

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 are capacitive spring mass accelerometers with integrated sensor electronics. Resonant peaks are minimised by means of an special gas-dynamic damping in the primary transformer.

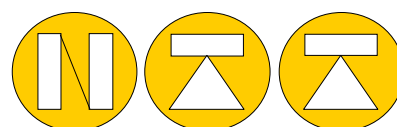
The sensors can be supplied with an analogous DC output, a digital pulse-width modulated signal or a frequency modulated output. The sensor electronics requires only a very low power consumption and is characterised by a high degree of long-term stability.

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.

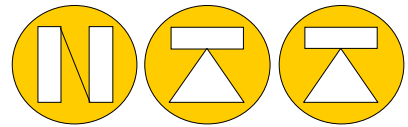
Typical applications are:

- 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



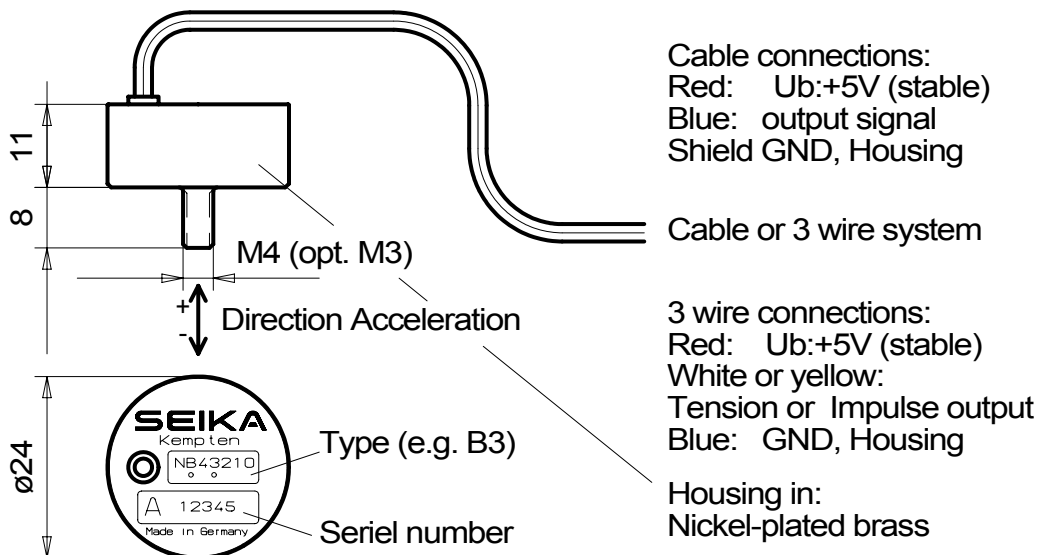
Technical Data

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	$-40^\circ C$ to $+85^\circ C$ (optional $125^\circ C$)		
Storage temperature	$-45^\circ C$ to $+90^\circ C$ (optional $125^\circ C$)		
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	$< +0,06\% / ^\circ C$		
Temperature drift on zero	$< 0,1mV / ^\circ C$		
Zero offset at $U_b = 5V$	$2,5 \pm 0,1$ Volt - general: $0,5U_b \pm 4\%$		
Output impedance	10k Ω		
Values for duty cycle for digital pulse model output at $U_{bN} = 5$ Volt			
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 $df_{(E)}/f\phi$	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 $df_{(Temp)}/f\phi$	< $\pm 5 \cdot 10^{-3}$ 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 $f\phi$	app. 1kHz to app. 4MHz (optional)		

Dimensions & Connections



Caution ! Do not reverse operating voltage polarity !

6 Volts is the maximum supply voltage