



## ±60° Analog Dual-Axis Inclinometer

Part Number: 0729-1767-99

### Operating Specifications

Output	Analog 0 V DC to 5 V DC
Supply Voltage	5 V DC (regulated)
Supply Current	20 mA @ 5 V DC
Operating Range	±60°
Linear Range	±25°
Axes of Measurement	2
Linearity (% of ±60°)	≤7.0%
Linearity (% of ±25°)	≤2.0%
Repeatability	±0.1°
Null (0°) Offset	≤5°
Cross Axis (Roll) Sensitivity	≤0.025° per degree
Long Term Stability/Drift	≤0.1°
Null Temperature Coefficient	≤0.006° per °C
Scale Temperature Coefficient	0.1% per °C
Materials	Contains magnetic metals
Operating Temperature	-40 °C to 70 °C
Storage Temperature	-40 °C to 70 °C
Settling Time	≤500 ms
Typical Output Gain (±10°)	0.022 V DC per degree
Output Gain Tolerance (±10°)	±0.003 V DC per degree

### Physical Characteristics

Housing	ABS Plastic
Cable Length	0.3 m (12")
Electrical Connections	Flying leads, 24-gauge wire
Weight	50 grams
Length	56.3 mm (2.217")
Width	40.0 mm (1.575")
Height	20.0 mm (0.787")
Hole Center	47.8 mm (1.882")

### Ordering Information

Part Number	Description
0729-1767-99	Inclinometer, ±60°, 2 Axis, Analog

### 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/PWM
0729-1754-99	Inclinometer, ±60°, 2 Axis, RS-485
0729-1759-99	Inclinometer, ±60°, 2 Axis, RS-232
0729-1760-99	Inclinometer, ±60°, 2 Axis, RS-485
0729-1765-99	Inclinometer, ±25°, 2 Axis, Analog/RS-232
F203-00A-212-00	Inclinometer, ±3°, 2 Axis, Analog/RS-232
F225-00T-003-01	Inclinometer, ±25°, 2 Axis, UART/TTL
0729-1763-XX	Tilt Switch, ±1° to ±45°, 2 Axis, Relay/RS-232
0729-1736-99	Tilt Switch, ±1° to ±45°, 2 Axis, Relay/RS-232
0729-1757-99	Tilt Switch, ±1° to ±45°, 1 Axis, Open Collector
0729-1758-99	Tilt Switch, ±1° to ±45°, 1 Axis, Open Collector

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### Description

The 0729-1767-99 dual-axis analog inclinometer utilizes a 0717-4318-99 wide-range electrolytic tilt sensor and the 1-6200-007 analog signal conditioner. Its robust plastic housing and epoxy potting provide excellent durability and environmental protection.

This inclinometer has superior tolerances and unit to unit performance. Its low-profile housing and economic design make it an ideal solution for a versatile range of applications in all sectors.

### Key Features and Benefits

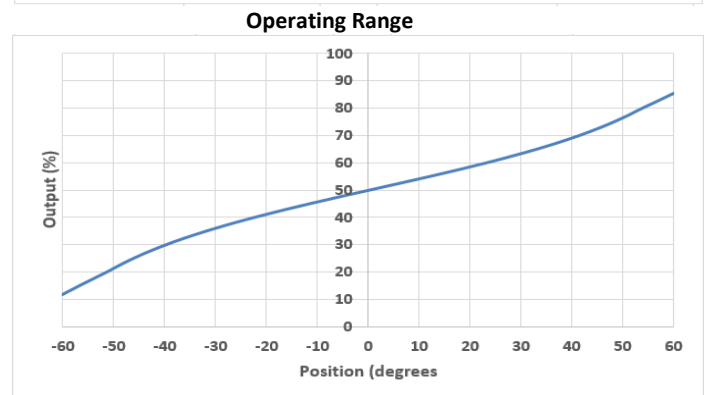
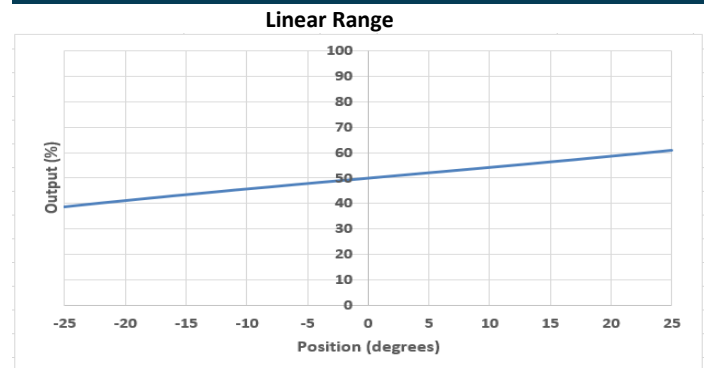
- ±0.1° repeatability, ≤0.01° resolution, very high accuracy
- ≤0.1° long term drift with an extremely long life
- Minimal drift compared to MEMS devices
- -40 °C to 70 °C operating temperature for industrial applications
- Live text and video chat technical support

