



## HG1936 Rate Sensor

High performance MEMS Rate Sensor

Possibilities of Navigation. *Made Easy*

# HG1936 Rate Sensor

## Proven – Dependable – Accurate

The HG1936 is a Micro-Electro-Mechanical Systems (MEMS) based Rate Sensor designed to meet the needs of a range of applications including ground and oceanographic surveying, robotics, commercial camera stabilization, control and navigation of unmanned aerial vehicles, missiles, munitions and projectiles.

## Description

The HG1936 includes three MEMS gyroscopes that are environmentally sealed in a rugged aluminum housing. In addition, it employs an internal environmental isolation system to attenuate unwanted inputs. The HG1936 Short Form Rate Sensor offers the same industry leading MEMS inertial performance with reduced height and weight.

## Configurations

Three different performance grades of the HG1936 are available off-the-shelf. The HG1936 offers many configurable features, such as data rate output and flight control filtering, to simplify system integration.

## HG1936 RATE SENSOR KEY CHARACTERISTICS

Volume, Size (H x W x L)	4.5 in <sup>3</sup> (74 cm <sup>3</sup> )
Weight	<0.31 lbs.
Power Consumption	< 3 watts
Operating Temperature Range	-54°C to +85°C (Varies by configuration)
Data Rate	100 Hz (Guidance) and 600 Hz (Control) - Other data rates available
Built-In-Test-Coverage	>89%
Gyro Operating Range	Varies by configuration. Up to 7,200 deg/sec in the X axis and 1,440 deg/sec in the Y and Z axes.
Supply Voltages	+5V

## HG1936 RATE SENSOR STANDARD MODELS & PERFORMANCE

DEVICE	GYRO BIAS REPEATABILITY <sup>1</sup> (°/HR 1σ)	GYRO BIAS IN-RUN STABILITY <sup>2</sup> (°/HR 1σ)	ARW <sup>3</sup> (°/√HR)
HG1936CA50	20	1.5	0.125 <sup>4</sup> , 0.09 <sup>5</sup>
HG1936BA50	40	1.5	0.125 <sup>4</sup> , 0.09 <sup>5</sup>
HG1936AA50	60	1.5	0.175

## HG1936 RATE SENSOR TYPICAL PERFORMANCE OVER FULL OPERATING TEMPERATURE RANGE

DEVICE	GYRO BIAS REPEATABILITY <sup>1</sup> (°/HR 1σ)	GYRO BIAS IN-RUN STABILITY <sup>2</sup> (°/HR 1σ)	ARW <sup>3</sup> (°/√HR)
HG1936CA50	7	0.30	0.06
HG1936BA50	10	0.40	0.07
HG1936AA50	20	0.50	0.08

### Notes:

1. Bias repeatability measurements calculated as the Root Square (RMS) of combined bias thermal model + residuals from dynamic tumble test.
2. Bias in-run stability measurements based on Allan Variance Bias Instability (BI) coefficient.
3. Angular Random Walk (ARW) based on Allan Variance Random Walk (RW) coefficient.
4. Applies to the Roll channel.
5. Applies to the Pitch and Yaw channels.

## KEY HONEYWELL ADVANTAGES

- All inertial sensors utilized in our tactical IMUs are designed, developed and manufactured by Honeywell
- Capable of 350 msec start time enabling faster target acquisition and response
- Industry standard RS-422 serial interface is offered on all IMUs and Rate Sensors
- Units feature a wide range of factory configurable interface protocols, including a Synchronous Data Link Control (SDLC) option, an asynchronous serial option, a gated clock option and a custom serial option
- Solid-state electronics improve dependability and reliability throughout unit operational life
- 20-year storage life achieved without requiring repair and overhaul

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