take vibration measurements.

More measurement points and orientations can be accommodated with fewer sensors by installing clips at all desired points and populating them with as many sensors as necessary. Sensors are then moved to remaining clip locations until all measurements are completed. Triaxial measurements can be made with single axis, cube-shaped accelerometers by changing axis orientation for successive measurements.

Swivel-style clips permit sensors installed on curved or sloped surfaces to be aligned along the desired plane and axis. These clips rotate and pivot to provide full flexibility in alignment.

Easy-Mount Swivel Clip

Models 080B174, 080B176, 080B177

Shown with sensor (sensor not included)

Model Number	080B174	080B176	080B177
Compatible Cube Size	0.40 in 10.2 mm	0.45 in 11.4 mm	0.55 in 14.0 mm
Size (Base Diameter x Maximum Height)	0.5 x 1.22 in 12.7 x 31.0 mm	0.5 x 1.22 in 12.7 x 31.0 mm	0.75 x 1.39 in 19.1 x 35.2 mm
Weight	3.6 gm	3.6 gm	5.5 gm
Frequency Limit (± 10%) (Grease Mount)	1k Hz	1k Hz	1k Hz
Temperature Range (Continuous)	-65 to +125 °F -54 to +52 °C	-65 to +125 °F -54 to +52 °C	-65 to +125 °F -54 to +52 °C
High Temperature Limit (Short Term Exposure)	+175 °F +79 °C	+175 °F +79 °C	+175 °F +79 °C
Compatible Accelerometers	333B32, 333B33, 356B11, 356B21	333B42, 333B53, 356A12, 356A22	356A02, 356A15, 356A16, 356A17
Ordering Information			
25-Piece Bag of Easy-Mount Swivel Clips	080B182	080B184	080B186
Notes			
Actual attainable frequency limits may be higher than specified, particularly for lower weight accelerometers, and may differ depending on axis of motion. An interface of silicone grease between clip and accelerometer aids in mechanical coupling to improve attainable frequency range.			

Adhesives

Many adhesives have been successfully used for securing mounting bases to test objects. These include epoxies, waxes, glues, gels, and dental cement. Some provide more permanent attachment than others. Stiffer adhesives provide better transmission of high frequencies. Adhesives should be selected which perform adequately for the required application and environmental conditions. PCB® offers petro wax and quick bonding gel.

Adhesives

Model 080A90
Quick Bonding Gel

Model 080A109
Petro Wax

Model Number	Description	Quantity Provided
080A24	Petro Wax	4 Squares, 1 x 1 x 0.25 in ea.
080A109	Petro Wax	1 Squares, 1 x 1 x 0.25 in
080A47	Petro Wax	175 gm Box
080A90	Quick Bonding Gel	1 Tube, 0.10 oz (3 gm)

Tips from Techs

How do I remove an adhesive mount sensor?

A debonder should always be used to avoid sensor damage.

To avoid damaging the accelerometer, a debonding agent must be applied to the adhesive prior to sensor removal. With so many adhesives in use (glues, dental cement, epoxies, etc.), there is no universal debonder available. The debonder for the Loctite 454 adhesive that PCB® offers is Acetone. If you are using anything other than Loctite 454, you will have to check with the individual manufacturer for the debonding recommendation. The debonding agent must be allowed to penetrate the surface in order to properly react with the adhesive, so it is advisable to wait a few minutes after applying before removing the sensor.

Tools

Removal tools help avoid sensor damage and assist with the removal of adhesively mounted "teardrop"-style accelerometers. The shear force applied, snaps the bond of most glues and epoxies.

Probe tips install onto accelerometers to enable their use as handheld vibration sensors. This technique is useful if installation space is severely limited or for determining installation locations where vibration is most prevalent.

Tools

Model Number	Applicable Sensor(s)
039A27	352A21, 352C22, 357A09, 357C10, 352A25
039A26	352C23, 352A73
039A28	352A24, 357A07
039A29	357A08, 357A19
039A07	740B02
039A31	352A56
039A32	352A71, 352A72
039A08	0.4 in (10.2 mm) Cube Shaped Accelerometers
039A09	0.45 in (11.4 mm) Cube Shaped Accelerometers
039A10	0.55 in (14 mm) Cube Shaped Accelerometers
039A12	0.8 in (20.3 mm) Cube Shaped Accelerometers
039A33	0.25 in (6.3mm) Cube Shaped Accelerometers

Model 080A09
Probe Tip with 10-32 tapped hole

Model 076A22
BNC connector tool
Helps grip BNC's for connection to crowded panels

Removal tool for cube shaped accelerometers
Models 039A08, 039A09, 039A10, & 039A12,

Removal tool for miniature teardrop accelerometers
Models 039A27, 039A26, 039A28, & 039A29

Magnetic Mounting Bases

Magnetic mounting bases allow a convenient, temporary method of installing accelerometers to ferrous, magnetic surfaces. Select a magnetic base with a larger diameter than the accelerometer base.

Tips from Techs Always exercise caution when using a magnetic base, as the attractive installation forces can cause excessive shock to the sensor. It is recommended to install the magnet base to the test object on an edge and then "roll" the assembly gently into position; or install the magnet base to the test object first, and then attach the sensor.

Magnetic Mounting Bases

Model 080A30

Model 080A27

Model 080A179

Model 080A130, 131, 132

Model 080A54

Model Number	Diameter	Thickness		Mounting	Force		Uses
080A30	3/8 in hex	0.23 in	5.84 mm	5-40 Thread	2.5 lb	11 N	Miniature, 2 gm Accelerometers
M080A30	3/8 in hex	0.2 in	5.08 mm	M3 x 0.5 Thread	2.5 lb	11 N	Miniature, 2 gm Accelerometers
080A27	3/4 in hex	0.27 in	6.86 mm	10-32 Stud	12 lb	54 N	General Purpose
080A179	0.75 in	0.40 in	10.2 mm	10-32 Thread	12 lb	54 N	General Purpose
080A54	1-3/8 in hex	0.49 in	12.45 mm	1/4-28 Stud	50 lb	225 N	Industrial Accelerometers
080A130	0.75 in	0.72 in	18.29 mm	1/4-28 Thread	15 lb	68 N	For Curved Surfaces
080A131	1.1 in	1.02 in	25.9 mm	1/4-28 Thread	35 lb	158 N	For Curved Surfaces
080A132	1.5 in	1.25 in	31.8 mm	1/4-28 Thread	55 lb	225 N	For Curved Surfaces

Mounting Studs and Screws

Mounting studs are used to secure the accelerometer to the test object. To ensure accurate measurements, always mount the accelerometer with the recommended mounting torque and avoid bottoming the stud into the test object's or accelerometer's tapped mounting hole. The use of a stud with a shoulder will usually avoid bottoming, however, ensure that the base of the sensor is counter-bored to accept the shoulder. Once installed, the accelerometer's base should be in close contact with the test object surface.

