

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

When configured as a standalone IMU, the IMU-IGM-A1 delivers a rugged product to build your SPAN application on.

### IMPROVED ACCURACY

Take advantage of NovAtel CORRECT<sup>™</sup> to receive your choice of accuracy and performance, from decimetre to RTK-level positioning. 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
- + Optimized for SPAN on OEM6<sup>®</sup> enclosures

### FEATURES

- + Regulated 10-30 VDC input
- + 200 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-A1™

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

### Horizontal Position Accuracy (RMS)

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

### Data Rates

IMU measurement	200 Hz
INS solution	Up to 200 Hz

**Time Accuracy<sup>5</sup>** 20 ns RMS

**Max Velocity<sup>6</sup>** 515 m/s

## IMU PERFORMANCE<sup>7</sup>

### 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 × 137 × 51 mm  
Weight 475 g

### Power

Input voltage 10–30 VDC  
Power consumption<sup>8</sup> 2.5 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-imus/imu-igm-a1/](http://www.novatel.com/products/span-gnss-inertial-systems/span-imus/span-mems-imus/imu-igm-a1/)

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## PERFORMANCE DURING GNSS OUTAGES<sup>9</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>10</sup>	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 <sup>11</sup>	0.01	0.02	0.020	0.010	0.012	0.012	0.074
10 s	RTK <sup>10</sup>	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 <sup>11</sup>	0.02	0.02	0.020	0.010	0.012	0.012	0.074

1. Performance obtained when using an OEM6 Family receiver (contact NovAtel Sales for purchase information). For detailed receiver specifications, see NovAtel's OEM615 product sheet and Receiver 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 5 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 8** Specifications subject to change without notice.

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