

SDG500

MEMS Quartz Angular Rate Sensor

Ideal for High Performance Commercial Applications:

- Attitude Control for Small Business & Regional Aircraft
- Antenna, Optical Platform Stabilization & Pointing
- Instrumentation
- Motion Control
- Robotics & Robotic Vehicles



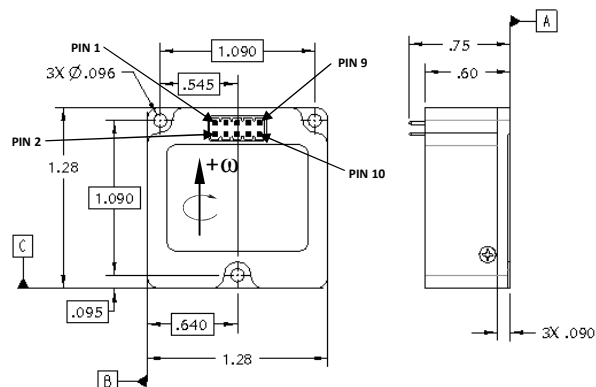
Key Performance Features:

- **Outstanding Vibration & Noise Performance**
- **Exceptional Bias Stability**
- **Compact Size, No Wear-Out Mechanisms**
- **High Reliability & Long Life**
- **DC Voltage Input/High-Level Analog DC Voltage Output**
- **Adaptable – No Software Required**



The SDG500 single-axis angular rate sensor provides exceptional performance versus similar sensors in its class, with a lower noise capability superior to silicon-based gyros. The SDG500 utilizes our proven Quartz MEMS sensing technology and fully-contained electronics in a durable, compact size.

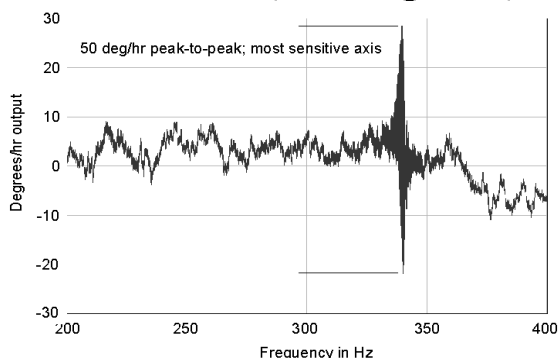
By applying design techniques found only in more expensive rate sensors, excellent bias stability, temperature performance, noise, and vibration performance levels have been achieved.



PIN # Function

1	—	+Vdc input
2	—	Power Ground
3	—	-Vdc Input
4	—	Temp Output
5	—	Signal Return
6	—	Rate Output
7	—	No Connection
8	—	Self Test Input
9	—	Case Ground
10	—	Built-In Test

SDG500 Sine Sweep Vibration @ 1.5G input



* Please see user's guide for more information regarding vibration tolerance and sensitivity.

SDG500-00100-100

Power Requirements

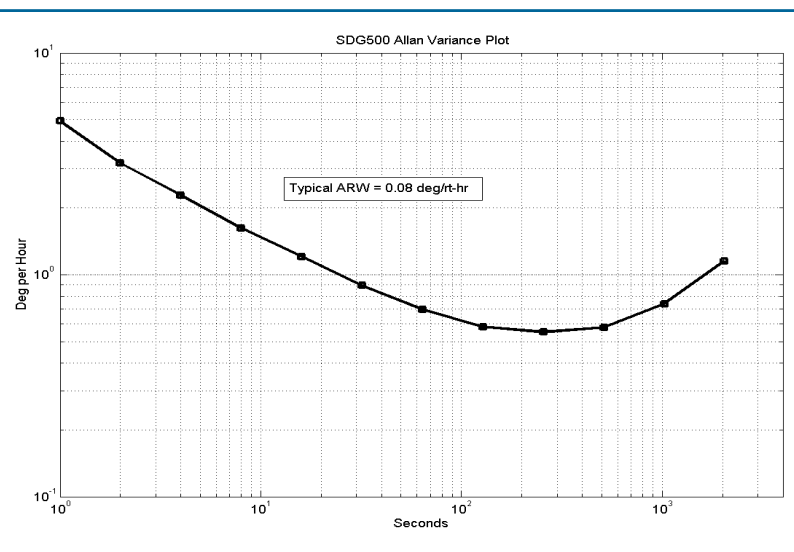
Input Voltage	+ and – 10 to 15 Vdc
Input Current	< 20 mA (each supply, typical)

Performance

Standard Range Full Scale	$\pm 100^\circ/\text{sec}$
Full Scale Output (Nominal)	$\pm 5.0 \text{ Vdc}$
Scale Factor (at 25°C, Typical)	$0.050 \pm 0.001 \text{ Vdc}/^\circ/\text{sec}$
Scale Factor Over Temperature	$\leq 0.1\%/^\circ\text{C}$
Bias Calibration (at 25°C)	$\leq 1.5^\circ/\text{sec}$
Bias Variation over Temperature (Dev. from 25°C)	$\leq 5^\circ/\text{sec}$
Bias Stability (In-Run at Constant Temp., Std. Dev.)	$< 20^\circ/\text{hr. typical}$
G Sensitivity	$< 0.06^\circ/\text{sec}/g$
Start-Up Time	$< 1.0 \text{ sec}$
Bandwidth (-90°, incl. temp. effect)	$60 \pm 15 \text{ Hz}$
Damping Ratio	0.7 ± 0.3
Non-Linearity, (% Full Range)	$\leq 0.05\%$
Resolution/Threshold	$< 0.004^\circ/\text{sec}$
Output Noise	$\leq 0.005^\circ/\text{sec}/\sqrt{\text{Hz}}$ (DC to 100 Hz)

Environments

Operating Temperature	-40°C to $+85^\circ\text{C}$
Storage Temperature	-55°C to $+95^\circ\text{C}$
Vibration Operating* (20 – 2000 Hz, Flat Profile)	5 g_{rms} , $36^\circ/\text{hr}/g_{\text{rms}}$
Vibration Survival* (5.83 g_{rms})	D0160E, Curve C1
Shock Survival (20g 11ms)	D0160E, Category B
Weight	$\leq 25 \text{ grams}$



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