

Dual axis Accelerometer / Vibration-Sensor KAS203-Serie

- 4 ... 20mA (3-wire) current output
- Static (from 0 Hz) and dynamic measuring possible
- high repeatability up to <math><4\text{mg}/0,01\%</math> over range
- high resolution up <math><1\text{mg}/0,005\%</math>
- Dual axis for acceleration & vibration measuring
- Active and passive temperature compensated
- Sensor is calibrated at 1g
- Sensor element shock proof $\geq 20.000\text{g}$
- Operation temperature range $-40 \dots +85^{\circ}\text{C}$
- Rugged water proof metal housing
- Rugged M12 connector (IP67/68 with closed cap)
- Three wire interface, reverse polarity protected

Options/other versions:

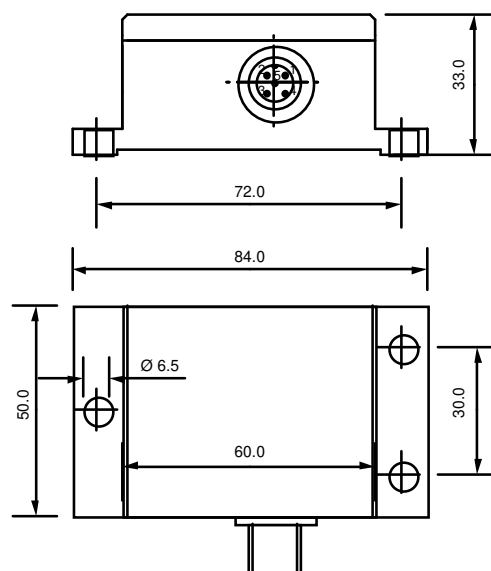
- High resolution measuring ranges:
 $0,005\text{mA} = 0,001^{\circ}$ (Inclinometer)
- $\pm 30 \dots 90^{\circ}$ dual axis versions
- $\pm 2 \dots 4\text{g}$ dual axis versions
- Two wire (current loop) versions
- IP68/69 Cable-Version available
- Digital output with $\pm 15 \dots 180^{\circ}$ range
- Customized adaptations in small quantities

The sensing elements work based on the capacitive principle. They feature high precision and high shock resistance, resulting among others from the improved **bulk** micro electro mechanical system, made of high purity silicon. Due to the especially appropriate structure, no drifts caused by deformation of the sensing mass are expected even after severe hits. The gas damping inside the sensing element prevents **resonance oscillations** or overshooting of the sensing mass.

The sensor is mounted in a water proof housing (IP67/68) which provides three holes for fixation and a commonly used M12 connector (IP67/68). The 4 ... 20mA output allows for long connecting lines. Using an appropriate resistor, the current output can be converted to a 1 ... 5V or 2 ... 10V voltage signal.

This sensors are available in dual axis versions with $\pm 30^{\circ} \dots \pm 90^{\circ}$ (Inclinometer KAS201-Serie), $\pm 1,5 \dots 8^{\circ}$ (Inclinometer KAS211-Serie), $\pm 2 \dots 4\text{g}$ (Accelerometer KAS202-Serie) and $\pm 6 \dots 18\text{g}$ (KAS203-Serie) measuring ranges.

All sensors are calibrated at $1\text{g}/0^{\circ}$. Thus a further zero alignment (other than mechanical adjustment to the application) is not necessary.



Specifications

Parameter	Condition	KAS203 -11A	KAS203 -12A	KAS203 -01A	KAS203 -02A	KAS203 -21A	KAS203 -22A	Unit
Measuring range ⁴⁾	nominal	+/- 6	+/- 6	+/- 12	+/- 12	+/- 18	+/- 18	g
Repeatability at 0° (horizontal position) ¹⁾	20°C	<4				<6		mg
Typ Resolution at 0° / 1g	DC ... 400Hz	2				3		mg
Noise density sensing element		100				150		µg√Hz
typ. Offset temperature dependency	13...37°C	1,25				1,9		mg / °C
long term stability ⁶⁾	10 years	7				11		mg
Cross axis sensitivity ²⁾	max. / typ	4/1						%
Measuring direction		X / Y						
Damping ⁹⁾	-3 dB	0...400	0...1000	0...400	0...1000	0...400	0...1000	Hz
Operating temperature range ⁸⁾	not condensing	-40...+85						°C
Shock resistance Chip ⁷⁾	Min.	20'000						g
Output signal I _{out}		4..20						mA
Output signal I _{out} 0°-position		12 ⁷⁾						mA
Sensitivity	Nominal	1.333 ⁷⁾		0.666 ⁷⁾		0.444 ⁷⁾		mA/g
Power supply ³⁾	stabilized	20... 30						VDC
Connection		M12						
Water resistance		IP67/68/69 ⁸⁾						IP-class

- 1) **Repeatability:** maximum offset occurring with position change after return to initial position (corresponds to achievable precision, including temperature hysteresis after temperature compensation and linearization).
- 2) **Cross axis sensitivity:** maximum error occurring with (additional) inclination or acceleration from another direction than the measuring plane
- 3) **Supply** stabilized
- 4) Static angle (inclinometer) measuring possible: 1g = 90° (Trigonometric function) +/- 1g control / calibration can made easily from end-user!
- 5) Discontinued
- 6) **Long term stability:** calculated values from HTB tests. Test results available at request.
- 7) **Absolut values can vary: A measuring certificate in mA/g can be offered optionally.**
- 8) IP69 : cable with cable clamp instead of connector
- 9) Mechanical gas- and electronical-banpass-filtering → sensor analogue, not digital!

More detailed connection instruction please sees in the files “applications basics” and “user guide”

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