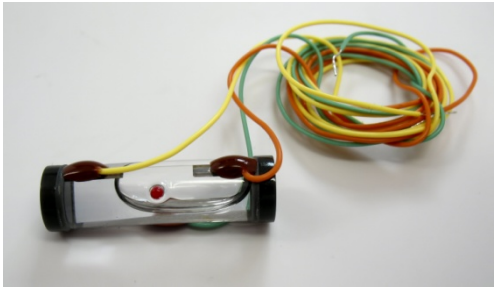
0737-1203-99

Single Axis Linear Output Electrolytic Tilt Sensor



Patent: US 7,886,451

Description

The **0737-1203-99** "THIN FLIM" sensor is designed for applications requiring highly repeatable mid-range angle measurement and a linear output. Long-term stability over its angle and temperature range is a distinctive characteristic of this sensor. The 0737-1203-99 uses patented "Thin Film" technology and construction to provide an accurate and robust angle sensor at an attractive price with excellent sensor-to-sensor repeatability and reliability. Unparalleled performance and features compared to any other commercially available product.

- *Angle Range* *± 15 arc min.*
- *Resolution* *<0.05 arc sec.*
- *Null Repeat* *< 0.5 arc-sec.*

Applications Include

» Geophysical and Structural Monitoring
» Construction Laser Instruments and Transits
» Solar Tracking and Satellite Positioning
» Machine Tool / Platform Leveling
» Medical Positioning and Monitoring

Physical Dimensions

Vial length	1.0" (25.4mm)
Vial Diameter	0.295"max (7.49mm)
Lead Length	15.0" (381mm)

Sensor Test Circuitry

Tests were conducted by exciting the left and right electrodes 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 sensor 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)

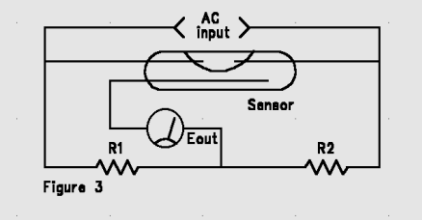


Figure 3

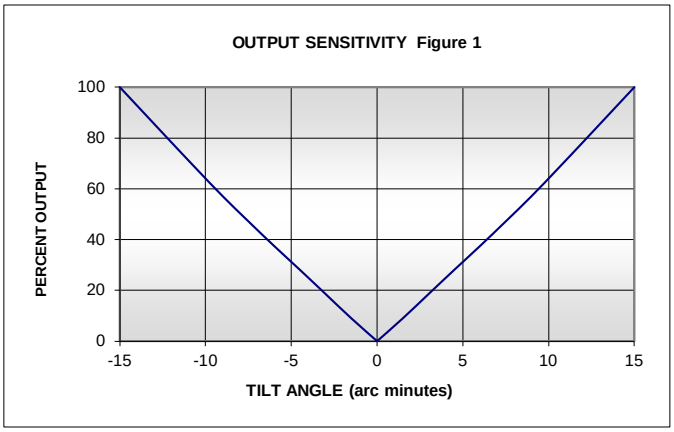
Caution!-Ensure that all test and operating circuits are entirely free of direct current. Direct current will cause level damage and/or instability.

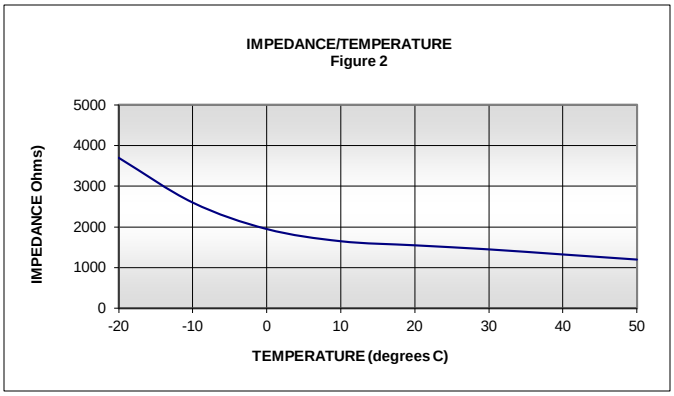
Operating Specifications

Operating Range (max.)	± 15'
Linear Range	± 8'
Null Voltage	≤0.030 Volts
Null Current(max.)	0.2 mA (continuous)
Null Impedance (nom)[1] (measured left to right electrode) see fig 2	80KΩ (25°C)
Null Repeatability	< 0.5 arc seconds
Resolution	< 0.05 arc seconds
Symmetry (typ)	≤20%
Operating Temperature	-20° C to +100° C
Storage Temperature	-50° C to +125° C
Time Constant (1)[2]	≤ 500 msec
Materials	non-magnetic
Temperature Coefficient at null when properly mounted	0.05%/°C

[1] Impedance of the electrode may be changed to limit null current.

[2] Viscosity of the electrolyte may be modified to meet individual requirements for time constant or vibration.





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