### Applications

- Agricultural vehicles and machinery
- Geotechnical and structural monitoring
- Construction tools
- Construction machinery and equipment

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### Linear and Operating Range Behavior





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Analog Output Description	
Vcc = 5 V DC	0 V DC to 5 V DC, 0° tilt = 2.50 V DC

Electrical Connections	
Red	Supply (5 V DC)
Black	Supply (Ground)
Yellow	Temperature analog output (0 V DC to 5 V DC)
Green	X axis analog output (0 V DC to 5 V DC)
Blue	Y axis analog output (0 V DC to 5 V DC)

**Mounting Notes**

All inclinometers in this series must be mounted horizontally (parallel to the surface of the earth and perpendicular to the force of gravity). For best performance, isolate the unit from vibrations when mounting it.

**Converting Temperature Values**

The board temperature output is a 10-bit value (0 to 1023). To convert that value to a temperature in °C, use the following equation:

$$\text{Temperature in } ^\circ\text{C} = (((\text{output}/1023)*5)-0.5)/0.01$$

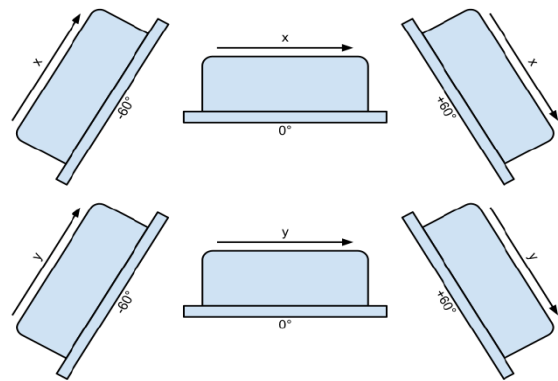
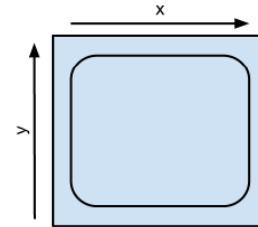
**Certifications and Ratings**

- RoHS Compliant
- IP66 Environmental Protection

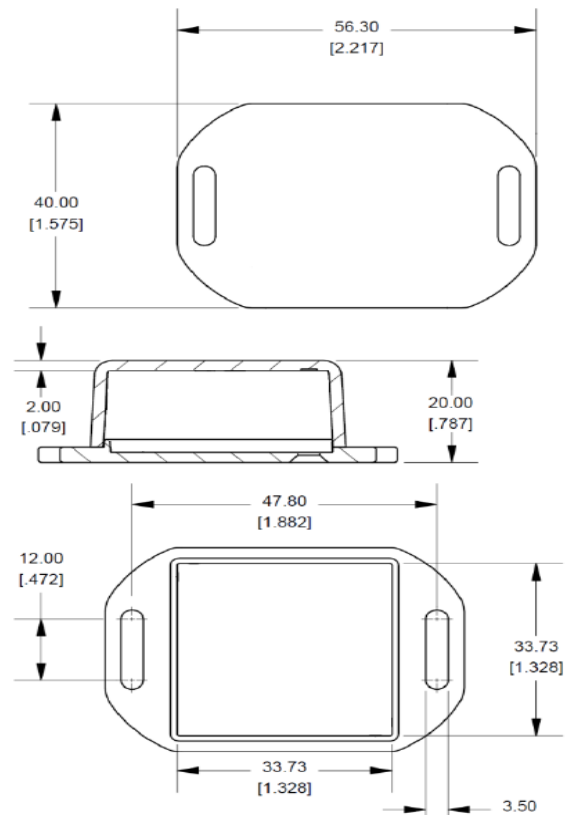
**Additional Documentation**

AN1000	<a href="#">Electrolytic Tilt Sensor Excitation</a>
AN1001	<a href="#">Temperature Compensation of Electrolytic Tilt Sensors</a>
AN1003	<a href="#">Configuring Tera Term to Use with TFC Tilt Products</a>
AN1005	<a href="#">Converting Tilt Angle to Degrees</a>
AN1006	<a href="#">Obtaining Measurements from TFC Signal Conditioners</a>

**Functional Diagram**



**Dimensional Drawings**





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**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.

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