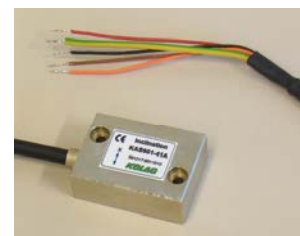


## Two Axis Acceleration and Vibration Sensor up to 18g KAS903 and KAS933 Series for cost sensitive vibrations applications

- senses in positive and negative direction
- static and dynamic acceleration measured
- high repeatability up to 0,05% over range
- high resolution: up to 0,005% over range
- shock resistance of the pendulum min. 20'000g
- Temperature range -30 ... +85°C
- active and passive temperature compensation
- small, solid metal housing with fixing holes
- M8 sensor plug connector or rugged PVC cable (1m)
- Large output span: 0,5 ... 4,5V output over measuring range
- Power supply requirement: 7... 30 VDC, stabilized
- Traceable calibration certificate for mV/g on 1g/150Hz on certified Shaker available on request



Plug Variant KAS93x-xx



Wire Variant KAS90x-xx

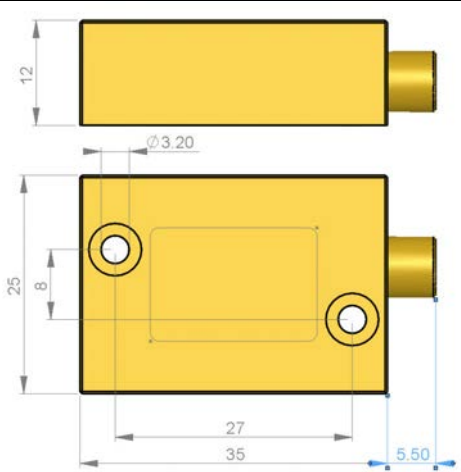
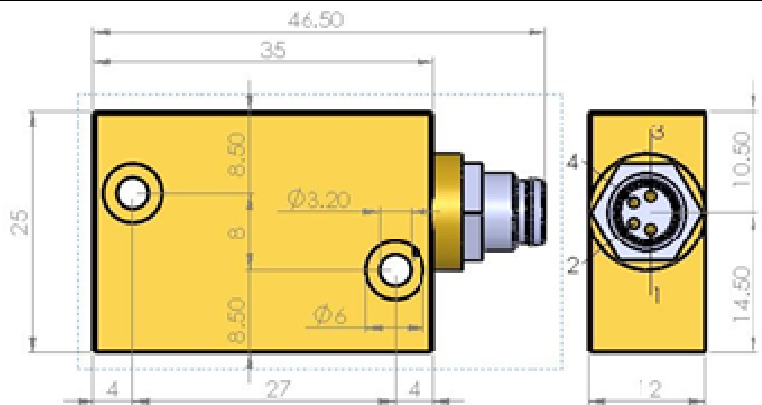
The sensors are based on an advanced "bulk micro machined" technology. The three dimensional structure of these sensors comprise a pendulum made of mono crystalline silicon. The pendulum is hermetically enclosed between two silicon discs. From this construction results a long term stable, high resolution und shock resistant sensor. A gas damping prevents overshooting and interfering resonance oscillation. An ASIC measures the capacitive change caused by the movement of the pendulum.

Those sensors need no separate adapter and can be used easily on e.g. SPS-Devices or standard oscilloscopes.

The gas damping into the sensing element eliminates negative effect like resonance frequency problems and over-shooting effects. The sensor offers excellent low pas filtering which is necessary in a wide band of vibrations-applications.

There are other sensitivity and ban-pass-filter parameters possible on request.

### Connection

Wire Variant KAS90x-xx	Plug Variant KAS93x-xx
	
<p>Red: +7 ...30 VDC            Black: 0 VDC            Braun: Out X            Orange: Out Y            Shield: Casing</p> <p><b>The outputs are not protected!</b></p>	<p>1 +7 ...30 VDC            2 0 VDC            3 Out X            4 Out Y</p> <p><b>The outputs are not protected!</b></p>

