



±90 Analog Dual-Axis MEMS Inclinometer
Part Number: 0751-9002-99

Operating Specifications	
Interface	Analog (0.5 V to 4.5 V)
Supply Voltage	7 V DC to 35 V DC
Supply Current	8 mA
Operating Range	±90°
Linear Range	±90°
Axes of Measurement	2
Offset (Output at 0°)	2.5 V
Sensitivity	35 mV/°
Repeatability	±0.1°
Resolution	0.0035°
Cross-axis (Roll) Sensitivity	≤3%
Offset Temperature Error	±0.2° @ 0 °C to 70 °C
	±0.6° @ -25 °C to 85 °C
Sensitivity Temp. Dependency	-0.8% to 0.3% @ 0 °C to 70 °C
	-1.5% to 0.5% @ -25 °C to 85 °C
Operating Temperature	-40 °C to 85 °C
Storage Temperature	-55 °C to 85 °C

Physical Characteristics	
Housing	Zinc
Electrical Connections	4 Wire
Cable Length	30 cm (11.8")
Weight	60 g (excluding connector)
Length	41 mm (1.61")
Width	46 mm (1.81")
Height	13.5 mm (0.53")
Hole Center	38 mm (1.50")

Ordering Information	
Part Number	Description
0751-9002-99	MEMS Inclinometer, ±90°, 2 Axis, Analog

Related Products	
Part Number	Description
0750-3002-99	MEMS Inclinometer, ±30°, 2 Axis, RS-485
0750-9002-99	MEMS Inclinometer, ±90°, 2 Axis, RS-485
0751-3002-99	MEMS Inclinometer, ±30°, 2 Axis, Analog
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
0729-1755-99	Inclinometer, ±60°, 2 Axis, Analog/PWM
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
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 0751-9002-99 dual-axis analog inclinometer sensor utilizes a MEMS sensor for dual-axis tilt measurements. It's a durable solution and has an IP67 rating, make it an excellent solution for heavy duty environments such as construction machinery and industrial applications.

Key Features and Benefits

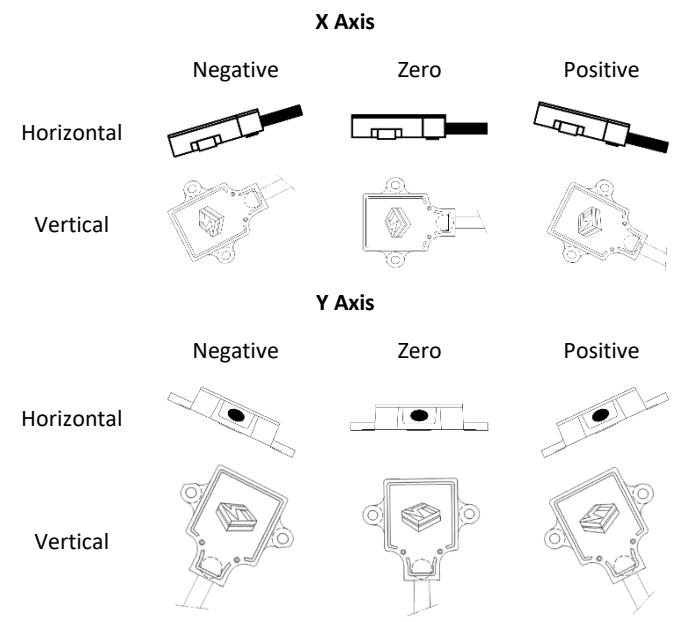
- ±0.1° repeatability, ≤0.0035° resolution, very high accuracy
- -40 °C to 85 °C operating temperature for industrial applications
- Live text and video chat technical support

Applications

- Agricultural vehicles and machinery
- Geotechnical and structural monitoring
- Construction tools
- Construction machinery and equipment
- Solar tracking
- Platform tilt measurement
- Equipment and instrument condition monitoring
- Inclination based position measurement
- Rotational orientation measurement

