

SCA111T and SCA121T Series

Stand Alone Inclinometer

Single or Dual Axis Analog Output

FEATURES

- Silicon 3D MEMS sensor
- 0,1° accuracy
- Resolution < 0,001°
- Operating temperature range -40...+85 °C
- Long term stability < 0,02°
- Shock resistance >20 000 g
- Sensing element -3 dB @ 18 Hz
- Main dimensions: 30x30x13 mm size, single or dual axis
- Voltage output
- RoHS compatible

BENEFITS

- Excellent long term stability
- Sensing element controlled frequency response
- Outstanding shock durability
- Harsh environment robustness

APPLICATIONS

- Platform tilt measurement
- Equipment and instrument condition monitoring
- Inclination based position measurement
- Rotational orientation measurement (dual axis)

For customised product please contact VTI Technologies

ELECTRICAL CHARACTERISTICS

Parameter	Condition	Min.	Typ	Max.	Units	
Supply voltage	Unregulated or regulated ratiometric	7 4.75	16 5	35 5.25	V V	Applies to: -D02, -D03, -D07 Applies to: -D04, -D05
Current consumption			5		mA	
Output load	Resistive	10			kΩ	
	Capacitive			20	nF	

PERFORMANCE CHARACTERISTICS

Parameter	Condition	SCA111T-D02	SCA121T-D03	SCA121T-D07	SCA111T-D04	SCA121T-D05	Units
Measuring range ⁽¹⁾		±30	±90	±30	±90	±90	°
Supply voltage		7...35	7...35	7...35	5 ±0.25	5 ±0.25	V
Measuring axis	(see "Directions")	X	X-Y	X-Y	X	X-Y	
Offset ^(2,5)	Output at 0°	2.5	2.5	2.5	2.5	2.5	V
Offset zero point error ⁽⁵⁾	Max. deviation	1	1	1	1	1	°
Offset temperature error	0...70 °C	±0.2	±0.2	±0.2	±0.2	±0.2	°
	-25...85 °C	±0.6	±0.6	±0.6	±0.6	±0.6	°
Sensitivity	Sine of inclination	70	35	70	35	35	mV/°(@offset pos.)
Sensitivity temperature error ⁽⁵⁾	0...70 °C	-0.8...0.3	-0.8...0.3	-0.8...0.3	-0.8...0.3	-0.8...0.3	%
	-25...85 °C	-1.5...0.5	-1.5...0.5	-1.5...0.5	-1.5...0.5	-1.5...0.5	%
Nonlinearity	Sinus output	0.1	N/A	0.1	N/A	N/A	°
Frequency response -3 dB ⁽³⁾		18	18	18	18	18	Hz
Cross-axis sensitivity ⁽⁴⁾		3	3	3	3	3	%

Typical values unless otherwise specified.

Note 1 The measuring range is limited by the sensitivity and offset.

Note 2 Offset specified as Output @ 0°.

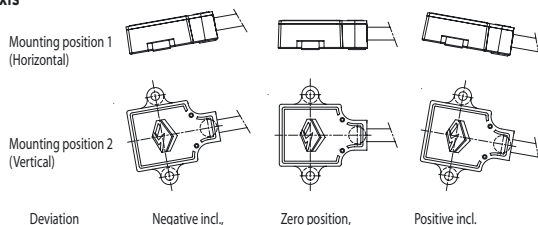
Note 3 The frequency response is determined by the sensing element's internal gas damping. The output has true DC (0 Hz) response.

Note 4 The cross-axis sensitivity determines how much inclination, perpendicular to the measuring axis, couples to the output.

Note 5 For optimum zero point accuracy, mounting angle of the part can be adjusted.

