

SMALL, LIGHTWEIGHT MEMS IMU ENCLOSURE FOR PAIRING WITH NOVATEL'S SPAN TECHNOLOGY



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 ENCLOSURE

NovAtel developed the IMU-IGM-S1 for pairing with a SPAN enabled GNSS receiver. Incorporating Sensor's STIM300 MEMS IMU, the IMU-IGM-S1 delivers the smallest and lightest tactical grade IMU enclosure in our SPAN product portfolio. The IMU-IGM-S1 delivers a rugged product on which to build your SPAN application.

IMPROVED 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[®] software from our Waypoint[®] Products Group can be used to post-process SPAN data to provide the highest level of accuracy.

BENEFITS

- + Small, lightweight and rugged
- + Tactical grade performance
- + Commercially exportable
- + Optimized for SPAN on OEM6[®] enclosures

FEATURES

- + Regulated 10-30 VDC input
- + 125 Hz navigation solution and raw measurement output
- + Dedicated wheel sensor input

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

IMU-IGM-S1™

SPAN SYSTEM PERFORMANCE¹

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
NovAtel CORRECT™	
» SBAS ²	60 cm
» DGPS	40 cm
» PPP ^{3, 4}	4 cm
» RTK	1 cm + 1 ppm

Data Rates

IMU measurement	125 Hz
INS solution	Up to 125 Hz

Time Accuracy⁵ 20 ns RMS

Max Velocity⁶ 515 m/s

IMU PERFORMANCE⁷

Gyroscope Performance

Bias instability	0.5 deg/h
Input range	400 deg/sec
Angular random walk	0.15 deg/√hr

Accelerometer Performance

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

PHYSICAL AND ELECTRICAL

Dimensions

152 × 137 × 51 mm

Weight 500 g

Power

Input voltage 10-30 VDC

Power consumption⁸ <4.6 W

Connectors

Main port and AUX port
DB-HD15

COMMUNICATION PORTS

1 RS-232/RS-422 IMU data port

1 Wheel sensor port

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 marking, Industry Canada

INCLUDED ACCESSORIES

- Combined power and data cable

OPTIONAL ACCESSORIES

- I/O and wheel sensor accessory cable
- Inertial Explorer post-processing software

OPTIONAL CONFIGURATION

Stackable with FlexPak6™ for a SPAN solution (shown)



For the most recent details of this product: www.novatel.com/products/span-gnss-inertial-systems/span-imus/span-mems-imu/imu-igm-s1/

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61-400-883-601

PERFORMANCE DURING GNSS OUTAGES⁹

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

1. Performance obtained when using an OEM6 Family receiver (contact NovAtel Sales for purchase information). For detailed receiver specifications, see NovAtel's OEM615 receiver product sheet and NovAtel Receivers brochure.
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. 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. Typical, 12 V, 25 °C, IMU only. System with FlexPak6 requires 7 W.
9. Outage performance information is applicable for firmware version OEM060240RN0000 and up.
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.

Version 6 Specifications subject to change without notice.

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