SPAN® SPAN-IGM-A1™

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 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.

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

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

SPAN-IGM-A1™

SPAN SYSTEM PERFORMANCE[1]

OEM615 SPAN[2] 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	200 Hz
INS solution	Up to 200 Hz
Time Accuracy[4]	20 ns RMS
Max Velocity[5]	515 m/s

IMU PERFORMANCE[6]

Gyroscope Performance

Input range	±450 deg/sec
Rate bias stability	6 deg/h
Angular random walk	0.30 deg/√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[7]	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 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 CONFIGURATIONS

Available OEM615 options:

- GLONASS
- ALIGN[8, 9]
- Stackable with FlexPak6 for an ALIGN solution (shown)

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

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Europe 44-1993-848-736

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PERFORMANCE DURING GNSS OUTAGES[1]

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	0.035	0.035	0.150
	SP	1.00	0.60	0.020	0.010	0.035	0.035	0.150
	PP[11]	0.01	0.02	0.020	0.020	0.012	0.012	0.074
10 s	RTK[10]	0.46	0.13	0.100	0.021	0.072	0.072	0.210
	SP	1.41	0.70	0.100	0.021	0.072	0.072	0.210
	PP[11]	0.02	0.02	0.020	0.010	0.012	0.012	0.074

Version 7 Specifications subject to change without notice.

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Statements related to the export of products are based solely on NovAtel's experience in Canada and not binding in any way. Exportability may be different with respect to the export regulations in effect in another country. The responsibility for re-export of product from a Customer's facility is solely the responsibility of the Customer.

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 values to account for additional error due to baseline length.
11. Post-processing results using Inertial Explorer software.