SPAN® UIMU-HG1700

ECONOMICAL, TACTICAL GRADE IMU COMBINES WITH NOVATEL'S GNSS TECHNOLOGY TO DELIVER 3D POSITION, VELOCITY AND ATTITUDE SOLUTION

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. The absolute accuracy of GNSS positioning and the stability of Inertial Measurement Unit (IMU) gyro and accelerometer measurements are tightly coupled to provide an exceptional 3D navigation solution that is stable and continuously available, even through periods when satellite signals are blocked.

UIMU-HG1700 OVERVIEW

The UIMU-HG1700 contains the Honeywell HG1700 IMU. The HG1700 is a tactical grade IMU containing ring-laser gyros and servo accelerometers. The UIMU-HG1700 handles the power requirements of the IMU from a 12-28 VDC power input and provides the IMU data to a SPAN enabled GNSS+INS receiver such as the FlexPak6™ or ProPak6™ using a custom NovAtel interface. IMU measurements are used by the GNSS+INS receiver to compute a blended GNSS+INS position, velocity and attitude solution at up to 100 Hz. The HG1700 is ITAR controlled and requires export approval for customers outside the United States.

ADVANTAGES OF UIMU-HG1700

The HG1700 IMU is available in a range of gyro performance levels from one to five degrees per hour. Honeywell's high production volume of HG1700 IMUs enables excellent tactical grade performance for an economical price with short delivery times. The UIMU-HG1700 is available as a complete assembly including the IMU and environmentally sealed enclosure. For customers who already have the HG1700 IMU, the enclosure can be purchased separately and the IMU easily integrated.

IMPROVE SPAN UMIU-HG1700 ACCURACY

Take advantage of NovAtel CORRECT™ to receive your choice of accuracy and performance, from decimetre to RTK-level positioning. For more demanding applications, Inertial Explorer® post-processing software from our Waypoint® Product Group can be used to post-process SPAN UIMU-HG1700 data and offers the highest level of accuracy with the system.

BENEFITS

+ Economical tactical grade IMU
+ Easy integration with NovAtel's SPAN capable GNSS+INS receivers
+ Short product delivery time

FEATURES

+ Ring-laser gyro technology
+ 100 Hz data rate
+ 12-28 VDC power input
+ SPAN INS functionality

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

UIMU-HG1700

SPAN SYSTEM PERFORMANCE[1]

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
NovAtel CORRECT™	
» SBAS[2]	60 cm
» DGPS	40 cm
» PPP[3, 4]	4 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]

UIMU-HG1700-AG62

Gyro input range	±1000 deg/sec
Gyro rate bias	5.0 deg/hr
Gyro rate scale factor	150 ppm
Angular random walk	0.5 deg/√hr
Accelerometer range[8]	±50 g
Accelerometer linearity	500 ppm
Accelerometer scale factor	300 ppm
Accelerometer bias	2.0 mg

UIMU-HG1700-AG58

Gyro input range	±1000 deg/sec
Gyro rate bias	1.0 deg/hr
Gyro rate scale factor	150 ppm
Angular random walk	0.125 deg/√hr
Accelerometer range[8]	±50 g
Accelerometer linearity	500 ppm
Accelerometer scale factor	300 ppm
Accelerometer bias	1.0 mg

PHYSICAL AND ELECTRICAL

Dimensions 168 x 195 x 146 mm

Weight 4.5 kg

Power

Power consumption	8 W (typical)
Input voltage	+12 to +28 V

Connectors

Power	MIL-C-38999-III, 3 pin
Communication	MIL-C-38999-III, 13 pin

ENVIRONMENTAL

Temperature

Operating	-30°C to +60°C
Storage	-45°C to +80°C
Humidity	95% non-condensing
MTBF	2,000 hrs
Waterproof	IEC 60259 IPX7
Dust	IEC 60259 IP6X

OPTIONAL ACCESSORIES

- Inertial Explorer post-processing software

PERFORMANCE DURING GNSS OUTAGES[1, 9]

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[10]	0.02	0.05	0.020	0.010	0.010	0.010	0.021
	SP	1.20	0.60	0.020	0.010	0.010	0.010	0.023
	PP[11]	0.01	0.02	0.020	0.010	0.005	0.005	0.008
10 s	RTK[10]	0.09	0.05	0.023	0.010	0.014	0.014	0.026
	SP	1.72	1.59	0.030	0.012	0.015	0.015	0.028
	PP[11]	0.01	0.02	0.020	0.010	0.005	0.005	0.008
60 s	RTK[10]	2.45	0.28	0.096	0.013	0.016	0.016	0.035
	SP	3.49	1.68	0.105	0.014	0.017	0.017	0.040
	PP[11]	0.12	0.02	0.021	0.010	0.006	0.006	0.011

1. Typical values. Performance specifications subject to GPS system characteristics, US DOD 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. An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required.
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. GNSS receiver sustains tracking up to 4 g.
9. Table contains values for the UIMU-HG1700-AG58. For the UIMU-H62 Performance During GNSS Outages Table, please visit novatel.com/assets/Documents/Papers/IMU-HG62table.pdf.
10. 1 ppm should be added to all values to account for additional error due to baseline length.
11. Post-processing results using Inertial Explorer software.

For the most recent details of this product:
www.novatel.com/products/span-gnss-inertial-systems/span-imus/uimu-h58/

novatel.com

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1-800-NOVATEL (U.S. and Canada) or 403-295-4900

China 0086-21-68882300

Europe 44-1993-848-736

SE Asia and Australia 61-400-883-601

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