

Accelerometers
With integrated electronics for
Acceleration measurement in
Frequency range from "0" to
Several 100 Hz

Special features

- Very high overload resistance
- DC operation suitable for measuring both acceleration due to gravity (inclination) or radial acceleration (centrifugal force)
- Linear frequency response with minimal resonance peaking
- Low distortion factor
- High signal-noise ratio
- Very low output-signal hysteresis
- Hermetic sealed housing
- High long-term stability
- Small thermal drift
- Integrated sensor electronics
- Analogue DC output or digital pulse width modulated output
- Low power consumption
- Very short raise time
- Optional galvanic isolation of housing
- Multiple case options

Description

B1, B2, B3 is capacitive spring mass accelerometers with integrated sensor electronics. Resonant peaks are minimised by means of a special gas-dynamic damping in the primary transformer.

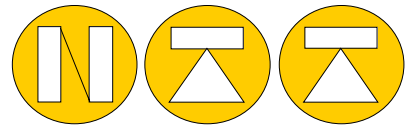
The sensors can be supplied with an analogous DC output, a digital pulse-width modulated signal or a frequency modulated output. The sensor electronics requires only very low power consumption and is characterised by a high degree of long-term stability.

Application

The acceleration sensors **B1, B2, B3** are typically used where high overloading occurs, in applications which require high long-term stability, measurements at a very low frequency or of static signals, very short rise-times, and/or small power consumption is required.

Typical applications are:

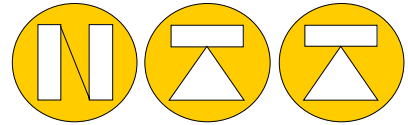
- Measurement on vehicles, machines, buildings,
- In process control systems as well as in safety installations
- Seismic measurements
- Inclination measurements
- Dynamic measurements
- Machine vibration measurement
- Dynamic rate determination



Technical Data

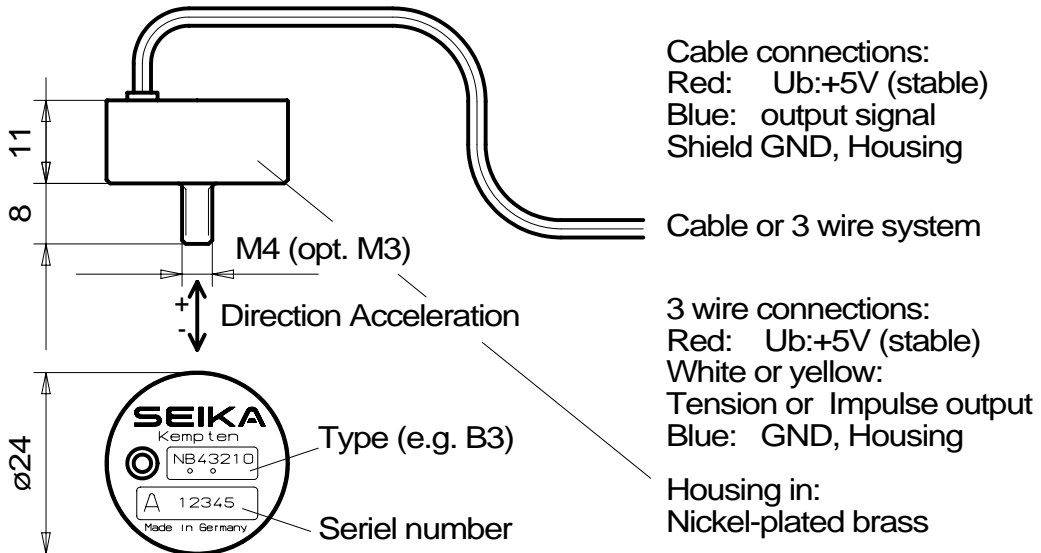
Type:	B1	B2	B3
Measuring range	$\pm 3g$ (app. $\pm 30m/s^2$)	$\pm 10g$ (app. $\pm 100m/s^2$)	$\pm 50g$ (app. $\pm 500m/s^2$)
Resolution	$< 10^{-3}g$	$< 5 \cdot 10^{-3}g$	$< 2 \cdot 10^{-2}g$
Frequency range	0...160Hz	0...350Hz	0...550Hz
Non-linearity	$< 0.2\%$ F.S.		
Cross axis sensitivity	$< 1\%$		
Mechanical overloading in measuring direction	10 000 g (app. 100 000 m/s ²)		
Nominal power supply (stabilised)	$U_{bN} = 5$ Volt		
Permissible range of power supply	$U_{bz} = 3...6$ Volt		
Consumption at $U_b = 5V$	App.1mA		
Protection degree	IP65		
Working 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)	App.23 Gram		
Electrical standard connection	3 high-flexible coloured wires, $\varnothing 1mm$ app.180 mm long, (special length as optional)		
Alternative electrical connections	0,5m flexible, shielded cable, $\varnothing 2,1mm$ (other lengths as option) 3 flexible, single coloured wires with Teflon isolation for extended Temperature range		
Values for analogue voltage output at $U_{bN} = 5$ Volt			
Sensitivity	App.110mV/g	app.23mV/g	app.6,5mV/g
Temperature drift on sensitivity	$< +0,06\%$ / °C		
Temperature drift on zero	$< 0,1mV/^\circ C$		
Zero offset at $U_b = 5V$	2,5 \pm 0,1Volt - general: 0,5 $U_b \pm 4\%$		
Output impedance	10k Ω		
Values for duty cycle for digital pulse model output at $U_{bN} = 5V$			
Sensitivity $dt_{(E)}/(t_{high} + t_{low})$	app.6,6 $\cdot 10^{-3}/g$	app.20 $\cdot 10^{-3}/g$	app.4 $\cdot 10^{-3}/g$
Temperature drift sensitivity	$< +0,06\%$ / K		
Temperature drift on zero	$< \pm 5 \cdot 10^{-4}$ F.S./K		
Middle initial point t_{high}/t_{low}	1 $\pm 4\%$		
Output frequency	App.100Hz to app.1MHz (optional)		

Values for frequency analogue Impulse-tension output at $U_{bN} = 5$ Volt			
Sensitivity $df_{(E)}/f\varnothing$	app.10 ⁻¹ /g	app.2 $\cdot 10^{-2}/g$	App.5 $\cdot 10^{-3}/g$
Temperature drift sensitivity	$< +0,06\%$ / K		
Temperature drift on zero $df_{(Temp)}/f\varnothing$	$< \pm 5 \cdot 10^{-3}$ F.S./K (Caution! because of the relatively high temp. Drift on zero, is this operating mode for static long-term measurements not especially suitable. Auto-Zero your system before measurement start)		
Middle initial frequency tolerance	$\pm 20\%$		



Output frequency f_0	App.1kHz to app.4MHz (optional)
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Dimensions & Connections



Caution! Do not reverse operating voltage polarity!
6 Volts is the maximum supply voltage