



## Economical, Tactical Grade IMU Combines with NovAtel's GNSS Technology to Deliver 3D Position, Velocity and Attitude Solution

### 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: World-Leading GNSS+INS Technology

SPAN (Synchronous Position, Attitude and Navigation) technology brings together two different, but complementary technologies: 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-HG Overview

The UIMU-HG contains the Honeywell HG1700 inertial measurement unit. The HG1700 is a tactical-grade IMU containing ring laser gyros and servo accelerometers. The UIMU-HG 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 ProPak® or SPAN-SE 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-HG

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-HG 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 inside.

### Improve SPAN HG Accuracy

Take advantage of our Advance® RTK as well as support for satellite-based augmentation systems such as OmniSTAR® or SBAS to improve real-time performance and accuracy. For more demanding applications Inertial Explorer® (IE) post processing software from our Waypoint® product group can be used to post process SPAN HG data

**SPAN System Performance<sup>1</sup>**

<b>Horizontal Position Accuracy (RMS)</b>	
Single Point L1	1.5 m
Single Point L1/L2	1.2 m
SBAS	0.6 m
DGPS	0.4 m
OmniSTAR	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-20 <sup>®2</sup>	0.2 m
RT-2 <sup>™</sup>	1 cm+1 ppm

**Acceleration Accuracy** 0.03 m/s RMS<sup>3</sup>

**Max Velocity<sup>4</sup>** 515 m/s

**Data Rate**

IMU Measurements	100 Hz
INS Position	100 Hz
INS Velocity	100 Hz
INS Attitude	100 Hz

**IMU Performance<sup>5</sup>**

<b>UIMU-H62</b>	
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 <sup>6</sup>	±50 g
Accelerometer Linearity	500 ppm
Accelerometer Scale Factor	300 ppm
Accelerometer Bias	2.0 mg

<b>UIMU-H58</b>	
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 <sup>6</sup>	±50 g
Accelerometer Linearity	500 ppm
Accelerometer Scale Factor	300 ppm
Accelerometer Bias	1.0 mg

**IMU Physical and Electrical**

<b>Dimensions</b>	168 x 195 x 146 mm
<b>Weight</b>	4.5 kg
<b>Power</b>	
Power Consumption	8 W (typical)
Input Voltage	+12 to +28 V
<b>Connectors</b>	
Power	MIL-C-38999-III, 3 pin
Communication	MIL-C-38999-III, 13 pin

**Environmental**

<b>Temperature</b>	
Operating	-30°C to +60°C
Storage	-45°C to +80°C
<b>Humidity</b>	95% non-condensing
<b>MTBF</b>	2,000 hrs

**Optional Accessories**

- Inertial Explorer post-processing software

**Performance During GNSS Outages (UIMU-H58)<sup>1</sup>**

Outage Duration	Positioning Mode	Position Accuracy (m) RMS		Velocity Accuracy (m/s) RMS		Attitude Accuracy (degrees) <sup>3</sup> RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0s	RTK	0.020	0.050	0.020	0.010	0.010	0.010	0.021
	HP	0.100	0.080	0.020	0.010	0.010	0.010	0.022
	SP	1.200	0.600	0.020	0.010	0.010	0.010	0.023
	PP <sup>7</sup>	0.010	0.015	0.020	0.010	0.007	0.007	0.010
10 s	RTK	0.090	0.050	0.023	0.010	0.014	0.014	0.026
	HP	0.320	0.260	0.028	0.012	0.015	0.015	0.028
	SP	1.720	1.590	0.030	0.012	0.015	0.015	0.028
	PP <sup>7</sup>	0.020	0.020	0.200	0.010	0.008	0.008	0.012
60 s	RTK	2.450	0.280	0.096	0.013	0.016	0.016	0.035
	HP	2.870	0.490	0.102	0.013	0.017	0.017	0.039
	SP	3.490	1.680	0.105	0.014	0.017	0.017	0.040
	PP <sup>7</sup>	0.011	0.040	0.030	0.010	0.009	0.009	0.016



Version 6 - Specifications subject to change without notice.

©2011 NovAtel Inc. All rights reserved.

NovAtel, Inertial Explorer, RT-20, AdVance, Waypoint and ProPak are registered trademarks of NovAtel Inc. SPAN and RT-2 are trademarks of NovAtel Inc.

OmniSTAR is a registered trademark of OmniSTAR Inc.

Printed in Canada. D10152

UIMU-HG April 2011

For the most recent details of this product:

[novatel.com/assets/Documents/Papers/IMU-HG.pdf](http://novatel.com/assets/Documents/Papers/IMU-HG.pdf)

<sup>1</sup> 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.

<sup>2</sup> Expected accuracy after convergence.

<sup>3</sup> When SPAN is in RTK mode.

<sup>4</sup> Export licensing restricts operation to a maximum of 515 metres per second.

<sup>5</sup> For UIMU-H62 Performance During GNSS Outages Table, please visit [novatel.com/assets/Documents/Papers/IMU-HG62table.pdf](http://novatel.com/assets/Documents/Papers/IMU-HG62table.pdf)

<sup>6</sup> GNSS receiver sustains tracking up to 4 g.

<sup>7</sup> Post-processing results using Inertial Explorer software.

Statements related to the export of products are based solely on NovAtel's experience in Canada, are not binding in any way and exportability may be different with respect to the export regulations in effect in another country. The responsibility for re-export of product from a Customer's facility is solely the responsibility of the Customer.



**AUTONOMOUS STUFF**