Mounting Studs & Screws

Style "A"

Model 081A08

Style "B"

Model 081B05

Style "C"

Model 081B45

Style "D"

Model 081A21

Style "E"

Model 080A149

Model Number	Mounting			Comment	Style
081A27	5-40 Stud	to	5-40 Stud	BeCu, For Some Triaxial Accelerometers	B
081A90	5-40 Stud	to	10-32 Stud	Adaptor Stud, BeCu	A
080A149	5-40 Thread	to	10-32 Stud	Adaptor Plate, 0.5" Dia. with 7/16" Flats	E
080A84	5-40 Thread	to	10-32 Stud	Adaptor Plate, 0.75" Dia. with Knurl	E
M080A149	M3 x 0.5 Thread	to	10-32 Stud	Adaptor Plate, 0.5" Dia. with 7/16" Flats	E
080A85	M3 x 0.5 Thread	to	10-32 Stud	Adaptor Plate, 0.75" Dia. with Knurl	E
080M260	6-32 Thread	to	10-32 Stud	Adaptor Plate, 0.75" Dia., Knurled with 5/8" Flats	E
081B05	10-32 Stud	to	10-32 Stud	with Shoulder, BeCu, For Most Accelerometers	B
081A21	10-32 Stud	to	10-32 Stud	Electrical Isolation Mounting Pad/Stud, 0.75" Hex	D
081C21	10-32 Stud	to	10-32 Stud	Electrical Isolation Mounting Pad/Longer Stud, 0.75" Hex	D
M081B23	10-32 Stud	to	M5 x 0.8 Stud	Adaptor Stud, BeCu	A
M081B05	10-32 Stud	to	M6 x 0.75 Stud	Adaptor Stud, with Shoulder, BeCu	A
M081A18	10-32 Stud	to	M6 x 1 Stud	Adaptor Stud, with Shoulder, Stainless Steel	A
081A08	10-32 Stud	to	1/4-28 Stud	Adaptor Stud, BeCu	A
081B20	1/4-28 Stud	to	1/4-28 Stud	With Shoulder, BeCu	B
081A96	1/4-28 Stud	to	1/4-28 Stud	Stainless Stl. for Model 350A96 Shock Accelerometer	B
M081B20	1/4-28 Stud	to	M6 x 0.75 Stud	Adaptor Stud, with Shoulder, BeCu	A
081B45	6-32 thd x 0.63 inch length	—	—	Cap Screw for Series 355 Ring Shaped Accelerometers	C
M081B45	M3 x 0.5 thd x 16 mm length	—	—	Cap Screw for Series 355 Ring Shaped Accelerometers	C
081B36	2-56 thd x 0.375 inch length	—	—	Cap Screw for 355B12 & 357A06	C
M081B36	M2 x 0.4 thd x 0.37 inch length	—	—	Cap Screw for 355B12 & 357A06	C
081B60	10-32 thd x 0.63 inch length	—	—	Cap Screw for 354C02 & 354C03	C

Triaxial Mounting Adaptors

Adapts three standard, single axis accelerometers for monitoring vibration in three orthogonal axes. Hex size listed represents the maximum allowable hex size for the installed single axis accelerometers.

Triaxial Mounting Bases

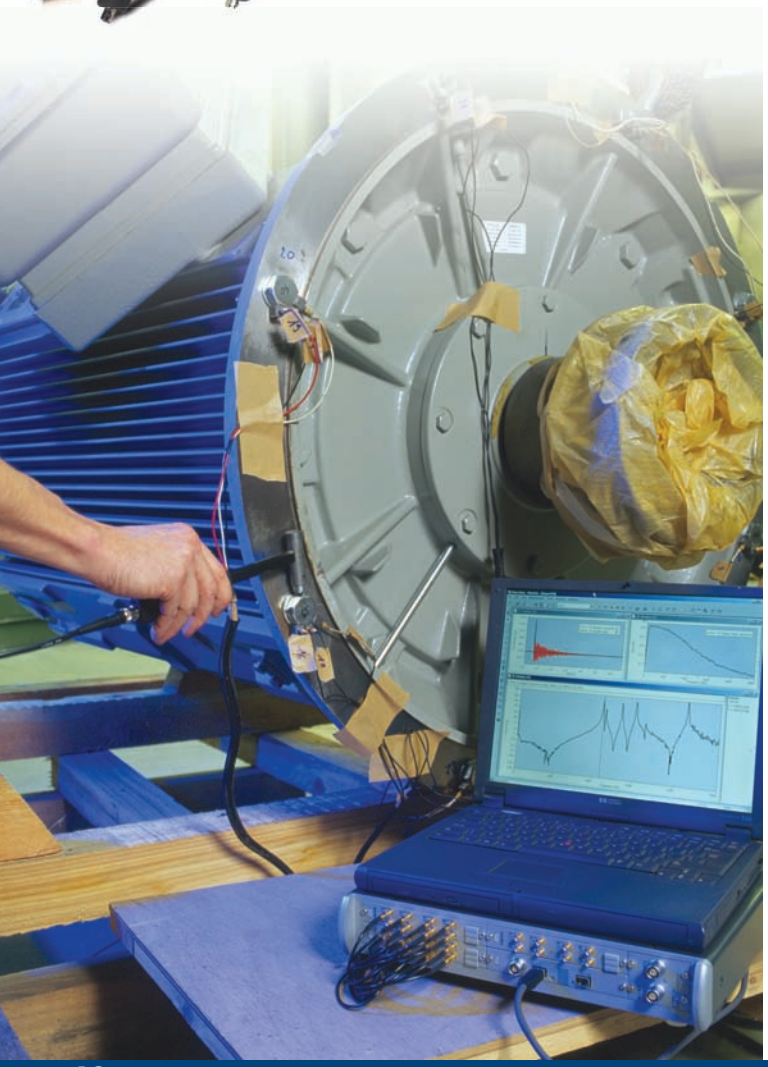
Style "A"

