



## Rugged GNSS/INS Receiver Delivers 3D Position, Velocity and Attitude Solution

### Benefits

Continuous, stable navigation

Supports IMUs from various suppliers

Available as fully enclosed product or as board stack

Proven OEMV® technology

### Features

SD card data logging

GPS or GPS+GLONASS options

Single antenna and future dual antenna support

Wheel sensor input for ground systems

### GNSS+INS Solution Unlike Any Other

NovAtel's 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 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 GNSS signals are blocked.

### SPAN-SE Overview

The SPAN-SE provides the user interface to SPAN. It outputs raw measurement data or solution data over several communication protocols or to a removable SD card. Multiple GPS-synchronous strobes and event input lines offer easy integration into a larger system. Combining SPAN-SE with a SPAN-supported IMU creates a complete GNSS/INS system. For applications requiring an external heading reference, a dual antenna version of SPAN-SE will soon be available.

### SPAN-SE Advantages

Tight coupling of the GPS and IMU measurements provides more satellite observations and the most accurate, continuous solution possible. With NovAtel's world-class OEMV technology as its GNSS receiver, the SPAN-SE delivers many powerful features including GPS+GLONASS capability and AdVance™ RTK performance. A dedicated CPU for real-time GPS/INS processing results in fast data rates and low raw data and solution latency for highly dynamic or time-critical applications.

To learn more about SPAN technology go to [www.improveyourgps.com](http://www.improveyourgps.com)

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



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**SPAN System Performance<sup>1</sup>**

<b>Horizontal Position Accuracy (RMS)</b>	
Single Point L1	1.8 m
Single Point L1/L2	1.5 m
SBAS	0.6 m
CDGPS	0.6 m
DGPS	0.45 m
Omnistar	
VBS	0.7 m
XP	0.15 m
HP	0.1 m
RT-20™	0.2 m
RT-2™	1 cm+1 ppm

**Measurement Precision**

L1 C/A Code	4 cm RMS
L1 Carrier Phase	0.5 mm RMS
	(differential channel)
L2 P(Y) Code	8 cm RMS
L2 Carrier Phase	1 mm RMS
	(differential channel)

**Data Rates**

GPS Measurement	50 Hz
GPS Position	20 Hz
IMU Measurement	Up to 200 Hz
INS Solution	Up to 200 Hz
Time Accuracy <sup>2</sup>	50 ns RMS
Maximum Velocity <sup>3</sup>	515 m/s

**Physical and Electrical****Dimensions** 200 x 248 x 76 mm**Weight** 3.4 kg**Power**

Power Consumption (single antenna)	10 W (typical)
Power Consumption (dual antenna)	12 W (typical)
Input Voltage	9-30 VDC

**Antenna Port(s) Power Output**

Output Voltage	+5 VDC
Maximum Current	100 mA

**Communication Ports**

RS232/RS422 software configurable UART COM Ports	4
IMU Connection	1
RTK correction Input UART COM Port	1
USB 2.0 Host	1
USB 2.0 Device	1
Ethernet	1
Removable SD Card	1
Event Input Triggers	4
Configurable Output Strokes	3

**COM Port Output Power**

Output Voltage	+9-30 VDC
Maximum Current	1.5 A

**Input/Output Connectors**

Power	ODU Mini Snap, Series K, 4 pin
I/O 1	ODU Mini Snap, Series K, 30 pin
I/O 2	ODU Mini Snap, Series K, 30 pin
Ethernet	RJ-45
Primary RF	TNC Female
Secondary RF	TNC Female
USB Device	Type B
USB Host	Type A

**Environmental**

<b>Temperature</b>	
Operating	-40°C to +65°C
Storage	-50°C to +80°C
<b>Humidity</b> 95% non-condensing	
Waterproof	IEC 60529 IPX7
Dust	IEC 60529 IP6X
<b>Vibration (operating)</b>	
Random	RTCA DO-160D, curve C
Sinusoidal	IEC 68-2-6
Shock (operating)	IEC 68-2-27, 25 g

**Regulatory**

Emissions	FCC Part 15, Class B EN 55022, Class B
Immunity	EN 55024
Safety	EN 609050-1
MTBF	269 000 hrs

**Included Accessories**

- VDC Power Cable
- 2x Serial Cables
- SD Card
- Mounting Brackets
- CD
- USB 2.0 Cable

**Optional Accessories**

- GPS-700 series antennas
- Antcom antennas
- RF cables – 5, 10 and 30 m lengths

**Additional Features**

- Field-upgradable firmware
- Supports RTCM SC-104 version 3.0, CMR version 3.0, CMR+, NMEA 0183 version 3.01, and RTCA DO-217 message types



Version 1 - Specifications subject to change without notice.

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For the most recent details of this product:  
novatel.com/Documents/Papers/SPAN-SE.pdf<sup>1</sup> GNSS/INS performance is dictated by the IMU integrated with SPAN.<sup>2</sup> Time accuracy does not include biases due to RF or antenna delay.<sup>3</sup> Export licensing restricts operation to a maximum of 515 metres per second.