

## 0715-4101-99

# Single Axis Mid Range Angle Electrolytic Tilt Sensor



### Description

The **0715-4101-99** Sensor has been used successfully in applications that demand a high accuracy for wider-angle ranges. This sensor provides excellent stability, good repeatability at null and angles, over time and a wide range of temperatures. The hermetic glass to metal construction and solid platinum electrodes guarantee a long operating life and consistent operating characteristics.

- Angle Range  $\pm 9^\circ$
- Resolution 12 arc sec.
- Null Repeat 1-arc sec.

### Applications Include

- » Automobile Wheel Alignment
- » Aircraft Avionics
- » Geophysical Monitoring
- » Machine Tool Leveling
- » Medical Positioning and Monitoring

### Physical Dimensions

Vial length	1.23" (31.2mm)
Vial diameter	0.36" (9.1mm)
Lead length	6.0" (152.4mm)

### Sensor Test Circuitry

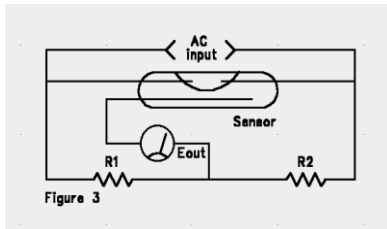
Tests were conducted by exciting the left and right electrodes with an AC signal of 400 Hz and an rms voltage to produce the maximum current at null as per operating specifications. Output readings are taken between the center electrode and the center of the balanced resistors R1 and R2. Tests were conducted 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 = 1/2 Null Impedance  
(nom)

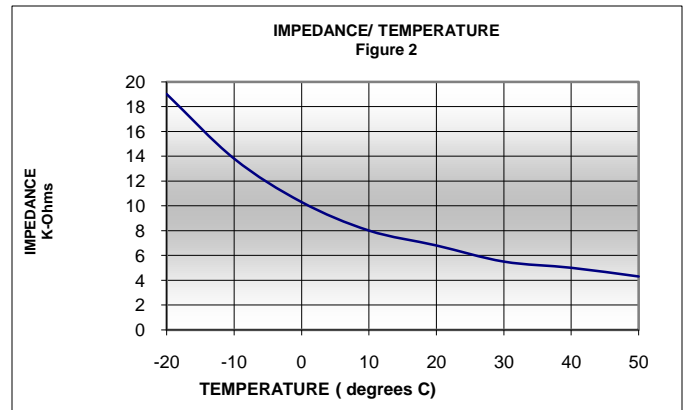
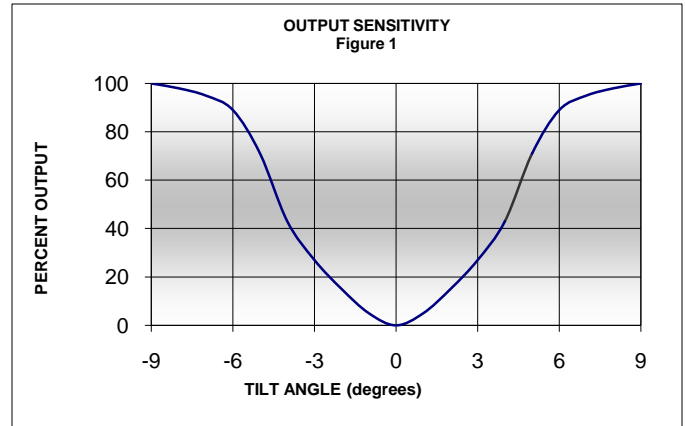


### Operating Specifications

Operating Range (max.)	$\pm 9^\circ$
Linear Range	$\pm 3^\circ$
Null Voltage	$\leq 0.010$ Volts
Null Current(max.)	2.5 mA (continuous)
Null Impedance (nom) <sup>1</sup>	6000 Ohms (25°C) (measured left to right electrode)see fig. 2
Null Repeatability	$\leq 12$ arc seconds
Resolution	$\leq 1$ arc minute
Symmetry (typ)	$\leq 20$ %
Operating Temperature	-20° C to +50° C
Storage Temperature	-50° C to +100° C
Time Constant (1) <sup>2</sup>	$\leq 500$ msec
Materials	non-magnetic
Temperature coefficient	$\pm 0.5$ arc seconds / ° C at null (when properly mounted)

<sup>1</sup> Impedance of the electrolyte may be changed to limit null current

<sup>2</sup> Viscosity of the electrolyte may be modified to meet individual requirements to reduce vibration



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