MEASURING DIRECTIONS

X-axis



Y-axis

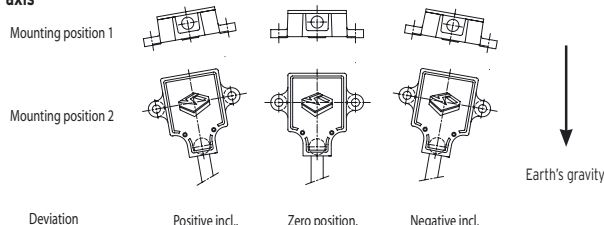


Figure 1. Positions

Notes:

- It is important that the part is parallel to the mounting plane, and that the output equals the zero value when sensor is in zero position.
- Zero position: Please note the picture above which provides information on how the output of the accelerometer behaves in different circumstances when assembled. Please also note that you can rotate the part around the measuring plane for optimum mounting location.

ELECTRICAL CONNECTION

SCA121T series

Wire color	Name	Function
Blue	GND	Ground
Red	V _{cc}	Power supply
Yellow	Out X	X-axis output
Green	Out Y	Y-axis output
White		Not connected

SCA111T series

Wire color	Name	Function
Blue	GND	Ground
Red	V _{cc}	Power supply
Yellow		Not connected
Green		Not connected
White	Output	X-axis output

MECHANICAL SPECIFICATION

Cable length:	-D02, -D03, -D07	30 cm.
	-D04, -D05	110 cm
Total weight:	Approx. 60 grams	
Protection class:	IP66	
Housing:	Zinc casting with passivation	

MOUNTING

The sensor module is to be mounted on a flat and smooth surface with 2 screws, dimension M4. Mounting torque 5 ±1 Nm.

SENSOR DIMENSIONS

Dimensions in mm.

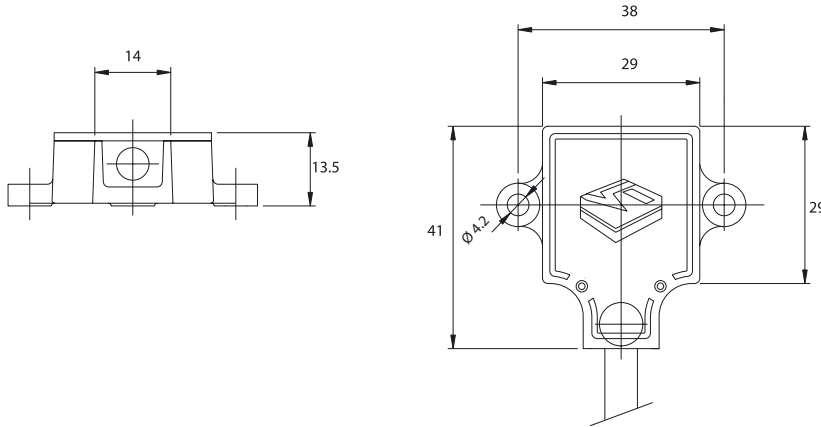
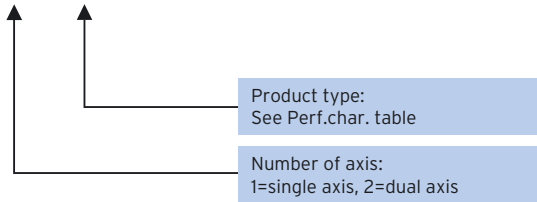


Figure 2.

ORDERING INFORMATION

SCA1X1T-D0Y



VTI Technologies Oy
Myllynkivenkuja 6
P.O. Box 27
FI-01621 Vantaa
Finland
Tel. +358 9 879 181
Fax +358 9 879 18791
sales@vti.fi

VTI Technologies Oy
Frankfurt Branch
Rennbahnstr. 72-74
D-60528 Frankfurt am Main
Germany
Tel. +49 69 6786 880
Fax +49 69 6786 8829
sales.de@vti.fi

VTI Technologies, Inc.
One Park Lane Blvd.
Suite 804 - East Tower
Dearborn, MI 48126
USA
Tel. +1 313 425 0850
Fax +1 313 425 0860
sales@vtitechnologies.com

VTI 
TECHNOLOGIES