IMU-CPT COMBINED WITH NOVATEL’S GNSS TECHNOLOGY TO PROVIDE 3D POSITION, VELOCITY AND ATTITUDE SOLUTION

SPAN® IMU-CPT™

SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY

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.

IMU-CPT OVERVIEW

The IMU-CPT is designed to be paired with the NovAtel OEM6® line of receivers. It is comprised of Fiber Optic Gyros (FOG) and Micro Electromechanical Systems (MEMS) accelerometers. FOGs offer exceptionally long life and stable performance compared with other similar gyro technologies.

ADVANTAGES OF IMU-CPT

Paired with NovAtel’s OEM6 receiver, the IMU-CPT offers a fully integrated, tightly coupled GNSS and IMU system delivering the most satellite observations and the most accurate, continuous position, velocity and attitude solution possible. Further, the IMU-CPT is comprised entirely of commercial components, greatly minimizing cross border difficulties encountered with traditional GNSS+INS systems.

IMPROVE IMU-CPT 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 IMU-CPT data and offers the highest level of accuracy with the system.

BENEFITS

- Continuous, stable positioning
- Minimizes import/export issues
- Withstands harsh environments
- Easy integration with NovAtel’s OEM6 series GNSS+INS receivers

FEATURES

- Fiber optic gyros and MEMS accelerometers
- Wheel sensor input for ground applications
- SPAN INS functionality

If you require more information about our SPAN products, visit www.novatel.com/span
SPAN SYSTEM PERFORMANCE

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

NovAtel CORRECT™» SBAS 2
» DGPS 60 cm
» PPP 40 cm
» RTK 1 cm + 1 ppm

Data Rate
- IMU measurement: 100 Hz
- INS solution: Up to 100 Hz

Time Accuracy3: 20 ns RMS
Max Velocity: 515 m/s

IMU PERFORMANCE

Gyroscope Performance
- Output range: ±375°/s
- Bias: 20°/hr
- Bias stability: ±1°/hr
- Scale factor: 1500 ppm
- Angular random walk: 0.0667°/√hr (max)

Accelerometer Performance
- Range: ±10 g
- Bias: 50 mg
- Bias stability: ±0.75 mg
- Scale factor: 4000 ppm

ENVIRONMENTAL

Temperature
- Operating: -40°C to +65°C
- Storage: -50°C to +80°C

Humidity
95% non-condensing

Waterproof
MIL-STD-810F, 506.4, Procedure II

INCLUDED ACCESSORIES

- Combined I/O and power cable

OPTIONAL ACCESSORIES

- Inertial Explorer post-processing software

PHYSICAL AND ELECTRICAL

Dimensions
152 x 168 x 89 mm
Weight
2.29 kg
Power
- Power consumption: 13 W max
- Input voltage: +9 to +18 VDC

INPUT/OUTPUT CONNECTORS
MI L- DTL-38999 Series 3

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 RTK</td>
<td>0.02</td>
<td>0.03</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td>0 s SP</td>
<td>1.00</td>
<td>0.60</td>
<td>0.020</td>
<td>0.010</td>
</tr>
<tr>
<td>0 s PPP</td>
<td>0.01</td>
<td>0.02</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td>10 s RTK</td>
<td>0.25</td>
<td>0.18</td>
<td>0.045</td>
<td>0.025</td>
</tr>
<tr>
<td>10 s SP</td>
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<td>0.75</td>
<td>0.050</td>
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</tr>
<tr>
<td>10 s PPP</td>
<td>0.02</td>
<td>0.02</td>
<td>0.015</td>
<td>0.010</td>
</tr>
<tr>
<td>60 s RTK</td>
<td>6.10</td>
<td>2.05</td>
<td>0.255</td>
<td>0.080</td>
</tr>
<tr>
<td>60 s SP</td>
<td>7.00</td>
<td>2.60</td>
<td>0.260</td>
<td>0.080</td>
</tr>
<tr>
<td>60 s PPP</td>
<td>0.23</td>
<td>0.11</td>
<td>0.020</td>
<td>0.012</td>
</tr>
</tbody>
</table>

1. Typical SPAN system performance values when using this IMU. 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.
2. GPS-only.
3. Requires subscription to Terrasar data service. Subscriptions available from NovAtel.
4. An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required.
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. RMS, incremental error growth from steady-state accuracy. Computed with respect to Full GPS, RTK trajectory.
9. 1 ppm should be added to all values to account for additional error due to baseline length.
10. Post-processing accuracy using Inertial Explorer processing software.

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