Dual Axis Vertical Reference System

VRS-E232-1AD

Description:

The Watson Industries Dual Axis Vertical Reference System is a solid-state gyro package used to measure 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 improved performance by integrating the output of a vibrating structure gyro to get an estimate of the attitude, which is then compared to the output of conventional accelerometers to find the error. This error is then filtered over a long time constant and subtracted from the rate gyro output to correct biases as a closed loop error correction system. This system lets the gyro dominate the attitude accuracy above the correction loop frequency while the accelerometer reference dominates the lower frequencies.

The VRS can be a functional replacement for mechanical gyros, which are often more expensive and less reliable than this solid-state sensor.

The VRS is especially suited for applications where there is limited bank and elevation such as ships, underwater vehicles, some land vehicles, and certain camera applications. This is because the VRS uses a linear coordinate system.

- Solid State, Strap Down System
- High Accuracy
- Low Cost, Low Power
- Rugged, High Reliability
- Analog and RS-232 Digital Outputs
- Two Year Limited Warranty
- Engineering Support

Applications:

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

Watson Industries, Inc.
3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A
Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248
e-mail: support@watson-gyro.com Website: www.watson-gyro.com

VRS-E232-1AD Specifications

Attitude		
Range: Bank	±180° (±30°)	Digital (Analog)
Range: Elevation	±90° (±30°)	Digital (Analog)
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	3°/V	±10V Output
Accuracy: Static	±0.3°	(up to 75°)
* Accuracy: Dynamic	0.5%	
Angular Rate		
Range: Roll, Pitch	±100°/sec	
Resolution:	0.025°/sec	Binary mode (14 bit)
Analog Scale Factor:	10°/sec/V	±10V Output
Scale Factor Accuracy:	0.5%	
Bias: Roll, Pitch	< 0.2°/sec (Analog) < 0.1°/sec (Digital)	±0.02°/sec Binary mode (14 bit)
Non-Linearity:	< 0.1%	Full scale range
Bandwidth:	20 Hz	
Noise:	< 0.03°/sec rms	
Acceleration		
Range: X, Y, Z	±10g	
Resolution:	4mg	
Scale Factor Accuracy:	1%	
Bias:	< 10mg	
Non-Linearity:	0.1%	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	10mS ½ sine wave
Electrical		
Frame Rate:	284.44 Hz	Maximum
Startup Time: Data	5 sec	
Startup Time: Fully operational	10 sec	
Input Power:	10 to 35VDC	3.2W
Input Current:	225mA @ 12VDC	125mA @ 24VDC
Digital Output:	RS-232	
Analog Output:	±10VDC	
Analog Output Impedance:	300 Ohm	Per line
Physical		
Axis Alignment:	< 0.25°	
Size: Including Mounting Flanges	3.24"W x 5.78"L x 4.18"H	8.2 x 14.7 x 10.6 (cm)
Weight:	29oz (1.8lb)	822 grams (0.8Kg)
Connection: RS-232 / Analog Outputs	9 pin female "D" subminiature	
Connection: Power	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. Export Classification ECCN 7A994.

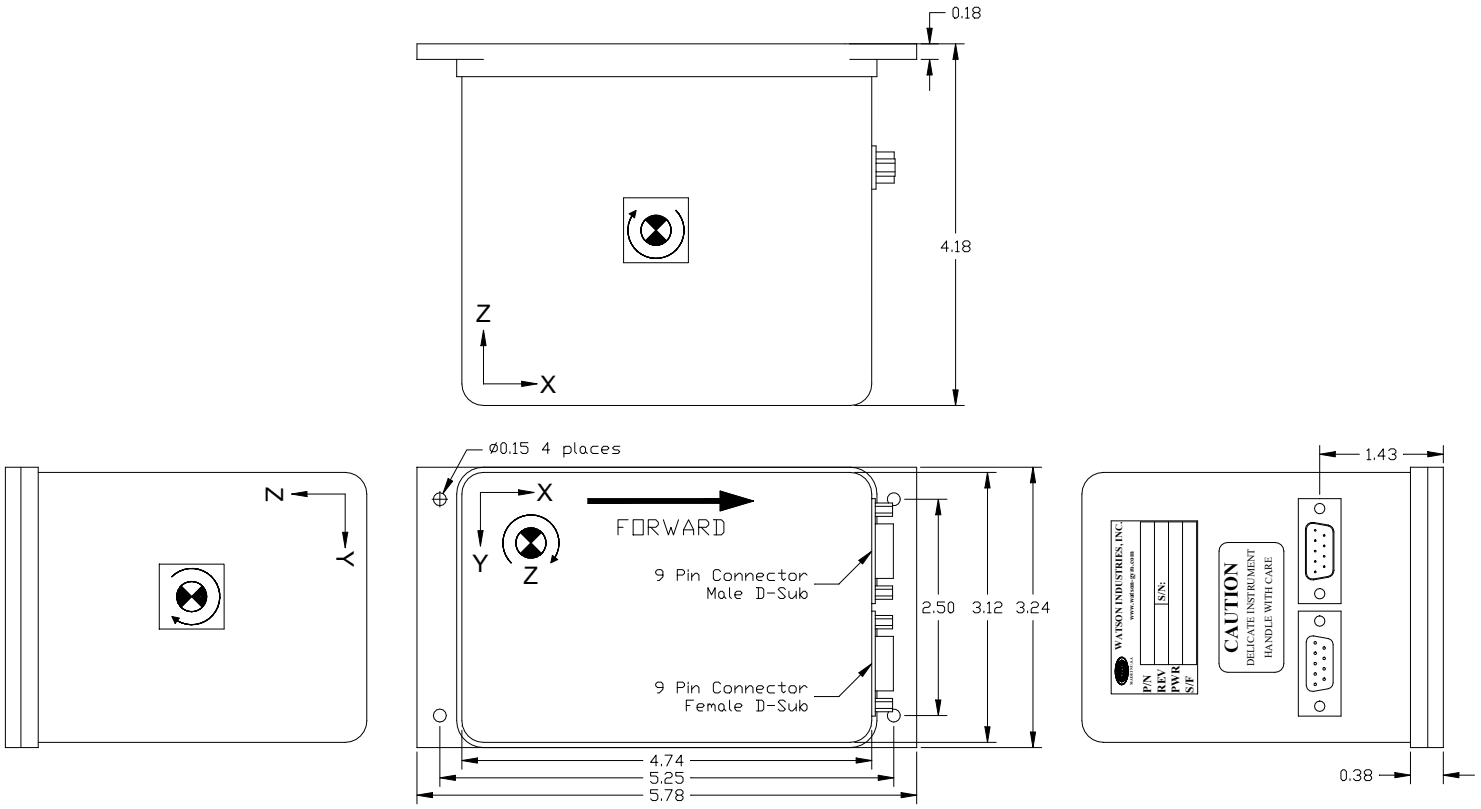
Watson Industries, Inc.

3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A

Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248

e-mail: support@watson-gyro.com Website: www.watson-gyro.com

Dimensions:



06/24 DAO

Watson Industries, Inc.

3035 Melby Street Eau Claire, Wisconsin 54703 U.S.A

Phone: +1 (715) 839-0628 Fax: +1 (715) 839-8248

e-mail: support@watson-gyro.com Website: www.watson-gyro.com