



## STRAPDOWN HEADING REFERENCE

SHR-360

### **Description:**

The SHR-360 provides heading and sensor information. It includes a high accuracy triaxial fluxgate magnetometer and a triaxial accelerometer. This unit is a "strap-down" or "body-axis" sensor. The sensitive axes of the magnetometer (like the accelerometers) will stay at a constant relationship with the vehicle and move as the vehicle moves. Since the fluxgate sensors rotate with the unit, the unit must use its angle sensors to calculate the rotation back to level.

The function is similar to a mechanical gimbal except that the rotations are done using software. The SHR-360 has several advantages over using a traditional gimbal including: no bearings to wear out, no fluid to leak and high shock survivability.



The Watson Industries "strap-down" solution provides a better magnetic heading than other magnetic heading products using mechanical gimbals. A significant problem with mechanically gimballed compasses becomes apparent when trying to calibrate the heading sensor in the field. With a strap-down system, the magnetometers are fixed with respect to the vehicle in which it is mounted; Therefore, the constant soft and hard iron field distortions can be fully calibrated out.

- Solid State, Strapdown System
- Low Cost, Low Power
- Rugged, High Reliability
- Vibration Resistant
- Analog and RS-232 Serial Outputs
- PC Heading Calibration
- Two Year Limited Warranty
- Engineering Support

### **Applications:**

Strap-down systems provide superior performance in installations including vehicles, ships, buoys, aircraft.



### **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

## SHR-360 Specifications

### Attitude

Range: Bank	±180°	
Range: Elevation	±90°	
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	18°/V	±10V Bank ±5V Elevation
Accuracy: Static	±0.5°	

### Magnetic Heading

Range:	0° - 360°	
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	18°/V	±10V Output
† Accuracy: Static	±1.5°	

### Acceleration

Range: X, Y, Z	±10g	
Resolution:	4mg	
Scale Factor Accuracy:	1%	
Bias: X, Y, Z	< 10mg	
Non-Linearity:	0.1%	Full scale range
Bandwidth:	3 Hz	

### Magnetic

Range: X, Y, Z	±1000 mGauss	
Resolution:	0.1 mGauss	Binary mode (14 bit)
Scale Factor Accuracy:	1%	
Bias: X, Y, Z	< 5 mGauss	
Non-Linearity:	< 0.01%	Full scale range
Bandwidth:	10 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 30VDC	< 3W
Input Current:	250mA @ 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 2.67"H	8.2 x 14.7 x 6.8 (cm)
Weight:	22oz (1.4lb)	620 grams (0.6Kg)
Connection: RS-232	9 pin female "D" subminiature	
Connection: Power / Analog Outputs	9 pin male "D" subminiature	

† Static heading accuracy is dependent on the magnetic environment.

This sensor will meet or exceed this spec within the 48 contiguous United States.

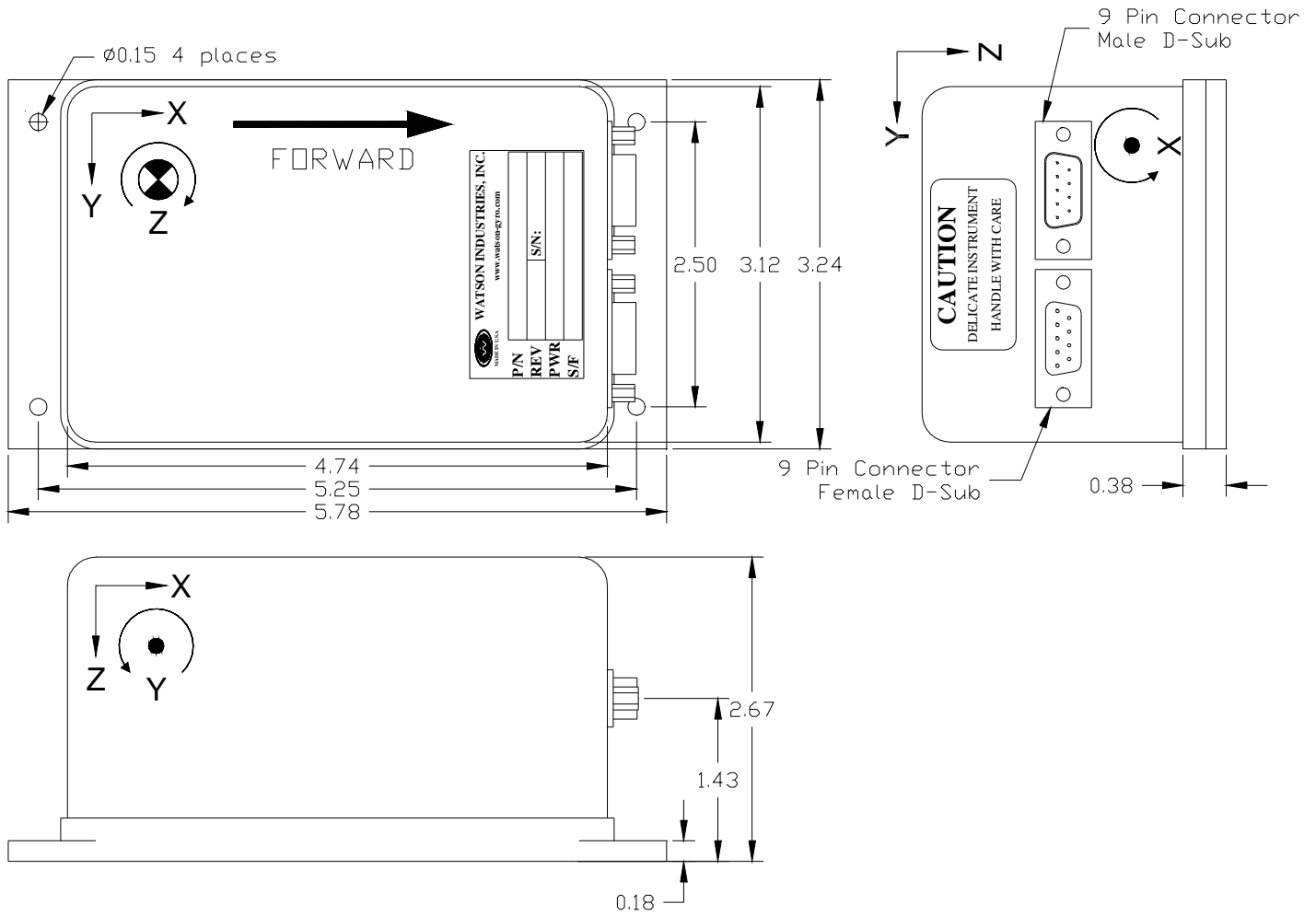
- Specifications are subject to change without notice.
- This product may be subject to export restrictions. Please consult the factory.



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**Dimensions:**



12/15 DAO



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