MEMS DC Response Accelerometers

Gas-damped, silicon MEMS sensing elements

**Highlights**

- Series 3713B now 78% lighter and 62% smaller
- Measurement capability to 0 Hz
- Full-scale ranges from ± 2 to ± 200 g
- Lightweight titanium or aluminum housings
- Constant & low frequency acceleration measurements
- Single-ended or differential output signal
- High frequency overload protection

**Applications**

- Aerospace Vibration Testing - Flutter, GVT, Etc.
- Simulated Environmental Testing with Shakers & Centrifuges
- Suspension, Shock Absorption and Damping Studies
- Driveability and Ride & Handling
- Brake & Steering Development
- Road Load Data Acquisition

PCB® Series 3711 (single axis), 3713 (triaxial), and 3741 (single axis) MEMS 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 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 +6 to +30 VDC and the low-noise, low-impedance output signal may be transmitted over long cable lengths without degradation.

As with all PCB® instrumentation, these sensors are complemented with toll-free applications assistance, 24-hour customer service, and are backed by a no-risk policy that guarantees total customer satisfaction.
Rugged and Durable Series 3711 & 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 +6 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.

Precision 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. They 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, Model 080A208, facilitates triaxial measurement configurations.

Single Ended Output – MEMS DC Response

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Measurement Range (pk)</th>
<th>Frequency (± 5%)</th>
<th>Broadband Resolution (rms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mV/g</td>
<td>± 200 g</td>
<td>0 to 850 Hz</td>
<td>21.1 mg</td>
</tr>
<tr>
<td>40 mV/g</td>
<td>± 50 g</td>
<td>0 to 1000 Hz</td>
<td>6.0 mg</td>
</tr>
<tr>
<td>66.7 mV/g</td>
<td>± 30 g</td>
<td>0 to 1000 Hz</td>
<td>3.5 mg</td>
</tr>
<tr>
<td>86.7 mV/g, 2.5 V offset</td>
<td>± 30 g</td>
<td>0 to 25 Hz</td>
<td>2.4 mg</td>
</tr>
<tr>
<td>200 mV/g</td>
<td>± 10 g</td>
<td>0 to 1000 Hz</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>1000 mV/g</td>
<td>± 2 g</td>
<td>0 to 250 Hz</td>
<td>0.25 mg</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>3711 Single Axis</th>
<th>3713 Triaxial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload Limit (Shock)</td>
<td>± 3000 g pk</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-65 to +250 °F</td>
</tr>
<tr>
<td>-54 to +121 °C</td>
<td>-54 to +121 °C</td>
</tr>
<tr>
<td>Excitation Voltage</td>
<td>6 to 30 VDC</td>
</tr>
<tr>
<td>Housing Material</td>
<td>Titanium</td>
</tr>
<tr>
<td>Sealing</td>
<td>Hermetic</td>
</tr>
<tr>
<td>Size (H x L x W)</td>
<td>0.45 x 0.85 x 0.85 in</td>
</tr>
<tr>
<td></td>
<td>11.4 x 21.6 x 21.6 mm</td>
</tr>
<tr>
<td>Weight (Connector style</td>
<td>16.3 gm</td>
</tr>
<tr>
<td>Integral cable style</td>
<td>65.0 gm</td>
</tr>
<tr>
<td>Electrical Connector</td>
<td>1/4-28 4-Pin or</td>
</tr>
<tr>
<td>10 ft. (3 m) Integral Cable</td>
<td>10 ft. (3 m) Integral Cable</td>
</tr>
</tbody>
</table>

Supplied Accessories

- Easy Mount Clip 080A152
- Adhesive Base 080A12
- Mounting Screw/Stud 081A113
- M081A103

Additional Accessories

- Triaxial Mounting Block 080A153
- Mounting Cable Connector 9P or EN

Recommended Cable

- 010
- 037

Differential Output – MEMS DC Response

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Measurement Range (pk)</th>
<th>Frequency (± 5%)</th>
<th>Broadband Resolution (rms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mV/g</td>
<td>± 200 g</td>
<td>0 to 850 Hz</td>
<td>21.1 mg</td>
</tr>
<tr>
<td>20 mV/g</td>
<td>± 100 g</td>
<td>0 to 1000 Hz</td>
<td>12.0 mg</td>
</tr>
<tr>
<td>40 mV/g</td>
<td>± 50 g</td>
<td>0 to 1000 Hz</td>
<td>5.2 mg</td>
</tr>
<tr>
<td>66.7 mV/g</td>
<td>± 30 g</td>
<td>0 to 1000 Hz</td>
<td>3.5 mg</td>
</tr>
<tr>
<td>200 mV/g</td>
<td>± 10 g</td>
<td>0 to 1000 Hz</td>
<td>1.2 mg</td>
</tr>
<tr>
<td>1000 mV/g</td>
<td>± 2 g</td>
<td>0 to 250 Hz</td>
<td>0.25 mg</td>
</tr>
</tbody>
</table>