Style "B"

Style "C"

Model Number	Dimensions	Material	Mounting via	Accel. Fasteners	Max. Hex	Style
080B16	0.37 in (9.4 mm) Cube	Anodized Aluminum	10-32 Thread	5-40 Thread	5/16 in	A
M080B16	0.37 in (9.4 mm) Cube	Anodized Aluminum	10-32 Thread	M3 x 0.5 Thread	5/16 in	A
080A196	0.44 in (11.18 mm) Cube	Anodized Aluminum	10-32 Thread	5-40 Thread	3/8 in	A
080A17	0.812 in (20.62 mm) Cube	Stainless Steel	10-32 Screws	10-32 Thread	3/8 in	B
M080A17	0.812 in (20.62 mm) Cube	Stainless Steel	M5 x 0.8 Screws	M5 x 0.8 Thread	3/8 in	B
080B10	0.866 in (22 mm) Cube	Stainless Steel	8-36 Screws	10-32 Thread	1/2 in	B
M080B10	0.866 in (22 mm) Cube	Stainless Steel	M4 x 0.7 Screws	M6 x 0.75 Thread	1/2 in	B
080C10	0.866 in (22 mm) Cube	Anodized Aluminum	8-36 Screws	10-32 Thread	1/2 in	B
080A187	0.875 x 0.875 x 0.665 in (22.23 x 22.23 x 16.89 mm)	Anodized Aluminum	4-40 Screws	6-32 Thread	For Ring Type	C
080A180	1.00 in (25.4 mm) Cube	Titanium	10-32 Screws	1/4-28 Thread	7/8 in	C
M080A180	1.00 in (25.4 mm) Cube	Titanium	M5 x 0.8 Screws	M6 x 0.75 Thread	7/8 in	C
080B11	1.24 in (31.5 mm) Cube	Anodized Aluminum	10-32 Screws	10-32 Screws	7/8 in	B
M080B11	1.24 in (31.5 mm) Cube	Anodized Aluminum	M5 x 0.8 Screws	10-32 Screws	7/8 in	B
080A62	1.23 in (31.2 mm) Cube	Stainless Steel	10-32 Screws	1/4-28 Screws	7/8 in	B
080A57	1.48 in (37.6 mm) Cube	Stainless Steel	10-32 Screws	1/4-28 Screws	1-1/4 in	B
M080A57	1.48 in (37.6 mm) Cube	Stainless Steel	M5 x 0.8 Screws	1/4-28 Screws	1-1/4 in	B
Model	**Dimensions**	**Material**	**Mounting via**	**Accel. Fasteners**	**Note**	
080A194	0.28 in (7.11 mm) Cube	Anodized Aluminum	Adhesive	Adhesive	For Teardrop Accelerometers	
080A114	0.90 in (22.86 mm) Cube	Aluminum	10-32 Thread	10-32 Electrical Jack	Use Only with Models 333B31, 333B41 or 333B51	
080A153	1.265 in (32.13 mm) Cube	Delrin	10-32 Thread	4-40 Screws	Use with Series 3711	
080A208	1.01 in (25.65 mm) Cube	Anodized Aluminum	6-32 Screws	4-40 Screws	Use with Series 3741	
080A204	1.23 in (31.2 mm) Cube	Anodized Aluminum	10-32 Screws	10-32 Thread	Use with 393B04 or B05	
080A213	0.6 x 0.8 0.36 in (15.2 x 20.3 x 9.1 mm)	Titanium	8-32 Screws	4-40 Screws	Use with Series 3991	

Impact Hammers



Highlights

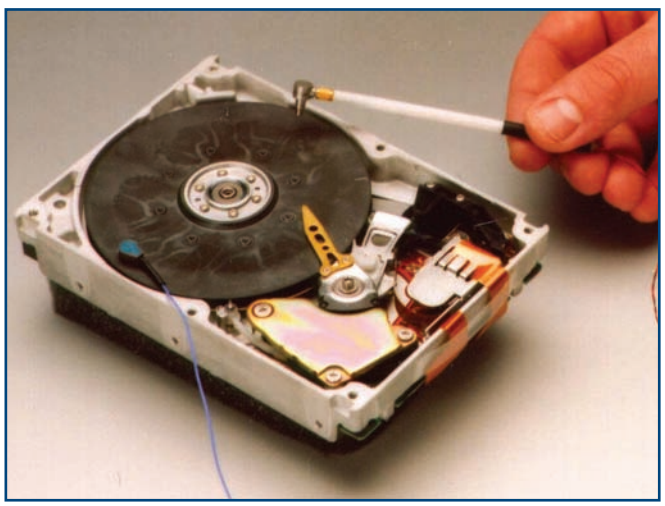
- Modally Tuned® to provide more consistent results
- Variety of hammers to suit any size test object
- Assortment of tips offer frequency tailored impulse

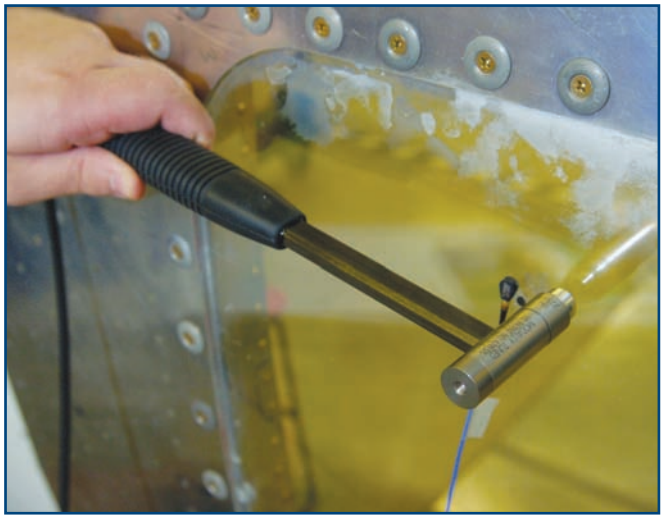
Each PCB® Modally Tuned®, ICP® instrumented impact hammer features a rugged, force sensor that is integrated into the hammer's striking surface.

"Modal Tuning" is a feature that ensures the structural characteristics of the hammer do not affect measurement results. This is accomplished by eliminating hammer resonances in the frequency range of interest from corrupting the test data, resulting in more accurate and consistent measurements.

