

±90° RS-485 Dual-Axis MEMS Inclinometer

Part Number: 0750-9002-99



Operating Specifications

Interface	RS-485
Supply Voltage	7 V DC to 35 V DC
Supply Current	20 mA
Operating Range	±90°
Linear Range	±90°
Axes of Measurement	2
Repeatability	±0.1°
Resolution	0.07° per LSB
Cross-axis Stability	≤4%
Offset Temperature Error	±0.2° @ 0 °C to 70 °C ±0.6° @ -25 °C to 85 °C
Sensitivity Temperature Error	±0.2% @ 0 °C to 70 °C ±0.5% @ -25 °C to 85 °C
Operating Temperature	-40 °C to 85 °C
Storage Temperature	-55 °C to 85 °C
Frequency Response (-3dB)	18 Hz
Time Constant (63.2% of output)	≤55 ms

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
0750-9002-99	MEMS Inclinometer, ±90°, 2 Axis, RS-485

Related Products

Part Number	Description
0750-3002-99	MEMS Inclinometer, ±30°, 2 Axis, RS-485
0751-3002-99	MEMS Inclinometer, ±30°, 2 Axis, Analog
0751-9002-99	MEMS Inclinometer, ±90°, 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

Description

The 0750-9002-99 dual-axis RS-485 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

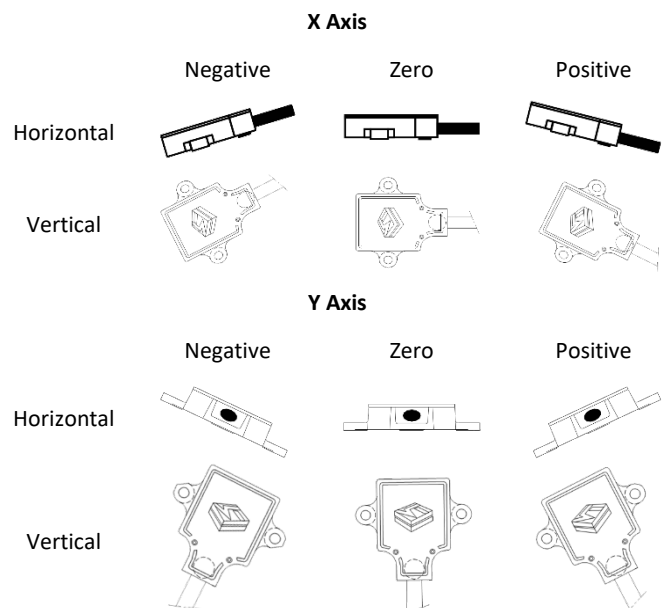
- ±0.1° repeatability, ≤0.07° per LSB resolution, very high accuracy
- -40 °C to 85 °C operating temperature for industrial applications
- Live text and video chat technical support

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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RS-485 Settings

Baud Rate (default 38400)	1200 to 38400
Data Bits	8
Parity	None
Stop Bits	1
Address (default 99)	01 to 99
Maximum Signal Conditioners on Bus	32

RS-485 Commands

*9914#	X axis output (degrees)
*9918#	X axis average output (degrees)
*9924#	Y axis output (degrees)
*9928#	Y axis average output (degrees)
*9942#	Temperature Output (Celsius)
*9981A25#	Change address (to 25) using password A
*99860#	Change X axis zero offset using password 0
*99870#	Change Y axis zero offset using password 0
*9980#	Read product information
*9989B#	Factory reset (with password B)

See the [0750 Series manual](#) for additional commands and details

Electrical Connections

Red	Supply (+)
Blue	Supply (-)
Green	Factory use only, do not connect
Yellow	RS-485 A (+)
White	RS-485 B (-)

Example RS-485 Command and Response Byte Values

Retrieve X axis degree of tilt from sensor with address 99, which returns +2.23°.

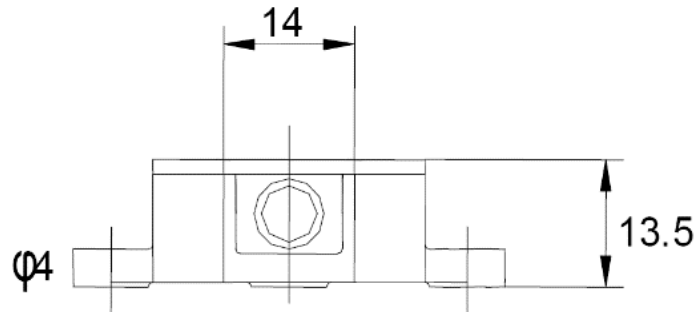
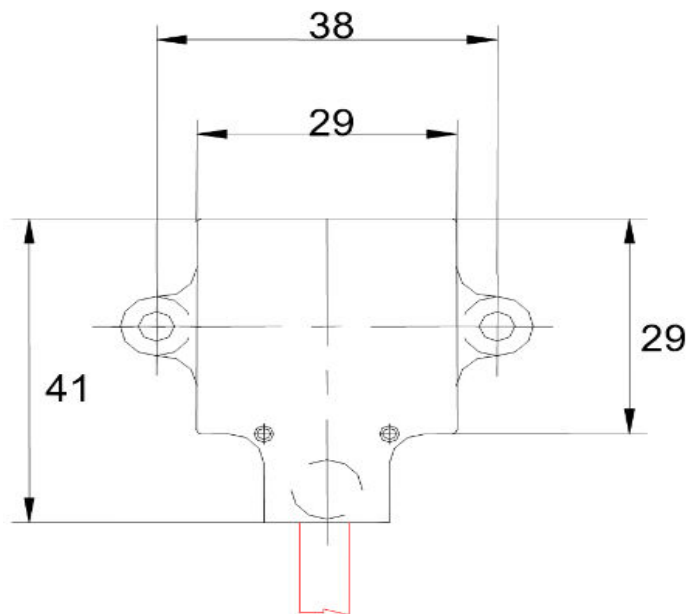
Command

Byte	0	1	2	3	4	5
ASCII	*	9	9	1	4	#
Hex	0x2A	0x39	0x39	0x31	0x34	0x23

Response

Byte	0	1	2	3	4	5	6	7
ASCII	+	2	.	2	3	°	<lf>	<cr>
Hex	0x2D	0x32	0x2E	0x32	0x33	0xA7	0x0A	0x0D

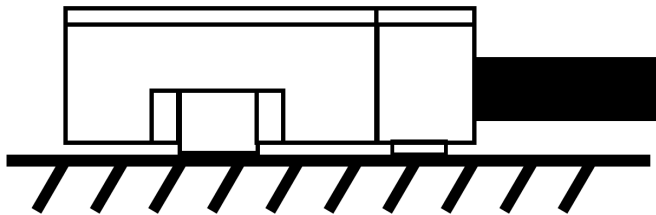
Dimensional Drawings



±90° RS-485 Dual-Axis MEMS Inclinometer Part Number: 0750-9002-99



Mounting



Mounting Notes

The 0750-9002-99 must be mounted on a flat, smooth surface with 2 M4 screws.

Orientation Note

The 0750-9002-99 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](#) [0750 Series MEMS Inclinometer Instruction Manual](#)

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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