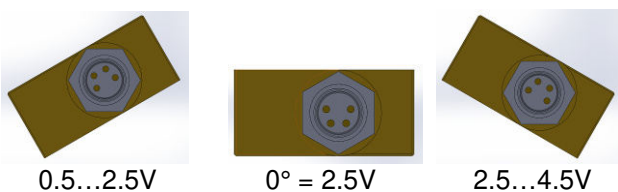
## Specifications

Parameter	Conditions	KAS903-11A	KAS903-12A	KAS903-01A	KAS903-02A	KAS903-21A	KAS903-22A	Units
		KAS933-11A	KAS933-12A	KAS933-01A	KAS933-02A	KAS933-21A	KAS933-22A	
Measuring range <sup>4)</sup>		+/- 6 <sup>9)</sup>	+/- 6 <sup>9)</sup>	+/- 12	+/- 12	+/- 18	+/- 18	g
Repeatability at 0° (horizontal position) <sup>1)</sup>	20°C, typ.	<4	<4	<4	<4	<6	<6	mg
typ. Resolution at 0° / 1g Noise	DC...400Hz	2 100	2 100	2 100	2 100	3 150	3 150	mg µg√Hz
typ. Offset temperature dependency	-13...37°C	1.25	1.25	1.25	1.25	1.9	1.9	mg / °C
long term stability <sup>6)</sup>	10 years <sup>6)</sup>	7	7	7	7	11	11	mg
Measuring direction		x, y	x, y	x, y	x, y	x, y	x, y	Axis
Damping (ban pass <sup>10)</sup> )	-3 dB	0...400	0...1000	0...400	0...1000	0...400	0...1000	Hz
Cross axis error	Max.	4 <sup>2)</sup>	4 <sup>2)</sup>	4 <sup>2)</sup>	4 <sup>2)</sup>	4 <sup>2)</sup>	4 <sup>2)</sup>	%
Operating temperature range <sup>8)</sup>		-30 <sup>8)</sup> ... +85	-30 <sup>8)</sup> ... +85	-30 <sup>8)</sup> ... +85	-30 <sup>8)</sup> ... +85	-30 <sup>8)</sup> ... +85	-30 <sup>8)</sup> ... +85	°C
Shock resistance Chip		20'000	20'000	20'000	20'000	20'000	20'000	g
Output signal V <sub>out</sub> Offset = V <sub>out</sub> in 0° / position <sup>7)</sup> Sensitivity <sup>7)</sup>	Nominal <sup>7)</sup> Nominal <sup>7)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.333 <sup>7)9)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.333 <sup>7)9)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.166 <sup>7)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.166 <sup>7)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.11 <sup>7)</sup>	0.5 ... 4.5 2.5 <sup>7)</sup> 0.11 <sup>7)</sup>	V V V/g
Power supply <sup>3)</sup>		7... 30	7... 30	7... 30	7... 30	7... 30	7... 30	VDC
Weight without cable		22	22	22	22	22	22	g
PVC-cable shielded	nominal	1.0	1.0	1.0	1.0	1.0	1.0	m
Analog resistive output load	V <sub>out</sub> to V <sub>dd</sub> or GND	min. 10	min. 10	min. 10	min. 10	min. 10	min. 10	kOhm
Analog capacitive output load		max. 20	max. 20	max. 20	max. 20	max. 20	max. 20	nF

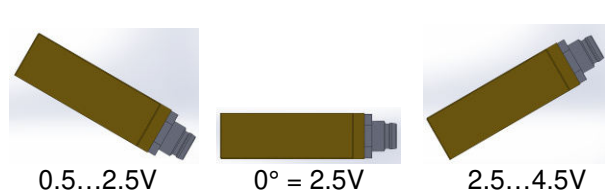
- 1) Repeatability: maximum offset occurring with position change after return to initial position (corresponds to achievable precision, including temperature hysteresis after temperature compensation and linearization).
- 2) Cross axis sensitivity: maximum error occurring with (additional) inclination or acceleration from another direction than the measuring plane; can be calibrated and compensated easily from end-user, please contact factory.
- 3) Supply stabilized
- 4) Static (for inclination → +/- 1g = +/- 90°) and dynamic measuring possible.
- 5) Typical values
- 6) Long term stability: calculated values from HTB tests. Test results available at request.
- 7) Deviation should not be higher than approx. +/- 2% on 0-Point and +/- 4% in sensitivity: Calibration protocol available on request.
- 8) Cable is specified for -15° for dynamic and -30° for static applications. High flexible cables for high dynamic applications are available on request.
- 9) Related to production procedure the deviation can be bigger, see also 7)
- 10) Mechanical and electrical ban pass filtering → not digital, no data rate relevance!

### Mechanical installation

X-Axis



Y-Axis



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