



# MEMS DC Response Accelerometers

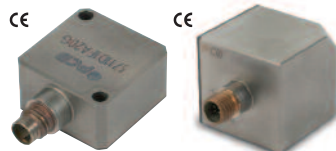
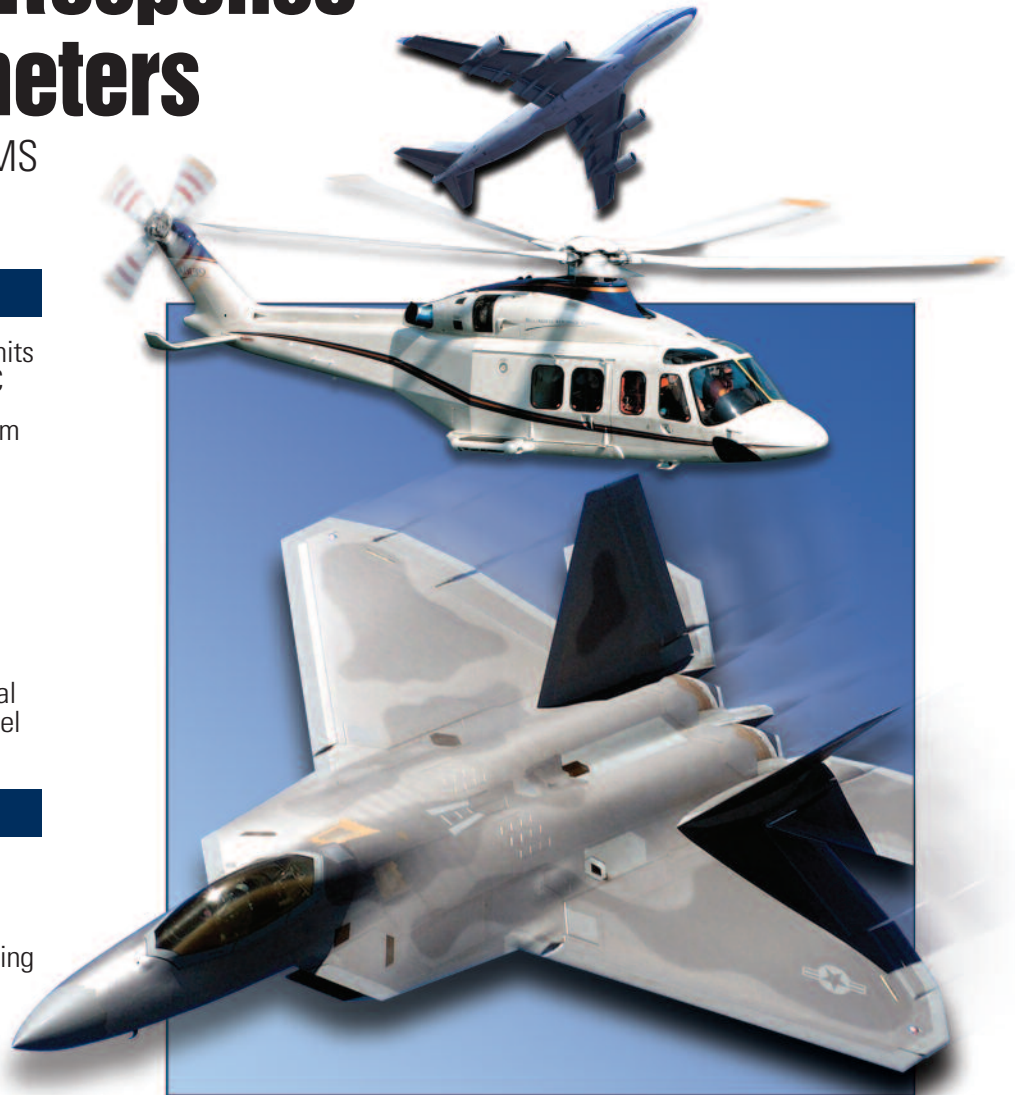
Gas-damped, silicon MEMS sensing elements

## Highlights

- Supply voltage regulation permits operation from + 5 to + 30 VDC
- Offered in full-scale ranges from  $\pm 2$  to  $\pm 200$  G
- Lightweight titanium and aluminum housings
- Constant & low frequency acceleration measurements
- Single ended or differential output signal with power, signal & ground leads for each channel

## Applications

- Aerospace vibration testing - flutter, GVT, etc.
- Simulated environmental testing with shakers & centrifuges
- Servohydraulic vehicular ride simulation & comfort studies
- Suspension, shock absorption and damping studies



Series 3711

Series 3713



Series 3741

PCB® Series 3711 (uniaxial), 3713 (triaxial), and 3741(uniaxial) MEMS DC response accelerometers are designed to measure low-frequency vibration and motion and are offered in full-scale ranges from  $\pm 2$  to  $\pm 200$  g to accommodate a variety of ground testing requirements. The units feature gas-damped, silicon MEMS sensing elements for uniform, repeatable performance and offer high frequency overload protection.

