

## ±60° RS-232 Dual-Axis Inclinometer

Part Number: **0729-1752-99**

### Operating Specifications

Interface	RS-232
Supply Voltage	3.3 V DC to 5 V DC
Supply Current	11 mA (3.3 V) 16 mA (5 V)
Analog Input Resolution	16 bits (10 bits oversampled)
Operating Range	±60°
Linear Range	±25°
Axes of Measurement	2
Repeatability	±0.1°
Resolution	≤0.003°
Null Offset	±5°
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 85 °C
Storage Temperature	-40 °C to 125 °C
Temperature Sensor Range	-40 °C to 125 °C
Time Constant (63.2% of output)	≤100 ms

### Physical Characteristics

Housing	None (PCBA)
Electrical Connections	7 Pin, 2.54 mm (0.1") spacing
Weight	5.5 g
Length	31.75 mm (1.25")
Width	31.75 mm (1.25")
Height	16.10 mm (0.63")
Hole Center	26.67 mm (1.05")

### Ordering Information

Part Number	Description
0729-1752-99	Inclinometer, ±60°, 2 Axis, RS-232

### Related Products

Part Number	Description
0717-4318-99	Tilt Sensor, ±60°, 2 Axis
1-6200-006	Signal Conditioner, 1 or 2 Axis, RS-232
0729-1751-99	Inclinometer, ±60°, 2 Axis, SPI
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
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 **0729-1752-99** dual axis RS-232 inclinometer includes the **0717-4318-99** wide-range, dual-axis electrolytic tilt sensors and **1-6200-006** signal conditioning electronics.

This inclinometer has superior tolerances and unit to unit performance with an economic design, making it an excellent solution for a variety of applications in many markets and industries.

### Key Features and Benefits

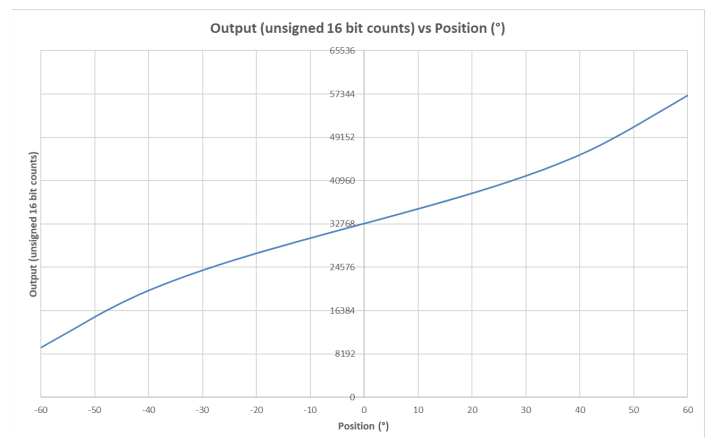
- ±0.1° repeatability, ≤0.003° resolution, very high accuracy
- ≤0.1° long term drift with an extremely long life
- Minimal drift compared to MEMS devices
- -20 °C to 85 °C operating temperature for industrial applications
- Live text and video chat technical support

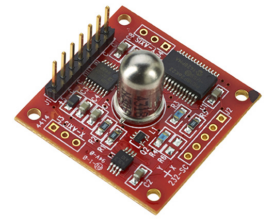
### Applications

- Geotechnical and structural monitoring
- Construction tools, laser leveling
- Construction machinery and equipment
- Aerial work platforms (AWP), elevating work platforms (EWP)
- Mobile elevating work platforms (MEWPS)

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### Operating Range Behavior





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RS-232 Settings	
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1

RS-232 Commands	
X	X axis output (0 to 65535)
Y	Y axis output (0 to 65535)
T	Temperature output (0 to 1023)
S	Output X, Y, temperature at set intervals
R	Stop timed interval output
1, 2, 3, 4, 5	Delay (in seconds) for set intervals
@Z#	Set current position as zero
&C*	Clear saved zero position

Electrical Connections	
J1 Pin 1 (+5)	Supply (+)
J1 Pin 2 (C)	Supply (-)
J1 Pin 3 (C)	Ground
J1 Pin 4 (OUT)	RS-232 transmit (TX)
J1 Pin 5 (IN)	RS-232 receive (RX)
J1 Pin 6 (C)	Ground
J1 Pin 7 (C)	Ground
L1	Dual axis sensor connection
J3	Single axis sensor x axis connection
J4	Single axis sensor y axis connection

