OEM-IMU-HG4930

Small, affordable MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel to provide 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) gyro and accelerometer measurements combine to provide an exceptional 3D navigation solution that is stable and continuously available, even through periods when satellite signals are blocked.

Sophisticated, tactical grade MEMS performance
The OEM-IMU-HG4930 is a high performing Micro Electromechanical Systems (MEMs) IMU. Economical, robust and small, the low power OEM-IMU-HG4930 provides tactical grade performance for unmanned vehicles and commercial and/or military guidance applications. When integrated with SPAN GNSS+INS technology, this IMU is ideal for airborne, marine and ground applications that require accurate 3D position, velocity and attitude data in a compact package.

OEM-IMU-HG4930 advantages
The OEM-IMU-HG4930 is comprised entirely of commercial components, simplifying export processes for this IMU.

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
• Commercially exportable
• Low 5 VDC power input

Features
• MEMS gyros and accelerometers
• Small size, rugged and light weight
• IMU data rate: 100 Hz
• Direct UART interface to OEM7 receivers
• SPAN GNSS+INS capability with configurable application profiles
SPAN System Performance

**Horizontal Position Accuracy (RMS)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Point L1</td>
<td>1.5 m</td>
</tr>
<tr>
<td>Single Point L1/L2</td>
<td>1.2 m</td>
</tr>
<tr>
<td>SBAS²</td>
<td>60 cm</td>
</tr>
<tr>
<td>DGPS</td>
<td>40 cm</td>
</tr>
<tr>
<td>TerraStar-L²,⁴</td>
<td>40 cm</td>
</tr>
<tr>
<td>TerraStar-C PRO²,⁴</td>
<td>2.5 cm</td>
</tr>
<tr>
<td>TerraStar-X²,⁴</td>
<td>2 cm</td>
</tr>
<tr>
<td>RTK</td>
<td>1 cm + 1 ppm</td>
</tr>
</tbody>
</table>

**Data Rate**

- IMU Raw Data Rate: 100 Hz or 400 Hz
- INS Solution: Up to 200 Hz

**Time Accuracy**³: 20 ns RMS

**Max Velocity**⁵: 515 m/s

---

IMU Performance

**Gyroscope Performance**

- **Technology**: MEMS
- **Input rate**
- **Full Performance Range**: ±325°/sec
- **Full Operating Range**: ±400°/sec

**Accelerometer Performance**

- **Technology**: MEMS
- **Range**: ±20 g

---

Physical and Electrical

**Dimensions**: 64.8 mm dia max × 35.7 mm h max

**Weight**: 200 g

**Power**

- **Power consumption**: <3 W (typical)
- **Input voltage**: +5 VDC

---

Environmental

**Temperature**

- **Operating**: -40°C to +71°C
- **Storage**: -40°C to +80°C

**Random Vibe**

- **MIL-STD-810G(Ch1), Method 514.7 (2.0g)**

---

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>RTK⁶</td>
<td>0.02</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.06</td>
<td>0.15</td>
<td>0.015</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.00</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Processed⁹</td>
<td>0.01</td>
<td>0.02</td>
<td>0.015</td>
</tr>
<tr>
<td>10 s</td>
<td>RTK⁶</td>
<td>0.12</td>
<td>0.08</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.16</td>
<td>0.20</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.10</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Processed⁹</td>
<td>0.01</td>
<td>0.02</td>
<td>0.015</td>
</tr>
<tr>
<td>60 s</td>
<td>RTK⁶</td>
<td>3.82</td>
<td>0.73</td>
<td>0.165</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>3.86</td>
<td>0.85</td>
<td>0.165</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>4.80</td>
<td>1.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Processed⁹</td>
<td>0.11</td>
<td>0.05</td>
<td>0.017</td>
</tr>
</tbody>
</table>

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 sources.
2. GPS-only.
3. Requires subscription to TerraStar data service. Subscriptions available from NovAtel.
4. Time accuracy does not include biases due to RF or antenna delay.
5. Export licensing restricts operation to a maximum of 515 metres/second.
6. Supplied by IMU manufacturer.
7. Outage statistics were calculated by taking the RMS of the maximum errors over a minimum of 30 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).
8. 1 ppm should be added to all values to account for additional error due to baseline length.
9. Post-processing results using Inertial Explorer. The survey data used to generate these statistics had frequent changes in azimuth.

---

Contact Hexagon | NovAtel

sales.nov.at@hexagon.com | 1-800-NOVATEL (U.S. and Canada) or 403-295-4900 | China: 0086-21-68882300 | Europe: 44-1993-848-736 | SE Asia and Australia: 61-400-883-601.

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

Inertial Explorer, NovAtel, OEM7, SPAN, TerraStar and Waypoint are trademarks of NovAtel, Inc., entities within the Hexagon Autonomy & Positioning division, their affiliated entities, and/or their licensors. All other trademarks are properties of their respective owners.

©2021 NovAtel Inc. All rights reserved. NovAtel makes no representation or warranty regarding the accuracy of the information in this publication. This document gives only a general description of the product(s) or service(s) offered by NovAtel, and, except where expressly provided otherwise, shall not form part of any contract. Such information, the products and conditions of supply are subject to change without notice.