

Schaevitz® T700 - Series

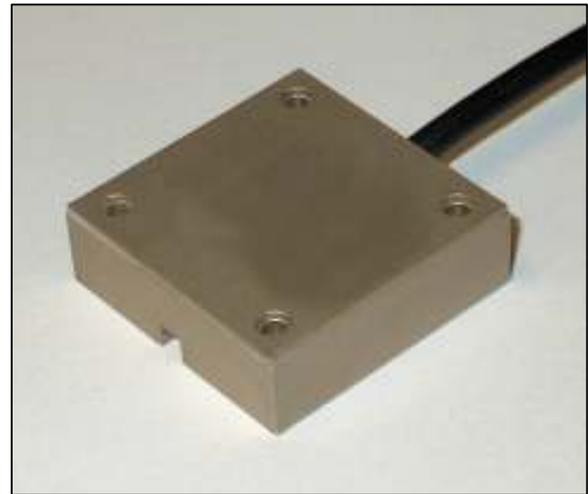
DC-Operated,
Single and Dual Axis Inclinometer

Introduction

The Sherborne Sensors' T700 range of Solid State Inclinometers measure inclination proportional to sine of angle in single or dual axes. The inclinometer utilises MEM technology and has positive mechanical stops conferring excellent shock resistance.

The -0101 version incorporates a temperature sensor enabling each sensor to be individually characterised over its operational temperature range. A data sheet containing the characteristic output equation is supplied with each sensor enabling errors due to zero offset, sensitivity error, linearity, thermal zero shift and thermal sensitivity shift to be minimised. By entering the equation coefficients into the host operating software, cost-effective high accuracy acceleration sensing may be achieved.

Designed for operation from an unregulated DC power source, the T700 is packaged in a robust aluminium alloy housing with an integral shielded cable connection; the shield is connected to the sensor case. The cable may, as an option, be fitted with an electrical connector.



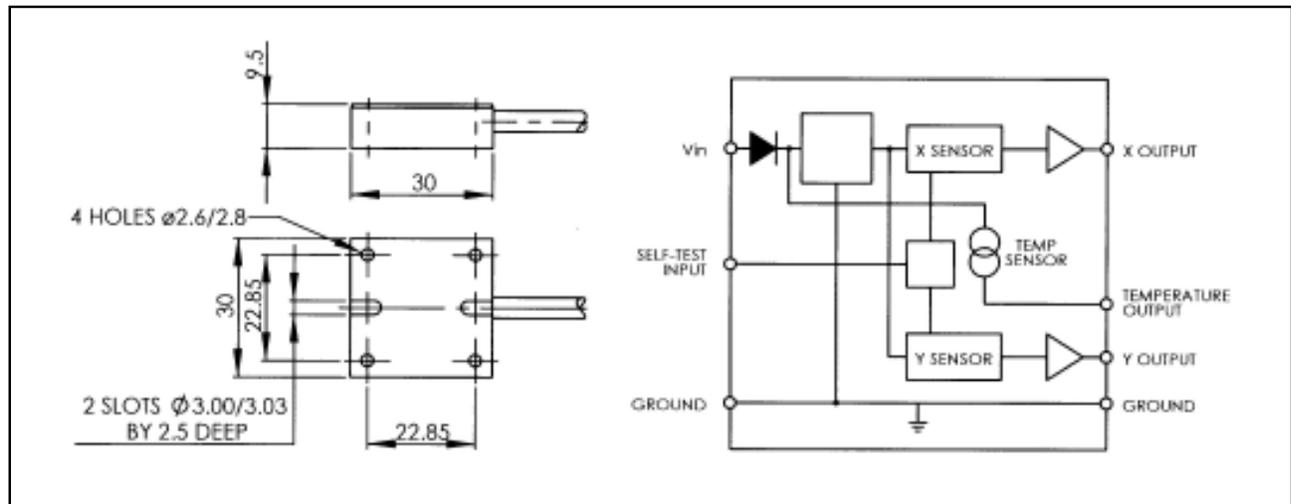
WIRE COLOUR	FUNCTION
RED	6.5 – 18 V Supply ¹
BLACK	Ground ²
YELLOW	X-Axis output
WHITE	Y-Axis output ³
GREEN	Temperature output ⁴
BLUE	Self-test input

¹ power supply input is reverse-polarity protected

² electrical ground is isolated from the case

³ for dual axes version

⁴ used on -0101 version



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General Specification for -0001 (and -0101 before error correction)

Full Scale Acceleration	±30	±90	Degrees
Signal Output	Analog		
Full Scale Output	±1.000 ± 0.020	±2.000 ± 0.040	Volts
Zero Offset Voltage	2.5 ± 0.1		Volts
Non-linearity	< ± 0.5		%FSO
Band Width (nominal)	800		Hz (-3dB)
Rise Time	< 1		Second
Warm Up Time	< 60		Seconds
Power Supply	+6.5 to 18		Volts Dc
Power Dissipation	< 30		mW
Electrical Connection	Integral cable		500mm long
Weight	< 50		Grams
Compensated Temperature Range	-18 to +70		Degrees C
Operating Temperature Range	-25 to +85		Degrees C
Thermal Zero Shift	0.03		%FRO/°C
Thermal Sensitivity	0.03		%Reading/°C
Mechanical Shock	> 3500		g (0.5mS, ½ sine)
Humidity/Immersion	IP55		
Insulation Resistance	> 100		MΩ @ 25 volts dc

Additional Specification for -0101 (after error correction)

Accuracy X-Axis	< ± 1	Milliradian
Accuracy Y-Axis	< ± 1	Milliradian
Temperature Output	1	µA / kelvin

Characteristic error correction equation supplied with each unit for each axis

$$\text{Angle (}^\circ\text{)} = K_1F^3 + K_2F^2 + K_3F + K_4$$

where:

- F = Function of axis output voltage and temperature
- K₁ = 3rd order output coefficient
- K₂ = 2nd order output coefficient
- K₃ = 1st order output coefficient
- K₄ = Output constant

Self-Test Feature

The sensor is fitted with a self-test feature. When activated by applying 5 volts to the self-test connection the output will change by approximately 4 volts.

