

# SPAN<sup>®</sup> IMU-LN200



TACTICAL GRADE, LOW NOISE IMU  
COMBINES WITH NOVATEL'S GNSS  
TECHNOLOGY TO PROVIDE 3D POSITION,  
VELOCITY AND ATTITUDE SOLUTION



## SPAN: WORLD-LEADING GNSS+INS TECHNOLOGY

Synchronous Position, Attitude and Navigation (SPAN) technology brings together two different but complementary technologies: Global Navigation Satellite Systems (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-LN200 OVERVIEW

The IMU-LN200 is a tactical grade IMU containing closed-loop fiber optic gyros and solid-state silicon accelerometers. Low noise and stable accelerometer and gyro sensor biases make the IMU-LN200 an ideal choice for airborne mapping applications. IMU mounting is made easy by its small footprint.

The IMU-LN200 is available as a complete assembly, including the IMU and environmentally sealed enclosure. The LN200 is also available as a stand alone OEM product so integrators can easily pair it with a SPAN enabled receiver. The LN200 is ITAR controlled and requires export approval for customers outside the United States.

## IMPROVE SPAN LN200 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 LN200 data and offers the highest level of accuracy with the system.

## BENEFITS

- + Low noise, low bias sensor excellent for airborne survey applications
- + Easy integration with NovAtel's SPAN capable GNSS+INS receivers
- + Streamlined enclosure and simple cabling

## FEATURES

- + Closed-loop fiber optic gyro technology
- + 200 Hz data rate
- + 10-34 VDC power input
- + SPAN GNSS+INS functionality

If you require more information about our SPAN products, visit [www.novatel.com/span](http://www.novatel.com/span)



Contact NavtechGPS for product details. [www.NavtechGPS.com](http://www.NavtechGPS.com)  
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# IMU-LN200



## SPAN SYSTEM PERFORMANCE<sup>1</sup>

### Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
NovAtel CORRECT	
» SBAS <sup>2</sup>	60 cm
» DGPS	40 cm
» PPP <sup>3, 4</sup>	
TerraStar-L	40 cm
TerraStar-C	4 cm
RTK	1 cm + 1 ppm

### Data Rate

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

**Time Accuracy<sup>5</sup>** 20 ns RMS

**Max Velocity<sup>6</sup>** 515 m/s

## IMU PERFORMANCE<sup>7</sup>

### IMU-LN200

Gyro input range	±1000 deg/sec
Gyro rate bias	1.0 deg/hr
Gyro scale factor error	100 ppm
Angular random walk	0.07 deg/√hr
Accelerometer input range <sup>8</sup>	±40 g
Accelerometer linearity	150 ppm
Accelerometer scale factor error	300 ppm
Accelerometer bias	0.3 mg

### IMU-LN200C

Gyro input range	±490 deg/sec
Gyro rate bias	1.0 deg/hr
Gyro scale factor error	100 ppm
Angular random walk	0.07 deg/√hr
Accelerometer input range <sup>8</sup>	±15 g
Accelerometer linearity	500 ppm
Accelerometer scale factor error	300 ppm
Accelerometer bias	1.0 mg

## PHYSICAL AND ELECTRICAL

### Dimensions

150 x 134 x 134 mm

### Weight

<3.4 kg

### Power

Power consumption	14 W (typical)
Input voltage	+10 to +34 V

### Connectors

Power	SAL M12, 5 pin, male
Data	SAL M12, 4 pin, female
Wheel sensor	SAL M12, 8 pin, male

## ENVIRONMENTAL

### Temperature

Operating	-40°C to +55°C
Storage	-40°C to +80°C

### Humidity

MIL-STD-810G,  
Method 507.5

**Random Vibe** MIL-STD-810G,  
Method 514.6 (2.0g)

### MTBF

20,000 hrs

**Environment** IEC 60529 IP67

## INCLUDED ACCESSORIES

- Power cable
- Communication cable
- Wheel sensor cable

## OPTIONAL ACCESSORIES

- Mounting plate
- Inertial Explorer post-processing software

For the most recent details of this product:

[www.novatel.com/products/span-gnss-inertial-systems/span-imus/imu-ln200-tactical-grade-fiber-optic-gyros-fog-inertial-measurement-unit-imu/](http://www.novatel.com/products/span-gnss-inertial-systems/span-imus/imu-ln200-tactical-grade-fiber-optic-gyros-fog-inertial-measurement-unit-imu/)

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Europe 44-1993-848-736

SE Asia and Australia  
61-400-883-601

## PERFORMANCE DURING GNSS OUTAGES<sup>1,9</sup>

Outage Duration	Positioning Mode	POSITION ACCURACY (M) RMS		VELOCITY ACCURACY (M/S) RMS		ATTITUDE ACCURACY (DEGREES) RMS		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Heading
0 s	RTK <sup>10</sup>	0.02	0.03	0.010	0.010	0.010	0.010	0.020
	SP	1.00	0.60	0.010	0.010	0.010	0.010	0.020
	PP <sup>11</sup>	0.01	0.02	0.010	0.010	0.005	0.005	0.007
10 s	RTK <sup>10</sup>	0.13	0.10	0.020	0.015	0.012	0.012	0.025
	SP	1.15	0.67	0.020	0.015	0.012	0.012	0.025
	PP <sup>11</sup>	0.01	0.02	0.020	0.010	0.005	0.005	0.007
60 s	RTK <sup>10</sup>	2.75	0.85	0.100	0.025	0.017	0.017	0.040
	SP	3.50	1.40	0.100	0.025	0.017	0.017	0.040
	PP <sup>11</sup>	0.09	0.03	0.040	0.010	0.005	0.005	0.007

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. Requires subscription to TerraStar data service. Subscriptions available from NovAtel.

4. TerraStar service available depends on the SPAN receiver used. See the receiver product sheet for details.

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

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

7. Supplied by IMU manufacturer.

8. GNSS receiver sustains tracking up to 4 g.

9. Steady state and outage performance remains the same for the C model.

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.

Version 1 Specifications subject to change without notice.

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D21488 September 2016

Printed in Canada.



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