2 Axis Rate Sensor
RS Series

USD's RS Series of Two Axis Rate Sensors measures angular rate with respect to two mutually perpendicular axes. The high performance ruggedized package contains two 446 Series Rate Integrating Gyroscopes (RIGs) and all the necessary support electronics. The RIGs have been in production for over 30 years providing robust, precise, hysteresis-free rate sensing in the desired rate of turn range. The lack of hysteresis allows very low rate sensing, accurately, below 0.01°/second. All of the circuitry is designed with modern day components and are commercial off the shelf (COTS). It's a proven technology out-performing Fiber Optic Gyros (FOGs) in cost and performance in severe environments.

The RS Series supports a wide range of factory configurable options such as input rate, AC or DC input and output, scale factor and bandwidth. The packaging can be configured with different mounting patterns and connectors to be a form, fit, function replacement for existing systems.

A BIT function (*built in test*) can be included for each axis to provide "go" status of the sensor. The BIT monitors the spin-motor of the RIG, and the servo of each axis. Upon either a spin-motor or servo failure, the system cannot provide a meaningful output corresponding to a sensed rate. The TTL level BIT provides a logical "high" for each axis indicating the system is active and available to provide meaningful rate of turn measurements.

Applications:

- Guidance & Control
- Flight Control
- High Accuracy Stabilization
  - Optical Line of Sight
  - Camera
  - Seeker Head
  - Antenna & Radar
  - Gimbal & Platform
- Autopilot Control

Key Features:

- Low Noise
- High Bandwidth
- Robust Environmental Capability
- Excellent Linearity, Scale Factor & Bias Stability

Performance:	
Input Rate	From 0.01 to 500 °/sec
Input Excitation	7 to 26 VAC 16 to 36 VDC
Output	AC, DC or Differential DC
Scale Factor	To Customer Specification
Linearity	< 0.01% Full Scale
Zero Rate Output (Bias)	< 5 mv
Bandwidth (-3 db)	Up to 100 Hz
Resolution	± 0.01 °/sec
Threshold	± 0.01 °/sec
Environmentals:	
Operating Temperature	-54° C to +105° C
Shock	300g, 11 msec
Vibration (20 to 2000 Hz)	20g rms

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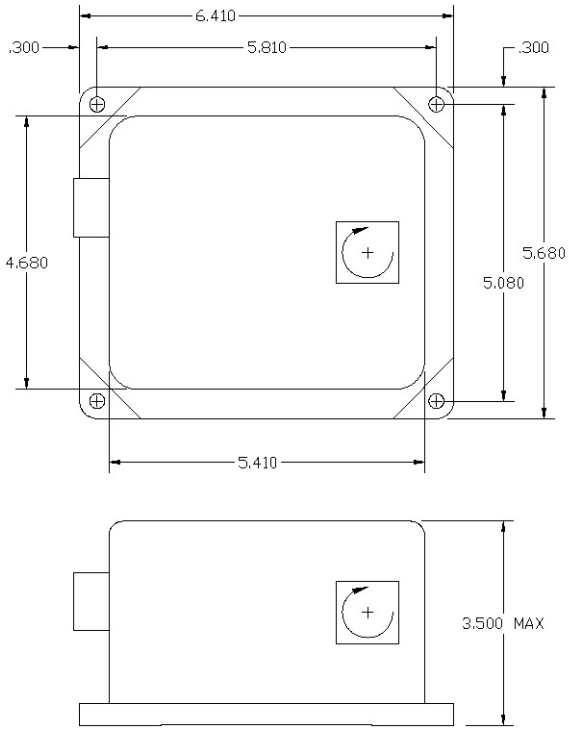

Typical Rate Sensor Pin-out

Pin #	Function	Type
1	Azimuth Rate +	Analog
2	Azimuth Rate -	Analog
3	Elevation Rate +	Analog
4	Elevation Rate -	Analog
5	Power Input	16 to 36 VDC
6	Azimuth BIT	TTL
7	Elevation BIT	TTL
8	Chassis Ground	Ground
9	Power Common	Power Return
10	Signal Common	Ground

The above outline drawing is typical of a rate sensor that requires a 16 to 36 volt DC supply excitation and a differential DC output. All of the required circuits to permit RIG units to provide accurate, sensitive rate of turn measurements are included in the assembly package. These circuits include the main power supply and power distribution system, the RIG spin-motor and pickoff drive systems, gimbal torquer current servo system, output signal conditioning and fully differential driver systems.

Mounting system and electrical connector can be configured to mate with customer requirements.

For more information, please contact sales@usdynamicscorp.com

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