

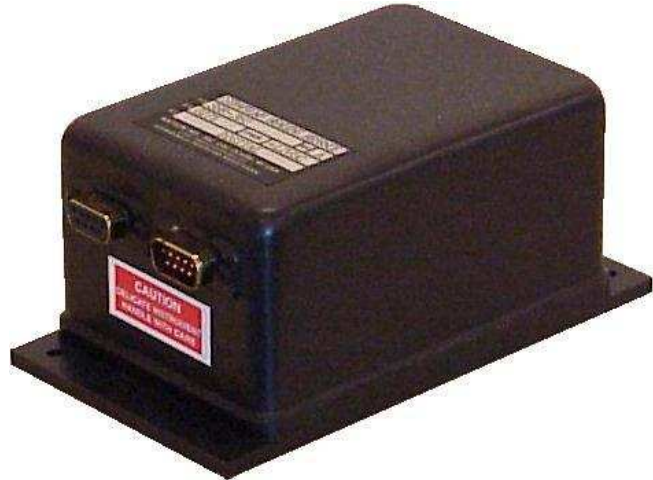


## GYRO STABILIZED STRAPDOWN HEADING REFERENCE

SHR-E360

### **Description:**

The SHR-E360 provides heading and sensor information. It includes a high accuracy triaxial fluxgate magnetometer, a triaxial accelerometer, and a rate gyro. This unit is a "strap-down" or "body-axis" sensor. The sensitive axes of the SHR will stay at a constant relationship with the vehicle and move as the vehicle moves. Since the fluxgate sensors rotate with the unit, it must use its angle sensors to calculate the rotation back to level. This function is similar to a mechanical gimbal except that the rotations are done using software. The SHR-E360 has several advantages over using a traditional gimbal including: no bearings to wear out, no fluid to leak and high shock survivability.



The SHR-E360 is gyro-stabilized. This means that the SHR will provide better performance in dynamic applications. The internal gyro allows the SHR to respond to short-term movements while the fluxgate provides the long-term heading reference. This combination of sensors allows for accurate data in a wider range of applications than a SHR without gyro-stabilization.

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, UAVs, ROVs, and submersibles.



### **Watson Industries, Inc.**

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## SHR-E360 Specifications

### Attitude

Range: Bank	±180°	
Range: Elevation	±90°	
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	18°/V	±10V Output
Accuracy: Static	±0.3°	

### Heading

Range:	0° - 360°	
Resolution:	0.02°	Binary mode (14 bit)
Analog Scale Factor:	18°/V	±10V Output
† Accuracy: Static	±1.5°	
* Accuracy: Dynamic	±2%	

### Angular Rate

Range: Yaw	±100°/sec	
Resolution:	0.01°/sec	Binary mode (14 bit)
Scale Factor Accuracy:	1%	
Bias: Yaw	< ±0.02°/sec	
Non-Linearity	< 0.03%	Full scale range
Bandwidth	20 Hz	

### Acceleration

Range: X, Y, Z	±10g	
Resolution:	4mg	
Scale Factor Accuracy:	1%	
Bias: X, Y, Z	< ±5mg	
Non-Linearity:	< 1%	Full scale range
Bandwidth:	20 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	-30°C to +60°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	71.1 Hz	Maximum
Startup Time: Data	5 sec	
Startup Time: Fully operational	10 sec	
Input Power:	10 to 30VDC	4W
Input Current:	380mA @ 12VDC	190mA @ 24VDC
Digital Output	RS-232	
Analog Output	±10VDC	

### Physical

Axis Alignment:	< 0.25°	
Size: Including Mounting Flanges	3.24"W x 5.78"L x 2.6"H	8.2 x 14.7 x 6.6 (cm)
Weight:	27oz (1.7lb)	770g (0.8kg)
Connection: RS-232	9 pin female "D" subminiature	
Connection: Power / Analog Outputs	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.

† 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



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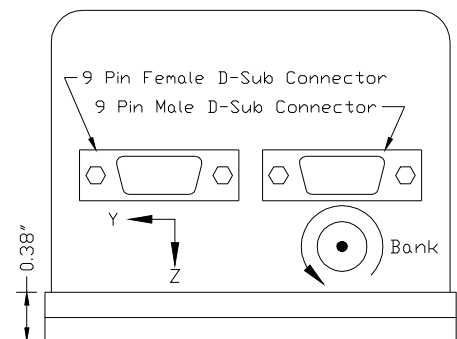
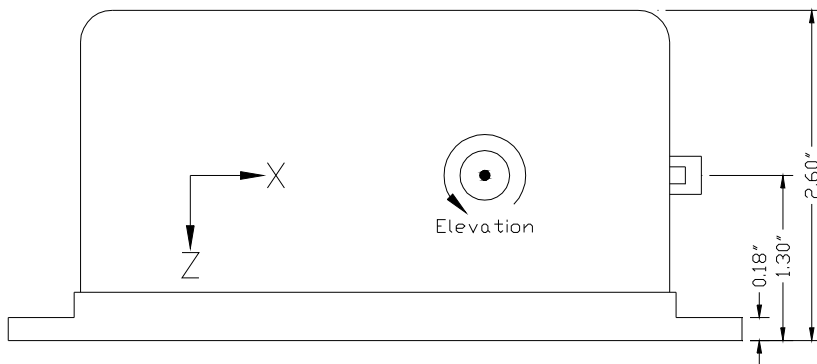
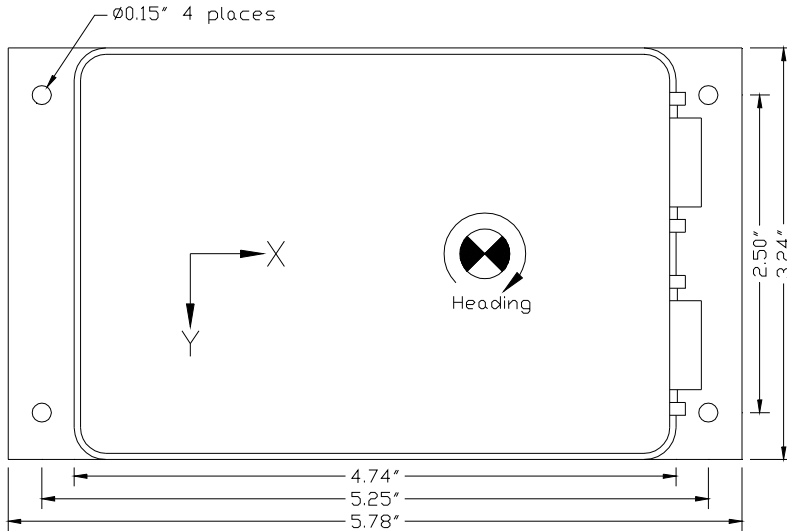
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**Dimensions:**



03/08 DAO



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