



## Tactical Grade, Low Noise IMU Combines with NovAtel's GNSS Technology to Create a 3D Position, Velocity and Attitude Solution

### Benefits

35,000 hour MTBF

No export approval required for most countries and applications

Easy integration with a NovAtel SPAN capable GNSS/INS receiver

### Features

Closed loop fiber optic gyros and servo accelerometers

200 Hz data rate

Wheel encoder input capability

SPAN INS functionality

### SPAN: World-Leading GNSS + INS Technology

SPAN (Synchronous Position, Attitude and Navigation) 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.

### IMU-FSAS Overview

The IMU-FSAS is a tactical grade IMU from iMAR GmbH. The custom NovAtel interface of the IMU integrates easily into a NovAtel SPAN enabled GNSS/INS receiver such as the FlexPak6™ or SPAN-SE. IMU measurements are sent from the IMU-FSAS to the GNSS/INS receiver where a blended GNSS/INS position, velocity and attitude solution is generated at up to 200 Hz. An optional interface for magnetic or optical encoder style wheel sensors is available for ground applications.

### Advantages of IMU-FSAS

The low noise and stable biases of the accelerometer and gyro sensors mean this IMU is well suited for ground or airborne survey applications or general positioning and navigation in locations where standard GNSS receivers are not sufficient. For commercial applications, the IMU-FSAS does not require formal export authorization from Germany or Canada.

### Improve SPAN FSAS Accuracy

Take advantage of our Advance® RTK as well as support for other satellite based augmentation systems such as L-Band or SBAS to improve real-time performance and accuracy. For more demanding applications, Inertial Explorer® post-processing software from our Waypoint® Product Group can be used to post-process SPAN FSAS data and offers the highest level of accuracy with the system.

If you require more information about our SPAN IMUs,

visit [novatel.com/products/span-gnss-inertial-systems/inertial-measurement-units-imus](http://novatel.com/products/span-gnss-inertial-systems/inertial-measurement-units-imus)

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or 403-295-4900

China 0086-21-54452990-8011

Europe 44-1993-848-736

SE Asia and Australia 61-400-833-601



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

<b>Horizontal Position Accuracy (RMS)</b>	
Single Point L1	1.5 m
Single Point L1/L2	1.2 m
SBAS	0.6 m
DGPS	0.4 m
L-Band	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-2™	1 cm+1 ppm
<b>Acceleration Accuracy<sup>2</sup></b>	
	0.03 m/s <sup>2</sup> RMS
<b>Max Velocity<sup>3</sup></b>	
	515 m/s
<b>Data Rate</b>	
IMU Measurements	200 Hz
INS Position	200 Hz
INS Velocity	200 Hz
INS Attitude	200 Hz

**IMU Performance**

<b>IMU-FSAS-EI-SN</b>	
Gyro Input Range	±450 deg/sec
Gyro Rate Bias	<0.75 deg/hr
Gyro Rate Scale Factor	300 ppm
Angular Random Walk	0.1 deg/√hr
Accelerometer Range <sup>4</sup>	±5 g
Accelerometer Scale Factor	300 ppm
Accelerometer Bias	1.0 mg

**IMU Physical and Electrical**

<b>Dimensions</b>	128 x 128 x 104 mm
<b>Weight</b>	2.1 kg
<b>Power</b>	
Power Consumption	16 W (max)
Input Voltage	+11 to +34 V
<b>Input/Output Connectors</b>	
	MIL-C-38999-III, 22 pin

**Environmental**

<b>Temperature</b>	
Operating	-40°C to +71°C
Storage	-40°C to +85°C
<b>Humidity</b>	95% non-condensing
<b>MTBF</b>	35,000 hrs

**Optional Accessories**

- Inertial Explorer post-processing software

**Performance During GNSS Outages<sup>1</sup>**

Outage Duration	Positioning Mode	Position Accuracy (m) RMS		Velocity Accuracy (m/s) RMS		Attitude Accuracy (degrees) <sup>2</sup> RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK	0.020	0.050	0.020	0.010	0.008	0.008	0.023
	HP	0.100	0.080	0.020	0.010	0.010	0.008	0.026
	SP	1.200	0.600	0.020	0.010	0.009	0.013	0.024
	PP <sup>5</sup>	0.010	0.015	0.020	0.010	0.008	0.008	0.012
10 s	RTK	0.130	0.060	0.026	0.010	0.010	0.010	0.025
	HP	0.350	0.290	0.031	0.011	0.012	0.012	0.032
	SP	1.340	0.670	0.035	0.011	0.014	0.014	0.026
	PP <sup>5</sup>	0.020	0.020	0.020	0.010	0.008	0.008	0.013
60 s	RTK	3.500	0.320	0.135	0.015	0.015	0.015	0.040
	HP	4.230	0.560	0.147	0.015	0.016	0.016	0.040
	SP	4.440	0.870	0.151	0.015	0.018	0.018	0.040
	PP <sup>5</sup>	0.130	0.050	0.030	0.020	0.010	0.010	0.016



Version 6 - Specifications subject to change without notice.

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For the most recent details of this product:

[novatel.com/assets/Documents/Papers/FSAS.pdf](http://novatel.com/assets/Documents/Papers/FSAS.pdf)

<sup>1</sup> Typical values. Performance specifications subject to GPS system characteristics, US DOD operational degradation, ionospheric and tropospheric conditions, satellite geometry, baseline length, multipath effects and the presence of intentional or unintentional interference sources.

<sup>2</sup> When SPAN is in RTK mode.

<sup>3</sup> Export licensing restricts operation to a maximum of 515 metres per second.

<sup>4</sup> GNSS receiver sustains tracking up to 4 g.

<sup>5</sup> Post-processing results using Inertial Explorer software.



Statements related to the export of products are based solely on NovAtel's experience in Canada, are not binding in any way and exportability may be different with respect to the export regulations in effect in another country. The responsibility for re-export of product from a Customer's facility is solely the responsibility of the Customer.