

Single and dual axis Inclinator / Accelerometer Sensor for 4...20mA and IP 67: SCA114T / SCA124T

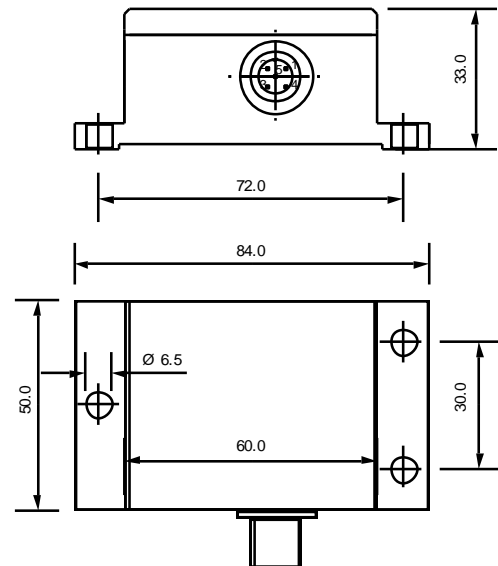
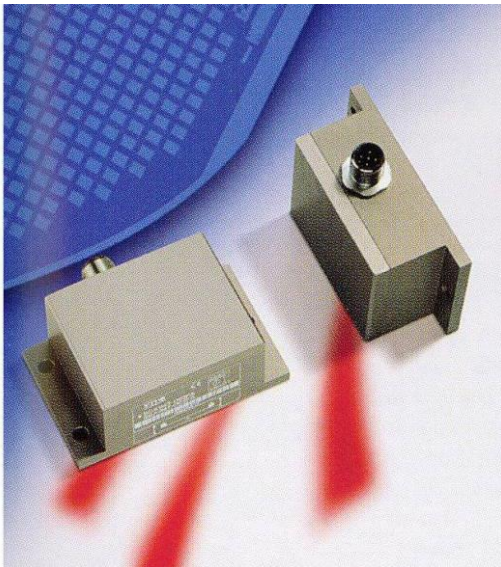
The sensing elements work based on the capacitive principle. They feature high precision and high shock resistance, resulting among others from the improved **bulk** micro electro mechanical system (MEMS), made of high purity silicon. Due to the especially appropriate structure, no drifts caused by deformation of the sensing mass are expected even after several 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) which provides three holes for fixation and a commonly used M12 connector (IP67). As Option a cable version is available with IP68 (5 weeks 10m under water tested) 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.

Standard sensors are available as single or dual axis versions with +/-30° and +/-90° measuring ranges.

All sensors are calibrated at 1g/0°. Thus a further zero alignment (other than mechanical adjustment to the application) is not necessary.

For acceleration and vibration measuring sensors with other measuring range are available. Optionally numerous other measuring ranges can be offered.



- high repeatability (accuracy on 23°C / 0°) up to 0,03° (<0,04%) over range
- 4 ... 20mA current output (1... 5 and 2... 10 volt with external adaptation)
- Inclination sensors are temperature compensated
- Sensor is calibrated at 0° / 1g
- Power supply 10 ... 36V
- Power consumption <4mA
- Sensor element shock proof $\geq 20.000g$
- Operation temperature range $-40 \dots +85^{\circ}C$
- Rugged water proof metal housing
- Rugged M12 connector (IP67 with closed cap)
- Two wire interface, reverse polarity protected
- Single and dual axis versions for inclination measuring
- -3dB attenuation/damping at 1 Hz

Options:

- Other measuring ranges possible
- IP68 Cable-Version available
- Customized adaptations possible
- Attenuation at 18Hz possible
- OEM printed circuit boards available

10 and 5m cable with IP67 M12 connector and open leads available (order codes see below)

