Solid State Vertical Reference

ADS-C132-1A
ADS-C232-1A

Description:

The Watson Vertical Reference is a solid state gyro system used to measure angular displacement and rate, especially where dynamic motion may interfere. This is where the effects of lateral acceleration severely limit performance capability of an ordinary accelerometer or pendulous device. The Watson vertical reference provides exceptional performance for the price.

The Watson Vertical Reference achieves improved performance by integrating a Watson angular rate gyro to get an estimate of attitude and then comparing it with the output from a pendulum to find the error. The error is filtered over a long time constant and subtracted from the rate gyro output to correct biases as a closed loop error correction system. The Watson Vertical Reference can be a functional replacement for mechanical gyros. Mechanical gyros are often more expensive and cannot provide the reliability and life of this solid-state sensor.

The vertical reference is especially suited for applications where there is limited bank and elevation such as ships, underwater vehicles, land vehicles, and camera stabilization. This is because the vertical reference uses a linear coordinate system. To do any better, a full three axis system, with either an Euler or Quaternion system, would be required. Consult the factory about your application.

Single Axis (ADS-C132-1A)

Dual Axis (ADS-C232-1A)

- All Solid State
- High Reliability
- Low Cost
- One Year Warranty
- Low Power
- Engineering Support

Applications:

The Watson vertical reference has been used to stabilize or control ships and submersibles, to instrument automobiles, to stabilize antennas and many other applications.

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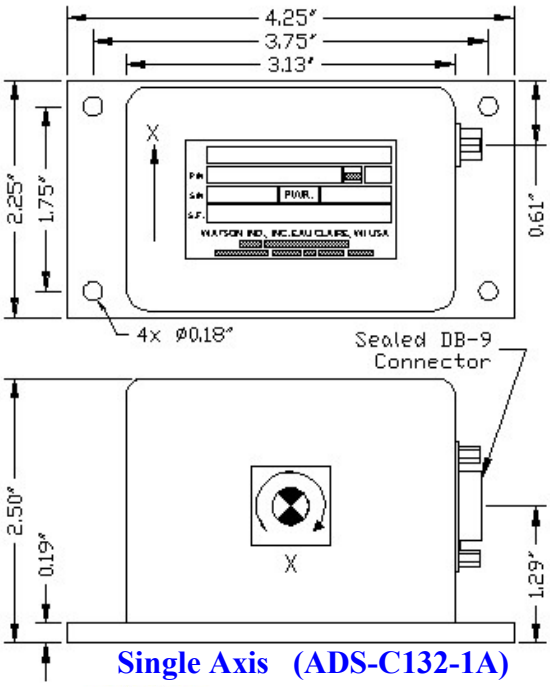
ADS-C132-1A, ADS-C232-1A Specifications

	Single Axis	Dual Axis	
Attitude			
Range: X axis	±50°	±30°	
Range: Y axis	Not available	±30°	
Analog Scale Factor:	5°/V	3°/V	±10V Output
Accuracy: Static	±0.3°	±0.3°	
* Accuracy: Dynamic	2%	2%	
Angular Rate			
Range: X axis	±100°/sec	±100°/sec	
Range: Y axis	Not available	±100°/sec	
Resolution:	0.1°/sec	0.1°/sec	
Analog Scale Factor:	10°/sec/V	10°/sec/V	±10V Output
Scale Factor Accuracy:	1%	1%	Constant temperature
Bias: X axis	< 1.5°/sec	< 1.5°/sec	
Bias: Y axis	Not available	< 1.5°/sec	
Non-Linearity	< 0.05%	< 0.05%	Full scale range
Bandwidth	50 Hz	50 Hz	
Environmental			
Temperature: Operating	-20°C to +50°C	-20°C to +50°C	
Temperature: Storage	-30°C to +60°C	-30°C to +60°C	
Vibration: Operating	2.5g rms	2.5g rms	20 Hz to 2 KHz
Vibration: Survival	10g rms	10g rms	20 Hz to 2 KHz
Shock: Survival	500g	500g	10mS ½ sine wave
Electrical			
Input Power: Positive	12 to 16VDC (0.3W)	12 to 16VDC (0.3W)	
Input Power: Negative	-12 to -16VDC (0.1W)	-12 to -16VDC (0.02W)	
Input Current:	20mA @ ±15VDC	25mA @ ±15VDC	
Analog Output	±10VDC	±10VDC	
Output Impedance:	300 Ohms	300 Ohms	
Physical			
Axis Alignment:	< 2°	< 2°	
Size: Including Mounting Flanges	2.25"W x 4.25"L x 2.50"H	3.13"W x 4.5"L x 3.12"H	
Weight:	7.1oz (0.4lb)	10.9oz (0.7lb)	
Connection:	9 pin male "D" subminiature	9 pin male "D" subminiature	

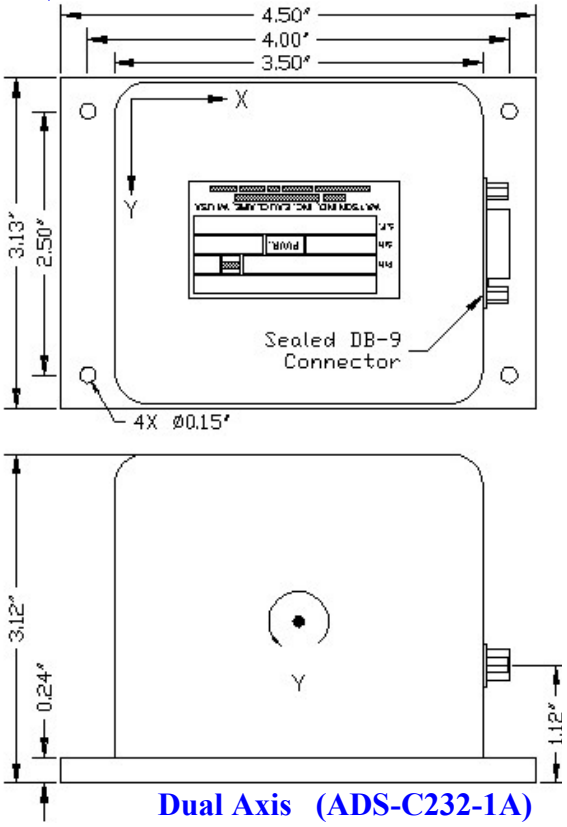
* Actual accuracy can be calculated as the listed percentage multiplied by the change in value over the entire dynamic maneuver.

- Specifications are subject to change without notice.
- This product may be subject to export restrictions. Please consult the factory.

Dimensions:



Single Axis (ADS-C132-1A)



Dual Axis (ADS-C232-1A)

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