



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

### Benefits

Low noise, low bias sensor  
excellent for airborne survey  
applications

Easy integration with NovAtel's  
SPAN-capable GNSS/INS receivers

### Features

Closed-loop fiber optic  
gyro technology

200 Hz data rate

12 – 28 VDC power input

### 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-LN200 Overview

The UIMU-LN200 contains the Northrop Grumman LN200 IMU. The LN200 is a tactical-grade IMU containing closed-loop fiber optic gyros and solid-state silicon accelerometers. The UIMU-LN200 handles the power requirements of the IMU from a 12 – 28 V power input and provides the IMU data to a SPAN-enabled GNSS/INS receiver such as the ProPak® or SPAN-SE using a custom NovAtel interface. The GNSS/INS receiver uses IMU measurements to compute a blended GNSS/INS position, velocity and attitude solution at up to 200 Hz. The LN200 is ITAR controlled and requires export approval for customers outside the United States.

### Advantages of UIMU-LN200

Low noise and stable accelerometer and gyro sensor biases make the UIMU-LN200 an ideal choice for airborne mapping applications. IMU mounting is made easy by its small footprint. The UIMU-LN200 is available as a complete assembly, including the IMU and environmentally sealed enclosure, or customers who already have the LN200 IMU can purchase the enclosure separately and easily integrate the IMU.

### Improve SPAN LN200 Accuracy

Take advantage of our Advance® RTK as well as support for 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 LN200 data and offers the highest level of accuracy with the system.

**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
OmniSTAR	
VBS	0.6 m
XP	0.15 m
HP	0.1 m
RT-20 <sup>®2</sup>	0.2 m
RT-2 <sup>™</sup>	1 cm+1 ppm

**Acceleration Accuracy<sup>3</sup>**  
**0.03 m/s<sup>2</sup> RMS**

**Max Velocity<sup>4</sup>**                    **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>UIMU-LN200</b>	
Gyro Input Range	±1000 deg/sec
Gyro Rate Bias	1.0 deg/hr
Gyro Rate Scale Factor	100 ppm
Angular Random Walk	0.07 deg/√hr
Accelerometer Range <sup>5</sup>	±40 g
Accelerometer Linearity	150 ppm
Accelerometer Scale Factor	300 ppm
Accelerometer Bias	0.3 mg

<b>UIMU-LN200-L</b>	
Gyro Input Range	±1000 deg/sec
Gyro Rate Bias	1.0 deg/hr
Gyro Rate Scale Factor	100 ppm
Angular Random Walk	0.07 deg/√hr
Accelerometer Range <sup>5</sup>	±40 g
Accelerometer Linearity	500 ppm
Accelerometer Scale Factor	1000 ppm
Accelerometer Bias	1.5mg

**IMU Physical and Electrical**

<b>Dimensions</b>	168 x 195 x 146 mm
<b>Weight</b>	4.5 kg
<b>Power</b>	
Power Consumption	12 W (typical)
Input Voltage	+12 to +28 V
<b>Connectors</b>	
Power	MIL-C-38999-III, 3 pin
Communication	MIL-C-38999-III, 13 pin

**Environmental**

<b>Temperature</b>	
Operating	-30°C to +60°C
Storage	-45°C to +80°C
<b>Humidity</b>	95% non-condensing
<b>MTBF</b>	20,000 hrs

**Optional Accessories**

- Inertial Explorer post-processing software

**Performance During GNSS Outages<sup>1,6</sup>**

Outage Duration	Positioning Mode	Position Accuracy (m) RMS		Velocity Accuracy (m/s) RMS		Attitude Accuracy (degrees) <sup>3</sup> RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0s	RTK	0.020	0.050	0.020	0.010	0.010	0.010	0.020
	HP	0.100	0.080	0.020	0.010	0.010	0.010	0.020
	SP	1.200	0.060	0.020	0.010	0.011	0.011	0.022
	PP <sup>7</sup>	0.010	0.015	0.020	0.010	0.005	0.005	0.008
10 s	RTK	0.120	0.070	0.025	0.011	0.011	0.011	0.022
	HP	0.390	0.320	0.030	0.012	0.012	0.012	0.030
	SP	1.340	0.670	0.030	0.012	0.012	0.012	0.029
	PP <sup>7</sup>	0.020	0.020	0.010	0.010	0.005	0.005	0.008
60 s	RTK	2.790	0.630	0.102	0.023	0.013	0.013	0.031
	HP	3.120	0.760	0.105	0.019	0.013	0.013	0.040
	SP	3.510	0.960	0.105	0.019	0.015	0.015	0.039
	PP <sup>7</sup>	0.110	0.030	0.020	0.015	0.008	0.008	0.010