

## 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

NovAtel's Advance<sup>®</sup> RTK improves real-time performance and accuracy. For more demanding applications, Inertial Explorer<sup>®</sup> software from our Waypoint<sup>®</sup> 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<sup>®</sup> 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](http://www.novatel.com/span)

# IMU-IGM-S1™

## SPAN SYSTEM PERFORMANCE<sup>1</sup>

### Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS <sup>2</sup>	0.6 m
DGPS	0.4 m
NovAtel CORRECT™	
» PACE™	0.15 m
» TerraStar™ <sup>3</sup>	0.1 m
» RT-2®	1 cm + 1 ppm

### Data Rates

IMU measurement	125 Hz
INS solution	Up to 125 Hz

**Time accuracy<sup>4</sup>** 20 ns RMS

**Max Velocity<sup>5</sup>** 515 m/s

## IMU PERFORMANCE

Gyro bias instability	0.5 deg/h
Gyro input range	400 deg/sec
Gyro ARW	0.15 deg/√hr
Accelerometer bias instability	0.05 mg
Accelerometer 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 consumption<sup>6</sup> <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,  
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-imus/imu-igm-s1/](http://www.novatel.com/products/span-gnss-inertial-systems/span-imus/span-mems-imus/imu-igm-s1/)

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## PERFORMANCE DURING GNSS OUTAGES<sup>7</sup>

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 <sup>8</sup>	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 <sup>9</sup>	0.01	0.02	0.020	0.010	0.015	0.015	0.080
10 s	RTK <sup>8</sup>	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 <sup>9</sup>	0.02	0.02	0.020	0.010	0.015	0.015	0.080
60 s	RTK <sup>8</sup>	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 <sup>9</sup>	0.23	0.03	0.030	0.020	0.017	0.017	0.081

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. An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required for TERRASTAR.  
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. Typical, 12 V, 25 °C, IMU only. System with FlexPak6 requires 7 W.  
7. Outage performance information is applicable for firmware version OEM60240RN0000 and up.  
8. 1 ppm should be added to all values to account for additional error due to baselining length.  
9. Post-processing results using Inertial Explorer software.

**Version 2** Specifications subject to change without notice.

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