The force sensor serves to provide a measurement of the amplitude and frequency content of the energy stimulus that is imparted to a test object. Accelerometers are used in conjunction with the hammer to provide a measurement of the object's structural response due to the hammer blow. A variety of tips supplied with each hammer permit the energy content of the force impulse to be tailored to suit the requirements of the item under test.

Using multi-channel data acquisition and analysis software, the test engineer is able to ascertain a variety of mechanical properties leading to an understanding of an object's structural behavioral characteristics. Items analyzed can include resonance detection, mode shapes, transfer characteristics, and structural health – such as crack and fatigue detection.





Impact Hammers

Applications

- Structure Health Testing
- Resonance Determination
- Modal Analysis

Impact Hammers

Model Number	086E80	086C01	086C03
Sensitivity	100 mV/lbf 22.5 mV/N	50 mV/lbf 11.2 mV/N	10 mV/lbf 2.25 mV/N
Measurement Range	± 50 lbf pk ± 220 N pk	± 100 lbf pk ± 440 N pk	± 500 lbf pk ± 2200 N pk
Resonant Frequency	≥ 100 kHz	≥ 15 kHz	≥ 22 kHz
Sensing Element	Quartz	Quartz	Quartz
Sealing	Epoxy	Epoxy	Epoxy
Hammer Mass	4.8 gm	100 gm	160 gm
Head Diameter	0.25 in 6.3 mm	0.62 in 1.57 cm	0.62 in 1.57 cm
Tip Diameter	0.10 in 2.5 mm	0.25 in 0.63 cm	0.25 in 0.63 cm
Hammer Length	4.2 in 107 mm	8.5 in 21.6 cm	8.5 in 21.6 cm
Electrical Connection Position	Bottom of Handle	Bottom of Handle	Bottom of Handle
Extender Mass Weight	1.25 gm	25 gm	75 gm
Electrical Connector	5-44 Coaxial Jack	BNC Jack	BNC Jack
Supplied Accessories			
Mounting Stud	—	(2) 081B05	(2) 081B05
Extender Mass	084A13	084A06	084A08
Hard Tip	—	084B03	084B03
Medium Tip	—	084B04	084B04
Soft Tip	—	(2) 084C05	(2) 084C05
Super Soft Tip	—	(2) 084C11	(2) 084C11
Tip Cover	084A28	(2) 085A10	(2) 085A10
NIST Calibration	HCS-2	HCS-2	HCS-2
Cable	018G10	—	—
Wax	080A109	—	—
Plastic Handle	084A14	—	—
Aluminum Handle	084A17	—	—
Additional Version			
Alternative Sensitivity	—	—	086C04 - 5 mV/lbf

Tips from Techs

How do I know which impact hammer to select for my application?

The general rule of thumb to follow is the larger the structure to excite, the larger the impact hammer required. Some selection guidelines are as follows:

086E80 - Printed Circuit Boards & Hard Drives

086C01 – Lightly Damped Panels & Frames

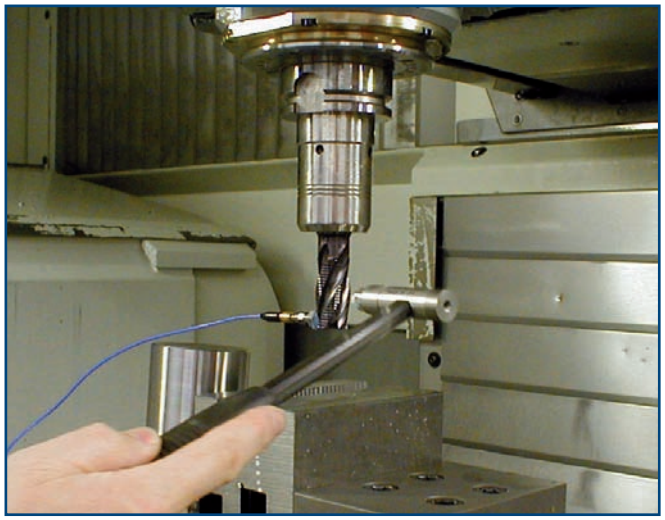
086C02, C03, & C04 – Medium sized structures such as Car Frames, Engines, & Machined Parts

086D05 – Heavier sized components such as Pumps & Compressors

086D20 – Heavy Structures such as Tool Foundations & Storage Tanks

086D50 – Large Structures such as Buildings, Bridges, & Ships

Impact Hammers



Impact Hammers

Model Number	086D05	086D20	086D50
Sensitivity	1 mV/lbf 0.23 mV/N	1 mV/lbf 0.23 mV/N	1 mV/lbf 0.23 mV/N
Measurement Range	± 5000 lbf pk ± 22,240 N pk	± 5000 lbf pk ± 22,240 N pk	± 5000 lbf pk ± 22,240 N pk
Resonant Frequency	≥ 22 kHz	≥ 22 kHz	≥ 5 kHz
Sensing Element	Quartz	Quartz	Quartz
Sealing	Epoxy	Hermetic	Hermetic
Hammer Mass	0.32 kgm	1.1 kgm	5.5 kgm
Head Diameter	1.0 in 2.5 cm	2.0 in 5.1 cm	3.0 in 7.6 cm
Tip Diameter	0.25 in 0.63 cm	2.0 in 5.1 cm	3.0 in 7.6 cm
Hammer Length	9.0 in 22.7 cm	14.5 in 37 cm	35 in 89 cm
Electrical Connection Position	Bottom of Handle	Bottom of Handle	Bottom of Handle
Extender Mass Weight	200 gm	—	—
Electrical Connector	BNC Jack	BNC Jack	BNC Jack
Supplied Accessories			
Mounting Stud	(2) 081B05	—	—
Extender Mass	084A09	—	—
Hard Tip	084B03	084A63	084A32
Medium Tip	084B04	084A62	—
Soft Tip	(2) 084C05	084A61	084A31
Super Soft Tip	084A50	084A60	—
Tip Cover	(2) 085A10	—	—
NIST Calibration	HCS-2	HCS-2	HCS-2

Cable Assemblies & Connector Adaptors

Highlights

- Coaxial Cable Assemblies
- 4-Connector Cable Assemblies
- Custom Cable Assemblies
- Cable Connectors
- Coaxial Custom Cable Assemblies
- Multi-conductor Custom Cable Assemblies
- Multi-conductor Cables
- Patch Panels
- Connector Adaptors

