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

SPAN® UIMU-HG1700

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 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 is a commercial product that can be licensed under the U.S. Department of Commerce 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 UIMU–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
SPAN SYSTEM PERFORMANCE

Horizontal Position Accuracy (RMS)
- Single point L1/L2: 1.2 m SBAS
- 60 cm
- DGPS: 40 cm
- TerraStar-L: 40 cm
- TerraStar-C: 4 cm
- TerraStar-C PRO: 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: 20 ns RMS
Max Velocity: 515 m/s

IMU PERFORMANCE

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/v/hr
- Accelerometer range: ±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/v/hr
- Accelerometer range: ±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 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

OPTIONAL ACCESSORIES
- Inertial Explorer post-processing software

PERFORMANCE DURING GNSS OUTAGES

<table>
<thead>
<tr>
<th>Outage Duration</th>
<th>Positioning Mode</th>
<th>POSITION ACCURACY (M) RMS</th>
<th>VELOCITY ACCURACY (M/S) RMS</th>
<th>ATTITUDE ACCURACY (DEGREES) RMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Horizontal</td>
</tr>
<tr>
<td>0 s</td>
<td>RTK(3)</td>
<td>0.02</td>
<td>0.05</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.20</td>
<td>0.60</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>PP(11)</td>
<td>0.01</td>
<td>0.02</td>
<td>0.020</td>
</tr>
<tr>
<td>10 s</td>
<td>RTK(3)</td>
<td>0.09</td>
<td>0.05</td>
<td>0.023</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.72</td>
<td>1.59</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>PP(11)</td>
<td>0.01</td>
<td>0.02</td>
<td>0.020</td>
</tr>
<tr>
<td>60 s</td>
<td>RTK(3)</td>
<td>2.45</td>
<td>0.28</td>
<td>0.096</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>3.49</td>
<td>1.68</td>
<td>0.105</td>
</tr>
<tr>
<td></td>
<td>PP(11)</td>
<td>0.12</td>
<td>0.02</td>
<td>0.021</td>
</tr>
</tbody>
</table>

1 Typical values (open sky conditions). Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) operational degradation, ionospheric and tephospheric 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 4 g.
7 Supplied by IMU manufacturer.
8 GNSS receiver sustains tracking up to 4 g.
9 Table contains values for the UIMU-HG1700-AG58.
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.