Electrically, the units offer a single ended or differential output signal with power, signal, and ground leads for each channel. Supply voltage regulation permits operation from + 5 to + 30 VDC and the low-noise, low-impedance output signal may be transmitted over long cable lengths without degradation.

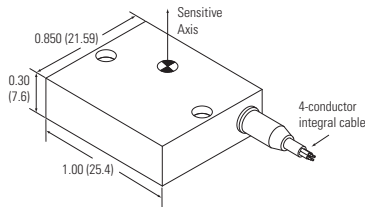


# Series 3741

**Precise and Low-Profile Series 3741 MEMS DC Response** sensors are low-profile and low-mass with mechanical overload stops and a hard-anodized aluminum housing for added durability. The units offer a differential output signal for common-mode noise rejection and incorporate many advanced features including supply voltage regulation and a proprietary temperature compensation circuit for stable performance over the entire operational temperature range. Each unit is provided with an integral, 4-conductor, 10 ft (3 m) shielded cable. An optional mounting adaptor facilitates triaxial measurement configurations.



**Series 3741**



**Series 3741**

Dimensions shown are in inches (millimeters)

## Differential Output – DC Response

Overload Limit (Shock)	Sensitivity	Measurement Range (pk)	Frequency ( $\pm 10\%$ )	Broadband Resolution (rms)
$\pm 10,000$ g pk	10 mV/g	$\pm 200$ g	0 to 2000 Hz	5.1 mg
$\pm 10,000$ g pk	20 mV/g	$\pm 100$ g	0 to 2000 Hz	4.5 mg
$\pm 10,000$ g pk	40 mV/g	$\pm 50$ g	0 to 2000 Hz	2.5 mg
$\pm 10,000$ g pk	66.7 mV/g	$\pm 30$ g	0 to 2000 Hz	2.5 mg
$\pm 5,000$ g pk	200 mV/g	$\pm 10$ g	0 to 200 Hz	1.1 mg
$\pm 5,000$ g pk	1000 mV/g	$\pm 2$ g	0 to 150 Hz	0.3 mg
Temperature Range	-65 to +250 °F -54 to +121 °C			
Excitation Voltage	6 to 30 VDC			
Housing Material	Anodized Aluminum			
Sealing	Epoxy			
Size (H x L x W)	0.30 x 1.00 x 0.85 in 7.62 x 25.4 x 21.6 mm			
Weight (without cable)	10 gm			
Electrical Connector	10 ft. (3 m) Integral Cable			
Output Configuration	Differential			
<b>Supplied Accessories</b>				
Mounting Screws/Studs	(2) 081A103 (2) M081A103			
<b>Additional Accessories</b>				
Triaxial Mounting Block	080A208			

## MODEL NUMBERING SYSTEM FOR SERIES 3741 MEMS DC RESPONSE ACCELEROMETERS

### 1.) Series

3741 Single axis, MEMS DC response accelerometer with standard, 10 ft. (3.0 m) integral cable and pigtail termination

### 2.) Full-scale output

D  $\pm 2$  VDC

### 3.) Excitation voltage

4 6 to 30 VDC

### 4.) Electrical connection

HB Shielded, 4-conductor, Teflon® jacket, integral cable (Series 010)

### 5.) Measurement Range

2G  $\pm 2$  g measurement range corresponding to 1000 mV/g sensitivity  
 10G  $\pm 10$  g measurement range corresponding to 200 mV/g sensitivity  
 30G  $\pm 30$  g measurement range corresponding to 66.7 mV/g sensitivity  
 50G  $\pm 50$  g measurement range corresponding to 40 mV/g sensitivity  
 100G  $\pm 100$  g measurement range corresponding to 20 mV/g sensitivity  
 200G  $\pm 200$  g measurement range corresponding to 10 mV/g sensitivity

### 6.) Integral cable length (add only if selecting integral cable other than standard 10 ft (3.0 m) length)

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

### 7.) Cable termination

HW 9-pin D-sub plug for mating to Model 478A30 signal conditioner

Example:

3741	D	4	HB	2G	/005	HW	Single axis DC response accelerometer, $\pm 2$ VDC full-scale output, 6 to 30 VDC excitation voltage, 5-ft integral cable, $\pm 2$ G measurement range, 9-pin D-sub plug cable termination.
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## Single Ended Output – DC Response

Sensitivity	Measurement Range (pk)	Frequency ( $\pm 10\%$ )	Broadband Resolution (rms)
10 mV/g	$\pm 200$ g	0 to 1500 Hz	5.3 mg
40 mV/g	$\pm 50$ g	0 to 1500 Hz	4.4 mg
100 mV/g	$\pm 20$ g	0 to 1500 Hz	3.6 mg
700 mV/g	$\pm 3$ g	0 to 150 Hz	1.1 mg