Coaxial Cable Assemblies

Coaxial Cable Assemblies

Base Model	1 ft (0.3 m)	3 ft (0.9 m)	5 ft (1.5 m)	10 ft (3.0 m)	20 ft (6.1 m)	30 ft (9.1 m)	50 ft (15.2 m)	Construct cable assembly model by combining base model with desired length, e.g., 002C10.	
030A		03	05	10	20	30	50	PTFE, Low Noise, Miniature	3-56 Plug to 10-32 Plug
030C			05	10	20	30	50	PTFE, Low Noise, Miniature	3-56 Plug to BNC Plug
018G		03	05	10	20	30		PVC, Miniature	5-44 Plug to 10-32 Plug
003G		03	05	10	20	30		TFE, Low Noise	5-44 Plug to 10-32 Plug
002P		03	05	10	20	30		FEP	5-44 Plug to BNC Plug
003P		03	05	10	20	30		TFE, Low Noise	5-44 Plug to BNC Plug
018C		03	05	10	20	30		PVC, Miniature	5-44 Plug to BNC Plug
030B			05	10	20			PTFE, Low Noise, Miniature	M3 Plug to 10-32 Plug
003R			05	10	20			TFE, Low Noise	M3 Plug to 10-32 Plug
002A		03	05	10	20	30	50	FEP	10-32 Plug to 10-32 Plug
003A	01	03	05	10	20	30	50	TFE, Low Noise	10-32 Plug to 10-32 Plug
023A				10				Hardline	10-32 Plug to 10-32 Jack
002C		03	05	10	20	30	50	FEP	10-32 Plug to BNC Plug
003C		03	05	10	20	30	50	TFE, Low Noise	10-32 Plug to BNC Plug
002B	01	03						FEP	10-32 Plug to BNC Jack
003B	01	03						TFE, Low Noise	10-32 Plug to BNC Jack
003U				10				TFE, Low Noise	SMB Female Plug to SMB Female Plug
003V				10				TFE, Low Noise	SMB Female Plug to BNC Plug
002T		03	05	10	20	30		FEP	BNC Plug to BNC Plug
003D		03		10	20			TFE, Low Noise	BNC Plug to BNC Plug
012A		03	05	10	20	30	50	PVC, RG58/U	BNC Plug to BNC Plug
012E				10	20		50	PVC, RG58/U	2-Socket Env. Sealed to BNC Plug
012R				10	20		50	PVC, RG58/U	2-Socket MIL to BNC Plug

3-56 Plug

5-44 Plug

10-32 Plug

10-32 Jack

BNC Plug

BNC Jack

M3 Plug

SMB Plug

2-Socket Plug

2-Socket
Env. Sealed Plug

Series 018C

Model 023A10

Series 002C

Series 003A

Series 012A

Coaxial Cable Specifications

Model	002	003	012	018	030
Cable Style	General Purpose	Low Noise	General Purpose	General Purpose	Low Noise
Temperature Range	-130 to +400 °F -90 to +204 °C	-320 to +500 °F -196 to +260 °C	-40 to +176 °F -40 to +80 °C	-22 to +221 °F -30 to +105 °C	-130 to +500 °F -90 to +260 °C
Impedance	50 Ohm	50 Ohm	52 Ohm	32 Ohm	50 Ohm
Capacitance	29 pF/ft 95 pF/m	30 pF/ft 98 pF/m	29 pF/ft 95 pF/m	55 pF/ft 180 pF/m	30 pF/ft 98 pF/m
Cable Jacket Material	FEP	TFE	PVC	PVC	PTFE
Cable Jacket Diameter	0.075 in 1.9 mm	0.079 in 2.01 mm	0.193 in 4.9 mm	0.054 in 1.37 mm	0.042 in 1.09 mm

Other Coaxial Cable Specifications

Model	005	006	023	038	098
Cable Style	Ruggedized	Low Noise Ruggedized	Hardline	Low Noise	Low Noise Flexible
Temperature Range	-67 to +275 °F -55 to +135 °C	-67 to +275 °F -55 to +135 °C	-300 to +1200 °F -184 to +650 °C	-58 to +250 °F -50 to +121 °C	-130 to +500 °F -90 to +260 °C
Impedance	50 Ohm	50 Ohm	—	50 Ohm	50 Ohm
Capacitance	29 pF/ft 95 pF/m	30 pF/ft 98 pF/m	100 pF/ft 328 pF/m	30 pF/ft 100 pF/m	35 pF/ft 115 pF/m
Cable Jacket Material	Polyolefin over Steel Braid	Polyolefin over Steel Braid	Stainless Steel	Polyurethane	TFE
Cable Jacket Diameter	0.200 in 5.08 mm	0.200 in 5.08 mm	0.059 in 1.5 mm	0.119 in 3.02 mm	0.079 in 2.01 mm

4-Conductor Cable Assemblies

4-Conductor Cable Assemblies

Base Model	5 ft (1.5 m)	10 ft (3.0 m)	15 ft (4.6 m)	20 ft (6.1 m)	25 ft (7.6 m)	30 ft (9.1 m)	50 ft (15.2 m)	Construct cable assembly model by combining base model with desired length, e.g., 034G20.	
034H	05	10		20		30	50	FEP, Lightweight	Mini 4-Socket Plug to (3) 10-32 Plugs
034K	05	10		20		30	50	FEP, Lightweight	Mini 4-Socket Plug to (3) BNC Plugs
019B	05	10	15	20		30		Silicone, Flexible, Lightweight	Mini 4-Socket Plug to (3) BNC Plugs
010P	05	10		20		30	50	FEP, General Purpose	4-Socket Plug to Pigtails
034A	05	10		20		30	50	FEP, Lightweight	4-Socket Plug to Pigtails
010D	05	10	15	20	25	30		FEP, General Purpose	4-Socket Plug to 4-Socket Plug
034D	05	10		20		30	50	FEP, Lightweight	4-Socket Plug to 4-Socket Plug
078D	05	10		20		30	50	Polyurethane, Flexible	4-Socket Plug to 4-Socket Plug
010F	05	10	15	20	25	30	50	FEP, General Purpose	4-Socket Plug to (3) 10-32 Plugs
034F	05	10		20		30	50	FEP, Lightweight	4-Socket Plug to (3) 10-32 Plugs
078F		10	15		25			Polyurethane, Flexible	4-Socket Plug to (3) 10-32 Plugs
010G	05	10	15	20	25	30	50	FEP, General Purpose	4-Socket Plug to (3) BNC Plugs
034G	05	10	15	20	25	30	50	FEP, Lightweight	4-Socket Plug to (3) BNC Plugs
036G	05	10	15	20	25	30		Silicone, Flexible	4-Socket Plug to (3) BNC Plugs
078G	05	10	15	20	25	30	50	Polyurethane, Flexible	4-Socket Plug to (3) BNC Plugs


