

## Narrow Range Electrolytic Tilt Sensor

Part Number: 0737-1203-99 and 0719-3703-99



### Operating Specifications<sup>1</sup>

|                                       |                     |
|---------------------------------------|---------------------|
| Operating range                       | ±0.5°               |
| Linear Range                          | ±0.15°              |
| Axes of Measurement                   | 1                   |
| Repeatability                         | ≤0.0003°            |
| Resolution                            | ≤0.00015°           |
| Null Offset (PN 0719-3703-99 only)    | ≤0.003°             |
| Long Term Stability/Drift             | ≤0.0003°            |
| Operating Temperature                 | -20 °C to 50 °C     |
| Storage Temperature                   | -55 °C to +125 °C   |
| Null Impedance                        | 80 kΩ               |
| Time Constant (63.2% of final output) | ≤500 ms             |
| Materials                             | Non-magnetic        |
| Maximum Current at Null               | 0.2 mA (continuous) |

### Physical Characteristics

#### 0737-1203-99 (sensor)

|             |                |
|-------------|----------------|
| Length      | 25 mm (1.0")   |
| Diameter    | 8 mm (0.31")   |
| Lead Length | 381 mm (15.0") |
| Wire Gauge  | 30 AWG         |
| Weight      | 3 g            |

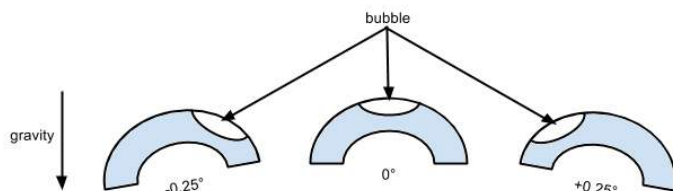
#### 0719-3703-99 (encapsulated sensor)

|               |                |
|---------------|----------------|
| Length        | 41 mm (1.63")  |
| Width         | 13 mm (0.5")   |
| Height        | 16 mm (0.625") |
| Post Diameter | 2 mm (0.086")  |
| Post Height   | 9 mm (0.37")   |
| Lead Length   | 381 mm (14.0") |
| Wire Gauge    | 30 AWG         |
| Weight        | 20 g           |

### Benefits

- Extremely high accuracy, resolution, and repeatability
- Very low power consumption
- Extremely long life
- Minimal drift over lifetime compared to MEMS devices
- Excellent customer support
- Manufactured in the United States of America

### Functional Diagram



### Description

The 0737-1203-99 narrow-range electrolytic tilt sensor is a low cost solution for extremely high accuracy position measurements in one axis over an angle range of ±0.5°. This sensor can also be encapsulated (PN 0719-3703-99) to simplify integration into a larger system.

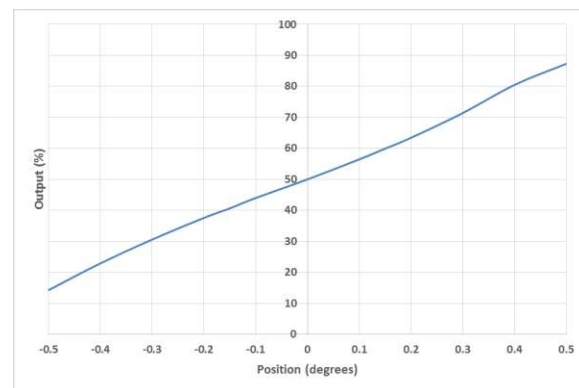
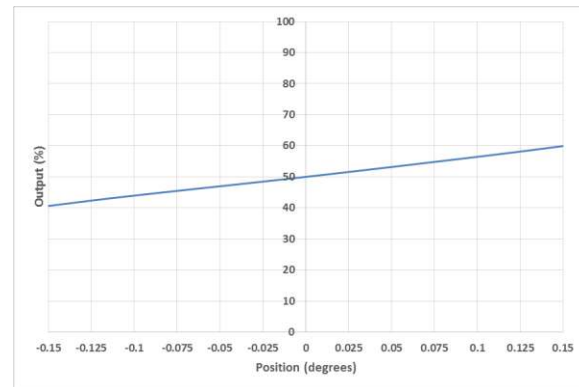
This is a passive sensor that requires signal conditioning electronics to provide an output. For a list of compatible signal conditioners, see the Related Products section on page 2.

