



## Dual Axis Analog Inclinometer

Part Number: 0729-1755-99

### Operating Specifications<sup>1</sup>

|   |                              |
|---|------------------------------|
| <b>Output</b>                                   | Analog 0 V DC to 5 V DC, PWM |
| <b>Supply Voltage</b>                           | 7 V DC to 16 V DC            |
| <b>Supply Current</b>                           | 20 mA @ 7 V DC               |
| <b>Operating Range</b>                          | ±60°                         |
| <b>Linear Range</b>                             | ±25°                         |
| <b>Axes of Measurement</b>                      | 2                            |
| <b>Linearity (% of ±60°)</b>                    | ≤7.0%                        |
| <b>Linearity (% of ±25°)</b>                    | ≤2.0%                        |
| <b>Symmetry (±60°)</b>                          | ≤3°                          |
| <b>Symmetry (±25°)</b>                          | ≤1°                          |
| <b>Repeatability</b>                            | ±0.1°                        |
| <b>Resolution</b>                               | ≤0.003°                      |
| <b>Null Offset</b>                              | ≤5°                          |
| <b>Cross Axis (Roll) Sensitivity</b>            | ≤0.025° per degree           |
| <b>Long Term Stability/Drift</b>                | ≤0.1°                        |
| <b>Null Temperature Coefficient<sup>2</sup></b> | ≤0.006° per °C               |
| <b>Scale Temperature Coefficient</b>            | 0.1% per °C                  |
| <b>Operating Temperature</b>                    | -40 °C to 85 °C              |
| <b>Storage Temperature</b>                      | -40 °C to 125 °C             |
| <b>Temperature Sensor Range</b>                 | -40 °C to 125 °C             |
| <b>Frequency Response</b>                       | ≤100 ms                      |
| <b>Settling Time</b>                            | ≤500 ms                      |

### Dimensions

|                               |                              |
|-------------------------------|------------------------------|
| <b>Housing</b>                | ABS Plastic <sup>3</sup>     |
| <b>Electrical Connections</b> | 12" cable with 24 gauge wire |
| <b>Weight</b>                 | 47 grams                     |
| <b>Length</b>                 | 56.3 mm (2.222")             |
| <b>Width</b>                  | 40.0 mm (1.575")             |
| <b>Height</b>                 | 20.0 mm (0.335")             |
| <b>Hole Center</b>            | 47.8 mm (1.882")             |

### Analog Output Description

V<sub>cc</sub> = 7 V DC to 16 V DC    0 V DC to 5 V DC, 0° tilt = 2.50 V DC

### PWM Output Description

|                   |                                     |
|-------------------|-------------------------------------|
| <b>Period</b>     | 122 Hz                              |
| <b>Duty Cycle</b> | 1% to 99%, 0° tilt = 50% duty cycle |
| <b>Resolution</b> | 16 bits                             |

### Benefits

- Very low power consumption
- Simple integration
- Excellent resolution and repeatability of measurements
- Superior performance in extreme temperatures and environments
- Excellent customer support
- Manufactured in the United States of America

### Description

The 0729-1755-99 Dual Axis Analog/PWM Inclinometer utilizes a 0717-4318-99 Fredericks TrueTilt™ wide range electrolytic tilt sensor and 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.

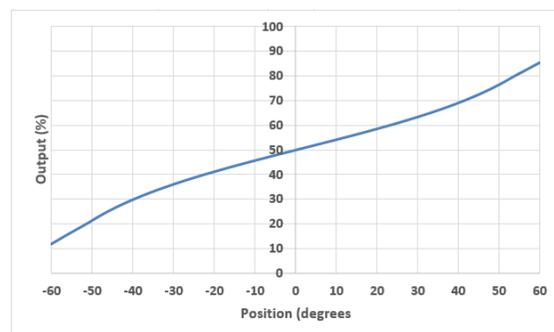
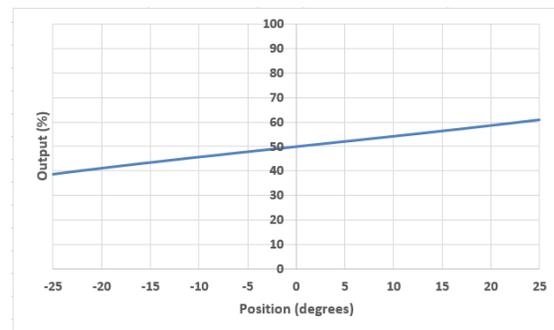
The 0729-1755-99 inclinometer can utilize any sensor from the Fredericks 0717 series wide range sensors upon customer request. A detailed list of compatible sensors can be found on page 2 in the Related Products section.

### Applications

- Aerial lift platform leveling monitor or control
- Crane boom angle measurement
- Robotic controls
- Satellite dish alignment
- Solar panel position and elevation control
- Wheel alignment systems

View a full list of applications on The Fredericks Company website at [www.frederickscompany.com](http://www.frederickscompany.com).

### Linear and Operating Range Behavior



### Certifications and Ratings

- RoHS Compliant
- IP66

<sup>3</sup> Metal housing available upon request.

<sup>1</sup> Visit [www.frederickscompany.com](http://www.frederickscompany.com) for a list of definitions.

<sup>2</sup> See application note AN1001 for a description of temperature compensation.

