

# SDG1400

## MEMS Quartz Angular Rate Sensor

Ideal for High Performance Commercial & Industrial Applications:

- Platform Stabilization
- Optical Camera Stabilization
- Antenna Stabilization & Pointing
- High Speed Ride & Tilt Control
- Robotic Control
- Instrumentation



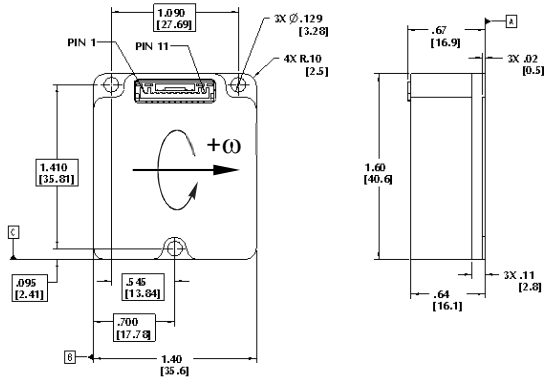
Key Performance Features:

- **Exceptional Bias Stability**
- **Low Gyro Noise**
- **Improved Vibration Performance**
- **DC Voltage Input/High-Level Analog DC Voltage Output**
- **Rugged Construction in a Very Small Form Factor**
- **High Reliability & Long Life**
- **RoHS Compliant**



The SDG1400 is a single-axis angular rate sensor that provides exceptional performance with Systron Donner Inertial's proven Quartz MEMS sensing element and fully self-contained electronics.

By applying design techniques found only in more expensive rate sensors, excellent Bias Stability, Temperature Performance, Noise, and Vibration performance levels have been achieved. The availability of the internal temperature sensors enable bias modeling.



### SDG1400-200-200

#### Power Requirements

Input Voltage	+ and - 10 to 16 Vdc
Input Current	< 15 mA (each supply, typical)

#### Performance

Standard Range Full Scale	$\pm 200^\circ/\text{sec.}$
Full Scale Output (Nominal)	$\pm 5.0 \text{ Vdc}$
Scale Factor (at 25°C)	$0.025 \pm 0.004 \text{ Vdc}/^\circ/\text{sec}$
Scale Factor Over Temperature (Dev. from 25°C)	$\leq 0.06\%/^\circ\text{C}$
Bias Calibration (at 25°C)	$\leq 1 \text{ deg}/\text{sec.}$
Bias Variation over Temperature (Dev. from 25°C)	$\leq 1 \text{ deg}/\text{sec.}$
Bias Stability (In-Run at Constant Temp., Std. Dev.)	$< 6^\circ/\text{hr. typical}$
G Sensitivity	$< 36^\circ/\text{hr}/\text{g}$
Start-Up Time	$\leq 1.0 \text{ sec}$
Bandwidth (-90°, incl. temp. effect)	$50 \pm 10 \text{ Hz}$
Damping Ratio	$0.7 \pm 0.2$
Non-Linearity, (% Full Range)	$\leq 0.03\%$
Output Noise (DC to 100 Hz)	$\leq 0.1^\circ/\sqrt{\text{hr}} (< 0.0017^\circ/\text{sec}/\sqrt{\text{Hz}})$

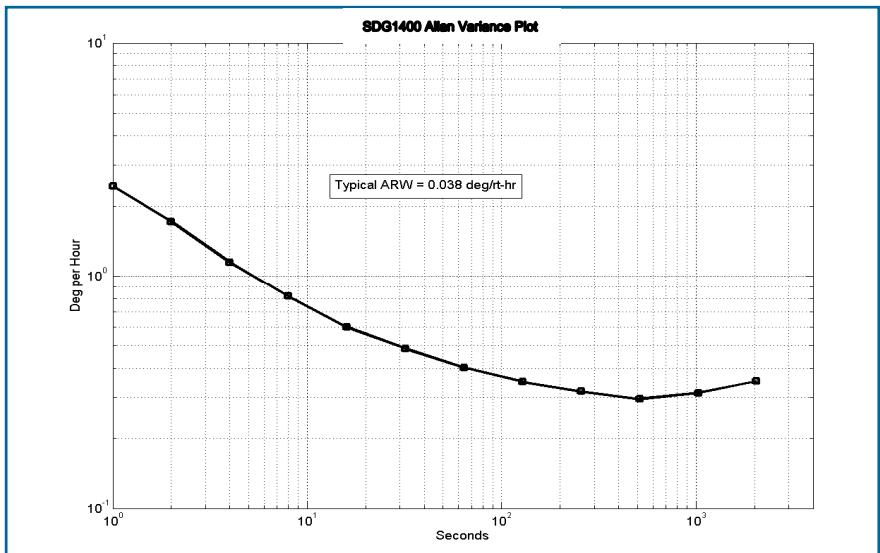
#### Environments

Operating Temperature	$-55^\circ\text{C}$ to $+85^\circ\text{C}$
Storage Temperature	$-55^\circ\text{C}$ to $+95^\circ\text{C}$
Vibration Operating* (20 – 2000 Hz, Flat Profile)	5 g <sub>rms</sub>
Vibration Rectification*	$< 3.6^\circ/\text{hr}/\text{g}_{\text{rms}}$
Vibration Survival*	20 g <sub>rms</sub>
Shock Survival	200 g, 2 ms, 1/2 sine pulse
Weight	$< 60 \text{ grams}$

#### SDG1400 PIN ASSIGNMENT

1	–	–	Power Ground
2	–	–	+Vdc Input
3	–	–	-Vdc Input
4	–	–	Temp 1 Output
5	–	–	Signal Return
6	–	–	Rate Output
7	–	–	Built-In Test
8	–	–	Temp 2 Output
9	–	–	No Connection
10	–	–	Leave Open
11	–	–	Case Ground

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



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