

T640 Series

DC-Operated Tilt Sensor with
unfiltered and low pass filter outputs



Sherborne Sensors

.... the first choice in precision

Features

- Ranges $\pm 30^\circ$, $\pm 60^\circ$ & $\pm 90^\circ$
- Essentially zero temperature coefficient of damping ratio
- Filtered and unfiltered outputs simultaneously available
- Integral temperature compensation
- DC input - DC output
- Signal ground isolated from power ground
- High reliability



Introduction

The range of range of Solid State Tilt Sensors manufactured by Sherborne Sensors measure angle with high accuracy utilising a micromachined (MEMS) silicon sensor incorporating gas damping. Unlike fluid damped devices the gas damping employed is essentially independent of temperature. The transducer also incorporates positive mechanical stops conferring excellent shock resistance.

The Tilt Sensor is compensated for the effects of temperature on both sensitivity and zero.

Typical applications include data acquisition systems, road bed analysis, platform levelling, structural monitoring, pipeline levelling, ship ballast transfer systems and many other applications requiring precision tilt measurement.

In addition to the instruments offered in this bulletin, Sherborne Sensors design and develop Tilt Sensors for specific applications. These custom designed units can be manufactured and tested to conform to customers specific requirements.



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NOVA METRIX

Sherborne Sensors, a Nova Metrix company

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Designed for operation from an unregulated DC power supply the T640 series features a MEMS technology solid-state sensor with integral air damping. Electrical termination is via a military style, bayonet lock electrical connector. The tilt sensor has a high useable frequency response and is fitted with a 5Hz low pass filter as standard. Available with electrical connector (T643) or solder pins (T645).

General Specification

Input

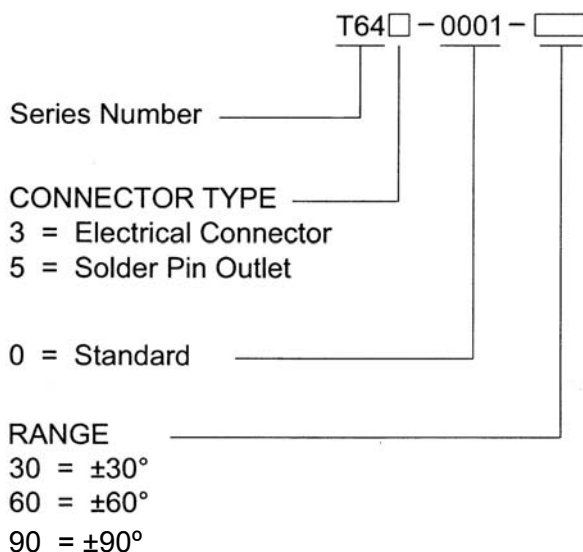
Ranges $\pm 30^\circ$, $\pm 60^\circ$ & $\pm 90^\circ$
Input Voltage +6 to 32Vdc Unregulated
Input Current 100mA dc max.

Output at 25°C

Full Range Output $\pm 5V$ dc $\pm 2\%$
Zero Offset $\leq \pm 2\%$ FRO
Nonlinearity $\leq \pm 0.5\%$ FRO
Hysteresis $\leq 0.02\%$ FRO
Resolution $\leq 0.001\%$ FRO
Cross Axis Sensitivity $\leq \pm 1\%$ FRO
Noise Output 5mV rms (DC to 10kHz) max
Damping Ratio 0.7 (± 0.2) @ 25°C
Output Impedance $< 1\Omega$
Filtered output response ... -3dB at 5Hz, 2-pole

Range	Resonant Frequency (Hz)	Unfiltered Frequency Response (Hz $\pm 5\%$)
All	700	0 to 250

DESIGNATION & ORDERING CODE



Environmental

Temp. Operating -40°C to $+100^\circ\text{C}$
Temp. Compensated 0°C to $+50^\circ\text{C}$
Temp. Storage -55°C to $+130^\circ\text{C}$
Thermal Sensitivity Shift $\leq \pm 0.03\%$ FRO/ $^\circ\text{C}$
Thermal Zero Shift $\leq \pm 0.03\%$ FRO/ $^\circ\text{C}$
Shock 200g for 2ms
..... ($\frac{1}{2}$ sine wave)
Acceleration Will withstand constant 20 times
..... rated range in all 3 axes without
..... damage
Humidity/Immersion IP65
EMC Directive EN 61326: 1998
EMC Emissions EN 55022: 1998, 30 MHz to 1 GHz
EMC Immunity EN61000-4-2 1995 inc A1: 1998 &
..... A2: 2001, ± 4 kV
..... EN61000-4-3: 2002, 10 V/m
..... EN61000-4-4: 2004, ± 1 kV
..... EN61000-4-4: 2004, ± 2 kV
..... EN61000-4-6 1996 inc A1: 2001, 3
..... Vrms
..... EN61000-4-6 1996 inc A1: 2001, 10
..... Vrms
..... EN61000-4-8: 1994 Incorporating
..... Amendment A1: 2001, 30 A/m
Insulation Resistance ≥ 20 M Ω at 50V dc

Physical

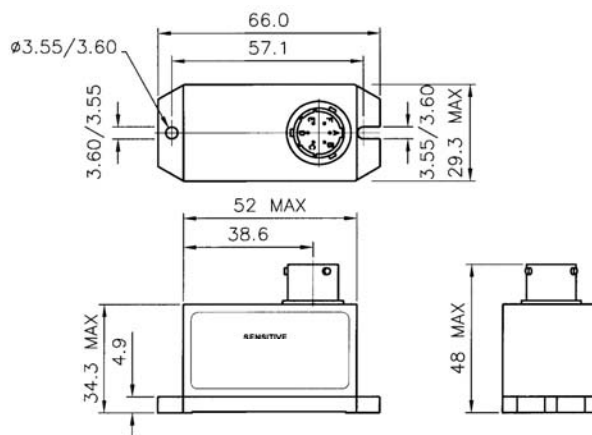
Weight 120 grams max

Electrical Connections

Connector Type Bayonet lock, MIL-C-26482, 6
..... pin, Shell Size 10

Pin A – supply +
Pin B – supply 0v
Pin C – signal ground
Pin D – signal output (filtered)
Pin E – signal output (unfiltered)
Pin F – not connected

Please specify Mating Connector 3CON-0009 if required.



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