

UIMU-HG1700-AG58

Economical, tactical grade IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel to deliver 3D position, velocity and attitude solution



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

UIMU-HG1700-AG58 overview

The UIMU-HG1700-AG58 contains a Honeywell HG1700-AG58 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 PwrPak7 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-AG58 is a commercial product that can be licensed under the jurisdiction of the U.S. Department of Commerce for customers outside the United States.

Advantages of UIMU-HG1700-AG58

Honeywell's high production volume of HG1700 IMUs enables excellent tactical grade performance for an economical price with short delivery times. The UIMU-HG1700-AG58 is available as a complete assembly including the IMU and environmentally sealed enclosure. For customers who already have the HG1700-AG58 IMU, the enclosure can be purchased separately and the IMU easily integrated.

Improve UIMU-HG1700-AG58 accuracy

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For more demanding applications, Waypoint Inertial Explorer post-processing software can be used to post-process real-time data on the UIMU-HG1700-AG58 and offers the highest level of accuracy with the system.

Benefits

- High performance IMU
- Optimal for aerial, hydrographic survey and industrial applications
- Easy integration with NovAtel's SPAN capable GNSS+INS receivers
- Rugged design ideal for challenging environments
- High sensor dynamic range

Features

- Ring-laser gyros and servo accelerometers
- Stationary INS alignment capable
- IMU data rate: 100 Hz
- SPAN GNSS+INS capability with configurable application profiles

SPAN System Performance¹

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 PRO ^{3,4}	2.5 cm
TerraStar-X ^{3,4}	2 cm
RTK	1 cm + 1 ppm

Data Rate

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

Time Accuracy⁵ 20 ns RMS

Max Velocity⁶ 515 m/s

IMU Performance⁷

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
Connector	MIL-C-38999-III, 22 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

Compliance

FCC, ISED, CE

Optional Accessories

- Inertial Explorer post-processing software

Performance During GNSS Outages¹

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					
	PPP	0.06	0.15	0.010	0.010	0.010	0.010	0.020
	SP	1.00	0.60					
	Post-Processed ¹⁰	0.01	0.01	0.015	0.010	0.004	0.004	0.008
10 s	RTK ⁹	0.14	0.08					
	PPP	0.18	0.20	0.025	0.012	0.015	0.015	0.028
	SP	1.12	0.65					
	Post-Processed ¹⁰	0.01	0.02	0.020	0.010	0.004	0.004	0.009
60 s	RTK ⁹	2.77	0.53					
	PPP	2.81	0.65	0.110	0.017	0.021	0.021	0.040
	SP	3.75	1.10					
	Post-Processed ¹⁰	0.13	0.02	0.021	0.010	0.005	0.005	0.013

1. Typical values (open sky conditions). 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 enabled 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. GNSS receiver sustains tracking up to 4 g. 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.

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