



# MEMS DC Response Accelerometers

For low-frequency vibration and motion measurements

## Highlights

- Low noise – high resolution
- Measurement capability to 0 Hz
- Full-scale ranges from  $\pm 2g$  to  $\pm 200g$
- Lightweight titanium or aluminum housings
- Single-ended or differential output signal
- High shock protection
- Gas damping
- Hermetically sealed (Series 3711E and 3713E)



## Applications

- Driveability and ride & handling
- Component & system performance
- Vehicle & component durability
- Suspension, shock absorption and damping studies
- Aerospace vibration testing - flutter, gvt, etc.
- Simulated environmental testing with shakers & centrifuges
- Rocket launch loading and acceleration
- Aircraft flutter & flight testing
- Laboratory scale model testing

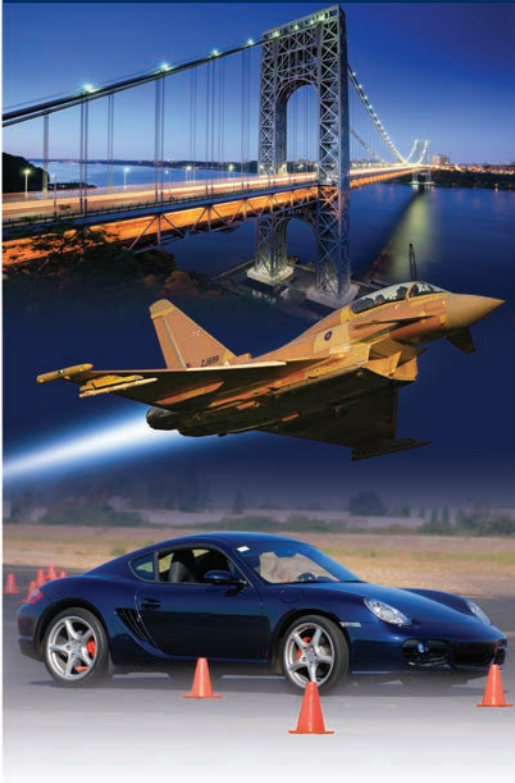
### Looking for a more precise way to measure low-frequency vibration and motion?

PCB® Series 3711E, 3713E, and 3741E MEMS DC response accelerometers were specifically designed to help test engineers take more reliable low-frequency vibration and motion measurements. Offered in full-scale ranges from 2g to  $\pm 200g$ , the accelerometers are available in single axis (Series 3711E and Series 3741E) and triaxial (Series 3713E) configurations. They also feature low spectral noise and high resolution, which makes them ideal for a wide variety of testing applications.

Electrically, the units offer a single-ended (Series 3711E and Series 3713E) or differential (Series 3741E) output signal with power, signal, and ground leads for each channel. Supply voltage regulation permits operation from +6 VDC to +30 VDC and the low-noise, low-impedance output signal may be transmitted over long cable lengths without degradation.



## Series 3711E, 3713E & 3741E



### Rugged and Durable Series 3711E and 3713E MEMS DC Response Accelerometers

Series 3711E and series 3713E have a hermitically sealed titanium case, enabling them to perform in harsh environments. The series is available in single and triaxial versions with a 10 ft (3m) integral cable or a multi-pin, threaded, electrical connector for easy installation and setup. Gas damping is used in all accelerometers in this series, and is used to mitigate the accelerometer output from saturation which can occur if the sensor is excited by random vibration. The advantage of gas over liquid damping is that gas is minimally affected by temperature changes.

### Precision Series 3741E MEMS DC Response Accelerometers

These accelerometers feature a low-profile and low mass hard anodized housing for added durability. This series offers a differential output signal for common-mode noise rejection and incorporate many advanced features including supply voltage regulation and temperature compensation for stable performance over the entire operational range. Each unit is provided with an integral, 4-conductor, 10ft (3m) shielded cable. An optional mounting adapter, Model 080A208 facilitates triaxial measurement configurations.

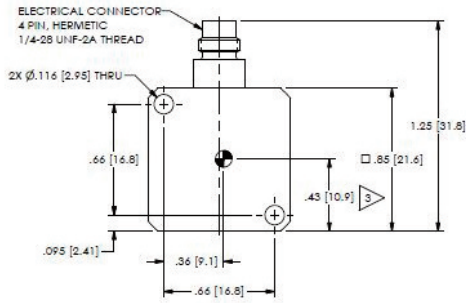
As with all PCB instrumentation, these sensors are complemented with toll-free assistance, 24-hour technical service, and are backed by a no-risk policy that guarantees total customer satisfaction or your money refunded.