Overload Limit (Shock) | ± 3000 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 (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) | 9.9 gm

Electrical Connector | 10 ft (3 m) Integral Cable

Supplied Accessories

- Mounting Screws/Studs (2) 081A103
  - M081A103

Additional Accessories

- Triaxial Mounting Block 080A208
# Model Numbering System

## 1) Series
- 3741B Single axis, MEMS DC response accelerometer
- 3713B Triaxial, MEMS DC response accelerometer
- 3711B 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
- 10G ± 10 g measurement range corresponding to 200 mV/g sensitivity
- 30G ± 30 g measurement range corresponding to 66.7 mV/g sensitivity
- 50G ± 50 g measurement range corresponding to 40 mV/g sensitivity
- 100G ± 100 g measurement range corresponding to 20 mV/g sensitivity (Series 3741 only)
- 200G ± 200 g measurement range corresponding to 10 mV/g sensitivity

## 4) 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 length in meters)

## 5) Cable Termination
- AY 4-pin plug (Series 3711 & 3741 only)
- DZ Pigtail, stripped and tinned ends (Series 3711 & 3713 only)
- EN 9-pin plug (Series 3713B11 only)
- HW 9-pin D-sub plug for mating to Model 478A30 signal conditioner (Series 3741 only)
- LN 8-pin mini DIN for mating to Models 482C27 or 483C28 signal conditioners (Series 3741 only)
- LT 8-pin mini DIN for mating to Models 482C27 or 483C28 signal conditioners (Series 3711 only)

## Example
- 3713B 11 10G /005 DZ Single axis MEMS DC response accelerometer, ± 10 g measurement range, 5 ft. (1.5 m) integral cable pigtail

## Additional Version
- 3711B 03 Single axis MEMS DC response accelerometer; multi-pin, threaded, electrical connector; ± 30 g measurement range; low pass filter; 2.5 V offset

PCB Piezotronics Inc. Toll-Free in USA 800-828-8840 716-684-0001 wwwpcb.com
Recommended Accessories & Signal Conditioners for Series 3711 and 3713 MEMS DC Response Accelerometers

Model 010D05 Cable
4-pin plug to 4-pin plug

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

Model 010D20 Cable
20 ft (6.1 m)
4-pin plug to 4-pin plug

Model 010D30 Cable
30 ft (9.1 m)
4-pin plug to 4-pin plug

Model 037P05 Cable
5 ft (1.5 m)
9-pin plug to pigtails

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

Model 037P20 Cable
20 ft (6.1 m)
9-pin plug to pigtails

Model 037P30 Cable
30 ft (9.1 m)
9-pin plug to pigtails

Model 037A05 Cable
5 ft (1.5 m)
9-pin plug to three 4-pin plugs

Model 037A10 Cable
10 ft (3.0 m)
9-pin plug to three 4-pin plugs

Model 037A20 Cable
20 ft (6.1 m)
9-pin plug to three 4-pin plugs

Model 037A30 Cable
30 ft (9.1 m)
9-pin plug to three 4-pin plugs

Model 037P05 Cable
5 ft (1.5 m)
9-pin plug to pigtails

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

Model 037P20 Cable
20 ft (6.1 m)
9-pin plug to pigtails

Model 037P30 Cable
30 ft (9.1 m)
9-pin plug to pigtails

Model 037A05 Cable
5 ft (1.5 m)
9-pin plug to three 4-pin plugs

Model 037A10 Cable
10 ft (3.0 m)
9-pin plug to three 4-pin plugs

Model 037A20 Cable
20 ft (6.1 m)
9-pin plug to three 4-pin plugs

Model 037A30 Cable
30 ft (9.1 m)
9-pin plug to three 4-pin plugs

Recommended Accessories & Signal Conditioners for Series 3741 MEMS DC Response Accelerometers

Model 080A153 Triaxial Mounting Block

Model 080A152 Easy mount clip

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

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

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