

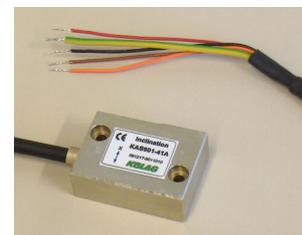
Single and Dual-Axis Acceleration-(Inclination-) Sensor

KAS901, KAS931, KAS902 and KAS932

- 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
- single axis sensors are active and dual axis sensor additionally passive temperature compensated
- small, solid brass housing with fixing holes
- M8 sensor plug connector or rugged PVC cable
- Large output span: 0.5 ... 4.5V output over measuring range
- Power supply requirement: 7... 30 VDC, stabilized



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 and 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.

Specifications

Parameter	Conditions	KAS901-04 KAS931-04	KAS901-05 KAS931-05	KAS901-54 KAS931-54	KAS902-57 KAS932-57	KAS901-58 KAS931-58	Units
Measuring range ⁴⁾		+/- 1.7	+/- 1.7	+/- 1.7	+/- 2.0	+/- 4	g
Measuring range ⁴⁾ min.		+/- 90	+/- 90	+/- 90	+/- 90		°
Repeatability at 0° (horizontal position) ^{1) 6)}	0 ... 40°C	4 0.1°	4 n.r.	4 0.1°	4 0.1°	Approx. 8	mg °angle
Resolution at 0° / 1g	type on 0°	0.2 0.1°	0.2 0.05°	0.08 0.05°	0.08 0.05°	0.1 n.r.	mg/√Hz °
Measuring direction	Out X Out Y	x	z	x, y	x, y	x, y	Axis
Cross axis sensitivity ²⁾	Max.	4	4	4	4	4	%
damping	-3 db.	50	50	50	50	115	Hz
Operating temperature range		-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	°C
Shock resistance		20'000	20'000	20'000	20'000	20'000	g
Output signal V _{out} Offset = V _{out} in 0° position Sensitivity		0.5 ... 4.5 2.5 1.2	0.5 ... 4.5 1.3 ⁸⁾ 1.2	0.5 ... 4.5 2.5 1.2	0.5 ... 4.5 2.5 1	0.5 ... 4.5 2.5 0.5	V V V/g
Power supply ³⁾		7... 30	7... 30	7... 30	7... 30	7... 30	VDC
PVC-cable shielded	nominal	1.0	1.0	1.0	1.0	1.0	m
Analog resistive output load	V _{out} to V _{dd}	min. 10	min. 10	min. 10	min. 10	min. 10	kOhm
Analog capacitive output load	or GND	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

3) Supply stabilized

4) Measuring range: Trigonometric function: $\text{angle} = \arcsin\left(\frac{V_{\text{out}} - 2,5(\text{Offset})}{\text{Sensitivity}}\right)$ (paste values without units)

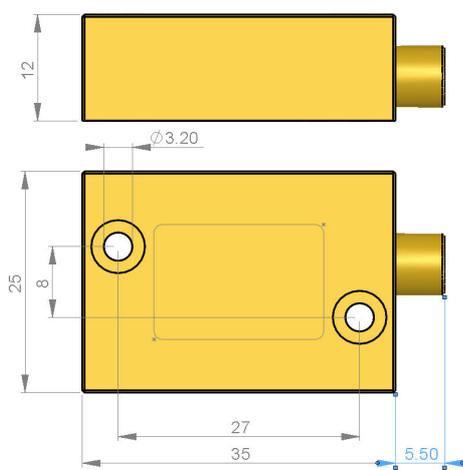
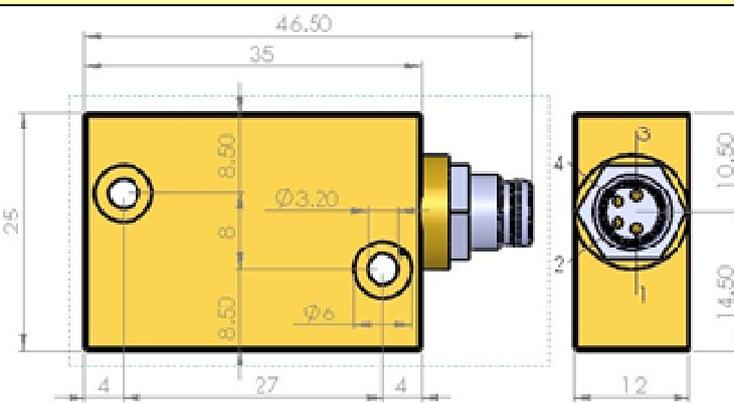
5) Typical values

6) Long term stability: calculated values from HTB tests. Test results available at request.

7) Cable is specified for -15°C for dynamic and -30°C for static applications

8) In 0° (horizontal) position the proof-mass (pendulum) is bending down (earth's gravitational force) If the sensor will be turned 90° to the side then the output will be nominal 2,5V

Connection

Wire Variant KAS90x-xx	Plug Variant KAS93x-xx
 <p style="margin-top: 10px;"> Red: +7 ...30 VDC Black: 0 VDC Braun: Out X (or Z) Orange: Out Y Shield: Casing </p> <p style="margin-top: 10px;">The outputs are not protected!</p>	 <p style="margin-top: 10px;"> 1 +7 ...30 VDC 2 0 VDC 3 Out X (or Z) 4 Out Y </p> <p style="margin-top: 10px;">The outputs are not protected!</p>

Mechanical installation

X-Axis



Y-Axis

