



Tactical Grade, Low Noise IMU Delivers 3D Position, Velocity and Attitude Solution as Part of SPAN Technology

Benefits

200 Hz output rate

Tactical-grade IMU performance

Easy integration with NovAtel's
SPAN-SE GNSS/INS receiver

Features

Closed-loop fiber optic gyros

Micromechanical accelerometers

200 Hz data rate

SPAN: World-Leading GNSS+INS Technology

SPAN (Synchronous Position, Attitude and Navigation) technology brings together two different, but complementary technologies: 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.

UIMU-LCI Overview

The UIMU-LCI is a tactical-grade IMU from Northrop-Grumman Litef GMBH. The custom NovAtel mechanical enclosure and software interface of the IMU integrates easily into a NovAtel SPAN-enabled GNSS/INS receiver such as the SPAN-SE. IMU measurements are sent from the UIMU-LCI to the GNSS/INS receiver where a blended GNSS/INS position, velocity and attitude solution is generated at up to 200 Hz.

Advantages of UIMU-LCI

The low noise and stable biases of the accelerometer and gyro sensors mean that the IMU is well suited for ground or airborne survey applications or general positioning and navigation in locations where standard GNSS receivers are not sufficient. The IMU is manufactured in Germany.

Improve SPAN LCI Accuracy

Take advantage of our Advance® RTK as well as support for other satellite-based augmentation systems such as OmniSTAR® or SBAS to improve real-time performance and accuracy. For more demanding applications Inertial Explorer® (IE) post processing software from our Waypoint® product group can be used to post process SPAN LCI data and offers the highest level of accuracy with the system.

SPAN System Performance¹

Horizontal Position Accuracy (RMS)	
Single Point L1	1.5 m
Single Point L1/L2	1.2 m
SBAS	0.6 m
DGPS	0.4 m
OmniSTAR	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-20 ^{®2}	0.2 m
RT-2 [™]	1 cm+1 ppm

Acceleration Accuracy³0.004 m/s² RMS**Max Velocity⁴** 515 m/s**Data Rate⁵**

IMU Measurements	200 Hz
INS Position	200 Hz
INS Velocity	200 Hz
INS Attitude	200 Hz

IMU Performance**UIMU-LCI**

Gyro Input Range	±800 deg/sec
Gyro Rate Bias	<1.0 deg/hr
Gyro Rate Scale Factor (typical)	100 ppm
Angular Random Walk	<0.05 deg/√hr
Accelerometer Range ⁶	±40 g
Accelerometer Scale Factor (typical)	250 ppm
Accelerometer Bias	<1.0 mg

IMU Physical and Electrical

Dimensions	168 x 195 x 146 mm
Weight	4.25 kg
Power	
Power Consumption	16 W (typ)
Input Voltage	+12 to +28 V
Connectors	
	MIL-C-38999-III, 22 pin

Environmental

Temperature	
Operating	-40°C to +60°C
Storage	-40°C to +71°C
Humidity	95% non-condensing
Random Vibe	MIL-STD 810F 10g RMS
Shock	MIL-STD 810F 30g RMS
MTBF	>45,000 hrs

Optional Accessories

- Inertial Explorer post-processing software

Performance During GNSS Outages^{1,8}

Outage Duration	Positioning Mode	Position Error (m)		Velocity Error (m/s)		Attitude Error (degrees)		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK	0.020	0.050	0.020	0.010	0.007	0.007	0.018
	HP	0.100	0.080	0.020	0.010	0.007	0.007	0.018
	SP	1.200	0.600	0.020	0.010	0.007	0.007	0.020
	PP ⁷	0.010	0.015	0.010	0.010	0.005	0.005	0.008
10 s	RTK	0.070	0.060	0.022	0.010	0.007	0.007	0.018
	HP	0.280	0.280	0.024	0.011	0.008	0.008	0.022
	SP	1.660	1.170	0.024	0.012	0.008	0.008	0.025
	PP ⁷	0.010	0.020	0.010	0.010	0.005	0.005	0.008
60 s	RTK	1.670	0.480	0.061	0.015	0.009	0.009	0.021
	HP	1.740	0.530	0.063	0.015	0.009	0.009	0.025
	SP	2.460	1.330	0.066	0.015	0.009	0.009	0.026
	PP ⁷	0.110	0.030	0.020	0.015	0.006	0.006	0.010