Model Number	3711 Single Axis	3713 Triaxial
Overload Limit (Shock)	$\pm 5000$ g pk	$\pm 5000$ g pk
Temperature Range	-65 to +250 °F -54.0 to +121 °C	-65 to +250 °F -54 to +121 °C
Excitation Voltage	5 to 30 VDC	5 to 30 VDC
Housing Material	Titanium	Titanium
Sealing	Hermetic	Hermetic
Size (H x L x W)	0.45 x 0.85 x 0.85 in 11.4 x 21.6 x 21.6 mm	1.1 in Cube 28 mm Cube
Weight	Connector style Integral cable style	78 gm 169 gm
Electrical Connector	1/4-28 4-Pin or 10 ft. (3 m) Integral Cable	9-Pin or 10 ft. (3 m) Integral Cable
Output Configuration	Single-Ended	Single-Ended

Supplied Accessories		
Easy Mount Clip	080A152	—
Adhesive Base	—	080A190
Mounting Screws/Studs	(2) 081A113 (2) M081A113	081A05 M081A05

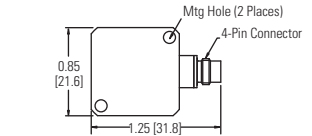
  

Additional Accessories		
Triaxial Mounting Block	080A153	—
Recommended Cables	010	037

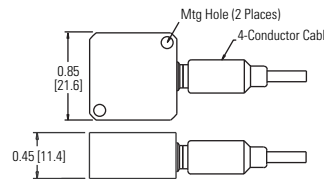
**Rugged and Durable Series 3711 and 3713 MEMS DC Response** sensors are hermetically sealed in a robust titanium housing allowing for a very stable and accurate measurement in the most severe operating environments. In addition, this series is inherently insensitive to base strain and transverse acceleration effects. Supply voltage regulation permits operation from + 5 to + 30 VDC and the single ended, low-noise, low-impedance output signal may be transmitted over long cable lengths without degradation. The series is available in single-axis and triaxial versions with a 10 ft (3 m) integral cable or a multi-pin, threaded, electrical connector for easy installation and setup.



**Series 3711**



**Series 3711 with 4-pin connector**

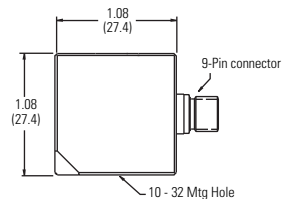


**Series 3711 with integral cable**

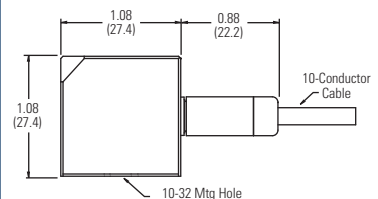
Dimensions shown are in inches (millimeters)



**Series 3713**



**Series 3713 with 9-pin connector**



**Series 3713 with integral cable**

Dimensions shown are in inches (millimeters)

## MODEL NUMBERING SYSTEM FOR SERIES 3711 & 3713 DC RESPONSE ACCELEROMETERS

### 1.) Series

3711 Single axis, high sensitivity, MEMS DC response accelerometer  
3713 Triaxial, high sensitivity, MEMS DC response accelerometer

### 2.) Full-scale output

D  $\pm 2$  VDC

### 3.) Excitation voltage

1 5 to 30 VDC

### 4.) Electrical connection

- FA 4-pin hermetic jack (applies only to Series 3711 single axis sensors)
- FB 010 Series 4-conductor integral cable (applies only to Series 3711 single axis sensors)
- FD 9-pin hermetic jack (applies only to Series 3713 triaxial sensors)
- FE 037 Series 10-conductor integral cable (applies only to Series 3713 triaxial sensors)

### 5.) Measurement Range

- 3G  $\pm 3$  g measurement range corresponding to 700 mV/g sensitivity
- 20G  $\pm 20$  g measurement range corresponding to 100 mV/g sensitivity
- 50G  $\pm 50$  g measurement range corresponding to 40 mV/g sensitivity
- 200G  $\pm 200$  g measurement range corresponding to 10 mV/g sensitivity

### 6.) Integral cable length (add only if selecting integral cable other than standard 10 ft (3.0 m) length)

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

### 7.) Cable termination

- AY 4-pin plug (applies only to Series 3711 single axis sensors)
- BZ Blunt cut
- DZ Pigtail, stripped and tinned ends
- EN 9-pin plug (applies only to Series 3713 triaxial sensors)

Example:

3711 D 1 FB 3G /005 AY Single axis DC response accelerometer,  $\pm 2$  VDC full-scale output, 5 to 30 VDC excitation voltage, 5-ft integral cable,  $\pm 3$  G measurement range, 4-pin plug cable termination.



Recommended Accessories & Signal Conditioners for Series 3711 and 3713 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 pigtailed



**Model 080A153**  
Triaxial Mounting Block



**Model 080A152**  
Easy mount clip



**Model 445B01**  
Single-channel  
Gain x1, x10, x100  
100 to 240 VAC powered



**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 Accessories & Signal Conditioners for Series 3741 DC Response Accelerometers



**Model 080A208**  
Triaxial Mounting Block



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



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AD-3741-3711-3713-MEMS-0709

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