**IMU-HG1900**

Tactical grade MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel providing 3D position, velocity and attitude

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

**Sophisticated, tactical grade MEMS performance**

The IMU-HG1900 IMU offers a hybrid package of Honeywell’s Micro Electromechanical Systems (MEMs) gyros and RBA accelerometers. Economical, robust and small, the low-power IMU-HG1900 provides high end tactical grade performance for commercial and military guidance and navigation applications. When integrated with SPAN technology, this IMU is ideal for airborne and ground applications that require accurate 3D position, velocity and attitude data. The IMU-HG1900 is a commercial product that can be licensed under the jurisdiction of the U.S. Department of Commerce for customers outside the United States.

The IMU-HG1900 is available as a complete assembly in an environmentally sealed enclosure. The HG1900 is also available as a stand alone OEM product that can be easily paired with a SPAN enabled GNSS receiver.

**Improved accuracy**

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For the most demanding applications, Waypoint Inertial Explorer post-processing software offers the highest level of accuracy.

**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**

- MEMS gyros and RBA accelerometers
- Stationary INS alignment capable
- IMU data rate: 100 Hz
- Enclosure comes with optional wheel sensor input
- SPAN GNSS+INS capability with configurable application profiles
**SPAN System Performance**

**Horizontal Position Accuracy (RMS)**

<table>
<thead>
<tr>
<th></th>
<th>L1/L2</th>
<th>SBAS</th>
<th>DGPS</th>
<th>TerraStar-L^3,4</th>
<th>TerraStar-C PRO^3,4</th>
<th>TerraStar-X^3,4</th>
<th>RTK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single point</td>
<td>1.2 m</td>
<td></td>
<td>60 cm</td>
<td>40 cm</td>
<td>2.5 cm</td>
<td>2 cm</td>
<td>1 cm</td>
</tr>
<tr>
<td>SBAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+1 ppm</td>
</tr>
<tr>
<td>DGPS</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Accuracy during GNSS Outages**

<table>
<thead>
<tr>
<th>Outage Duration</th>
<th>Positioning Mode</th>
<th>Positioning 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^2</td>
<td>0.02</td>
<td>0.03</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.06</td>
<td>0.15</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.00</td>
<td>0.60</td>
<td>0.100</td>
</tr>
<tr>
<td></td>
<td>Post-Processed^10</td>
<td>0.01</td>
<td>0.02</td>
<td>0.010</td>
</tr>
<tr>
<td>10 s</td>
<td>RTK^2</td>
<td>0.12</td>
<td>0.08</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.16</td>
<td>0.20</td>
<td>0.020</td>
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<tr>
<td></td>
<td>SP</td>
<td>1.10</td>
<td>0.65</td>
<td>0.100</td>
</tr>
<tr>
<td></td>
<td>Post-Processed^10</td>
<td>0.01</td>
<td>0.02</td>
<td>0.010</td>
</tr>
<tr>
<td>60 s</td>
<td>RTK^2</td>
<td>1.92</td>
<td>0.33</td>
<td>0.080</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>1.96</td>
<td>0.45</td>
<td>0.080</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>2.90</td>
<td>0.90</td>
<td>0.080</td>
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<tr>
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<td>Post-Processed^10</td>
<td>0.10</td>
<td>0.13</td>
<td>0.012</td>
</tr>
</tbody>
</table>

**Physical and Electrical**

- **Dimensions**: 130 x 130 x 125 mm
- **Weight**: 2.5 kg
- **Power consumption**: 8 W (typical)
- **Input voltage**: +10 to +34 VDC
- **Connectors**:
  - Power: SAL M12, 5 pin, male
  - Data: SAL M12, 4 pin, female
  - Wheel sensor: SAL M12, 8 pin, male

**Environmental**

- **Temperature**:
  - Operating: -40°C to +55°C
  - Storage: -40°C to +80°C
- **Humidity**: MIL-STD-810G (Ch1), Method 514.7 (2.0g)
- **Environment**: MIL-STD-810G (Ch1), Method 512.6 (IEC 60529 IP67)

**Compliance**

- FCC, ISED, CE

**Included Accessories**

- Power cable
- Communication cable
- Wheel sensor cable

**Optional Accessories**

- Mounting plate
- Inertial Explorer post-processing software

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1 Typical values. 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. 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 Outage statistics were calculated by taking the RMS of the maximum errors over a minimum of 20 complete GNSS outages. Each outage was followed by 120 seconds of full GNSS availability before the next outage was applied. High accuracy GPS updates (fixed ambiguities) were available immediately before and after each outage. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e., as normally observed in ground vehicle environments). 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.