**SPAN® SPAN-IGM-A1™**

SPAN MEMS TECHNOLOGY INTEGRATED WITH NOVATEL’S POWERFUL OEM615™ RECEIVER

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**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.

**SPAN ENABLED MEMS RECEIVER**

The SPAN-IGM-A1 delivers world class NovAtel SPAN technology in an integrated, single box solution. The SPAN-IGM-A1 offers tightly coupled GNSS inertial navigation featuring our OEM615 receiver.

The smallest and lightest GNSS+Inertial Navigation System (INS) receiver in our product portfolio, the SPAN-IGM-A1 can be configured from the factory as an integrated GNSS+INS engine or as a standalone IMU sensor for pairing with an existing NovAtel SPAN receiver.

**ALIGN® ENABLED**

Building on NovAtel’s successful SPAN–SE–D enclosure, we offer our ALIGN heading solution as an option on the SPAN–IGM–A1. ALIGN can be activated by pairing the SPAN–IGM–A1 with an external ALIGN enabled receiver such as our FlexPak6™.

**IMPROVED ACCURACY**

NovAtel CORRECT™ with RTK improves real-time performance and accuracy. For more demanding applications, Inertial Explorer® software from our Waypoint® Products Group can be used to post-process SPAN data to provide the highest level of accuracy.

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### BENEFITS

+ SPAN enabled enclosure featuring NovAtel’s tightly coupled OEM615 GNSS+INS engine
+ Can be paired with an external receiver to support ALIGN GNSS azimuth aiding for low dynamic applications
+ Small, lightweight and rugged

### FEATURES

+ Metre to centimetre-level accuracy
+ Regulated 10–30 VDC input
+ 200 Hz navigation solution and raw measurement output
+ Serial, USB, CAN and Multi I/O interface including dedicated wheel sensor input
+ GPS, GLONASS, SBAS and RTK support

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If you require more information about our SPAN products, visit [www.novatel.com/span](http://www.novatel.com/span)
SPAN-IGM-A1™

SPAN SYSTEM PERFORMANCE

OEM615 SPAN® tightly coupled RTK GNSS+INS engine

Horizontal Position Accuracy (RMS)

Single point L1/L2 1.2 m
NovAtel CORRECT™
  » SBAS® 60 cm
  » DGPS 40 cm
  » RTK 1 cm + 1 ppm

Data Rates

GNSS measurement 20 Hz
GNSS position 20 Hz
IMU measurement 200 Hz
INS solution Up to 200 Hz

Time Accuracy 20 ns RMS
Max Velocity 515 m/s

IMU PERFORMANCE

Gyroscope Performance
Input range ±450 deg/sec
Rate bias stability 6 deg/h
Angular random walk 0.30 deg/v/√hr

Accelerometer Performance
Range ±18 g
Bias stability 0.1 mg
Velocity random walk 0.029 m/s/√hr

PHYSICAL AND ELECTRICAL

Dimensions 152 × 142 × 51 mm
Weight 515 g
Power
Input voltage 10–30 VDC
Power consumption 4 W

Antenna LNA Power Output
Output voltage 5 VDC ±5%
Maximum current 100 mA

Connectors
Main port & AUX port DB-HD15
Antenna TNC

COMMUNICATION PORTS

1 12 Mbps
1 RS-232 or RS-422 921,600 bps
1 RS-232 921,600 bps
1 CAN port 1 Mbps

Inputs/Outputs
2 Event input triggers
1 Configurable PPS
1 Wheel sensor port
1 VARF

Status LEDs
Power
GNSS status
INS status

ENVIRONMENTAL

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

Humidity
MIL-STD-810G 95% non-condensing

Vibration (operating)
Random MIL-STD-810G (7.7 g)
Sinusoidal IEC 60068-2-6 (5 g)
Bump IEC 60068-2-27 (25 g)
Shock MIL-STD-810G (40 g)

Immersion IEC 60529 IPX7

Compliance
FCC, CE, Industry Canada

INCLUDED ACCESSORIES

• Combined power, data and I/O cables

OPTIONAL ACCESSORIES

• Inertial Explorer post-processing software
• GPS–700 series antenna and RF cables
• NovAtel Connect™ GUI software
• SPAN-IGM bracket kit for ALIGN

OPTIONAL CONFIGURATIONS

Available OEM615 options:
  • GLONASS
  • ALIGN®
  • Stackable with FlexPak6 for an ALIGN solution (shown)

For the most recent details of this product: www.novatel.com/products/spans-gnss-inertial-systems/span-combined-systems/span-igm-a1/

novatel.com
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China 0086–21–68882300
Europe 44–1993–848–736
SE Asia and Australia 61–400–883–601

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>RTK</td>
<td>0.02</td>
<td>0.03</td>
<td>0.020</td>
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<tr>
<td></td>
<td>SP</td>
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<td>0.60</td>
<td>0.020</td>
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<tr>
<td></td>
<td>PP</td>
<td>0.01</td>
<td>0.02</td>
<td>0.020</td>
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<tr>
<td>10 s</td>
<td>RTK</td>
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<tr>
<td></td>
<td>PP</td>
<td>0.02</td>
<td>0.02</td>
<td>0.020</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. For detailed receiver specifications, see NovAtel’s OEM615 product sheet and Receiver brochure.
3. GPS-only.
4. See IMU performance.
5. Export licensing restricts operation to a maximum of 515 metres/second.
6. Supplied by IMU manufacturer.
8. For additional information on optional configurations, see our firmware options on our web site or contact NovAtel for more information.
9. ALIGN requires a secondary GNSS receiver paired with the SPAN enclosure.
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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