IMU-µIMU-IC

High performing MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel to provide 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 Systems (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.

Overview
The µIMU features Northrop Grumman Litef GmbH's proven inertial measurement technology offering exceptional performance when paired with a NovAtel SPAN enabled receiver. The µIMU interfaces with receivers from NovAtel through a highly reliable IMU interface. IMU measurements are used by the SPAN enabled receiver to compute a blended GNSS+INS position, velocity and attitude solution at up to 200 Hz. Small size, low weight and power consumption makes the µIMU ideal for heading reference, flight control and stabilization applications.

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

Improve IMU-µIMU accuracy
SPAN GNSS+INS technology provides 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 on the IMU-µIMU to offer the highest level of accuracy with the system.

Benefits
- High performance IMU
- Optimal for aerial, hydrographic survey and industrial applications
- Easy integration with NovAtel’s SPAN capable GNSS+INS receivers
- Commercially exportable
- Rugged design ideal for challenging environments
- Ideal for a control reference system

Features
- MEMS gyros and accelerometers
- Stationary INS alignment capable
- IMU data rate: 200 Hz
- Enclosure comes with optional wheel sensor input
- SPAN GNSS+INS capability with configurable application profiles
**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 PRO*: 2.5 cm
- TerraStar-X*: 2 cm
- RTK: 1 cm +1 ppm

**Data Rate**
- IMU Raw Data Rate: 200Hz
- INS Solution: Up to 200 Hz

**Time Accuracy**
- 20 ns RMS

**Max Velocity**
- 515 m/s

**IMU Performance**

**Gyroscope Performance**
- Input range: ±499 deg/sec
- Bias stability: ±6 deg/hr
- Scale factor error: ±1400 ppm
- Angular random walk: ±0.3 deg/hr

**Accelerometer Performance**
- Range: 8 ±15 g
- Bias repeatability: ±3 mg
- Scale factor error: ±1500 ppm
- Velocity random walk: ±0.25 mg/√Hz

**Physical and Electrical**
- Dimensions: 130 x 130 x 115 mm
- Weight: 2.57 kg

**Power**
- Power consumption: 11 W (typical)
- Input voltage: +10 to +34 V

**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 507.6

**Random Vibe**
- 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

**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>
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<tr>
<td></td>
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<td>Horizontal</td>
<td>Vertical</td>
<td>Horizontal</td>
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<tr>
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<td>0.015</td>
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<td>PPP</td>
<td>0.06</td>
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<td>SP</td>
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<td>0.60</td>
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<tr>
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<td>10 s</td>
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<td>PPP</td>
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<td>SP</td>
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<td>Post-Processed (2)</td>
<td>0.16</td>
<td>0.04</td>
<td>0.020</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. 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. GNSS receiver sustains tracking up to 4 g. 9. Steady state and outage performance remains the same for the -L model. 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.

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

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