SPAN™

UIMU-LCI

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 capable GNSS/INS receivers

Features

Closed-loop fiber optic gyros

Micromechanical accelerometers

200 Hz data rate

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.

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 FlexPak6 or 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 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 LCI data and offers the highest level of accuracy with the system.

If you require more information about our SPAN products, visit novatel.com/products/span-gnss-inertial-systems

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SPAN™ UIMU-LCI

SPAN System Performance[1]

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
L-Band	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-2™	1 cm+1 ppm

Acceleration Accuracy[2] 0.004 m/s² RMS

Max Velocity[3] 515 m/s

Data Rate[4]

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[5]	±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 (typical)
Input Voltage	+12 to +28 V

Connectors MIL-C-38999-III, 22 pin

Environmental

Temperature

Operating	-40ºC to +60ºC
Storage	-40ºC to +71ºC

Humidity 95% non-condensing

Random Vibe MIL-STD 810F 10g RMS

Shock MIL-STD 810F 30g RMS

MTBF >45,000 hrs

Waterproof IEC 60259 IPX7

Dust IEC 60259 IP6X

Optional Accessories

- Inertial Explorer post-processing software

Performance During GNSS Outages[1,6]

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

Version 4 - Specifications subject to change without notice.

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For the most recent details of this product:
novatel.com/assets/Documents/Papers/IMU-LCI.pdf

[1] 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.
[2] When SPAN is in RTK mode.
[3] Export licensing restricts operation to a maximum of 515 metres per second.
[4] If raw IMU measurements are logged (200 Hz), the maximum rate position, velocity, attitude logs that can be requested is 50 Hz.
[5] GNSS receiver sustains tracking up to 4 g.
[6] Ground Mobile Operating Environment
[7] Post-processing results using Inertial Explorer software.