

IMU-IGM-A1

Small, lightweight MEMS IMU enclosure for pairing with SPAN technology from Hexagon | NovAtel



World-leading GNSS+INS technology

SPAN GNSS+INS 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 deeply 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

The IMU-IGM-A1 is designed to pair with a SPAN enabled GNSS receiver. Incorporating a MEMS inertial sensor, the IMU-IGM-A1 delivers the smallest and lightest IMU enclosure in our IMU enclosure portfolio.

The IMU-IGM-A1 delivers a rugged product designed for your GNSS+INS solution.

Improved accuracy

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For more demanding applications, Waypoint Inertial Explorer software can be used to post-process real-time data to provide the highest level of accuracy.

Benefits

- Economical
- Easy integration with NovAtel's SPAN capable GNSS+INS receivers
- Commercially exportable
- Rugged design ideal for challenging environments

Features

- Low noise commercial grade gyros and accelerometers
- Dedicated wheel sensor input
- IMU data rate: 200 Hz
- Direct UART interface to OEM7 receivers
- SPAN GNSS+INS capability with configurable application profiles

SPAN System Performance¹**Horizontal Position Accuracy (RMS)**

Single point L1/L2	1.2 m
SBAS ²	60 cm
DGPS	40 cm
TerraStar-L ^{3,4}	40 cm
TerraStar-C PRO ^{3,4}	2.5 cm
TerraStar-X ^{3,4}	2 cm
RTK	1 cm +1 ppm

Data Rates

IMU Raw Data Rate	200 Hz
INS Solution	Up to 200 Hz

Time Accuracy⁵ 20 ns RMS

Max Velocity⁶ 515 m/s

IMU Performance⁷**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 ⁸	2.5 W

Connectors

Main port and AUX port	DB-HD15
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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, ISSED, CE

Included Accessories

- Combined power and data cable

Optional Accessories

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

Performance During GNSS Outages

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 ⁹	0.02	0.03	0.020	0.010	0.035	0.035	0.150
	PPP	0.06	0.15					
	SP	1.00	0.60					
	Post-Processed ¹⁰	0.01	0.01					
10 s	RTK ⁹	0.47	0.13	0.100	0.020	0.072	0.072	0.210
	PPP	0.51	0.25					
	SP	1.45	0.70					
	Post-Processed ¹⁰	0.02	0.02					
60 s	RTK ⁹	25.02	1.73	1.170	0.070	0.185	0.185	0.350
	PPP	25.06	1.85					
	SP	26.00	2.30					
	Post-Processed ¹⁰	0.55	0.13					

1. 1 Typical values. Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference. 2. GPS-only. 3. Requires subscription to TerraStar data service. Subscriptions available from NovAtel. 4. TerraStar service available depends on the SPAN enabled receiver used. See the receiver product sheet for details. 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. 9. 1 ppm should be added to all values to account for additional error due to baseline length. 10. Post-processing results using Inertial Explorer software.

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