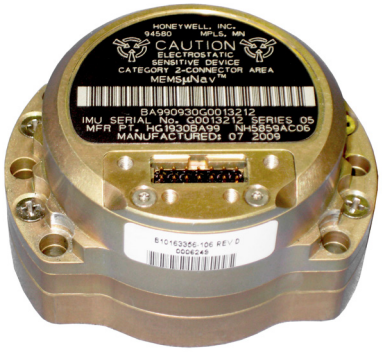
OEM-HG1930

Small, affordable MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel to deliver 3D position, velocity and attitude



World-leading GNSS+INS technology

SPAN GNSS+INS technology brings together two different but complementary technologies: Global Navigation Satellite System (GNSS) positioning and Inertial Navigation Systems (INS). The absolute accuracy of GNSS positioning and the stability of Inertial Measurement Unit (IMU) measurements combine to provide an exceptional 3D navigation and attitude solution that is stable and continuously available, even through periods when satellite signals are blocked.

Small IMU for demanding applications

The HG1930 is a small, low cost Micro Electromechanical Systems (MEMS) IMU manufactured by Honeywell. It provides tactical grade performance for unmanned vehicles and other commercial and/or military guidance applications. When integrated with SPAN GNSS+INS technology, this IMU is ideal for airborne and ground applications that require accurate 3D position, velocity and attitude data. The HG1930 is a commercial product that can be licensed under the jurisdiction of the U.S. Department of Commerce for customers outside the United States.

Combining SPAN and MEMS technology

A proprietary MEMS Interface Card (MIC) couples the HG1930 with SPAN enabled receivers, offering a unique, powerful GNSS+INS system for weight and size constrained applications. Designed as a board stack configuration for ease of integration, the MIC can interface directly with NovAtel's small form factor OEM719 receiver. The HG1930 is also available as a stand alone product so integrators can easily pair it with an existing SPAN enabled receiver.

Require higher accuracy?

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For the most demanding applications, Waypoint Inertial Explorer post-processing software offers the highest level of accuracy.

Benefits

- High performance IMU
- Optimal for aerial, hydrographic survey and industrial applications
- High sensor dynamic range

Features

- MEMS gyros and accelerometers
- Small size, rugged and lightweight
- IMU data rate: 100 Hz
- SPAN GNSS+INS capability with configurable application profiles

IMU-HG1930-CA50

SPAN System Performance[3]

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS[4]	60 cm
DGPS	40 cm
TerraStar-L[5, 6]	40 cm
TerraStar-C PRO[5, 6]	2.5 cm
TerraStar-X[5, 6]	2 cm
RTK	1 cm +1 ppm

Data Rates

IMU Raw Data Rate	100 Hz
INS Solution	Up to 200 Hz

Time Accuracy[7]	20 ns RMS
Max Velocity[8]	515 m/s

IMU Performance[9]

Gyroscope Performance

Input range	±1000 deg/sec
Rate bias	20 deg/hr
In-run bias stability	2 deg/hr
Rate scale factor	300 ppm
Angular random walk	0.125 deg/√hr

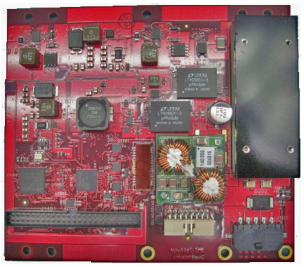
Accelerometer Performance

Range	±30 g
Scale factor	300 ppm
Bias repeatability	5 mg
Bias in-run stability	3 mg

Physical and Electrical

IMU dimensions	64.8 mm dia × 35.7 mm h (max)
IMU weight	200 g
Power consumption	<3 W
MTBF	>20,000 hours

UIC Specifications:



Physical and Electrical

Dimensions	113 × 100 × 17.5 mm
Weight	125 g

Power

Input voltage	10 VDC – 34 VDC
Power consumption	4 W

Communication Ports

1 RS-422 COM port for the NovAtel GNSS receiver
1 RS-422 port for the IMU
1 Wheel sensor input

Connectors

5-pin power connector
16-pin receiver communication connector
50-pin IMU connector

Environmental

Temperature

Operating	-40°C to +75°C
Storage	-55°C to +90°C

Vibration

Random	MIL-STD 810G (Cat 24, 7.7 g RMS)
Sine	IEC 60068-2-6
Bump	IEC 68-2-29 (25 g)
Shock	MIL-STD-810G (40 g)

Performance During GNSS Outages[10]

Outage Duration	Positioning Mode	Position Accuracy (M) RMS		Velocity Accuracy (M/S) RMS		Attitude Accuracy (Degrees) RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK[11]	0.02	0.03	0.015	0.010	0.015	0.015	0.030
	PPP	0.06	0.15					
	SP	1.00	0.60					
	Post-Processed[12]	0.01	0.02	0.010	0.010	0.006	0.006	0.015
10 s	RTK[11]	0.17	0.13	0.035	0.020	0.023	0.023	0.040
	PPP	0.21	0.25					
	SP	1.15	0.70					
	Post-Processed[12]	0.02	0.02	0.010	0.010	0.007	0.007	0.015
60 s	RTK[11]	4.52	0.83	0.165	0.040	0.035	0.035	0.060
	PPP	4.56	0.95					
	SP	5.50	1.40					
	Post-Processed[12]	0.19	0.04	0.017	0.010	0.010	0.010	0.023

1. 12VDC, OEM719 stack configuration. 2. OEM719 USB port in stack configuration. 3 Typical values. Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference. 4. GPS-only. 5.Requires a subscription to TerraStar data service. Subscriptions available from NovAtel. 6.TerraStar service available depends on the SPAN enabled receiver used. See the receiver product sheet for details. 7. Time accuracy does not include biases due to RF or antenna delay. 8. Export licensing restricts operation to a maximum of 515 metres/second. 9. Supplied by IMU manufacturer. 10. Outage statistics were calculated by taking the RMS of the maximum errors over a minimum of 30 complete GNSS outages. Each outage was followed by 120 seconds of full GNSS availability before the next outage was applied. High accuracy GPS updates (fixed ambiguities) were available immediately before and after each outage. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e. as normally observed in ground vehicle environments). 11. 1 ppm should be added to all values to account for additional error due to baseline length. 12. Post-processing accuracy using Inertial Explorer processing software. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e., as normally observed in ground vehicle environments)

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For the most recent details of this product: novatel.com

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