Mini 4-Socket Plug

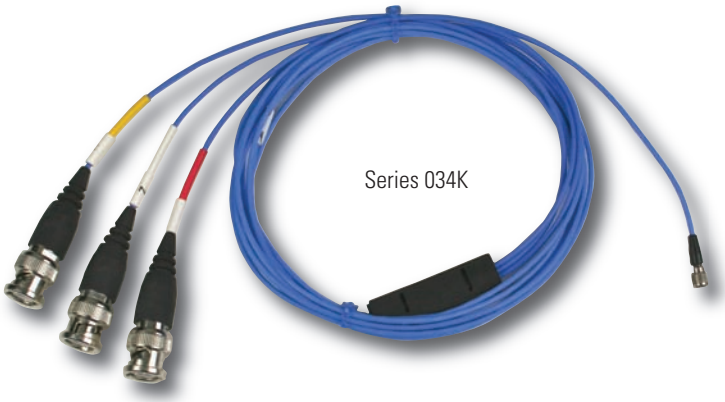

4-Socket Plug


BNC Plug


10-32 Plug


Series 034D


Series 010F


Series 034K


Series 010G

4-Conductor Cable Specifications

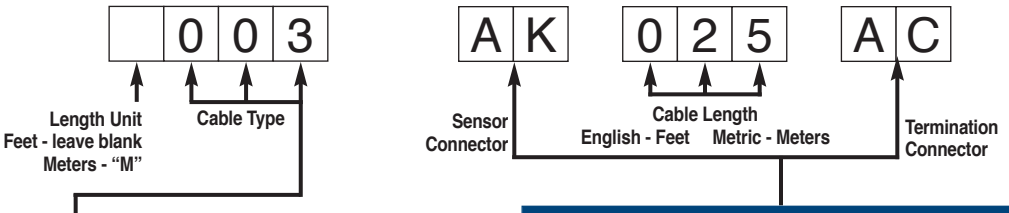
Model	010	034	019	036	078
Cable Style	General Purpose	Low Noise	Flexible Lightweight	Flexible	Flexible
Temperature Range	-130 to +392 °F -90 to +200 °C	-130 to +392 °F -90 to +200 °C	-76 to +500 °F -60 to +260 °C	-76 to +392 °F -60 to +200 °C	-58 to +185 °F -50 to +85 °C
Capacitance	16 pF/ft 52.4 pF/m	14 pF/ft 46 pF/m	15 pF/ft 49.2 pF/m	15 pF/ft 48 pF/m	25 pF/ft 81 pF/m
Cable Jacket Material	FEP	FEP	Silicone	Silicone	Polyurethane
Cable Jacket (Diameter)	0.1 in 2.54 mm	0.077 in 1.96 mm	0.070 in 1.77 mm	0.104 in 2.64 mm	0.119 in 3.02 mm

Custom Cable Assemblies

How to Configure Custom Cable Models:

1. Choose the cable length format desired, either English (ft) or Metric (m) unit lengths.
2. Choose the desired raw cable type.
3. Choose desired sensor connector type.
4. Determine the cable length required in English (ft) or Metric (m) unit lengths.
5. Choose desired termination connector type.

Example:
Model 003AK025AC defines a 25 ft, low-noise cable with right angle 10-32 plug sensor connector, BNC plug termination connector.



Raw Cable Type

Coaxial Cables			Diameter		Max. Temp.	
002	General Purpose, White FEP Jacket	CE	0.075 in	1.9 mm	400°F	204°C
003	Low Noise, Blue TFE Jacket	CE	0.079 in	2.0 mm	500°F	260°C
005	Ruggedized 002 Type, General Purpose	CE	0.2 in	5.08 mm	275°F	135°C
006	Ruggedized 003 Type, Low Noise	CE	0.2 in	5.08 mm	275°F	135°C
012	RG-58/U, Black Vinyl Jacket	CE	0.193 in	4.90 mm	176°F	80°C
018	Lightweight, Black PVC Jacket		0.054 in	1.37 mm	221°F	105°C
030	Low Noise, Mini, PTFE Jacket	CE	0.043 in	1.1 mm	500°F	260°C
038	Low Noise, Blue Polyurethane Jacket	CE	0.119 in	3.02 mm	250°F	121°C
098	Flexible, Low Noise, Green TFE Jacket	CE	0.079 in	2.06 mm	500°F	260°C
Twisted/Shielded Pair Cable						
024	General Purpose, Black Polyurethane Jacket	CE	0.250 in	6.35 mm	250°F	121°C
032	Lightweight, FEP Jacket		0.085 in	2.16 mm	392°F	200°C
045	High Temperature, Red PFA Jacket	CE	0.204 in	5.18 mm	250°F	121°C
053	High Temperature, Red FEP Jacket	CE	0.157 in	3.99 mm	392°F	200°C
Shielded 4-Conductor Cable						
010	General Purpose, FEP Jacket	CE	0.1 in	2.54 mm	392°F	200°C
034	Lightweight, FEP Jacket	CE	0.077 in	1.96 mm	392°F	200°C
019	Lightweight, Blue Silicon Jacket	CE	0.068 in	1.73 mm	500°F	260°C
036	General Purpose, Blue Silicon Jacket	CE	0.104 in	2.64 mm	392°F	200°C
078	General Purpose, Blue Polyurethane Jacket	CE	0.119 in	3.02 mm	185°F	85°C
Hardline Cable						
013	Hardline, 2-conductor, Inconel Jacket		0.125 in	3.20 mm	1200 °F	650 °C
023	Hardline, Coaxial, 304L Stainless Steel Jacket		0.059 in	1.5 mm	1200 °F	650 °C
Miscellaneous Cable						
031	Red/White Twisted Pair, PTFE Jacket		0.03 in*	0.8 mm*	392°F	200°C
037	10-cond. Shielded, Black Poly Jacket		0.024 in	0.61 mm	250°F	121°C

