

## 0717-4319-99

### Dual Axis Wide Angle Electrolytic Tilt Sensor (Low Cost)

#### Description

The **0717-4319-99** TrueTILT™ sensor represents a new advancement in dual axis low cost 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. This sensor is ideal for economical, commercial market applications requiring high production quantities and first-rate accuracy.

- *Angle Range* ± 50°
- *Resolution* ±0.2 arc minutes (.003°)
- *Repeatability* ± 0.1°

#### Applications Include

- » Wheel Alignment
- » Navigation and GPS Compensation
- » Automotive Roll Over
- » RV (Recreational Vehicle Leveling)
- » 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)

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

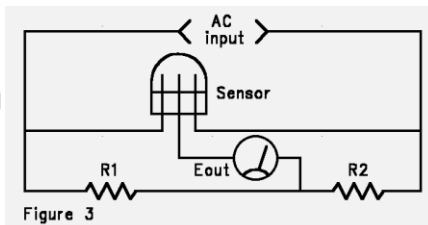
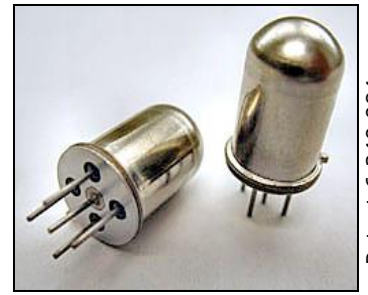


Figure 3



Patent 6,249,984

TrueTilt™

#### Operating Specifications

|                               |   |
|-------------------------------|---|
| Operating Range (max.)        | ± 50°   |
| Linear Range                  | ± 25°   |
| Null Voltage                  | ≤0.03 Volts   |
| Null Current(max.)            | 0.2 mA (continuous)   |
| Null Impedance (nom)          | 50 K Ohms (25°C)<br>(measured left to right electrode) see fig. 2 |
| Repeatability                 | ±0.1°   |
| 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.            | ±0.1°   |
| 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.

