SPAN® IMU-HG1900

TACTICAL GRADE MEMS IMU COMBINES WITH SPAN TECHNOLOGY PROVIDING 3D POSITION, VELOCITY AND ATTITUDE

ABOUT SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY

Synchronous Position, Attitude and Navigation (SPAN) 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 NovAtel's 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 U.S. Department of Commerce for customers outside the United States.

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

IMPROVED ACCURACY

Take advantage of NovAtel CORRECT® to receive your choice of accuracy and performance, from decimetre to RTK-level positioning. For the most demanding applications, Inertial Explorer® post-processing software from our Waypoint® Products Group offers the highest level of accuracy.

BENEFITS

+ Tactical grade performance
+ Ideal for size constrained applications
+ Easy to integrate with SPAN enabled GNSS receivers

FEATURES

+ MEMS Gyro technology
+ Small size, rugged and light weight
+ 10-34 VDC power input
+ 100 Hz data rate
+ SPAN GNSS+INS functionality

If you require more information about our SPAN products, visit www.novatel.com/span

IMU-HG1900

SPAN SYSTEM PERFORMANCE[1]

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS[2]	60 cm
DGPS	40 cm
TerraStar-L[3, 4]	40 cm
TerraStar-C[3, 4]	4 cm
TerraStar-C PRO[3, 4]	2.5 cm
RTK	1 cm + 1 ppm

Data Rate

IMU measurements	100 Hz
INS position	100 Hz
INS velocity	100 Hz
INS attitude	100 Hz

Time Accuracy[5] 20 ns RMS

Max Velocity[6] 515 m/s

IMU PERFORMANCE[7]

Gyroscope Performance

Input range	±1000 deg/sec
Rate bias	5 deg/hr
In-run bias stability	1 deg/hr
Scale factor linearity	150 ppm
Scale factor repeatability	150 ppm
Angular random walk	0.09 deg/√hr

Accelerometer Performance

Range	±30 g
Linearity	500 ppm
Scale factor linearity	500 ppm
Scale factor repeatability	300 ppm
Bias repeatability	1 mg
Bias in-run stability	0.7 mg

PHYSICAL AND ELECTRICAL

Dimensions

L x W x H 130 x 130 x 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

ENVIRONMENTAL

Temperature

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

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

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

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

INCLUDED ACCESSORIES

- Power cable
- Communication cable
- Wheel sensor cable

OPTIONAL ACCESSORIES

- Mounting plate
- Inertial Explorer post-processing software

For the most recent details of this product: www.novatel.com/products/span-gnss-inertial-systems/span-imus/span-mems-imus/imu-hg1900

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Version 3 Specifications subject to change without notice.

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PERFORMANCE DURING GNSS OUTAGES[8]

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[9]	0.02	0.03	0.010	0.010	0.010	0.010	0.030
	SP	1.00	0.60	0.010	0.010	0.010	0.010	0.030
	PP[10]	0.01	0.02	0.010	0.010	0.005	0.005	0.011
10 s	RTK[9]	0.12	0.07	0.020	0.010	0.013	0.013	0.036
	SP	1.10	0.65	0.020	0.010	0.013	0.013	0.036
	PP[10]	0.01	0.02	0.010	0.010	0.005	0.005	0.011
60 s	RTK[9]	1.95	0.30	0.080	0.016	0.018	0.018	0.050
	SP	2.90	0.90	0.080	0.016	0.018	0.018	0.050
	PP[10]	0.10	0.02	0.012	0.010	0.005	0.005	0.014

1 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 sources.
2 GPS-only.
3 Requires subscription to TerraStar data service. Subscriptions available from NovAtel.
4 TerraStar service available depends on the SPAN receiver used. See the receiver product sheet for details.
5 Time accuracy does not include biases due to RF or antenna delay.
6 Export licensing restricts operation to a maximum of 515 metres/second.
7 Supplied by IMU manufacturer.
8. 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).
9. 1 ppm should be added to all values to account for additional error due to baseline length.
10. Post-processing results using Inertial Explorer software.