



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

Benefits

Low noise, low bias sensor
excellent for airborne survey
applications

Easy integration with a NovAtel
SPAN-capable GNSS/INS receiver

Features

Closed-loop fiber optic
gyro technology

200 Hz data rate

9-28 V power input

GNSS+INS Solution Unlike Any Others

NovAtel's SPAN (Synchronous Position, Attitude and Navigation) technology brings together two different, but complementary technologies: GPS positioning and inertial navigation. The absolute accuracy of GPS 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 GPS signals are blocked.

IMU-LN200 Overview

The IMU-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 IMU-LN200 handles the power requirements of the IMU from a 9-28 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. IMU measurements are used by the GNSS/INS receiver 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 IMU-LN200

The IMU-LN200 is the IMU of choice for many airborne mapping customers because of the low noise and stable biases of the accelerometer and gyro sensors. Mounting of the IMU is made easy by its small footprint. The IMU-LN200 is available as a complete assembly including the IMU and environmentally sealed enclosure, or for customers who already have the LN200 IMU, the enclosure can be purchased separately and the IMU easily integrated inside.

If you require more information about our SPAN IMUs,
visit improveyourgps.com



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or 403-295-4900

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SPAN System Performance¹**Position Accuracy (RMS)**

Single Point L1	1.8 m
Single Point L1/L2	1.5 m
SBAS	0.6 m
DGPS	0.45 m
OmniSTAR	
VBS	0.7 m
XP	0.15 m
HP	0.1 m
RT-20™ ²	0.2 m
RT-2™	1 cm+1 ppm

Velocity Accuracy **0.02 m/s RMS**
(nominal)

Attitude Accuracy³

Pitch	0.010° RMS
Roll	0.010° RMS
Azimuth	0.025° RMS

Acceleration Accuracy

0.03 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**IMU-LN200**

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 ⁶	±40 g
Accelerometer Linearity	150 ppm
Accelerometer Scale Factor	300 ppm
Accelerometer Bias	0.3 mg

IMU Physical and Electrical

Dimensions **157 x 135 x 140 mm**

Weight **3.0 kg**

Power

Power Consumption	12 W (typical)
Input Voltage	+12 to 28 V

Input/Output Connectors

Power	MIL-C-38999-III, 3 pin
Communication	MIL-C-38999-III, 13 pin

Environmental

Temperature	
Operating	-30°C to +60°C
Storage	-45°C to +80°C
Humidity	95% non-condensing

MTBF **20,000 hrs**

Performance During GNSS Outages⁷

Outage Duration	Positioning Mode	Position Error (m)		Velocity Error (m/s)		Attitude Error (degrees)		
		Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Yaw
10 s	RTK	0.11	0.04	0.012	0.003	0.003	0.003	0.006
	DGPS	0.33	0.32	0.020	0.008	0.005	0.005	0.023
	SP	1.07	1.97	0.024	0.010	0.005	0.005	0.030
30 s	RTK	0.59	0.18	0.036	0.008	0.006	0.005	0.014
	DGPS	0.73	0.42	0.038	0.010	0.006	0.006	0.026
	SP	1.38	2.01	0.043	0.013	0.006	0.006	0.033
60 s	RTK	2.03	0.61	0.072	0.020	0.007	0.008	0.023
	DGPS	2.11	0.65	0.069	0.014	0.006	0.007	0.030
	SP	2.68	2.05	0.075	0.015	0.006	0.007	0.036



Version 3 - Specifications subject to change without notice.

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Printed in Canada. D10151

IMU-LN200 May 2009

For the most recent details of this product:
novatel.com/Documents/Papers/LN200.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 Expected accuracy after static convergence.

³ When SPAN is in RTK mode.

⁴ Export licensing restricts operation to a maximum of 515 metres per second.

⁵ If raw IMU measurements are logged (200 Hz), the maximum rate position, velocity, attitude logs that can be requested is 50 Hz.

⁶ GNSS receiver sustains tracking up to 4 g.

⁷ These values were computed with respect to a full GPS RTK trajectory.

