

# OEM-IMU-EG370N

Commercial, MEMS IMU  
With Higher Data Rate and  
Improved Accuracies Combines  
With SPAN Technology by  
Hexagon | NovAtel to Deliver 3D  
Position, Velocity and Attitude



## SPAN: Tightly-Coupled GNSS+INS Technology

Synchronized Position and Attitude Navigation (SPAN) 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 technology by NovAtel, this IMU is ideal for size constrained applications that require accurate 3D position, velocity and attitude (roll, pitch and azimuth) data.

## Require Higher Accuracy?

NovAtel receivers provide your choice of accuracy and performance, from decimeter to RTK-level positioning. For more demanding applications, Inertial Explorer® post-processing software from our Waypoint® Products Group offers the highest level of accuracy.

## Benefits

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

## Features

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

**SPAN System Performance<sup>1</sup>**

**Horizontal Position Accuracy (RMS)**

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

**Data Rates**

IMU Raw Data Rate	200Hz
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**

Technology	MEMS
Input range	±450 deg/sec
Rate bias stability	0.8 deg/hr
Angular random walk	0.06 deg/√hr

**Accelerometer Performance**

Range	±10 g
Bias stability	0.01 mg
Velocity random walk	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

**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<sup>8</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>9</sup>	0.02	0.03	0.015	0.010	0.013	0.013	0.070
	PPP	0.06	0.15					
	SP	1.00	0.60					
	Post-Processed <sup>10</sup>	0.01	0.02					
10 s	RTK <sup>9</sup>	0.17	0.13	0.040	0.020	0.022	0.022	0.085
	PPP	0.21	0.25					
	SP	1.15	0.70					
	Post-Processed <sup>10</sup>	0.01	0.02					
60 s	RTK <sup>9</sup>	5.02	1.03	0.220	0.035	0.035	0.035	0.120
	PPP	5.06	1.15					
	SP	6.00	1.60					
	Post-Processed <sup>10</sup>	0.17	0.06					

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 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 meters/second. 7. Supplied by IMU manufacturer. 8. Outage statistics were calculated by taking the RMS of the maximum errors over a minimum of 30 complete GNSS outages. Each outage was followed by 120 seconds of full GNSS availability before the next outage was applied. High accuracy GPS updates (fixed ambiguities) were available immediately before and after each outage. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e., as normally observed in ground vehicle environments). 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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