AAA545
Multi Axis Series

DC-Operated, Bi-axial & Tri-axial Linear Accelerometer

FEATURES

- Ranges ± 2g to ± 100g
- Integral overload protection
- Critical damping ratio 0.7 nominal for 2g, 5g, 10g & 20g versions (0.6 for 50g & 0.5 for 100g) with essentially zero temperature coefficient
- Integral temperature compensation
- DC input - DC output
- Suitable for DC and AC acceleration applications
- Available in 2 and 3 axis versions

INTRODUCTION

The Sensors AAA545 range of multi-axis accelerometers measure vector acceleration in three mutually perpendicular planes with high accuracy and incorporate piezo-resistive strain gauge bridge sensors incorporating gas damping. Unlike fluid damped devices, the gas damping employed is essentially independent of temperature. The transducer also incorporates positive mechanical stops conferring excellent shock resistance.

The accelerometer is compensated for the effects of temperature on both sensitivity and zero.

Designed for operation from a DC power source, the AAA545 is packaged in a robust light alloy housing with solder pin connections. The accelerometer has a wide-range useable frequency response from DC to several kHz.

In addition to the instruments offered in this bulletin Althen Sensors design and develop accelerometers for specific applications. These custom designed units can be manufactured and tested to conform to specific requirements and standards.

Typical applications include biomechanical investigations, data acquisition systems, crash test, impact, shock and vibration analysis.
### GENERAL SPECIFICATION

**Input**
- Ranges (g) 2; 5; 10; 20; 50; 100
- Excitation 5.00 ± 0.01 Vdc. Regulated to 8ppm/V (Max)
- Input Current ............... 5mA dc max per axis

**Output at 25°C**
- Zero Offset .................. ≤ ± 2 mV
- Nonlinearity ................ ≤ ±0.5% FRO
- Hysteresis .................. ≤ ±0.2% FRO
- Resolution .................. ≤ 0.0005% FRO
- Cross Axis Sensitivity ...... ≤ ±1% FRO
- Noise Output ................ 10μV (rms) max
- Damping Ratio .............. 0.7 (+0.2) @ 25°C
- Output Impedance ........... 1.2 to 6.5 kΩ

<table>
<thead>
<tr>
<th>Range (g)</th>
<th>Full Range Output (Min/Max) (mV)</th>
<th>Resonant Frequency (Hz)</th>
<th>Frequency Response (Hz ± 5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>± 2</td>
<td>16/32</td>
<td>700</td>
<td>0 to 150</td>
</tr>
<tr>
<td>± 5</td>
<td>24/36</td>
<td>800</td>
<td>0 to 250</td>
</tr>
<tr>
<td>± 10</td>
<td>24/36</td>
<td>1000</td>
<td>0 to 350</td>
</tr>
<tr>
<td>± 20</td>
<td>24/36</td>
<td>1500</td>
<td>0 to 550</td>
</tr>
<tr>
<td>± 50</td>
<td>24/36</td>
<td>4000</td>
<td>0 to 1000</td>
</tr>
<tr>
<td>± 100</td>
<td>24/36</td>
<td>6000</td>
<td>0 to 1300</td>
</tr>
</tbody>
</table>

Note: The full range output is that obtained using 5volt excitation

### Environmental
- Temp. Operating .......... -40°C to +105°C
- Temp. Compensated ...... 0°C to +50°C
- Temp. Storage .......... -55°C to +130°C
- Thermal Sensitivity Shift ≤ ±0.02% FRO/°C
- Thermal Zero Shift ...... ≤ ±0.02°FRO/°C
- Acceleration limit ...... 400g for 2 to 10 g versions, 20 x range or 2000g, whichever is lower for other versions (any direction)
- Humidity/Immersion ...... IP65
- Insulation Resistance ...... ≥ 20 MΩ at 50V dc

### Physical
- Sensitive Axis Alignment See diagram
- Weight ...................... 40 grams max

### Electrical Connections
- Solder Pin Connections ...
  - Pin A : + dc excitation
  - Pin B : 0V dc excitation
  - Pin C : Signal 'X' axis
  - Pin D : + Signal 'X' axis
  - Pin E : Signal 'Y' axis
  - Pin F : + Signal 'Y' axis
  - Pin G : – Signal 'Z' axis (option)
  - Pin H : + Signal 'Z' axis (option)

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**DESIGNATION & ORDERING CODE**

AAA545 - 000□□□□□□□□□□

Series Number
2. Dual-axis (X & Y)
3. Tri-axis (X, Y & Z)

Range in g

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The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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