### Applications

- Geotechnical and geophysical monitoring
- Structural monitoring
- Tilt meters, tilt beams, and horizontal inclinometers
- Railway track monitoring
- Machine tool leveling
- Zero reference

View a full list of applications for our sensors on our website at [www.frederickscompany.com](http://www.frederickscompany.com).

### Linear and Operating Range Behavior



### Certifications and Ratings

- RoHS Compliant

<sup>1</sup> See application note AN1002 for operating specification definitions.

## Narrow Range Thin Film Electrolytic Tilt Sensor

Part Number: 0737-1203-99 and 0719-3703-99



### Notes

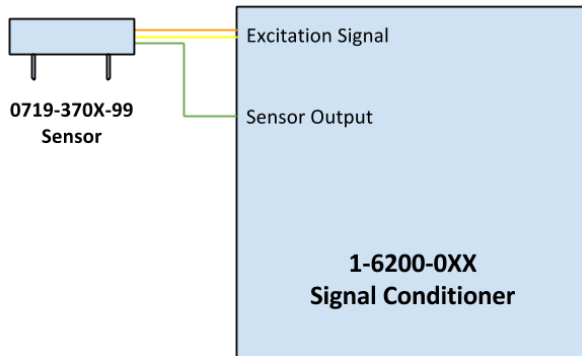
When using an excitation circuit not designed by The Fredericks Company, ensure that no direct current passes through the sensor. Direct current will lead to sensor damage, output drift, and general instability. For a description of hardware and software design for this sensor, see application note AN1000.

The 0737-1203-99 and 0719-3703-99 must be mounted horizontally (parallel to the surface of the earth and perpendicular to the force of gravity). For best performance, isolate the sensor from vibrations when mounting it.

Further information on electrolytic tilt sensor basics is provided on our website at [www.frederickscompany.com](http://www.frederickscompany.com).

### Test Circuit

All data was acquired with a Fredericks Company Dual Axis 6200 Series Signal Conditioner in single axis mode at 20° C. A general schematic of our signal conditioners is provided below. Further information on sensor excitation and excitation circuitry is provided on The Fredericks Company website and in the application note AN1000.



### Related Products

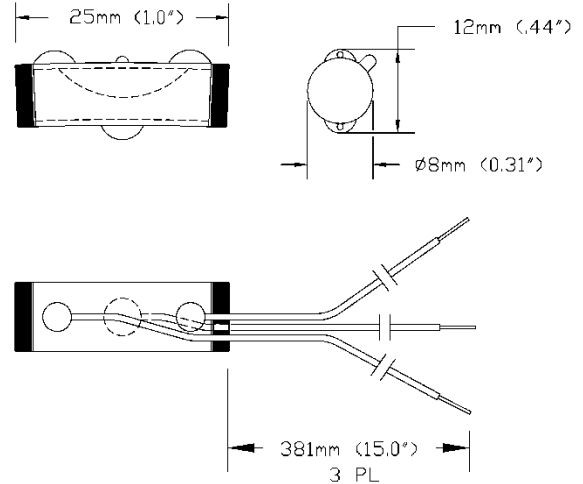
#### Signal Conditioners (PCB, no sensors)

|            |  |
|------------|--|
| 1-6200-005 | SPI interface                          |
| 1-6200-006 | RS-232 interface                       |
| 1-6200-007 | Analog/PWM interface                   |
| 1-6200-008 | RS-485 interface                       |
| 1-6200-012 | Analog/RS-232 interface, high accuracy |

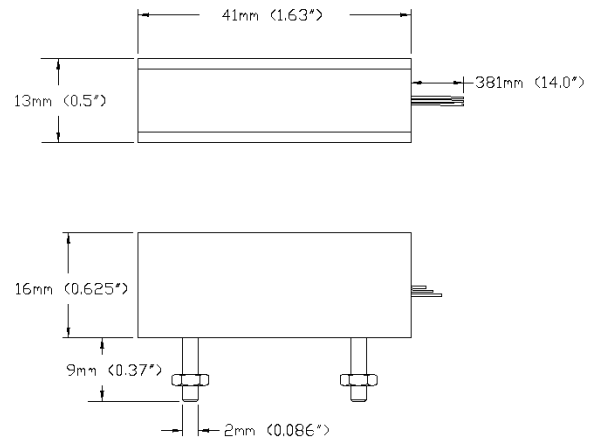
Visit our website at [www.frederickscompany.com](http://www.frederickscompany.com) for a full list of products.

### Dimensional Drawings

#### 0737-1203-99



#### 0719-3703-99



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