# 0711-0763-99

# Single Axis Narrow Angle Low Current Electrolytic Tilt Sensor

## Description

The **0711-0763-99** Sensor has been used successfully in applications that demand a high accuracy for small angle ranges and excellent null repeatability. The sensor offers excellent stability over time and wide range of temperatures. The hermetic glass to metal construction and solid platinum (platinized) electrodes guarantee a long operating life and stable operating characteristics.

- *Angle Range* *± 1°*
- *Resolution* 1 arc sec.
- Null *Repeat* *≤ 3-arc sec.*

## Applications Include

» Construction Laser Instruments and Transits
» Aircraft Avionics
» Geophysical Monitoring
» Machine Tool Leveling
» Medical Positioning and Monitoring

## Physical Dimensions

| | |
|---|---|
| Vial length | 1.25" (31.7mm) |
| Vial diameter | 0.281" (7.1mm) |
| Lead length | 0.125" (3.1mm) |

## 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.

## Descrition 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)

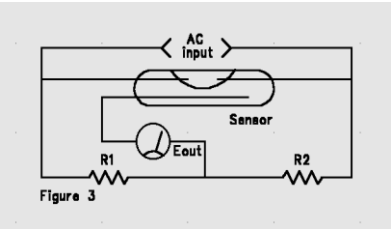


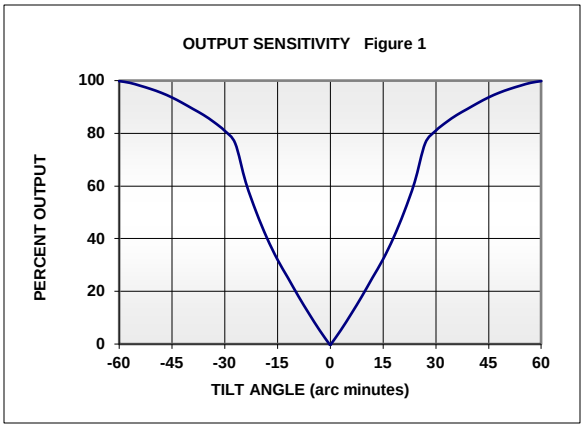
Figure 3

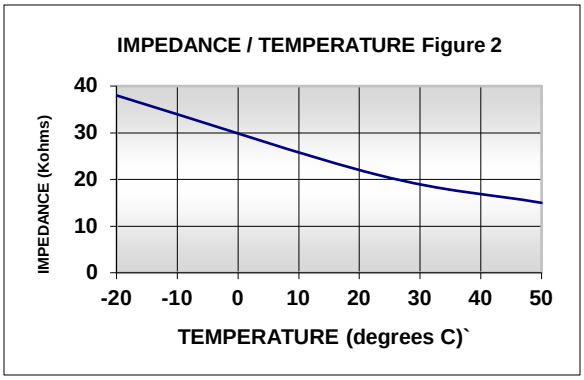
**Caution!-Ensure that all test and operating circuits are entirely free of direct current. Direct current will cause level damage and / or instability.**

## Operating Specifications

| | |
|---|---|
| Operating Range (max.) | ± 1° |
| Linear Range | ± 5 arc minute |
| Null Voltage | ≤0.005 Volts |
| Null Current(max.) | 0.5 mA (continuous) |
| Null Impedance (nom)[1] | 21K Ohms (25°C) (measured left to right electrode)see fig. 2 |
| Null Repeatability | ≤ 3 arc seconds |
| Resolution | < 1 arc second |
| Symmetry (typ) | ≤ 20 % |
| Operating Temperature | -20° C to +50° C |
| Storage Temperature | -50° C to +100° C |
| Time Constant (1) [2] | ≤ 500 msec |
| Materials | non-magnetic |
| Temperature coefficient at null (when properly mounted) | ± 0.5 arc seconds / ° C |

[1] Impedance of the electrolyte may be changed to limit null current
[2] Viscosity of the electrolyte may be modified to meet individual requirements to reduce vibration



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