



Dual Axis Vertical Reference System

ADS-C232-1AD

Description:

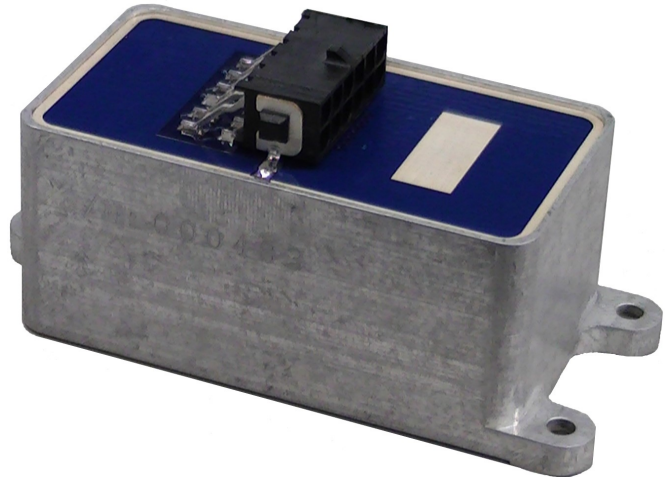
Introducing the ADS-C232-1AD, Watson Industries newest sensor system! It is a much smaller, yet fully functional vertical reference system that can serve as a replacement for a Watson VRS in many applications.

The Watson Industries Dual Axis Vertical Reference System is a solid-state gyro package that measures angular displacement and rate, especially where dynamic motion may interfere. Under these conditions, the effects of lateral accelerations severely limit the performance of an ordinary accelerometer or pendulous device.

The Watson Dual Axis Vertical Reference achieves exceptional performance by integrating the output of a vibrating structure gyro to get an estimate of the attitude, which is then compared to accelerometers to find the error. The error is filtered over a long time constant and subtracted from the rate gyro output to correct biases in a closed loop error correction system. This process lets the gyro measure short-term attitude accuracy above the correction loop frequency while the accelerometer serves as the long-term reference.

The ADS can be a functional replacement for mechanical gyros, which are often more expensive, larger, heavier and less reliable than this solid-state sensor. It is especially suited for applications where there is limited bank and elevation such as ships, underwater vehicles, some land vehicles, and certain camera applications.

- [Solid State, Strap Down System](#)
- [High Accuracy](#)
- [Low Cost, Low Power](#)
- [Rugged, High Reliability](#)
- [Analog and RS-232 Digital Outputs](#)
- [One Year Limited Warranty](#)
- [Engineering Support](#)



Applications:

The ADS is used to stabilize and control ships and submersibles, to stabilize antenna platforms, to instrument automobiles, and for many other applications.



Watson Industries, Inc.

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Attitude

Range: Bank	$\pm 180^\circ (\pm 30^\circ \dagger)$	Digital (Analog)
Range: Elevation	$\pm 90^\circ (\pm 30^\circ \dagger)$	Digital (Analog)
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	3°/V †	$\pm 10V$ Output
Accuracy: Static	$\pm 0.5^\circ$	(up to 75°)
* Accuracy: Dynamic	0.5%	

Angular Rate

Range: Roll, Pitch	$\pm 100^\circ/\text{sec}$	
Resolution:	0.025°/sec	Binary mode (14 bit)
Analog Scale Factor:	10°/sec/V	$\pm 10V$ Output
Scale Factor Accuracy:	0.5%	
Bias: Roll, Pitch	$< 0.3^\circ/\text{sec}$	$\pm 0.02^\circ/\text{sec}$ Binary mode (14 bit)
Non-Linearity:	$< 0.2\%$	Full scale range
Bandwidth:	50 Hz	
Noise:	$< 0.06^\circ/\text{sec rms}$	

Acceleration

Range: X, Y, Z	$\pm 10g$	
Resolution:	4mg	
Scale Factor Accuracy:	1%	
Bias:	$< 10mg$	
Non-Linearity:	0.5%	Full scale range
Bandwidth:	3 Hz	

Environmental

Temperature: Operating	-40°C to +85°C	
Temperature: Storage	-55°C to +85°C	
Vibration: Operating	5g rms	20 Hz to 2 KHz
Vibration: Survival	10g rms	20 Hz to 2 KHz
Shock: Survival	500g	1mS ½ sine wave

Electrical

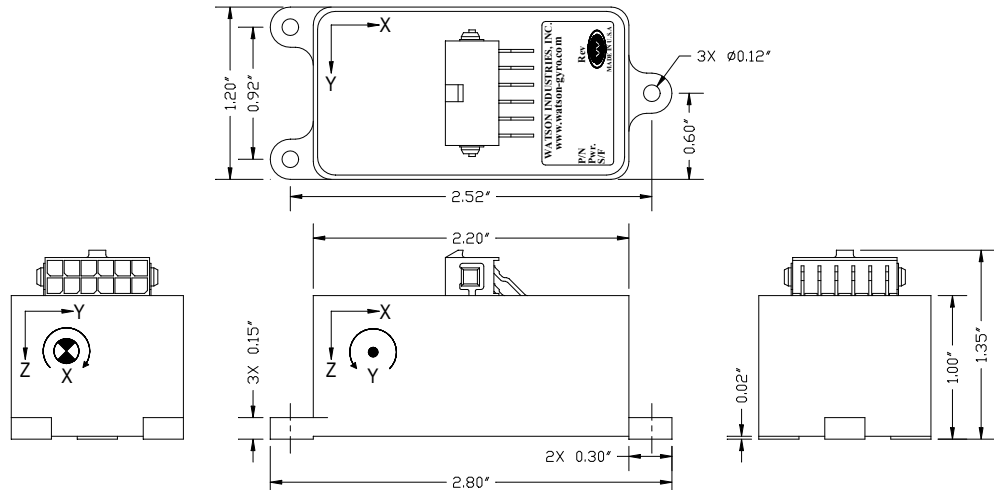
Frame Rate:	250 Hz	Maximum
Startup Time: Data	5 sec	
Startup Time: Fully operational	10 sec	
Input Power: Positive	12 to 16VDC	0.7W
Input Power: Negative	-12 to -16VDC	0.3W
Input Current:	40mA @ $\pm 15VDC$	
Digital Output:	RS-232	
Analog Output:	$\pm 10VDC$	
Analog Output Impedance:	300 Ohm	Per line

Physical

Axis Alignment:	$< 0.25^\circ$	
Size: Including Mounting Flanges	1.2"W x 2.8"L x 1.35"H	3.0 x 7.1 x 3.4 (cm)
Weight:	2.1 oz	60 grams
Connection:	Amp 4-794627-2 (12 pin)	Mating Connector Incl.

- * Actual accuracy can be calculated as the listed percentage multiplied by the change in value over the entire dynamic maneuver.
- † The Analog output range for Bank & Elevation is menu selectable. This also changes the analog scale factor for Bank & Elevation.
- Specifications are subject to change without notice.
- This product may be subject to export restrictions. Export Classification ECCN 7A994.

Dimensions:



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