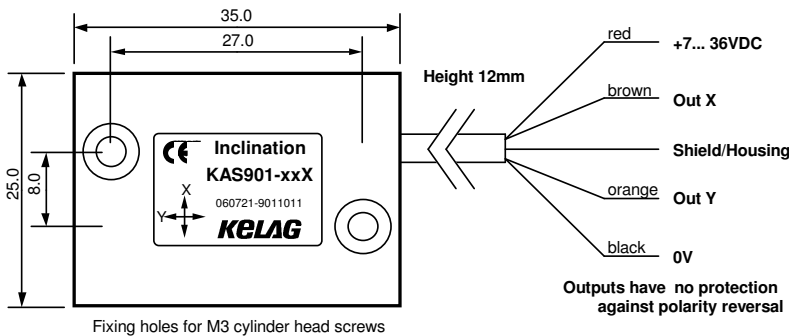
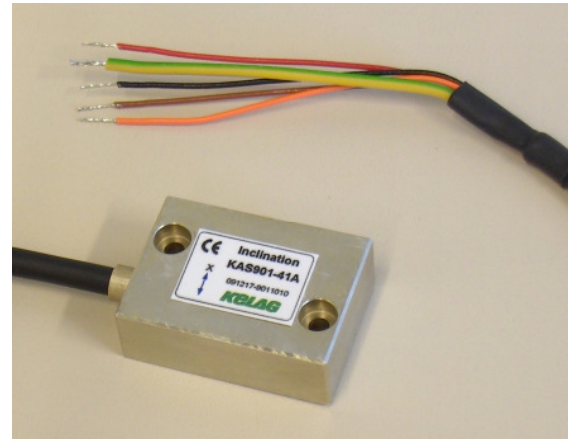


Two Axis Inclination Sensor KAS901-51 and -52

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.

- 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. 50'000g
- temperature range -30 .. +85 °C
- active and passive temperature compensation
- small, solid brass housing with fixing holes
- rugged PVC cable
- large output span: 0.5 .. 4.5V output over measuring range
- power supply requirement: 7... 36 VDC, stabilized



Other versions in other housings:

- single and dual axis sensors in rugged IP67 housing with cable or connector and standardized output 4... 20mA, 2...10V and **Modbus**
- smaller cases and sensors for higher temperatures ranges

Parameter	Conditions	KAS901-51	KAS901-52	Unit
Measuring range ⁴⁾		+/- 0,5 +/- 30	+/- 1 +/- 90	G °
Repeatability at 0° (horizontal position) ¹⁾	at 20 °C, typically	0,25 0,014	0,25 0,014	mg °
Resolution at 0° / 1g	DC .. 10Hz	0,05 0,003	0,05 0,003	mg °
	DC .. 1Hz	0,015 0,001	0,015 0,001	
typ. Offset temperature dependency ⁸⁾	20...60 °C	-0/+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	mg °
Measuring direction	horizontal	x-axis	x-axis	
Cross axis sensitivity ²⁾	Max.	4	4	%
Damping	-3 dB	18	18	Hz ⁵⁾
Operating temperature range		-30 ⁷⁾ .. +85	-30 ⁷⁾ .. +85	°C
Shock resistance Chip		20'000	20'000	g
Output signal V _{out}		0,5 .. 4,5	0,5 .. 4,5	V
Offset = V _{out} in 0° / rest pos.		2,5	2,5	V
Sensitivity		4	2	V/g
Power supply ³⁾		7... 36	7... 36	VDC
Analog resistive output load	V _{out} to V _{dd} or GND	Min. 10	Min. 10	kOhm
Analog capacitive output load		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:

$$\text{angle} = \arcsin\left(\frac{V_{out} - 2,5(\text{Offset})}{\text{Sensitivity}}\right)$$
 (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