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

Direction of Measurement





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Electrical Characteristics

Supply Voltage	7 V to 35 V DC
Current Consumption	≤8 mA
Analog Resistive Output Load	≥10 kΩ
Analog Capacitive Output Load	20nF
Start-up Delay	10 ms

Electrical Connections

Red	Supply (+)
Blue	Supply (-)
Yellow	X Axis Output
White	Y Axis Output
Green	Factory use only, do not connect

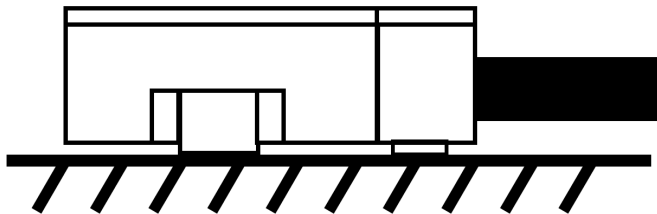
Voltage to Angle Conversion

The analog output can be converted to degrees using the following equation:

$$\alpha = \sin^{-1} \frac{V_{out} - Offset}{Sensitivity}$$

Offset and sensitivity can be found in the operating specifications.

Mounting



Mounting Notes

The 0751-9002-99 must be mounted on a flat, smooth surface with 2 M4 screws.

Orientation Note

The 0751-9002-99 can measure in 2 different orientations. It is necessary to calibrate the sensor in each axis so the sensor outputs '0' at the zero position before use.

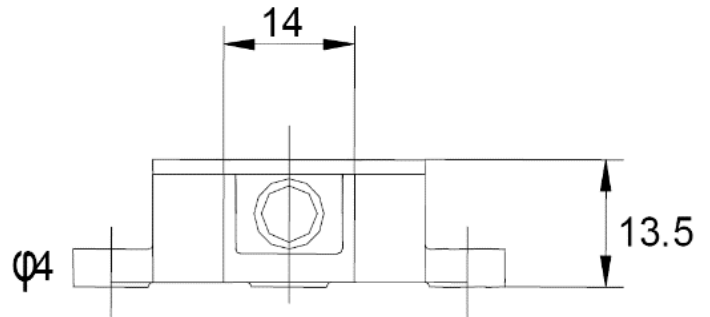
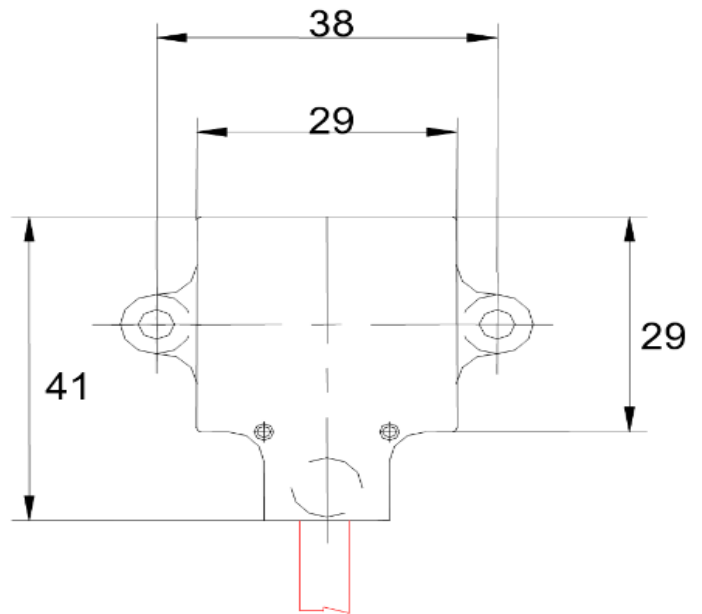
Certifications and Ratings

- RoHS Compliant
- IP67 (excluding connector)

Additional Documentation

- [AN1003 Configuring Tera Term to Use with TFC Tilt Products Manual](#)
- [0751 Series MEMS Inclinometer Instruction Manual](#)

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.

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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