

IMU-HG1900

Tactical grade MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel providing 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.

Sophisticated, tactical grade MEMS performance

The IMU-HG1900 IMU offers a hybrid package of Honeywell's Micro Electromechanical Systems (MEMS) gyros and RBA accelerometers. Economical, robust and small, the low-power IMU-HG1900 provides high-end tactical grade performance for commercial and military guidance and navigation applications. When integrated with SPAN technology, this IMU is ideal for airborne and ground applications that require accurate 3D position, velocity and attitude data. The IMU-HG1900 is a commercial product that can be licensed under the jurisdiction of the U.S. Department of Commerce for customers outside the United States.

The IMU-HG1900 is a complete assembly in an environmentally sealed enclosure that can be easily paired with a SPAN enabled GNSS receiver. The HG1900 is also available as a stand alone OEM product.

Improved 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
- Easy integration with SPAN capable GNSS+INS receivers from NovAtel
- Rugged design ideal for challenging environments
- High sensor dynamic range

Features

- MEMS gyros and RBA accelerometers
- Stationary INS alignment capable
- IMU data rate: 100 Hz
- Enclosure comes with optional wheel sensor input
- SPAN GNSS+INS capability with configurable application profiles

IMU performance¹

Gyroscope performance

Technology	MEMS
Dynamic range	1000 °/s
Bias instability	1 °/hr
Angular random walk	0.06 °/√hr

Accelerometer performance

Technology	RBA
Dynamic range	30 g
Bias instability	0.3 mg
Velocity random walk	0.02 m/s/√hr

Physical and electrical

Dimensions 130 × 130 × 125 mm

Weight 2.5 kg

Power

Power consumption 8 W (typical)
 Input voltage +10 to +34 VDC

Connectors

Power SAL M12, 5 pin, male
 Data SAL M12, 4 pin, female
 Wheel sensor SAL M12, 8 pin, male

Communication interface RS-422 UART

Connection to receiver Receiver serial port

Data rate

IMU raw data rate 100 Hz
 INS solution Up to 200 Hz

Environmental

Temperature

Operating -40°C to +55°C
 Storage -40°C to +80°C

Humidity MIL-STD-810G(Ch1), Method 507.6

Random vibrate MIL-STD-810G(Ch1), Method 514.7 (2.0g)

Environment MIL-STD-810G(CH1) Method 512.6 (IEC 60529 IP67)

Compliance

FCC, ISED, CE

Included accessories

- Power cable
- Communication cable
- Wheel sensor cable

Optional accessories

- Mounting plate

Performance during GNSS outages^{2,3,4}

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 ⁵	0.02	0.03				
	TerraStar-C PRO PPP	0.025	0.05	0.010	0.010	0.010	0.030
	Single point	1.00	0.60				
10 s	RTK ⁵	0.12	0.08				
	TerraStar-C PRO PPP	0.12	0.10	0.020	0.012	0.013	0.036
	Single point	1.10	0.65				
60 s	RTK ⁵	1.90	0.33				
	TerraStar-C PRO PPP	1.90	0.35	0.080	0.016	0.018	0.050
	Single point	2.90	0.90				
	RTK with Land profile and DMI	1.80	0.30	0.080	0.016	0.018	0.050
0 s	Post-Processed using Inertial Explorer	0.01	0.02	0.010	0.010	0.004	0.010
10 s		0.01	0.02	0.010	0.010	0.004	0.010
60 s		0.10	0.13	0.012	0.010	0.004	0.014

1. Supplied by IMU manufacturer.

2. Performance may be impacted in conditions with unmitigated vibration or significant temperature variations.

3. Performance with one antenna, no DMI, and default SPAN profile unless otherwise specified.

4. Typical. Based on mixed urban road vehicle dynamics and benign GNSS conditions.

5. 1 ppm should be added to all values to account for additional error due to baseline length.

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