

Compact Static Accelerometer: for acceleration or angle measurement in frequency ranges 0Hz to 550Hz.



Description

The B1, B2, and B3 sensors are capacitive spring mass accelerometers with integrated sensor electronics. Requiring very low power consumption these are characterized by a high degree of long-term stability. Resonant peaks are minimized by means of a special gas-dynamic damping in the primary transformer.

Manufactured with an Analog DC output, the integrated sensor electronics require only minimal power and are in conjunction with the capacitive primary transformer characterized by high accuracy, linearity, and long-term stability.

Applications

The B Series 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 (i.e. $\pm 90^\circ$)
- safety engineering
- dynamic measurement of position & velocity

Features

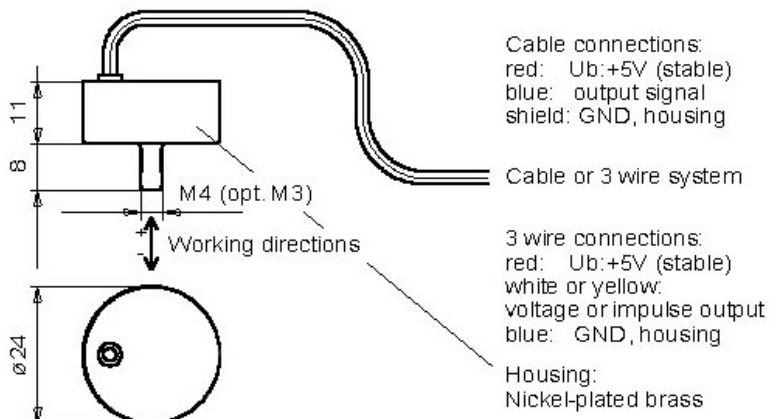
- Compact housing, less than 1" diameter
- Very high overload resistance
- Insensitive to interference by magnetic and electric fields
- Lower cut-off frequency is zero, hence suitable for measuring static acceleration, such as gravity (inclinations) or radial acceleration (centrifugal force)
- Linear 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
- Analog DC or pulse width modulated or frequency modulated output
- Low power consumption
- Very short settling time
- Multiple housing options

MECHANICAL CHARACTERISTICS		
Housing	Nickel Plated Brass	
Protection Degree	IP65	
Mounting	M4 Mounting Stud, M3 optional	
Mounting Plane	See "Figure 1"	
Outline Dimensions	$\varnothing 0.945"$ ($\varnothing 24\text{mm}$) X $.434"$ (11mm) h	
Electrical Connection	<i>Standard</i>	3 highly flexible, color-coded wires $\varnothing 0.04"$ ($\varnothing 1.0\text{mm}$) x 7.0" (18cm)
	<i>Optional</i>	A: Shielded cable $\varnothing 0.083"$ ($\varnothing 2.1\text{mm}$) x 1.65' (0.5m) B: 3 highly flexible, single color wires with Teflon isolation for extended temperature range
Weight	Approx. 0.89 ounces (25 grams) (not including cable)	
Operating Temperature	-40°F to $+185^\circ\text{F}$ (-40° to $+85^\circ\text{C}$), optional $+257^\circ\text{F}$ ($+125^\circ\text{C}$)	
Storage temperature	-49°F to $+194^\circ\text{F}$ (-45° to $+90^\circ\text{C}$), optional $+257^\circ\text{F}$ ($+125^\circ\text{C}$)	

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TYPE	B1	B2	B3
Measuring Range	±3g (Approx. ±30m/s ²)	±10g (Approx. ±100m/s ²)	±50g (Approx. ±500m/s ²)
Resolution	<.001g	<.005g	<.020g
Frequency Range	0...160Hz	0...350Hz	0...550Hz
Max. Non-linearity	<0.5%		
Cross Axis Sensitivity	<1%		
Mechanical Overloading in Measuring Direction	10,000g (Approx. 100,000m/s ²)		
Power Supply U _{BN} (Regulated)	5 Volt		
Min ... Max. Supply U _{BZ}	3 ... 6 Volt		
Current Consumption U _B =5Volt	Approx. 1mA		
ANALOG VOLTAGE OUTPUT MODEL AT U _{BN} =5VOLT			
Sensitivity	Approx. 110mV/g	Approx. 23mV/g	Approx. 6.5mV/g
Temperature Drift of Sensitivity	< +0.06%/°C		
Temperature Drift of Zero	< 0.1mV/°C		
Zero Offset at U _B =5V	2.5 ±0.1 Volt - generally: 0.5U _B ±4%		
Output Impedance	10kΩ		
<i>Digital pulse-width modulated output signal - linear to the degree of angle - available upon request.</i>			
CABLE WIRING TABLE:			
3-WIRE (standard)		SHIELDED CABLE (optional)	
RED	+5VDC Stable	RED	+5VDC Stable
WHITE	Output Signal	BLUE	Output Signal
BLUE	GND (housing)	SHIELD	GND (housing)
ATTENTION! The supply voltage must not exceed 6 Volt and the polarity must not be reversed.			

Figure 1: Dimensions and Mounting Position ([mm])



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