**Example RS-232 Command and Response Byte Values**

Retrieve X axis tilt value which returns 32768 (0° tilt):

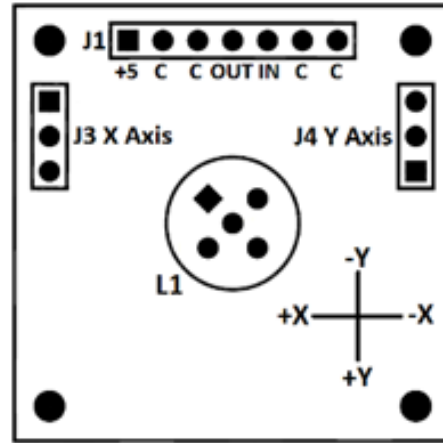
**Command**

Byte	0
ASCII	X
Hex	0x58

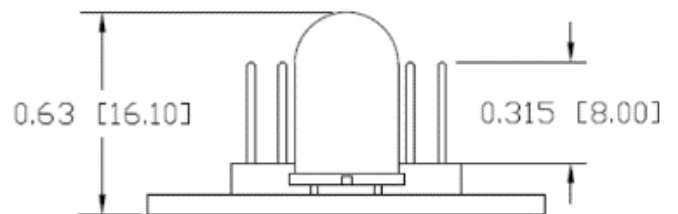
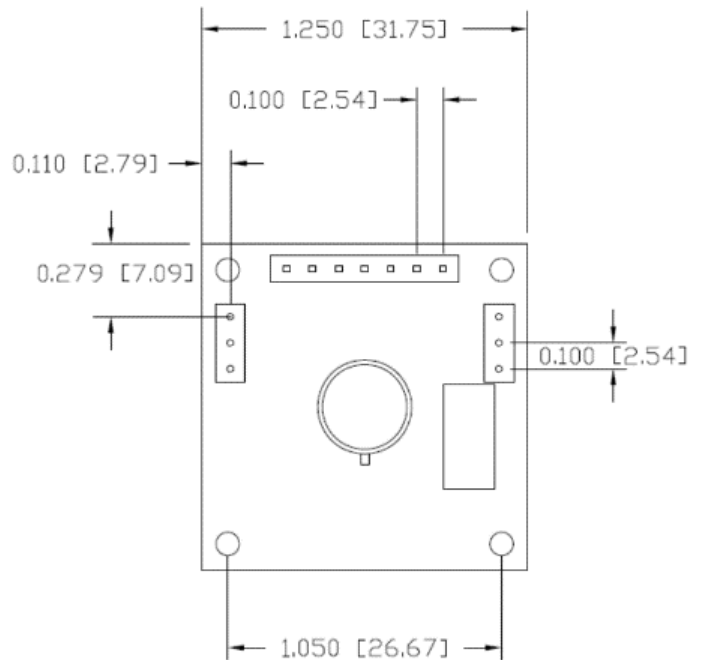
**Response**

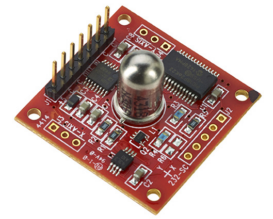
Byte	0	1	2	3	4	5	6
ASCII	3	2	7	6	8	<lf>	<cr>
Hex	0x33	0x32	0x37	0x36	0x38	0x0A	0x0D

**Pin Diagram and Direction of Measurement**



**Dimensional Drawings**





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**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:

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

**Mounting Notes**

The 0729-1752-99 and 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.

**Certifications and Ratings**

- RoHS Compliant

**Additional Documentation**

<a href="#">AN1000</a>	<a href="#">Electrolytic Tilt Sensor Excitation</a>
<a href="#">AN1001</a>	<a href="#">Temperature Compensation of Electrolytic Tilt Sensors</a>
<a href="#">AN1003</a>	<a href="#">Configuring Tera Term to Use with TFC Tilt Products</a>
<a href="#">AN1005</a>	<a href="#">Converting Tilt Angle to Degrees</a>
<a href="#">Article</a>	<a href="#">Structural Monitoring Case Study: Resensys</a>
<a href="#">Datasheet</a>	<a href="#">0717-4318-99 Wide Range Tilt Sensor</a>
<a href="#">Datasheet</a>	<a href="#">1-6200-006 RS-232 Signal Conditioner</a>

**Company Information**

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