



TrueTilt™ Single Axis Mid-Range Electrolytic Tilt Sensor

Part Number: 0703-1602-99

Operating Specifications

| | |
|---------------------------------------|---------------------------|
| Operating range | ±25° |
| Linear Range | ±10° |
| Axes of Measurement | 1 |
| Linearity (±10°) | ≤1% |
| Repeatability | ±0.005° [18 arcseconds] |
| Resolution | ≤0.0003° [1 arcseconds] |
| Null Offset | ±2° |
| Long Term Stability/Drift | ±0.005° [18 arcseconds] |
| Null Temperature Coefficient | ≤0.0002° [0.7 arcseconds] |
| Scale Temperature Coefficient | 0.075% per °C |
| Operating Temperature | -40 °C to 85 °C |
| Storage Temperature | -55 °C to 125 °C |
| Null Impedance | 50 kΩ |
| Time Constant (63.2% of final output) | ≤1 s |
| Materials | Magnetic metals |
| Maximum Current at Null | 0.2 mA (continuous) |

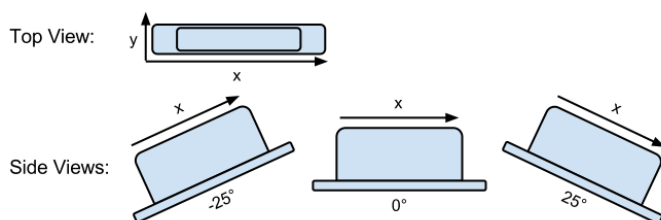
Physical Characteristics

| | |
|---------------------------------|------------------|
| Length | 1.598" [40.6 mm] |
| Width | 0.300" [7.6 mm] |
| Height | 0.560" [14.2 mm] |
| Hole Center | 1.340" [34.0 mm] |
| Hole Diameter | 0.145" [3.7 mm] |
| Lead Spacing (center to center) | 0.400" [10.2 mm] |
| Lead Diameter | 0.020" [0.5 mm] |
| Lead Length | 0.198" [5.0 mm] |
| Weight | 5.8 g |

Benefits

- Exceptionally high resolution and accuracy
- Extremely long life
- Minimal drift compared to MEMS devices
- Superior performance in industrial applications
- Excellent customer support
- Manufactured in the United States of America

Functional Diagram



Description

The 0703-1602-99 TrueTilt™ mid-range electrolytic tilt sensor has a robust, all metal construction providing durability while maintaining superior tolerances and sensor to sensor performance. It is an economical tilt sensor ideal for a versatile range of applications in many markets.

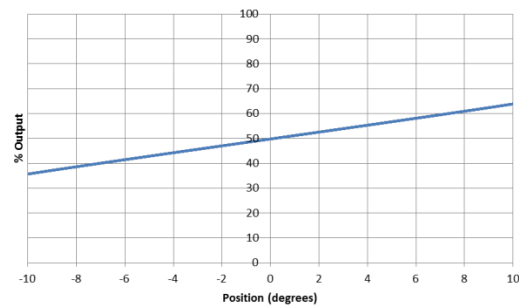
This is a passive sensor that requires signal conditioning electronics to provide an output. For a list of compatible signal conditioners, see the Related Products section on page 2.

Applications

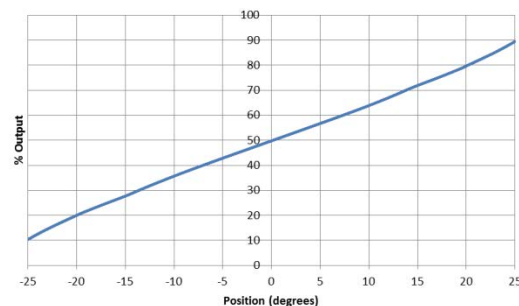
- Laser leveling (rotary/rotating lasers, line lasers, point lasers)
- Surveying equipment
- Construction machinery and equipment
- Railway monitoring
- Mobile satellite positioning
- Airport lighting

View a full list of applications for our sensors on our website at www.frederickscompany.com.

Linear and Operating Range Behavior



Linear Range



Operating Range

Certifications and Ratings

- RoHS Compliant

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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](#).

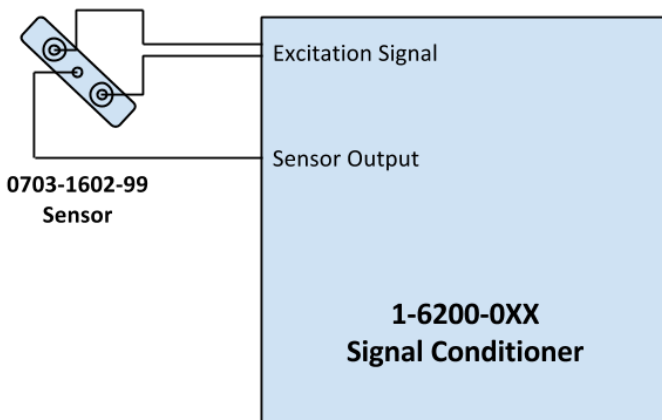
For more details on the temperature behavior of electrolytic tilt sensors and how to apply temperature compensation, see [application note AN1001](#).

The 0703-1602-99 and all sensors in the TrueTilt™ series 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.

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 (PCBs no sensors)

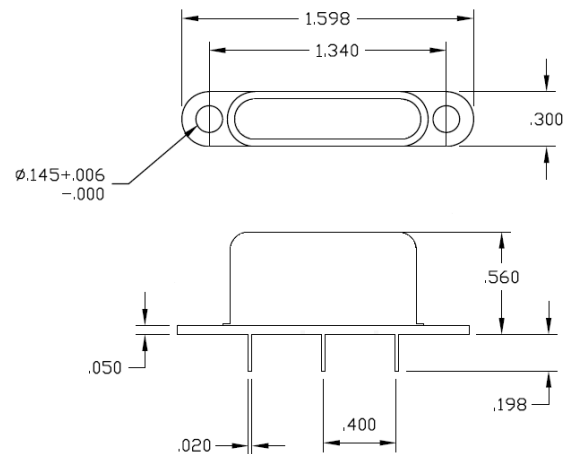
| | |
|------------|-------------------------|
| 1-6200-005 | SPI interface |
| 1-6200-006 | RS-232 interface |
| 1-6200-007 | Analog/PWM interface |
| 1-6200-008 | RS-485 interface |
| 1-6200-012 | Analog/RS-232 interface |

Inclinometers (PCBs with sensors)

| | |
|--------------|--|
| 0729-1765-99 | 1-6200-012 with (2) 0703-1602-99 sensors |
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Visit our website at www.frederickscompany.com for a full list of products.

Dimensional Drawings



Contact Us

The Fredericks Company
 2400 Philmont Avenue
 Huntingdon Valley, PA 19006
 tel: +1 215 947 2500
 fax: +1 215 947 7464
 email: sales@frederickscompany.com
 web: www.frederickscompany.com

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