A545 Series

DC-Operated,
Single Axis Linear Accelerometer

Sherborne Sensors
.... the first choice in precision

Features

- *Ranges ± 2g to ± 100g*
- *Essentially zero temperature coefficent of damping ratio*
- *Integral temperature compensation*
- *DC input - DC output*
- *High reliability*

Introduction

The Sherborne Sensors' range of Solid State Accelerometers measure vector acceleration with high accuracy and incorporate a micromachined piezo-resistive strain gauge bridge silicon sensor incorporating an gas damping feature. Unlike fluid damped devices the gas damping employed is essentially independent of temperature. The transducer also incorporates positive mechanical stops confering excellent shock resistance.

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

Typical applications include data acquisition systems, crash recorders, fatigue life monitoring and prediction; monitoring and controlling deceleration in mass transit systems; road bed analysis and fault detection equipment for high speed railways; military and civil flight simulators; autopilots and low frequency vibration monitoring.

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

Designed for operation from an unregulated DC power source, the A545 is packaged in a robust aluminium alloy housing with solder pin connections. The accelerometer has a wide-range useable frequency response from DC to several kHz.

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General Specification

Input

Ranges (±g) 2; 5; 10; 20; 50; 100
Input Voltage ..... 14.5 to 27Vdc
Input Current ..... 5mA dc max.

Output at 25°C

Zero Offset ..... ≤ ± 2 mV
Nonlinearity ..... ≤ ±0.5% FRO
Hysteresis ..... ≤ 0.02% 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

Range (g)	Sensitivity (Min/Max) (mV/g)	Resonant Frequency (Hz)	Frequency Response (Hz ± 5%)
± 2	8.0/16.0	700	0 to 150
± 5	4.8/7.2	800	0 to 250
± 10	2.4/3.6	1000	0 to 350
± 20	1.2/1.8	1500	0 to 550
± 50	0.48/0.72	4000	0 to 1000
± 100	0.24/0.36	6000	0 to 1300

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 Vertical to mounting face
Weight ..... 40 grams max

Electrical Connections

Solder Pin Connections ..... Pin A - + dc excitation
Pin B - 0V dc excitation
Pin C - Signal
Pin D + Signal
Pin E – not connected
Pin F – not connected

DESIGNATION & ORDERING CODE

A545 – 0001 – □□G

Series Number

1. Single-axis (Z)

Range in g