SPAN® IMU-µIMU-IC

HIGH PERFORMING MEMS IMU COMBINES WITH NOVATEL’S GNSS TECHNOLOGY TO PROVIDE 3D POSITION, VELOCITY AND ATTITUDE SOLUTION

SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY
Synchronous Position, Attitude and Navigation (SPAN) 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 tightly 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 NovAtel’s OEM6 and OEM7 receivers through a highly reliable IMU interface. IMU measurements are used by the SPAN 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 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 SPAN 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 IMU-µIMU data to offer the highest level of accuracy with the system.

BENEFITS
+ Fully commercial MEMS IMU
+ Continuous, stable positioning
+ Easy integration with NovAtel’s OEM6 and OEM7 series GNSS+INS receivers
+ Ideal for aerial and hydrographic survey as well as industrial applications

FEATURES
+ MEMS gyros and MEMS accelerometers
+ 200 Hz data rate
+ 10–34 VDC power input
+ SPAN GNSS+INS functionality

If you require more information about our SPAN products, visit www.novatel.com/span
IMU-µIMU-IC

SPAN SYSTEM PERFORMANCE

Horizontal Position Accuracy (RMS)
- Single point L1/L2: 1.2 m
- NovAtel CORRECT SBAS: 60 cm
- NovAtel CORRECT DGPS: 40 cm
- NovAtel CORRECT PPP: 3 cm
- TerraStar-L: 40 cm
- TerraStar-C: 4 cm
- RTK: 1 cm +1 ppm

Data Rate
- IMU measurements: 200 Hz
- INS position: 200 Hz
- INS velocity: 200 Hz
- INS attitude: 200 Hz

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: ±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 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)

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>
</tr>
</thead>
<tbody>
<tr>
<td>0 s</td>
<td>SP</td>
<td>1.00</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>RTK</td>
<td>0.02</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
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<td>10 s</td>
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<tr>
<td></td>
<td>RTK</td>
<td>0.16</td>
<td>0.030</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.01</td>
<td>0.020</td>
<td>0.005</td>
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<tr>
<td>60 s</td>
<td>SP</td>
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<td>0.025</td>
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<tr>
<td></td>
<td>RTK</td>
<td>3.55</td>
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<td>0.025</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>0.15</td>
<td>0.05</td>
<td>0.006</td>
</tr>
</tbody>
</table>

1. 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.
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 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.

For the most recent details of this product: www.novatel.com/products/span-gnss-inertial-systems/span-imu-micro-imu

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