

SCA103T

Analog High Performance
Differential 1-axis Inclinometer



muRata

Murata Electronics Oy

*Innovator
in Electronics*

SCA103T

Analog High Performance Differential 1-axis Inclinometer

Key features

- Size 11.31 x 5.08 x 15.58 mm (w x h x l)
- 5 V supply voltage
- $\pm 15^\circ$ & $\pm 30^\circ$ inclination measurement ranges
- $7 \mu\text{g}/\sqrt{\text{Hz}}$ noise density
- -0.001° resolution (10 Hz BW, analog output)
- Offset temperature dependency ($-25 \dots 85^\circ\text{C}$) $\pm 0.002^\circ/\text{C}$
- Digital SPI temperature output
- Wide operating temperature range $-40^\circ\text{C} \dots +125^\circ\text{C}$
- RoHS compliant

Applications

- Platform leveling and stabilization
- Moving machines operating in tough environments
- Rotating laser levels
- Leveling instruments



SCA103T PERFORMANCE CHARACTERISTICS

Parameter	D/S	Condition	SCA103T-D04	SCA103T-D05	Units
Measuring range	D	Nominal	± 15 ± 0.26	± 30 ± 0.5	$^\circ$ g
Frequency response	S	-3dB LP	8-28	8-28	Hz
Offset (output at 0g)	S	Ratiometric output	Vdd/2	Vdd/2	V
Offset calibration error	S		± 0.057	± 0.11	$^\circ$
Offset digital output	S		1024	1024	LSB
Sensitivity	D	between $0 \dots 1^\circ$	16 280	8 140	V/g mV/ $^\circ$
Sensitivity calibration error	S		± 0.5	± 0.5	%
Sensitivity digital output	D		6554	3277	LSB / g
Offset temperature dependency	D	$-25 \dots 85^\circ\text{C}$ (typical) $-40 \dots 125^\circ\text{C}$ (max)	± 0.002 ± 0.29	± 0.002 ± 0.29	$^\circ/\text{C}$ $^\circ$
Sensitivity temperature dependency	D	$-25 \dots 85^\circ\text{C}$ (typical) $-40 \dots 125^\circ\text{C}$ (max)	± 0.013 $-2.5 \dots +1$	± 0.013 $-2.5 \dots +1$	%/ $^\circ\text{C}$ %
Typical non-linearity	D	Measurement range	± 0.057	± 0.11	$^\circ$
Digital output resolution	D	between $0 \dots 1^\circ$	12 0.009	12 0.017	Bits $^\circ$ / LSB
Output noise density	D	From DC ... 100Hz	0.0004	0.0004	$^\circ$ / $\sqrt{\text{Hz}}$
Analog output resolution	D	Bandwidth 10Hz	0.0013	0.0013	$^\circ$
Ratiometric error	S	Vdd = 4.75...5.25V	± 1	± 1	%
Cross-axis sensitivity	S	Max.	4	4	%

FOR MORE INFORMATION, PLEASE REFER TO THE PRODUCT DATASHEETS AVAILABLE ONLINE AT WWW.MURATAMEMS.FI