

Two Axis Inclination Sensor KAS90x and KAS93x

- senses in positive and negative direction
- static and dynamic acceleration measured
- high repeatability up to 0.01% over range
- high resolution: up to 0.001% over range
- shock resistance of the pendulum min. 20'000g
- Temperature range -30 ... +85°C
- active and passive temperature compensation
- 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 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.

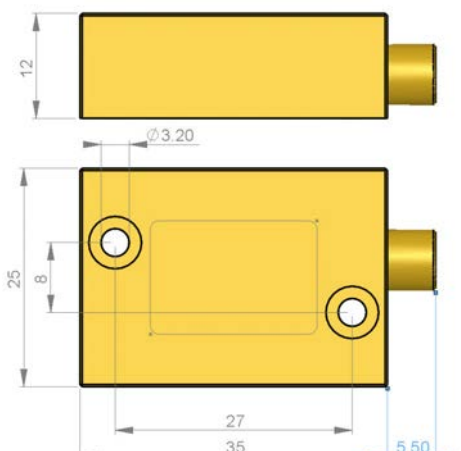
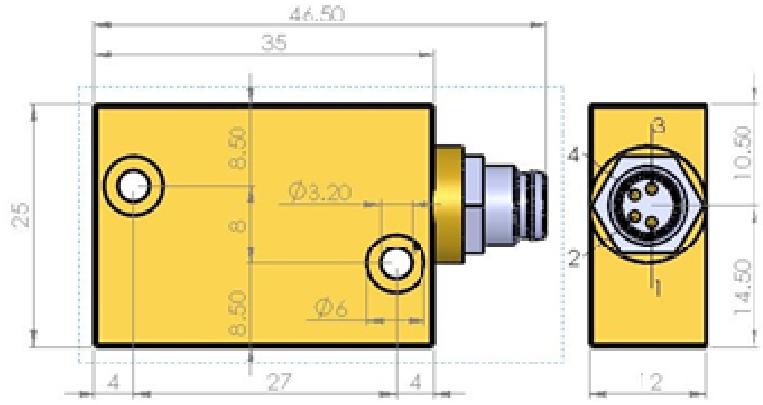
Specifications

Parameter	Conditions	KAS902-50 KAS932-50	KAS901-51 KAS931-51	KAS901-52 KAS931-52	Units
Measuring range ⁴⁾		+/- 0.34 +/- 20	+/- 0.5 +/- 30	+/- 1 +/- 90	g °
Repeatability at 0° (horizontal position) ¹⁾	at 20°C, typ.	0.25 0.014	0.25 0.014	0.25 0.014	mg °
Resolution at 0° / 1g	DC...10Hz DC...1Hz	0.05 0.003 0.015 0.001	0.05 0.003 0.015 0.001	0.05 0.003 0.015 0.001	mg °
typ. Offset temperature dependency ⁸⁾	20...60°C	-0/+0.066 -0/+0.006	-0/+.,066 -0/+0.006	-0/+0.066 -0/+0.006	mg / °C ° / °C
long term stability ⁶⁾	10 years ⁶⁾	0.62 0.036	0.62 0.036	0.62 0.036	mg °
Measuring direction	horizontal	x	x	x	Axis
Cross axis sensitivity ²⁾	Max.	4	4	4	%
Mechanical Damping	-3 dB	18	18	18	Hz ⁵⁾
Operating temperature range		-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	-30 ⁷⁾ ... +85	°C
Shock resistance Chip		20'000	20'000	20'000	g
Output signal V _{out} Offset = V _{out} in 0° / position Sensitivity		0.5 ... 4.5 2.5 5.88	0.5 ... 4.5 2.5 4	0.5 ... 4.5 2.5 2	V V V/g
Power supply ³⁾		7... 30	7... 30	7... 30	VDC
PVC-cable shielded	nominal	1.0	1.0	1.0	m
Analog resistive output load	V _{out} to V _{dd}	Min. 10	Min. 10	Min. 10	kOhm
Analog capacitive output load	or GND	Max. 20	Max. 20	Max. 20	nF

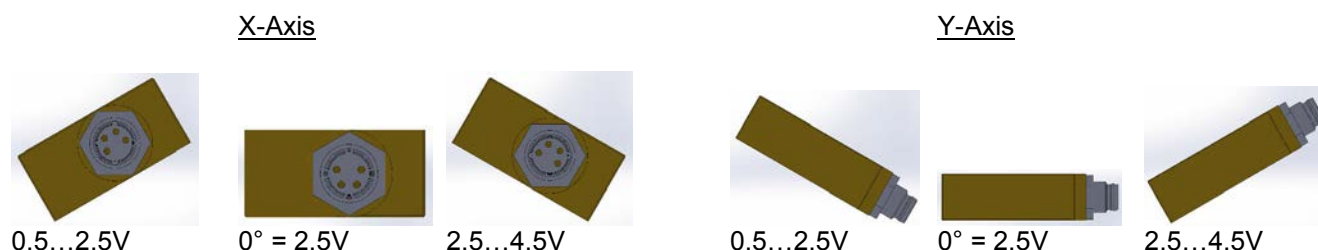
- 1) Repeatability: maximum offset occurring with position change after return to initial position (corresponds to achievable precision, including temperature hysteresis after temperature compensation and linearization).
- 2) Cross axis sensitivity: maximum error occurring with (additional) inclination 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) Related to sensing element

Connection

Wire Variant KAS90x-xx	Plug Variant KAS93x-xx												
 <p style="margin-top: 10px;"> Red: +7 ...30 VDC Black: 0 VDC Braun: Out X Orange: Out Y Shield: Casing </p> <p style="margin-top: 10px;">The outputs are not protected!</p>	 <table style="margin-top: 10px; width: 100%; border: none;"> <tr> <td style="width: 20px; text-align: right;">1</td> <td style="width: 20px;"></td> <td style="width: 20px; text-align: right;">+7 ...30 VDC</td> </tr> <tr> <td style="text-align: right;">2</td> <td></td> <td style="text-align: right;">0 VDC</td> </tr> <tr> <td style="text-align: right;">3</td> <td></td> <td style="text-align: right;">Out X</td> </tr> <tr> <td style="text-align: right;">4</td> <td></td> <td style="text-align: right;">Out Y</td> </tr> </table> <p style="margin-top: 10px;">The outputs are not protected!</p>	1		+7 ...30 VDC	2		0 VDC	3		Out X	4		Out Y
1		+7 ...30 VDC											
2		0 VDC											
3		Out X											
4		Out Y											

Mechanical installation



a.b.jödden gmbh Europark Fichtenhain A 13a 47807 Krefeld, Germany	Phone +49 2151 516259 0 Fax +49 2151 516259 20	info@abjoedden.de www.abjoedden.de
---	---	---------------------------------------