

OEM-IMU-EG370N

Commercial, MEMS IMU with higher data rate and improved accuracies 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 System (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 EG370N is a Micro Electromechanical System (MEMS) IMU from Epson. It features low noise gyros and accelerometers in a small, lightweight enclosure. The EG370N enables high data rate, 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 size constrained 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

- Economical
- Ideal for size constrained applications
- Easy integration with SPAN capable GNSS+INS receivers from NovAtel
- Commercially exportable
- Low 3.3 VDC power input

Features

- Low noise commercial grade gyros and accelerometers
- Small size and lightweight
- IMU data rate: 200 Hz
- Direct SPI interface to OEM7 receivers
- SPAN GNSS+INS capability with configurable application profiles

IMU performance¹**Gyroscope performance**

Technology	MEMS
Dynamic range	450 °/s
Bias instability ²	0.8 °/hr
Angular random walk ²	0.06 °/√hr

Accelerometer performance

Technology	MEMS
Dynamic range	10 g
Bias instability ²	0.012 mg
Velocity random walk ²	0.025 m/s/√hr

Physical and electrical**Dimensions** 24 × 24 × 10 mm**Weight** 10 g**Power**

Input voltage +3.3 VDC

Power consumption 0.1 W

Communication interface SPI**Connection to receiver** Receiver SPI port**Data rates**

IMU raw data rate 200 Hz

INS solution Up to 200 Hz

Environmental**Temperature**

Operating -40°C to +85°C

Storage -40°C to +85°C

Vibration (operating) MIL-STD-810G,

7.7 g RMS, 20 - 2000 Hz

Shock (operating) MIL-STD-810G, 40 g, 11ms**Shock (survival)** 1000 g, half sine, 0.5 ms**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	0.015	0.010	0.013	0.070
	TerraStar-C PRO PPP	0.025	0.05				
	Single point	1.00	0.60				
10 s	RTK ⁶	0.17	0.13	0.040	0.020	0.022	0.085
	TerraStar-C PRO PPP	0.17	0.15				
	Single point	1.15	0.70				
60 s	RTK ⁶	5.00	1.03	0.220	0.035	0.035	0.120
	TerraStar-C PRO PPP	5.00	1.05				
	Single point	6.00	1.60				
	RTK with Land profile and DMI	2.50	0.65				
0 s	Post-Processed using Inertial Explorer	0.01	0.02	0.015	0.010	0.005	0.010
10 s		0.02	0.02	0.015	0.010	0.005	0.010
60 s		0.17	0.06	0.017	0.010	0.005	0.012

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.

Contact Hexagon | NovAtel

sales.nov.ap@hexagon.com 1-800-NOVATEL (U.S. and Canada) or 403-295-4900 | China: 0086-21-68882300 | Europe: 44-1993-848-736 | SE Asia and Australia: 61-400-883-601. For the most recent details of this product: novatel.com

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D24940 Version 3 | 04 May 2023 | Printed in Canada