Single Ended Output - Series 3713E and 3711E MEMS DC Response				
Sensitivity	Measurement Range (pk)	Frequency (Nom. $\pm 3$ dB)	Broadband Resolution (rms)	
3713E and 3711E				
10mV/g	$\pm 200$ g	0 to 3000Hz	3713E 3mg	3711E 4mg
40mV/g	$\pm 50$ g	0 to 2000Hz	1mg	1mg
80mV/g	$\pm 25$ g	0 to 1500Hz	0.3mg	0.5mg
200mV/g	$\pm 10$ g	0 to 1000Hz	0.2mg	0.2mg
1000mV/g	$\pm 2$ g	0 to 400Hz	0.1mg	0.1mg

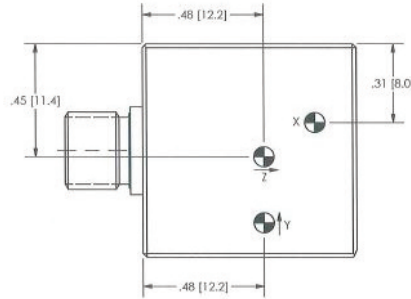
Single Ended Output - MEMS DC Response	3711E Single Axis	3713E Triaxial
Overload Limit (Shock)*	$\pm 5000$ g pk	$\pm 5000$ g pk
Temperature Range	-65 to +250°F -54 to +121°C	-65 to +250°F -54 to +121°C
Excitation Voltage	6 to 30 VDC	6 to 30 VDC
Housing Material	Titanium	Titanium
Sealing	Hermetic	Hermetic
Size (HxLxW)	0.45x0.85x0.85in 11.4x21.6x21.6mm	0.85in Cube 21.6mm Cube
Weight - integral cable style	65.0gm	119.0gm
Weight - connector style	16.3gm	22.7gm
Electrical Connector	1/4-28 4-pin or 10ft (3m) integral cable	9 pin or 10ft (3m) integral cable
Supplied Accessories	3711E Single Axis	3713E Triaxial
Easy Mount Clip	080A152	—
Adhesive Base	—	080A12
Mounting Screw/Stud	081A113 M081A113	081B05 M081B05
Additional Accessories	3711E Single Axis	3713E Triaxial
Triaxial Mounting Block	080A153	—
Mounting Cable Connector	AY	EN
Recommended Cable	010	037
*2g is 2000 peak		

Differential Output - Series 3741E MEMS DC Response			
Sensitivity	Measurement Range (pk)	Frequency (Nom. $\pm 3$ dB)	Broadband Resolution (rms)
20mV/g	$\pm 200$ g	0 to 3000Hz	5.6mg
40mV/g	$\pm 100$ g	0 to 2500Hz	2.8mg
80mV/g	$\pm 50$ g	0 to 2000Hz	1.0mg
160mV/g	$\pm 25$ g	0 to 1500Hz	0.6mg
400mV/g	$\pm 10$ g	0 to 1000Hz	0.4mg
2000mV/g	$\pm 2$ g	0 to 400Hz	0.1mg

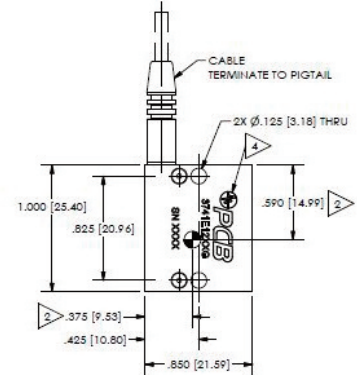
Differential Output - MEMS DC Response 3741E	
Overload Limit (Shock)*	$\pm 5000$ g pk
Temperature Range	-65 to +250°F -54 to +121°C
Excitation Voltage	6 to 30 VDC
Housing Material	Anodized Aluminum
Sealing	Epoxy
Size (HxLxW)	0.30x1.00x0.85in 7.62x25.4x21.6mm
Weight - without cable	9.9gm
Weight - connector style	16.3gm
Electrical Connector	10ft (3m) integral cable
Supplied Accessories	
Mounting Screw/Stud	(2) 081A103 M081A103
Additional Accessories	
Triaxial Mounting Block	080A208
* 2g is 2000g peak	