## Dual Axis Analog Inclinometer

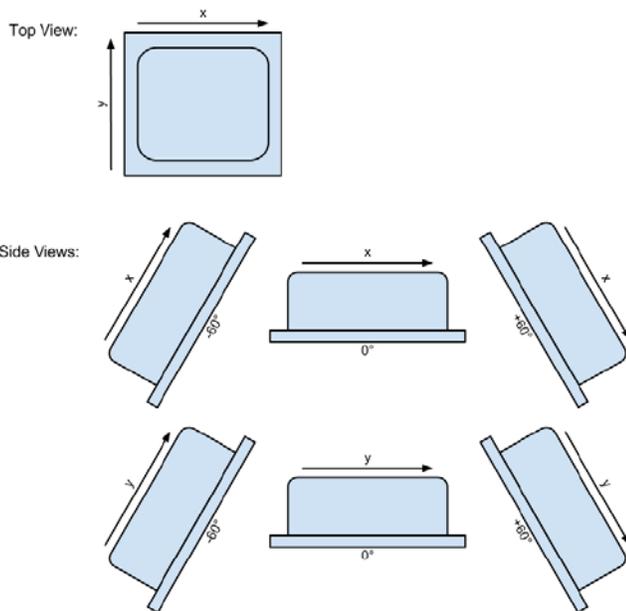
Part Number: 0729-1755-99



### Electrical Connections

|                           |  |
|---------------------------|--|
| <b>Red</b>                | Supply (7 V DC to 16 V DC)                   |
| <b>Black</b>              | Supply (Ground)                              |
| <b>Yellow<sup>4</sup></b> | Temperature analog output (0 V DC to 5 V DC) |
| <b>Green</b>              | X axis analog output (0 V DC to 5 V DC)      |
| <b>Blue</b>               | Y axis analog output (0 V DC to 5 V DC)      |
| <b>N/C<sup>5</sup></b>    | X axis PWM output                            |
| <b>N/C<sup>5</sup></b>    | Y axis PWM output                            |

### Direction of Measurement



### Mounting Notes

The 0729-1755-99 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.

### Related Products

#### Compatible Fredericks TrueTilt™ Sensors

**0717-4318-99** ±60° range, ±0.1° repeatability

**0717-4319-99** ±50° range, ±0.1° repeatability

**0717-4313-99** ±50° range, ±0.05° repeatability

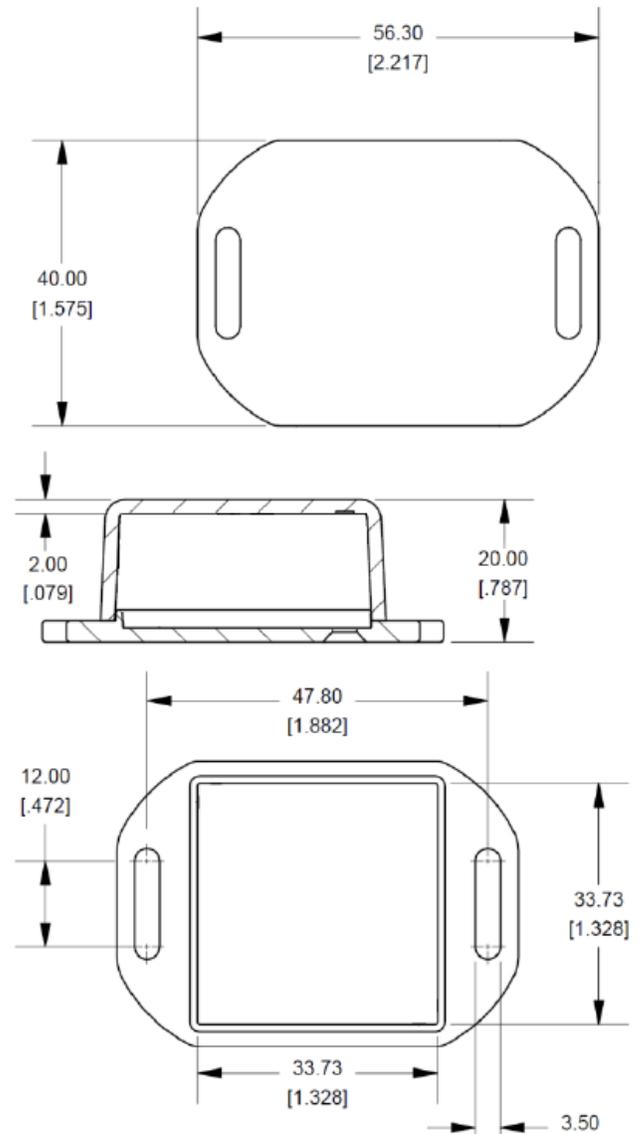
**0717-4315-99** ±60° range, ±0.05° repeatability

**0729 series inclinometers** - These inclinometers utilize Fredericks TrueTilt™ wide range electrolytic tilt sensors. They have a variety of outputs including analog, RS-232, and RS-485. These inclinometers have a low profile and a robust plastic housing with epoxy potting to provide excellent durability and environmental protection.

<sup>4</sup> Temperature (°C) = (temperature output voltage - 0.5) / 0.010

<sup>5</sup> Optional outputs provided upon request.

### Dimensional Drawings



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