

OEM-IMU-STIM300

Commercial MEMS IMU combines with SPAN GNSS+INS technology from Hexagon | NovAtel to deliver 3D position, velocity and attitude



Deeply-coupled GNSS+INS technology

SPAN GNSS+INS technology brings together two different but complementary technologies: Global Navigation Satellite System (GNSS) positioning and Inertial Navigation Systems (INS). The absolute accuracy of GNSS positioning and the stability of Inertial Measurement Unit (IMU) measurements combine to provide an exceptional 3D navigation and attitude solution that is stable and continuously available, even through periods when satellite signals are blocked.

Low noise commercial MEMS

The STIM300 is a Micro Electromechanical System (MEMS) IMU from Sensoror. It features low noise gyros and accelerometers in a small, lightweight, environmentally sealed enclosure. The STIM300 enables precision measurements for applications that require low cost, high performance and rugged durability in a very small form factor. When integrated with SPAN GNSS+INS technology, this IMU is ideal for airborne and ground applications that require accurate 3D position, velocity and attitude (roll, pitch and azimuth) data.

Require higher accuracy?

Receivers from NovAtel provide your choice of accuracy and performance, from decimetre to RTK-level positioning. For more demanding applications, Waypoint Inertial Explorer post-processing software offers the highest level of accuracy.

Benefits

- Ideal for size constrained applications
- Easy integration with SPAN capable GNSS+INS receivers from NovAtel
- Commercially exportable
- Low 5.0 VDC power input

Features

- Low noise commercial grade gyros and accelerometers
- Small size and lightweight
- IMU data rate: 125 Hz
- Direct UART interface to OEM7 receivers
- SPAN GNSS+INS capability with configurable application profiles

IMU performance¹

Gyroscope performance

Technology	MEMS
Dynamic range	400 °/s
Bias instability ²	0.3 °/hr
Angular random walk ²	0.15 °/√hr

Accelerometer performance

Technology	MEMS
Dynamic range	10 g
Bias instability ²	0.04 mg
Velocity random walk ²	0.07 m/s/√hr

Physical and electrical

IMU dimensions 39 × 45 × 22 mm

IMU weight 55 g

Power

Input voltage +5.0 VDC
Power consumption 1.5 W

Communication interface RS-422 UART

Connection to receiver Receiver serial port

Data rates

IMU raw data rate 125 Hz
INS solution up to 200 Hz

Environmental

Temperature

Operating	-40°C to +85°C
Storage	-55°C to +90°C

Performance during GNSS outages^{3,4,5}

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 ⁶	0.02	0.03				
	TerraStar-C PRO PPP	0.025	0.05	0.020	0.010	0.015	0.080
	Single point	1.00	0.60				
10 s	RTK ⁶	0.25	0.13				
	TerraStar-C PRO PPP	0.25	0.15	0.055	0.017	0.025	0.095
	Single point	1.25	0.70				
60 s	RTK ⁶	6.50	1.43				
	TerraStar-C PRO PPP	6.50	1.45	0.280	0.055	0.045	0.130
	Single point	7.50	2.00				
	RTK with Land profile and DMI	3.00	0.65	0.145	0.030	0.045	0.130
0 s	Post-Processed using Inertial Explorer	0.01	0.01	0.020	0.010	0.007	0.022
10 s		0.02	0.02	0.020	0.010	0.007	0.022
60 s		0.26	0.10	0.024	0.011	0.009	0.024

1. Supplied by IMU manufacturer.

2. From room temperature Allan variance method.

3. Performance may be impacted in conditions with unmitigated vibration or significant temperature variations. May vary from part to part.

4. Performance with one antenna, no DMI, and default SPAN profile unless otherwise specified.

5. Typical. Based on mixed urban road vehicle dynamics and benign GNSS conditions.

6. 1 ppm should be added to all values to account for additional error due to baseline length.

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