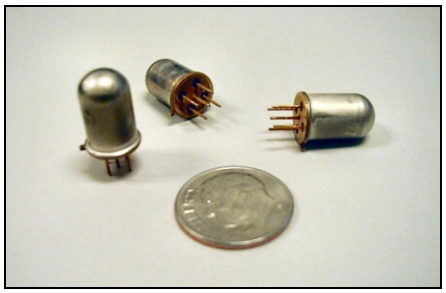
0717-4315-99

Dual Axis Wide Angle Electrolytic Tilt Sensor



Patent 6,249,984

TrueTilt™

Description

The **0717-4315-99** TrueTilt™ Sensor" represents a new advancement in electrolytic tilt sensor technology. Robust all metal construction provides durability as well as superior dimensional tolerances, which equates to excellent sensor-to-sensor electrical performance. The sensor features a breakthrough internal surface technology, which improves repeatability and lowers noise levels by one half. This sensor was designed for your most challenging application.

- *Angle Range* *± 60°*
- *Resolution* .2 arc minutes
- *Repeatability* *±0.05°*

Applications Include

» Wheel Alignment
» Navigation and GPS Compensation
» Automotive Roll Over
» Game Controllers and Joysticks
» Medical and Physical Feedback Instruments

Physical Dimensions

Height	0.530" (13.5mm)
Diameter – Cap	0.325" (8.25mm)
Diameter Flange	0.360" (9.14mm)
Lead Length	0.20" (5.0mm)
Lead Diameter	0.020" (0.5mm)
Lead Spacing (center to center)	0.1" (2.5mm)

Sensor Test Circuitry

Tests were conducted by exciting the outer electrodes of a single axis with an AC signal of 400 Hz and an rms voltage to produce the maximum current at null as per operating specifications. Output readings are taken between the center electrode and the center of the balanced resistors R1 and R2. Tests were conducted at a temperature of +25° C. See test circuitry in figure 3. Output curve is shown in figure 1.

Description of Test Values

AC input voltage = Null Current (max) times Null Impedance (nom)

Eout = Angle of tilt from null (Direction of tilt determined by phase of Eout)

R1 =R2 = ½ Null Impedance (nom)

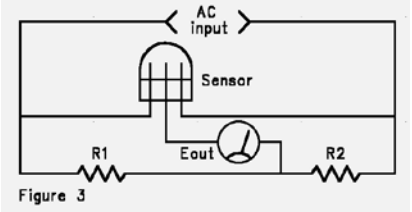


Figure 3

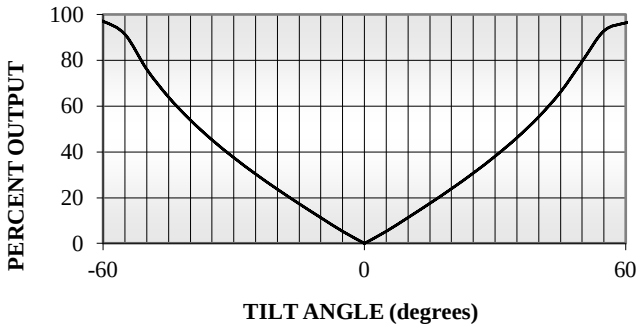
Caution!-Ensure that all test and operating circuits are entirely free of direct current. Direct current will cause level damage and / or instability.

Operating Specifications

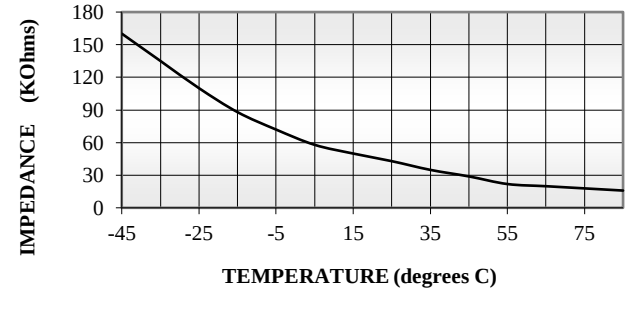
Operating Range (max.)	± 60°
Linear Range	± 25°
Null Voltage	≤0.015 Volts
Null Current(max.)	0.2 mA (continuous)
Null Impedance (nom) (measured left to right electrode)see fig. 2	40 K Ohms (25°C)
Repeatability	0.05°
Resolution	< 0.2 arc minutes
Symmetry (typ)	5 %
Null Offset (max)	5.0°
Mech. Crosstalk/Deg. (to 20°)	0.025°
Temperature coefficient	
Null	20 arc sec /°C
Scale	0.1% /°C
Stability @24 Hrs.	0.05°
Operating Temperature	-40° C to +85° C
Storage Temperature	-55° C to +100° C
Time Constant (1)	≤ 100 msec
Materials	magnetic

NOTE: Output sensitivity's scale factor may be modified to individual requirements upon special order.

OUTPUT SENSITIVITY
Figure 1



IMPEDANCE vs TEMPERATURE
Figure 2



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