Honeywell

THE POWER OF **CONNECTED**

HG1930 Inertial Measurement Unit

High performance 5 cubic inch MEMS IMU for demanding environments and applications.

Possibilities of Navigation. *Made Easy*

HG1930 Inertial Measurement Unit

Proven – Dependable – Accurate

Our HG1930 is a Micro-Electro-Mechanical-Systems (MEMS) based Inertial Measurement Unit (IMU) 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 HG1930 includes MEMS gyroscopes and accelerometers that are environmentally sealed in a rugged aluminum housing. In addition, it employs an internal environmental isolation system to attenuate unwanted inputs. We design, develop and manufacture all of the MEMS inertial sensors utilized in the HG1930 IMU. All of this culminates in the HG1930 providing industry leading MEMS sensor performance while maintaining minimal SWAP parameters.

Configurations

Three different performance grades of the HG1930 are available off-the-shelf. The HG1930 offers many configurable features, such as data rate output and flight control filtering, to simplify system integration.

HG1930 IMU KEY CHARACTERISTICS

Volume	5 in^3 (82 cm^3)
Weight	<0.35 Lbs (0.16 kg)
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.
Accelerometer Operating Range	Varies by configuration. Up to 85g in the X axes and 35g in the Y and Z axes.
Supply Voltages	+5V

HG1930 IMU STANDARD MODELS & PERFORMANCE

DEVICE	GYRO BIAS REPEATABILITY[1] (°/HR 1σ)	GYRO BIAS IN-RUN STABILITY[2] (°/HR 1σ)	ARW[3] (°/√HR MAX)	ACCEL BIAS REPEATABILITY[1] (MG 1σ)	ACCEL BIAS IN-RUN STABILITY[2] (MG 1σ)	VRW[3] (FPS/√HR MAX)
HG1930CA50	20	1.0	0.125[4], 0.09[5]	5	0.3	0.3
HG1930BA50	40	1.5	0.125[4], 0.09[5]	10	0.5	0.3
HG1930AA50	60	1.5	0.175	10	0.5	0.4

HG1930 IMU TYPICAL PERFORMANCE OVER FULL OPERATING TEMPERATURE RANGE

DEVICE	GYRO BIAS REPEATABILITY (°/HR 1σ)	GYRO BIAS IN-RUN STABILITY (°/HR 1σ)	ARW (°/√HR MAX)	ACCEL BIAS REPEATABILITY (MG 1σ)	ACCEL BIAS IN-RUN STABILITY (MG 1σ)	VRW (FPS/√HR MAX)
HG1930CA50	7	0.25	0.06	0.5	0.02	0.10
HG1930BA50	10	0.35	0.07	1.0	0.03	0.15
HG1930AA50	20	0.40	0.08	1.5	0.04	0.20

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) and Velocity Random Walk (VRW) measurements 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
- 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

Find Out More

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