**SPAN® IMU-ISA-100C**

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

**SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY**

NovAtel’s 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.

**OVERVIEW**

The IMU-ISA-100C features Northrop-Grumman Litf GMBH’s proven inertial measurement technology offering exceptional performance when paired with a NovAtel SPAN receiver. A near navigation grade sensor, the IMU-ISA-100C contains fiber optic gyros and fully temperature compensated Micro Electromechanical Systems (MEMS) accelerometers. The IMU-ISA-100C operates from 10-34 VDC and interfaces with NovAtel’s FlexPak6™ or ProPak6™ 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 rates up to 200 Hz.

**ADVANTAGES OF IMU-ISA-100C**

The IMU-ISA-100C offers extremely high performance and precise accuracy at an affordable price point. It is commercially exportable and offers an ideal solution for applications such as platform stabilization, general purpose navigation, photogrammetry, remote sensing and ground mobile mapping.

**IMPROVE SPAN IMU-ISA-100C 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® Products Group can be used to post-process SPAN IMU-ISA-100C data for the highest level of system accuracy.

**BENEFITS**

- High performance IMU
- Commercially exportable
- Easy integration with NovAtel’s SPAN capable GNSS+INS receivers
- Ideal for aerial and hydrographic survey as well as industrial applications

**FEATURES**

- Low noise fiber optic gyro and MEMS accelerometers
- 200 Hz data rate
- SPAN INS functionality

If you require more information about our SPAN products, visit www.novatel.com/span
IMU-ISA-100C

SPAN SYSTEM PERFORMANCE

Horizontal Position Accuracy (RMS)
- Single point L1/L2 1.2 m
- SBAS\(^1\) 60 cm
- DGPS 40 cm
- PPP\(^3, 4\) 4 cm
- RTK 1 cm + 1 ppm

Data Rate\(^5\)
- IMU measurements 200 Hz
- INS position 200 Hz
- INS velocity 200 Hz
- INS attitude 200 Hz

Time Accuracy\(^6\)
- 20 ns RMS

Max Velocity\(^7\)
- 515 m/s

IMU PERFORMANCE

Gyroscope Performance
- Input range ±495 deg/sec
- Bias stability ≥0.5 deg/hr
- Scale factor repeatability ≤100 ppm
- Scale factor non-linearity ≤100 ppm
- Angular random walk 0.012 deg/√hr

Accelerometer Performance
- Range\(^9\) ±10 g
- Bias repeatability ≥1250 μg
- Scale factor repeatability ≤ 100 ppm
- Scale factor non-linearity ≤100 ppm
- Velocity random walk ≤100 μg/√hr

IMU ISA-100C

Outage Duration Positioning Mode POSITION ERROR (M) VELOCITY ERROR (M/S) ATTITUDE ERROR (DEGREES)

<table>
<thead>
<tr>
<th>Outage Duration</th>
<th>Positioning Mode</th>
<th>POSITION ERROR (M)</th>
<th>VELOCITY ERROR (M/S)</th>
<th>ATTITUDE ERROR (DEGREES)</th>
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<tbody>
<tr>
<td>0 s</td>
<td>RTK(^11)</td>
<td>0.02</td>
<td>0.05</td>
<td>0.010</td>
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<tr>
<td></td>
<td>PPP</td>
<td>0.06</td>
<td>0.15</td>
<td>0.010</td>
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<td></td>
<td>SP</td>
<td>1.20</td>
<td>0.60</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>pp(^12)</td>
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<td>0.10</td>
<td>0.010</td>
</tr>
<tr>
<td>10 s</td>
<td>RTK(^11)</td>
<td>0.07</td>
<td>0.10</td>
<td>0.015</td>
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<tr>
<td></td>
<td>PPP</td>
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<tr>
<td></td>
<td>pp(^12)</td>
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<tr>
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<td>pp(^12)</td>
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</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. An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required.
5. 400 Hz data is an optional configuration. Contact NovAtel for details.

PHYSICAL AND ELECTRICAL

Dimensions 180 x 150 x 137 mm
Weight 5.0 kg

Power Consumption 18 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 -40ºC to +55ºC
- Storage -40ºC to +85ºC

Humidity MIL-STD-810G, Method 507.5
Random Vibe MIL-STD-810G, Method 514.6 (2.0 g)
MTBF >46,100 hrs

Environment IEC 60529 IP67

INCLUDED ACCESSORIES
- Power cable
- Communication cable
- Wheel sensor cable

OPTIONAL ACCESSORIES
- Inertial Explorer post-processing software

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

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\(^1\) Time accuracy does not include biases due to RF or antenna delay.
\(^2\) Export licensing restricts operation to a maximum of 515 metres/second.
\(^3\) Power consumption is 18 W (typical).
\(^4\) An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required.
\(^5\) 400 Hz data is an optional configuration. Contact NovAtel for details.