

SPAN MEMS TECHNOLOGY INTEGRATED WITH NOVATEL'S POWERFUL OEM615[™] RECEIVER



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-IGM-S1 RECEIVER

The SPAN-IGM-S1 offers exceptional performance in a small, lightweight, all-in-one package.

This product is commercially exportable and provides the best price/performance/size available in the market.

ALIGN[®] ENABLED

Building on NovAtel's successful SPAN-SE-D enclosure, we offer our ALIGN heading solution as an option on the SPAN-IGM-S1. ALIGN can be activated by pairing the SPAN-IGM-S1 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.

BENEFITS

- + SPAN enabled enclosure featuring NovAtel's tightly coupled OEM615 GNSS+INS engine
- + Tactical grade IMU performance
- + Commercially exportable IMU
- + Can be paired with an external receiver to support ALIGN GNSS azimuth aiding for low dynamic applications
- + Small, lightweight and rugged
- + Ideal for airborne, ground and marine applications

FEATURES

- + Metre to centimetre-level accuracy
- + Regulated 10-30 VDC input
- + 125 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

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

SPAN-IGM-S1™

SPAN SYSTEM PERFORMANCE¹

OEM615 SPAN² tightly coupled RTK GNSS+INS engine

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
NovAtel CORRECT™	
» SBAS ³	60 cm
» DGPS	40 cm
» RTK	1 cm + 1 ppm

Data Rates

GNSS measurement	20 Hz
GNSS position	20 Hz
IMU measurement	125 Hz
INS solution	Up to 125 Hz

Time Accuracy⁴ 20 ns RMS

Max Velocity⁵ 515 m/s

IMU PERFORMANCE⁶

Gyroscope Performance

Input range	400 deg/sec
Rate bias stability	0.5 deg/h
Angular random walk	0.15 deg/√hr

Accelerometer Performance

Range	±10 g
Bias stability	0.05 mg
Velocity random walk	0.06 m/s/√hr

PHYSICAL AND ELECTRICAL

Dimensions 152 × 142 × 51 mm
Weight 540 g

Power

Input voltage 10–30 VDC
Power consumption⁷ 6 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 USB	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 CONFIGURATION

- Available OEM615 options:
- GLONASS
- ALIGN^{8,9}
- Stackable with FlexPak6 for an ALIGN solution (shown)



Tel. 309.291.0966 | www.AutonomousStuff.com
info@AutonomousStuff.com

PERFORMANCE DURING GNSS OUTAGES¹

Outage Duration	Positioning Mode	POSITION ACCURACY (M) RMS		VELOCITY ACCURACY (M/S) RMS		ATTITUDE ACCURACY (DEGREES) RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK ¹⁰	0.02	0.03	0.020	0.010	0.015	0.015	0.080
	SP	1.00	0.60	0.020	0.010	0.015	0.015	0.080
	PP ¹¹	0.01	0.02	0.020	0.010	0.006	0.006	0.019
10 s	RTK ¹⁰	0.27	0.14	0.051	0.017	0.025	0.025	0.095
	SP	1.22	0.71	0.051	0.017	0.025	0.025	0.095
	PP ¹¹	0.02	0.02	0.020	0.010	0.007	0.007	0.021
60 s	RTK ¹⁰	6.61	1.46	0.280	0.051	0.044	0.044	0.130
	SP	7.56	2.03	0.280	0.051	0.044	0.044	0.130
	PP ¹¹	0.22	0.10	0.024	0.011	0.008	0.008	0.024

Version 5 Specifications subject to change without notice.

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D18496 May 2016

Printed in Canada.



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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. Time accuracy does not include biases due to RF or antenna delay.
5. Export licensing restricts operation to a maximum of 515 metres/second.
6. Supplied by IMU manufacturer.

7. Typical, GPS+GLONASS only, 12 V, 25 °C, without FlexPak6.
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 position values to account for additional error due to baseline length.
11. Post-processing results using Inertial Explorer software. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e., as normally observed in ground vehicle environments).

