



9 AAA545
Multi Axis Series

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



FEATURES

- Ranges $\pm 2g$ to $\pm 100g$
- 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.

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

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.



GENERAL SPECIFICATION

Input

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

Output at 25°C

Zero Offset $\leq \pm 2$ mV
 Nonlinearity $\leq \pm 0.5\%$ FRO
 Hysteresis $\leq 0.02\%$ FRO
 Resolution $\leq 0.0005\%$ FRO
 Cross Axis Sensitivity $\leq \pm 1\%$ FRO
 Noise Output 10 μ V (rms) max
 Damping Ratio 0.7 (± 0.2) @ 25°C
 Output Impedance 1.2 to 6.5 k Ω

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 $\leq \pm 0.02\%$ FRO/°C
 Thermal Zero Shift $\leq \pm 0.02\%$ 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 M Ω 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)

Range (g)	Full Range Output (Min/Max) (mV)	Resonant Frequency (Hz)	Frequency Response (Hz \pm 5%)
± 2	16/32	700	0 to 150
± 5	24/36	800	0 to 250
± 10	24/36	1000	0 to 350
± 20	24/36	1500	0 to 550
± 50	24/36	4000	0 to 1000
± 100	24/36	6000	0 to 1300

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

DESIGNATION & ORDERING CODE

