



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)

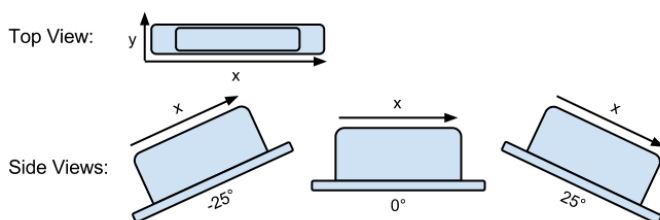
Physical Characteristics

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.

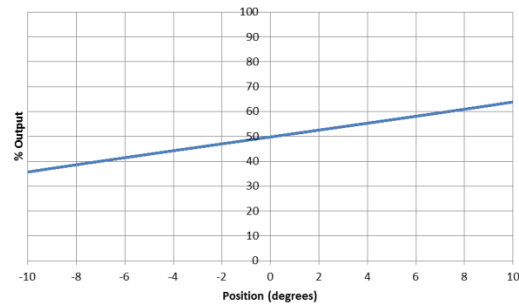
This is a passive sensor that requires signal conditioning electronics to provide an output. For a list of compatible signal conditioners, see the Related Products section on page 2.

Applications

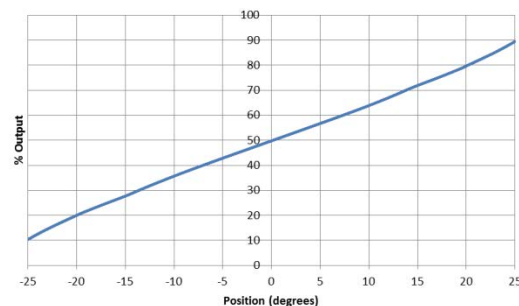
- Laser leveling (rotary/rotating lasers, line lasers, point lasers)
- Surveying equipment
- Construction machinery and equipment
- Railway monitoring
- Mobile satellite positioning
- Airport lighting

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](#).

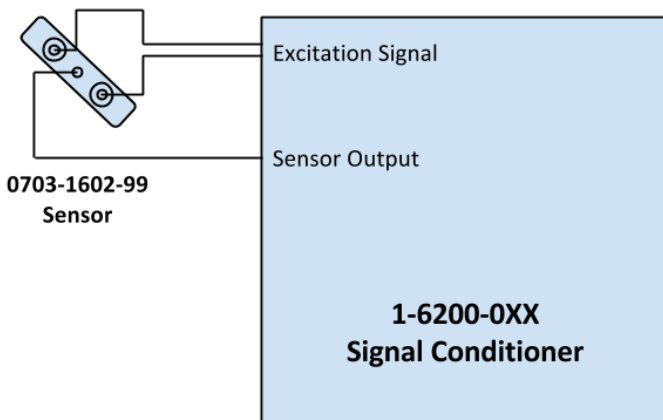
For more details on the temperature behavior of electrolytic tilt sensors and how to apply temperature compensation, see [application note AN1001](#).

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.

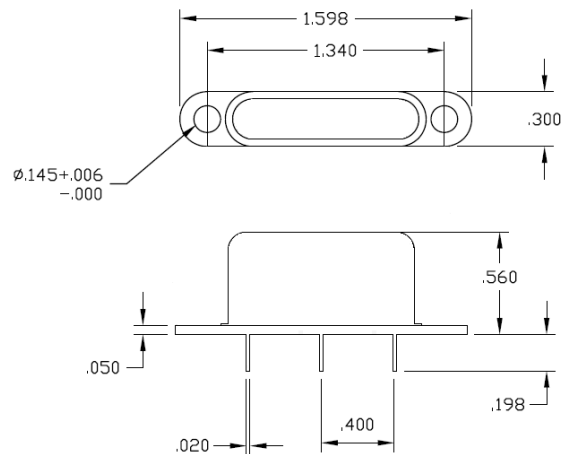
Further information on electrolytic tilt sensor basics is provided on our website at www.frederickscompany.com.

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](#).



Dimensional Drawings



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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.