* diameter of each conductor
The combination of cables and connectors listed are only recommended configurations; other configurations may be available. Consult PCB® before ordering.
CE designates that cable maintains CE conformance

Connector Types

Coaxial Cable Connectors	
EB	10-32 Plug
EJ	10-32 Plug (Spring Loaded)
AH	10-32 Plug (Hex)
AK	10-32 Plug (Right-Angle)
AW	10-32 Plug (Solder Adaptor)
FZ	10-32 Plug (for 023 Hardline Cabling)
AL	10-32 Jack
GA	10-32 Jack (for 023 Hardline Cabling)
AG	5-44 Plug
AF	5-44 Plug (Right-Angle)
EK	3-56 Plug
EP	M3 Plug
AC	BNC Plug
AB	BNC Jack
FW	SMB Plug
FX	SMB Jack
Multi-Lead Connectors (For Triaxial Sensors)	
AY	4-Socket Plug
CA	4-Pin Jack
EH	4-Socket Miniature Plug
HJ	4-Pin Miniature Jack
EN	9-Socket Plug
GJ	9-Pin Plug
JY	Splice Assembly to (3) EB Connectors
LA	Splice Assembly to (3) EJ Connectors
JZ	Splice Assembly to (3) AL Connectors
JW	Splice Assembly to (3) AC Connectors
JX	Splice Assembly to (3) AB Connectors
JS	Splice Assembly to (3) AY Connectors
Miscellaneous Connectors	
AE	2-Socket Plug MS3106 5/8-24 thd (with Environmental Boot)
AM	2-Socket Plug MS3106 5/8-24 thd
AP	2-Socket Plug MS3106 5/8-24 thd (with Strain Relief)
BP	2-Socket Plug MS3106 5/8-24 thd (High Temperature)
ET	2-Socket Plug MIL 7/16-27 thd (High Temperature)
GN	2-Socket Plug MIL 7/16-27 thd (for 013 Hardline Cabling)
GP	2-Pin Jack MIL 7/16-27 thd (for 013 Hardline Cabling)
LN	8-Pin Mini DIN (for 4-Wire Bridge)
BZ	Blunt Cut
DZ	Pigtail (Leads Stripped and Tinned for 3711/3713 Series)
JJ	Pigtail (Leads Stripped and Tinned for 3741 Series)
AD	Pigtail (Leads Stripped and Tinned for all Others)

Cable Connectors

AB **BNC Jack**
Max Temp 329 °F (165 °C)

AC **BNC Plug**
Max Temp 329 °F (165 °C)

AD **Pigtail** (leads stripped and tinned)
Max Temp 490 °F (254 °C)*

AE **2-Socket MS3106 Plug** (with environmental boot)
Max Temp 325 °F (163 °C)

AF **5-44 Coaxial Plug** (right angle)
Max Temp 392 °F (200 °C)

AG **5-44 Coaxial Plug** (straight)
Max Temp 500 °F (260 °C)

AH **10-32 Coaxial Plug** (straight, with wire locking hex)
Max Temp 450 °F (232 °C)

AK **10-32 Coaxial Plug** (right angle)
Max Temp 329 °F (165 °C)

AL **10-32 Coaxial Jack** (straight)
Max Temp 500 °F (260 °C)

AP **2-Socket MS3106 Plug** (with strain relief)
Max Temp 257 °F (125 °C)

AW **10-32 Coaxial Plug / Solder Adaptor** (user repairable)
Max Temp 500 °F (260 °C)*

AY **4-Socket Plug, 1/4-28 Thread** (for triaxial sensors)
Max Temp 325 °F (163 °C)

CA **4-Pin Jack, 1/4-28 Thread** (for triaxial sensors)
Max Temp 325 °F (163 °C)

EB **10-32 Coaxial Plug** (straight)
Max Temp 500 °F (260 °C)

EH **4-Socket Mini Plug, 8-36 Thread** (for triaxial sensors)
Max Temp 356 °F (180 °C)

EJ **10-32 Coaxial Plug** (straight, o-ring seal, spring loaded)
Max Temp 500 °F (260 °C)

EK **3-56 Coaxial Plug**
Max Temp 500 °F (260 °C)

EN **9-Socket Plug** (for triaxial capacitive accelerometers)
Max Temp 275 °F (135 °C)

EP **M3 Coaxial Plug**
Max Temp 500 °F (260 °C)

ET **2-Socket Plug, 7/16-27 Thread**
Max Temp 500 °F (260 °C)

FZ **10-32 Coaxial Plug** (for hardline cable)
Max Temp 900 °F (482 °C)

GA **10-32 Coaxial Jack** (for hardline cable)
Max Temp 550 °F (288 °C)

GN **2-Socket Plug, 7/16-27 Thread** (high temperature)
Max Temp 900 °F (482 °C)

GP **2-Pin Jack, 7/16-27 Thread** (high temperature)
Max Temp 900 °F (482 °C)

*Max Temp may be less depending upon cable application.

Custom Cable Assemblies

PCB® offers many standard cable assemblies, however, in the event that a standard cable assembly will not fulfill the requirements of the application, the ability to configure a custom cable assembly is offered. Start by ensuring compatibility of the connector type with the cable type desired from the chart below, and then configure the custom cable model number from the steps on the previous page.

Cable - Connector Compatibility Matrix

The following table provides compatibility information for cables and cable connectors. A "✓" denotes compatibility of the connector type shown in the rows going down the table with the cable type of the intersecting column going across the table.