Specifications

Parameter	Condition(s)	SCA114T-D02FA	SCA114T-D04FA	Unit
		SCA124T-D02FA	SCA124T-D04FA	
Measuring axis		1 (114T) / 2 (124T)	1 (114T) / 2 (124T)	
Measuring direction		X / XY	X / XY	
Measuring range ¹⁾		+/- 30 +/- 0,5	+/- 90 +/- 1	° g
Repeatability: ⁶⁾	at 23°C and 1g / 0° (angle)	<0,5 <0,03	<0,5 <0,03	mg °
typical offset temperature dependency (on 0°) ⁸⁾	-20...60°C	+/-0,15 +/-0,015	+/-0,15 +/-0,015	mg / °C ° / °C
Min. resolution / max. noise ³⁾	at 0° (angle) ¹⁾	0,05 0,003	0,05 0,003	mg °
Long term stability ^{5) 6)}	for 10years ²⁾	0,62 0,036	0,62 0,036	mg °
Cross axis sensitivity ⁴⁾	Max.	3	3	%
Frequency response (=damping against vibration)	-3 dB	1	1	Hz
Operation temperature		-40... +85	-40... +85	°C
Supply voltage	non stabilized	10... 36	10... 36	VDC
Housing IP rating ⁷⁾	closed connector	IP67 ⁷⁾	IP67 ⁷⁾	
Output		4... 20	4... 20	mA
Output in 0° / 1g position		12	12	mA

1) Ratio between g and °:

2) 10year long term stability:

3) Min. resolution / max. noise:

4) Cross axis sensitivity:

5) Calculated long term stability

6) Power on drift:

7) Housing IP rating

8) Temperature dependency

Trigonometric function (sine function)

Calculated values from HTB tests. Test results available at request.

Noise of the sensing element, not including noises of converter and external power supply

Max. error caused by an acceleration (inclination / vibration), the direction of which is perpendicular to the measuring direction

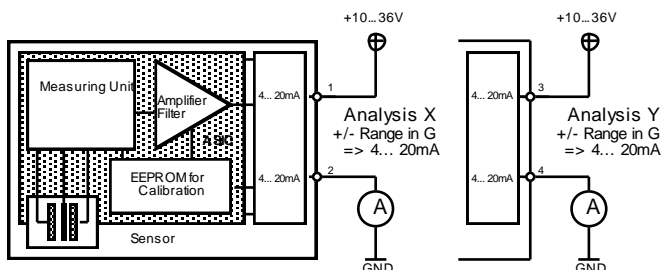
For chip SCA61T from VTI (used in SCA1X4) and its HTB tests. Report available on request.

Approx. 1 min. after power on the sensor stabilizes to approx. 0,015°. Values for repeatability and long term stability apply after stabilisation phase.

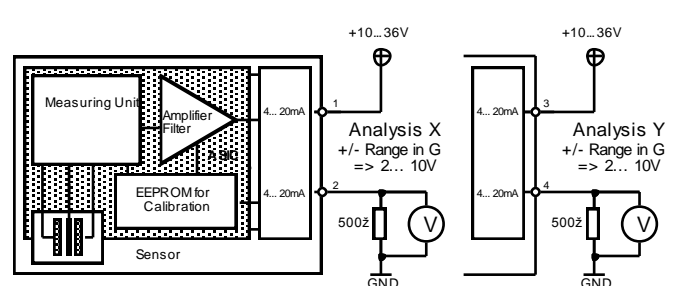
Cable Version 1X4TK tested vor IP68: 5 weeks 10m under water (please ask for data-sheat)

Related to Sensing element but repeatable: Calibration certificate on request

Read out in 4...20mA:



Read out in V:



Pin / lead	colours	Channel / axis	Signal	Order code for cable with M12 connector (IP67) and open leads
1	Brown	X	4...20mA	5m PUR cable: 40PKabelM12
2	White	X	4...20mA	10m PUR cable: 40PKabelM12_10
3	Blue	Y (if available)	4...20mA	
4	Black	Y (if available)	4...20mA	
5	grey	shield	GND	

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