



Accelerometers of high overload resistance with integrated electronics for measurement of acceleration in the frequency range 0 to several 100 Hz

Features

- very high overload resistance
- insensitive to interference by magnetic and electric fields
- lower cut-off frequency is zero, hence suitable for measuring static acceleration, such as gravity (inclinations) or radial acceleration (centrifugal force)
- linear frequency response with little or no resonant peak at upper cut-off frequency
- low non-linearity
- high signal-to-noise ratio
- no measurable hysteresis of signal
- hermetically sealed
- high long-term stability
- small temperature drift
- integrated sensor electronics
- low power consumption
- very short on-transition delay
- multiple housing options

Description

The sensors B1, B2 and B3 are capacitive spring-mass accelerometers with integrated electronics. Resonant peaks are minimized by special gas-dynamic damping in the primary transformer. The sensors are manufactured with an analog DC output. The sensor electronics require only small amounts of power and are in conjunction with the capacitive primary transformer characterized by low error and high long-term stability.

Application

The accelerometers B1, B2 and B3 are used for applications requiring high overload tolerance, high long-term stability, small lower cut-off frequency down to measurement of static acceleration, very short on-transition delay and low power consumption. Typical applications include:

- measurements on vehicles, machinery, buildings and plants for process control and error diagnosis
- seismic measurements
- inclination measurements
- safety engineering
- dynamic measurement of position and velocity

Technical Specifications

| Type: | B1 | B2 | B3 |
|------------------------|-------------------------------|---------------------------------|---------------------------------|
| Measuring range | ±3g (ca.±30m/s ²) | ±10g (ca.±100m/s ²) | ±50g (ca.±500m/s ²) |
| Resolution | <10 ⁻³ g | <5·10 ⁻³ g | <2·10 ⁻² g |
| Frequency range | 0...160Hz | 0...350Hz | 0...550Hz |
| Linearity deviation | <0,5% | | |
| Transverse sensitivity | <1% | | |

| | | | |
|--|--|----------------|-----------------|
| Mechanical overload resistance in direction of measurement | 10 000 g (approx. 100 000 m/s ²) | | |
| Nominal supply voltage (regulated) | 5Volt | | |
| Permissible range of supply voltage | 3Volt ... 6Volt | | |
| Current drawn at U _b = 5V | approx. 1mA | | |
| Degree of protection | IP65 | | |
| Operating temperature | -40°C to +85°C (optional 125°C) | | |
| Storage temperature | -45°C to +90°C (optional 125°C) | | |
| Weight (in metal housing without cable) | approx. 23 grams | | |
| Standard electrical connection | 3 highly flexible, color-coded wires ø1mm, length approx. 18 cm (special lengths on request) | | |
| Alternative electrical connection | 0.5m strong, flexible, shielded cable ø2.1mm (special lengths on request) 3 flexible, color-coded wires with Teflon insulation for extended temperature range | | |
| Sensitivity* | approx. 140mV/g | approx. 30mV/g | approx. 7.5mV/g |
| Temperature drift of sensitivity | <+6·10 ⁻² % / K | | |
| Temperature drift of zero point | <±0.1mV/K | | |
| Zero offset at U _b =5V | (2.5±0.1)Volt - generally: 0.5U _b ±4% | | |
| Output impedance | 10 kΩ | | |

* Each sensor will be delivery with individual calibration dates (offset and sensitivity) *on request: PWM-output

Dimensions (in mm) and Connections

