



TrueTilt™ Low Profile Dual Axis Wide Range Electrolytic Tilt Sensor

Part Number: **0717-4321-99**

Operating Specifications¹

Operating range	±40°
Linear Range	±40°
Axes of Measurement	2
Linearity (±40°)	≤1%
Repeatability	±0.1°
Resolution	≤0.005°
Null Offset	≤3°
Cross Axis (Roll) Sensitivity	≤0.025° per degree
Long Term Stability/Drift	±0.1°
Null Temperature Coefficient ²	≤0.005° per °C
Scale Temperature Coefficient	0.1% per °C
Operating Temperature	-40 °C to 85 °C
Storage Temperature	-55 °C to +100 °C
Null Impedance	85kΩ
Time Constant (63.2% of final output)	≤100 ms
Materials	Magnetic metals
Maximum Current at Null	0.2 mA (continuous)

Physical Characteristics

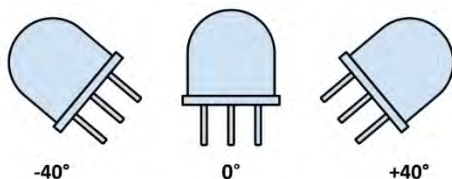
Height (including leads)	0.54" [13.7 mm]
Diameter (cap)	0.325" [8.3 mm]
Diameter (flange)	0.360" [9.1 mm]
Lead Spacing (center to center)	0.200" [5.1 mm]
Lead Diameter	0.020" [0.5 mm]
Lead Length	0.200" [5.1 mm]
Weight	1.1 g

Benefits

- Very low power consumption
- Extremely long life
- Minimal drift over lifetime compared to MEMS devices
- Excellent resolution and repeatability
- Superior performance in extreme temperatures and environments
- Excellent customer support

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Functional Diagram



*Note that tab orientation does not affect the sensor's output

Description

The **0717-4321-99** TrueTilt™ dual axis, wide 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. Its low profile makes it ideal over the standard 0717 sensors for designs with low clearance component requirements.

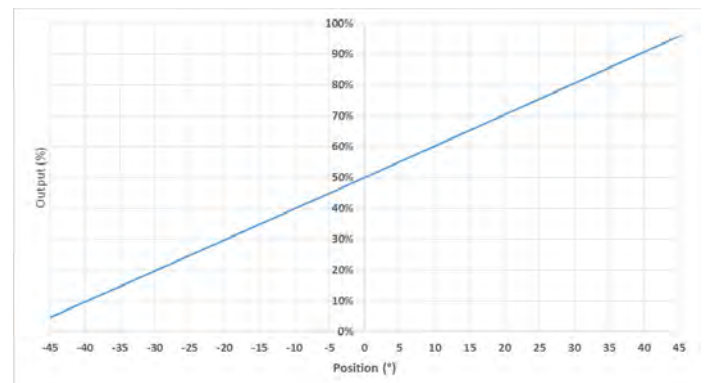
This is a passive sensor that requires signal conditioning electronics to provide an output. For a list of compatible signal conditioners, see the Related Products section on page 2.

Applications

- Recreational vehicle leveling (also known as an RV, caravan, camper van, or motorhome)
- Construction machinery and equipment
- Aerial work platforms (AWP), Elevating Work Platforms (EWP), and Mobile Elevating Work Platforms (MEWP) height and level sensing
- Railway monitoring
- Mobile satellite antenna positioning
- Agricultural machinery and equipment

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

Operating/Linear Range Output Behavior



Certifications and Ratings

- RoHS Compliant

¹ See [application note AN 1002](#) for operating specification definitions.

² See [application note AN 1001](#) for a description of temperature compensation.



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Notes

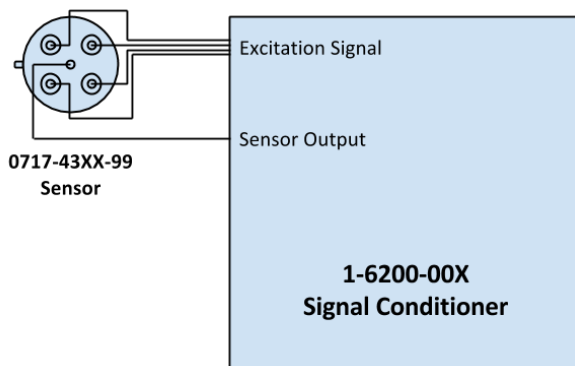
When using an excitation circuit not designed by The Fredericks Company, ensure that no direct current passes through the sensor. Direct current will lead to sensor damage, output drift, and general instability. For a description of hardware and software design for this sensor, see [application note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

The [0717-4321-99](#) 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.

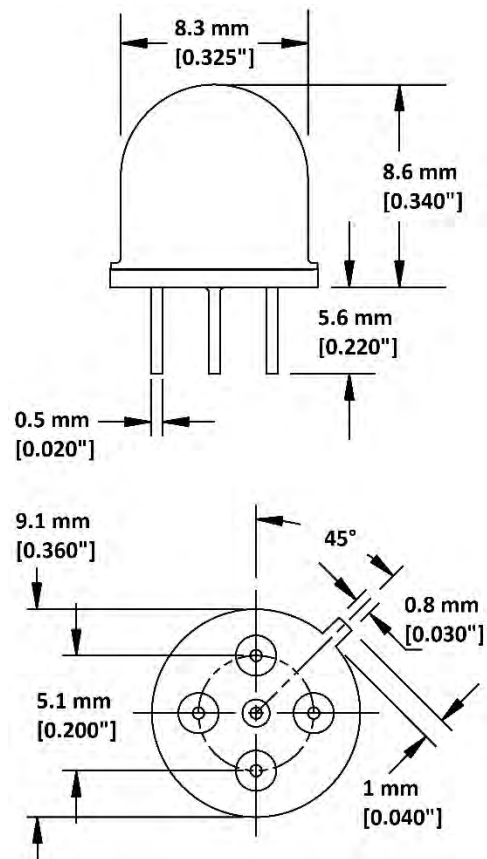
Further information on electrolytic tilt sensor basics is provided on our website at www.frederickscompany.com.

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



Additional Documentation

- [AN 1000 – Electrolytic Tilt Sensor Excitation](#)
- [AN 1001 – Temperature Compensation of Electrolytic Tilt Sensors](#)
- [AN 1005 – Converting Tilt Angle to Degrees](#)
- [AN 1006 – Obtaining Measurements from TFC Signal Conditioners](#)

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Related Products

Signal Conditioners (PCB, no sensor)

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

PCB Inclinometers (sensor mounted on PCB, no enclosure)

0729-1751-99	SPI interface
0729-1752-99	RS-232 interface
0729-1753-99	Analog/PWM interface
0729-1754-99	RS-485 interface
0727-1765-99	Analog/RS-232 interface

Environmentally Sealed Inclinometers (IP66 or higher rating)

0729-1755-99	Analog interface
0729-1759-99	RS-232 interface
0729-1760-99	RS-485 interface

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