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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 UMIU-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 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 SPAN capable GNSS+INS receivers from NovAtel
- 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

IMU performance[1]

Gyroscope performance

Technology	Ring laser
Dynamic range	1074 °/s
Bias drift	1.0 °/hr
Angular random walk	0.125 °/√hr

Accelerometer performance

Technology	RBA
Dynamic range	37 g
Bias drift	1.0 mg
Velocity random walk	0.02 m/s/√hr

Physical and electrical

Dimensions	168 x 195 x 146 mm
Weight	4.5 kg
Power	
Input voltage	+12 to +28 VDC
Power consumption	8 W (typical)
Connector	MIL-C-38999-III, 22 pin
Communication interface	RS-232 or 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	-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

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	0.010	0.010	0.010	0.020
	TerraStar-C PRO PPP	0.025	0.05				
	Single point	1.00	0.60				
10 s	RTK[5]	0.14	0.08	0.025	0.012	0.015	0.028
	TerraStar-C PRO PPP	0.14	0.10				
	Single point	1.12	0.65				
60 s	RTK[5]	2.75	0.53	0.110	0.017	0.020	0.040
	TerraStar-C PRO PPP	2.75	0.55				
	Single point	3.75	1.10				
	RTK with Land profile and DMI	2.50	0.53	0.110	0.017	0.020	0.040
0 s	Post-Processed using Inertial Explorer	0.01	0.01	0.015	0.010	0.004	0.008
10 s		0.01	0.02	0.020	0.010	0.004	0.009
60 s		0.13	0.02	0.021	0.010	0.005	0.013

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.*

Contact Hexagon | NovAtel

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

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