

±85° Micro Arc Single-Axis Wide-Range Electrolytic Tilt Sensor

Part Number: **0728-1025-99**

Operating Specifications

Operating Range	±85°
Linear Range	±75°
Axes of Measurement	1
Repeatability	≤0.05°
Resolution	≤0.003°
Null Voltage	≤0.025 Volts
Null Current (max)	≤0.0003°
Symmetry	≤5%
Mech. Crosstalk/Deg	0.005°
Operating Temperature	-20 °C to 100 °C
Storage Temperature	-55 °C to +100 °C
Null Impedance	10 kΩ
Time Constant	≤100 ms
Materials	Non-magnetic
Maximum Current at Null	0.2 mA (continuous)

Physical Characteristics

Height	21.59 mm (0.850")
Width	19.05 mm (0.750")
Diameter	1.590 mm (0.0625")
Lead Length	152.4 mm (6.000")

Ordering Information

Part Number	Description
0729-1025-99	Tilt Sensor, ±85°, 1 Axis

Compatible With

Part Number	Description
1-6200-005	Signal Conditioner, SPI
1-6200-006	Signal Conditioner, RS-232
1-6200-007	Signal Conditioner, Analog/PWM
1-6200-008	Signal Conditioner, RS-485
1-6200-012	Signal Conditioner, Analog/RS-232

Related Products

Part Number	Description
0729-1751-99	Inclinometer, ±60°, 2 Axis, SPI
0729-1752-99	Inclinometer, ±60°, 2 Axis, RS-232
0729-1753-99	Inclinometer, ±60°, 2 Axis, Analog and PWM
0729-1754-99	Inclinometer, ±60°, 2 Axis, RS-485
0729-1755-99	Inclinometer, ±60°, 2 Axis, Analog
0729-1759-99	Inclinometer, ±60°, 2 Axis, RS-232
0729-1760-99	Inclinometer, ±60°, 2 Axis, RS-485

Click to Buy Online from Fredericks Now!

Description

The **0728-1025-99** wide-angle sensor is manufactured to precise tolerances for extreme sensor-to-sensor sensitivity and repeatability.

The **0728-1025-99** sensor features linear output up to ±75°, good vibration resistance, and superior cross axis properties. Glass sealing technologies allow for operation in a wider temperature range.

This is a passive electrolytic tilt sensor that requires signal conditioning electronics to provide an output. For a list of compatible signal conditioners, see the Compatible With section.

Key Features and Benefits

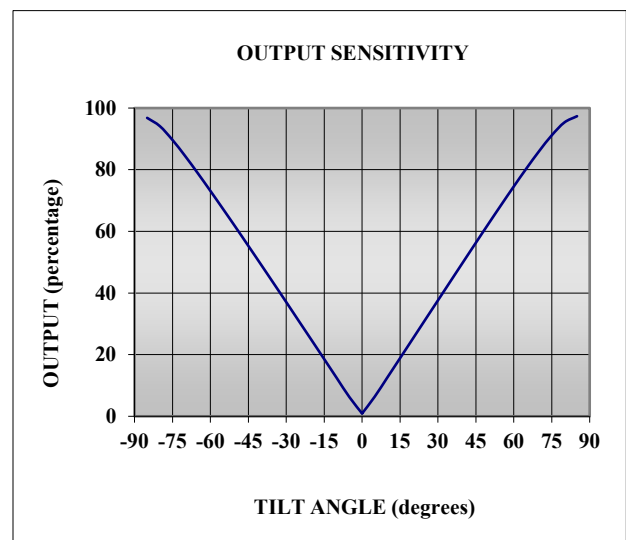
- ≤0.05° repeatability, ≤0.003° resolution, very high accuracy
- Minimal drift compared to MEMS devices
- -20 °C to 100 °C operating temperature for industrial applications
- Live text and video chat technical support

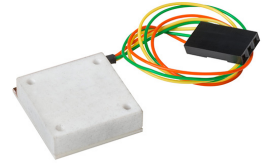
Applications

- Off road and construction vehicles
- Medical instruments
- Navigational and GPS compensation
- Robotic and automotive applications
- Oceanographic instrumentation

View the full list at www.frederickscompany.com/markets.

Operating Range Behavior



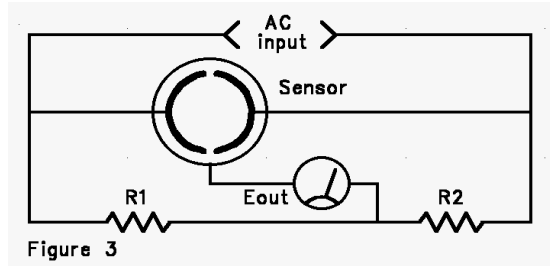


±85° Micro Arc Single-Axis Wide-Range Electrolytic Tilt Sensor
Part Number: 0728-1025-99

Sensor Test Circuitry

Tests were conducted by exciting the left and right electrodes 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.

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)

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 [0728-1025-99](#) 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.

Additional Documentation

- [AN1000](#) [Electrolytic Tilt Sensor Excitation](#)
- [AN1001](#) [Temperature Compensation of Electrolytic Tilt Sensors](#)
- [AN1005](#) [Converting Tilt Angle to Degrees](#)

Company Information

Specialty Manufacturing Services That Promise Precision - Since 1935, The Fredericks Company has been a global provider and U.S. designer and manufacturer of the highest performance tilt and vacuum measurement products on the market, with manufacturing processes that ensure the reliability of our products.

Tilt Measurement Products and Sensors That Set Standards - Fredericks' comprehensive tilt measurement product portfolio offers [electrolytic tilt sensors](#), [inclinometers](#), and [tilt switches](#). Engineered to outperform competing technology, our tilt sensors are accurate and repeatable with excellent resolution. Our tilt measurement products have no planned obsolescence and serve industries ranging from [construction](#) and [RV leveling](#) to aerospace applications and everything in between.

A Partnership That Prioritizes Uptime, Lead Time, and Service - Fredericks guarantees customer satisfaction and our "not too big, not too small" operation is what enables us to offer a true partnership experience. Our dedicated representatives and engineers offer exceptionally responsive service and the fastest lead times in the industry, knowing that uptime is the key to your success. With anytime access to our leadership team and solutions that enhance your products, you will feel the Fredericks difference.

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

Disclaimer: Specifications subject to change without notice. The Fredericks Company assumes no responsibility for inaccuracies in product specifications or any liability arising from product use.
 © 2022 The Fredericks Company