Coaxial Custom Cable Assemblies

Cable	002	003	005	006	012	013	018	023	024	030	031	032	038	045	053	098
Connector																
AB	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔
AC	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔
AD	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔
AE		✔			✔				✔						✔	
AF	✔	✔	✔	✔			✔			✔						
AG	✔	✔	✔	✔			✔			✔	✔	✔	✔			✔
AH	✔	✔	✔	✔			✔			✔		✔				
AK	✔	✔	✔	✔			✔			✔		✔	✔			✔
AL	✔	✔	✔	✔			✔			✔	✔	✔				✔
AP	✔	✔	✔	✔	✔				✔			✔	✔	✔	✔	
AW											✔					
BP	✔	✔		✔									✔	✔	✔	✔
BZ	✔	✔	✔	✔	✔		✔		✔	✔	✔	✔	✔	✔	✔	✔
EB	✔	✔	✔	✔			✔			✔	✔	✔	✔			✔
EJ	✔	✔	✔	✔			✔			✔		✔	✔			✔
EK										✔						
EP	✔	✔	✔	✔			✔			✔						
ET														✔	✔	
FW	✔	✔	✔	✔			✔			✔						
FX	✔	✔														
FZ								✔								
GA								✔								
GN						✔										
GP						✔										

Multi-conductor Custom Cable Assemblies

Cable	010	019	034	036	037	078
Connector						
AD	✔	✔	✔	✔	✔	✔
AY	✔	✔	✔	✔		✔
BZ	✔	✔	✔	✔	✔	✔
CA	✔	✔	✔	✔		✔
DZ	✔		✔		✔	✔
EH		✔	✔			
EN					✔	
GJ					✔	
HJ			✔			
JJ	✔					
JS					✔	
JW	✔	✔	✔	✔		✔
JX	✔	✔	✔	✔		✔
JY	✔	✔	✔	✔		✔
JZ	✔	✔	✔	✔		✔
LA	✔	✔	✔	✔		✔

Multi-conductor Cables

Multi-conductor cables minimize tangles and reduce overall cable costs. They also offer numerous cable/termination variations to suit a particular transmission requirement, as well as the ability to consolidate several cables into one.

Model 009F "xx"
Flat ribbon cable
DB50 female to DB50 male
Specify "xx" length in feet

Model 009H "xx"
Shielded ribbon cable
DB50 female to DB50 male
Specify "xx" length in feet

Model 009L05
Multi-conductor cable
VXI to 4 BNC plugs
5 ft (1.5 m) length

Model 009S05
Multi-conductor cable
VXI to VXI
5 ft (1.5 m) length

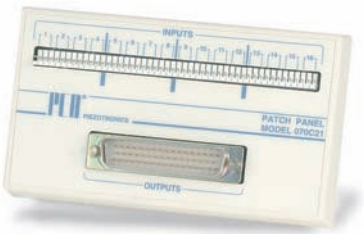
Model 009B "xx"
Ruggedized
Shielded multi-conductor cable
DB50 female to DB50 male
Specify "xx" length in feet

Model 009A "xx"
Ruggedized
Multi-conductor cable
DB50 female to 16 BNC Plugs
Specify "xx" length in feet

Patch Panels

Input patch panels serve as a central collection point for individual sensor cables installed in multi-channel measurement arrays. The sensor signal paths are then consolidated and transmission to readout or data acquisition equipment is accomplished by a single, multi-conductor cable.

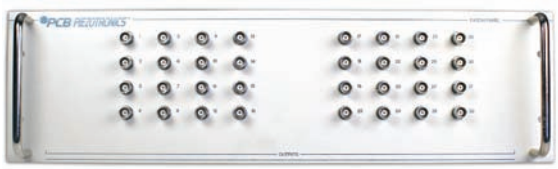
Output patch panels connect via multi-conductor cables to the output connectors on high density rack or modular signal conditioners. The sensor signal paths are then expanded to individual BNC's for each channel for subsequent connection to data acquisition equipment.



Model 070C21
16-channel input patch panel
16 IDC pin inputs
DB50 male output

Model 070C29
16-channel input patch panel
16 BNC jack and
16 IDC pin inputs
DB50 male output

Model 070A33
32-channel input patch panel
32 BNC jack and 32 IDC pin inputs
2 DB50 male outputs
Rack mount



Model 070A34
32-channel output patch panel
2 DB37 male inputs
4 DB37 female servo inputs
4 DB50 male HP outputs
32 BNC jack outputs
Rack mount

Connector Adaptors

070A02

Scope Input Adaptor
10-32 coaxial jack to BNC plug. For adapting BNC connectors for use with 10-32 coaxial plugs.

070A03

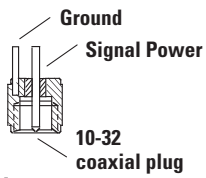
Connector Adaptor
10-32 coaxial plug to BNC jack. Converts 10-32 connectors for use with BNC plugs. Do not use on sensor connectors.

070A05

10-32 Coaxial Coupler
10-32 coaxial jack to 10-32 coaxial jack. Joins two cables terminating in 10-32 coaxial plugs.

070A08

Cable Adaptor
10-32 coaxial jack to BNC jack. Joins cables terminating in a BNC plug and a 10-32 coaxial plug.



070B09

Solder Connector Adaptor
10-32 coaxial plug to solder terminals. Excellent for high-shock applications. User-repairable.

BNC T Connector 070A11
BNC plug to two BNC jacks. Used as a cable splitter.

BNC Coupler 070A12
BNC jack to BNC jack. Joins two cables terminating in BNC plugs.

1/8 in max wall thickness
1/2 in mtg thd

Feed-thru Adaptor 070A13
10-32 coaxial jack to BNC jack. Bulkhead connects BNC plug to 10-32 coaxial jack.

1/4 in max wall thickness
5/16-32 in mtg thd

10-32 Hermetic Feed-thru 070A14
10-32 coaxial jack to 10-32 coaxial jack.

10-32 Coaxial Right Angle Adaptor 070A20
10-32 coaxial jack to 10-32 coaxial plug. For use in confined locations. For ICP® sensors only.

085A18

Plastic Protective Cap
Provides strain relief for solder connector adaptors, as well as protects 10-32 cable ends.

085A40

10-32 Coaxial Shorting Cap
Used to short charge output sensor connectors during storage and transportation.

076A05

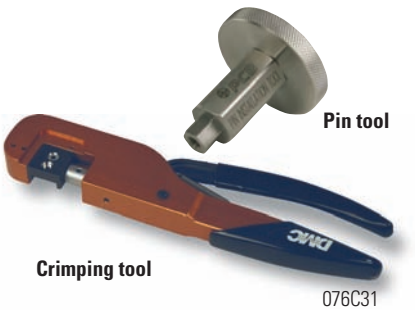
10-32 Coaxial Plug
Microdot connector, screw-on type.

076A25

Connector Tool
Used to install 076A05 screw-on type microdot connector.

EB

Coaxial Connector
10-32 crimp-on style coaxial connector. Requires tools contained in Model 076C31 kit.



076C31

10-32 Coaxial Crimp-on Connector Kit
Includes 1 pin insertion tool, 1 sleeve-crimping tool, and 20 Model "EB" connectors with cable strain reliefs. (Wire stripper and soldering iron not included).

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