

TACTICAL GRADE, LOW NOISE IMU DELIVERS 3D POSITION, VELOCITY AND ATTITUDE SOLUTION AS PART OF SPAN TECHNOLOGY



SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY

Synchronous Position, Attitude and Navigation (SPAN) 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 ProPak6™. 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 NovAtel CORRECT™ to receive your choice of accuracy and performance, from decimetre to RTK-level positioning. 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.

BENEFITS

- + 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

If you require more information about our SPAN products, visit www.novatel.com/span

UIMU-LCI

SPAN SYSTEM PERFORMANCE¹

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS ²	0.6 m
DGPS	0.4 m

NovAtel CORRECT™

» TERRASTAR-D ^{3,4}	6 cm
» Veripos Apex ^{2,3,5}	6 cm
» RT-2®	1 cm + 1 ppm

Data Rate

IMU measurements	200 Hz
INS position	200 Hz
INS velocity	200 Hz
INS attitude	200 Hz

Time Accuracy⁶ 20 ns RMS

Max Velocity⁷ 515 m/s

IMU PERFORMANCE

Gyroscope Performance

Input range	±800 deg/sec
Rate bias	<1.0 deg/hr
Rate scale factor	100 ppm (typical)
Angular random walk	<0.05 deg/√hr

Accelerometer Performance

Range ⁸	±40 g
Scale factor	250 ppm (typical)
Bias	<1.0 mg

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	-40°C to +60°C
Storage	-40°C to +71°C

Humidity 95% non-condensing

Random Vibe

MIL-STD 810F 10 g RMS

Shock MIL-STD 810F 30 g RMS

MTBF >45,000 hrs

Waterproof IEC 60259 IPX7

Dust IEC 60259 IP6X

OPTIONAL ACCESSORIES

- Inertial Explorer post-processing software

For the most recent details of this product:

www.novatel.com/products/span-gnss-inertial-systems/span-imus/uimu-lci/

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Version 6 Specifications subject to change without notice.

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PERFORMANCE DURING GNSS OUTAGES^{1,9}

Outage Duration	Positioning Mode	POSITION ERROR (M)		VELOCITY ERROR (M/S)		ATTITUDE ERROR (DEGREES)		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK ¹⁰	0.020	0.050	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 ¹¹	0.010	0.015	0.010	0.010	0.005	0.005	0.008
10 s	RTK ¹⁰	0.070	0.060	0.022	0.010	0.007	0.007	0.018
	SP	1.660	1.170	0.024	0.012	0.008	0.008	0.025
	PP ¹¹	0.010	0.020	0.010	0.010	0.005	0.005	0.008
60 s	RTK ¹⁰	1.670	0.480	0.061	0.015	0.009	0.009	0.021
	SP	2.460	1.330	0.066	0.015	0.009	0.009	0.026
	PP ¹¹	0.110	0.030	0.020	0.015	0.006	0.006	0.010

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. GPS only.

3. An OEM628, OEM638, FlexPak6 or ProPak6 receiver is required for TERRASTAR-D or Veripos Apex².

4. TERRASTAR-D subscriptions are available from NovAtel.

5. Veripos Apex² marine subscriptions are available directly from Veripos. (www.veripos.com)

6. Time accuracy does not include biases due to RF or antenna delay.

7. Export licensing restricts operation to a maximum of 515 metres/second.

8. GNSS receiver sustains tracking up to 4 g.

9. Ground Mobile Operating Environment

10. 1 ppm should be added to all values to account for additional error due to baseline length.

11. Post-processing results using Inertial Explorer software.