Series 3711E Drawing



Series 3713E Drawing



Series 3741E Drawing

**Model Numbering System**

**1) Series**

- 3741E Single axis, MEMS DC response accelerometer
- 3713E Triaxial, MEMS DC response accelerometer
- 3711E Single axis, MEMS DC response accelerometer

**2) Cable**

- 11 Multi-pin, threaded, electrical connector (3711 & 3713 only)
- 12 Standard, 10 ft. (3.0 m) integral cable and pigtail termination

**3) Measurement Range**

- 2G ± 2 g measurement range corresponding to 1000 mV/g sensitivity (3741E sensitivity of 2000 mV/g)
- 10G ± 10 g measurement range corresponding to 200 mV/g sensitivity (3741E sensitivity of 400 mV/g)
- 25G ± 25 g measurement range corresponding to 80 mV/g sensitivity (3741E sensitivity of 160 mV/g)
- 50G ± 50 g measurement range corresponding to 40 mV/g sensitivity (3741E sensitivity of 80 mV/g)
- 100G ± 100 g measurement range corresponding to 20 mV/g sensitivity (3741E sensitivity of 40 mV/g)
- 200G ± 200 g measurement range corresponding to 10 mV/g sensitivity (3741E sensitivity of 20 mV/g)

**4) Integral Cable Length (add only if selecting internal cable other than standard 10 ft - 3.0 m - length)**

/XXX Specify XXX as desired cable length in feet (specify MXXX for desired cable length in meters)

**5) Cable Termination**

- AY 4-pin plug (Series 3711E & 3741E only)
- DZ Pigtail, stripped and tinned ends (Series 3711E & 3713E only)
- EN 9-pin plug (Series 3713E only)
- HW 9-pin D-sub plug for mating to Model 478A30 signal conditioner (Series 3741E only)
- JJ Pigtail, stripped and tinned ends (Series 3741E only)
- LN 8-pin mini DIN for mating to Models 482C27 or 483C28 signal conditioners (Series 3741E only)
- LT 8-pin mini DIN for mating to Models 482C27 or 483C28 signal conditioners (Series 3711E only)

**Example**

3713E	11	10G	/005	DZ	Single axis MEMS DC response accelerometer, ± 10 g measurement range, 5 ft. (1.5 m) integral cable pigtail
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Recommended Accessories & Signal Conditioners for Series 3711E and 3713E MEMS DC Response Accelerometers



Model 010D10 Cable  
10 ft (3 m)  
4-pin plug to 4-pin plug



Model 037P10 Cable  
10 ft (3 m)  
9-pin plug to pigtails



Model 080A153  
Triaxial Mounting Block



Model 080A152  
Easy mount clip

IN-STOCK CABLE DESCRIPTIONS

	English	Metric		English	Metric
<b>Cabling for Single Axis Sensors</b> (Series 010 – 4-Conductor Cable)			<b>Cabling for Triaxial Sensors</b> (Series 037 – 10-Conductor Cable)		
<b>4-Pin Plug to 4-Pin Plug</b>			<b>9-Pin Plug to Pigtails</b>		
Model 010D05	5 ft	1.5 m	Model 037P05	5 ft	1.5 m
Model 010D10	10 ft	3.0 m	Model 037P10	10 ft	3.0 m
Model 010D20	20 ft	6.1 m	Model 037P20	20 ft	6.1 m
Model 010D30	30 ft	9.1 m	Model 037P30	30 ft	9.1 m
<b>4-Pin Plug to Pigtails</b>			<b>9-Pin Plug to Three 4-Pin Plugs</b>		
Model 010P05	5 ft	1.5 m	Model 037A10	10 ft	3.0 m
Model 010P10	10 ft	3.0 m	Model 037A20	20 ft	6.1 m
Model 010P20	20 ft	6.1 m	Model 037A30	30 ft	9.1 m
Model 010P30	30 ft	9.1 m			



Model 478A01  
Single-channel  
Unity gain  
Internal battery powered



Model 478B05  
3-channel  
Unity gain  
36 VDC powered  
Includes AC power adaptor  
Optional external battery pack

Recommended Accessory & Signal Conditioners for Series 3741E MEMS DC Response Accelerometers



Model 080A208  
Triaxial Mounting Block



Model 482C27  
4-channel  
Incremental gain  
Differential, single-ended  
Bridge & ICP® sensor types



Model 483C28  
8-channel  
Line-powered  
Bridge, Differential & ICP® sensor types



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