

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

NovAtel's Advance® 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

- + Small, lightweight and rugged
- + Optimized for SPAN on OEM6® 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

IMU-IGM-A1™

SPAN SYSTEM PERFORMANCE¹

Horizontal Position Accuracy (RMS)

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

Data Rates

IMU measurement	200 Hz
INS solution	Up to 200 Hz

Time accuracy⁴ 20 ns RMS

Max Velocity⁵ 515 m/s

IMU PERFORMANCE

Gyro input range	±450 deg/sec
Gyro rate bias stability	6 deg/h
Gyro angular random walk	0.30 deg/√hr
Accelerometer range	±18 g
Accelerometer bias stability	0.1 mg
Velocity random walk	0.029 m/s/√hr

PERFORMANCE DURING GNSS OUTAGES⁷

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 ⁸	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 ⁹	0.01	0.02	0.020	0.010	0.035	0.035	0.150
10 s	RTK ⁸	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 ⁹	0.03	0.02	0.020	0.010	0.035	0.035	0.150

PHYSICAL AND ELECTRICAL

Dimensions 152 × 137 × 51 mm
Weight 475 g

Power

Input voltage 10–30 VDC
Power consumption⁶ 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,
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/

novatel.com

sales@novatel.com

1-800-NOVATEL (U.S. and Canada) or 403-295-4900

China
0086-21-54452990-8011

Europe 44-1993-848-736

SE Asia and Australia
61-400-883-601

Version 4 Specifications subject to change without notice.

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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. 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 5 W.
7. Outage performance information is applicable for firmware version OEM060240RN0000 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.

