

## SPAN-SE

### Features

Single antenna configuration and future dual antenna support

SD card data logging

Environmentally sealed

GPS-only or GPS/GLONASS options

Wheel sensor input for ground applications

### Benefits

NovAtel SPAN technology offering tightly-coupled GNSS/INS

World class GNSS using NovAtel OEMV technology

Compatible with IMUs from various suppliers

Software backwards compatibility with previous SPAN products

Available in a fully enclosed product or as a board stack for OEM integrators



## The Solution Engine for NovAtel's SPAN™ Technology.

### GNSS + INS with SPAN

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 combine to provide a 3D position, velocity and attitude solution. Unlike GNSS-only navigation systems, the solution is stable and continuously available, even through periods when GNSS signals are blocked.

For further information about SPAN, visit us at [www.novatel.com/products/span.htm](http://www.novatel.com/products/span.htm)

### SPAN-SE Overview

SPAN-SE is the solution engine of NovAtel's leading-edge SPAN technology. It provides the user interface to SPAN and 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 be available soon.

### SPAN-SE Advantages

SPAN-SE uses NovAtel's powerful OEMV® receiver technology as its GNSS engine. The OEMV delivers many enabling features like GPS/GLONASS capability and AdvVance™ RTK, which are both supported in SPAN-SE. 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.



Precise thinking

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# SPAN-SE

## Performance<sup>1</sup>

### Horizontal Position Accuracy (RMS)

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

### Measurement Precision

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

### Data Rates

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

## Physical and Electrical

Size	200 x 248 x 76 mm
Weight	3.4 kg
Power Input Voltage	9-30VDC
Power Consumption (single antenna)	10W (typical)
Power Consumption (dual antenna)	12W (typical)

### Antenna Port(s) Power Output

Output Voltage	+5VDC
Maximum Current	100mA

### 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

### 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	4

## Environmental

Temperature	
Operating	-40°C to +65°C
Storage	-50°C to +95°C
Humidity	95% non-condensing
Waterproof	IEC 60529 IPX7
Dust	IEC 60529 IP6X

### Vibration (operating)

Random	RTCA DO-160D, curve C
Sinusoidal	IEC 68-2-6

Shock (Operating)	IEC 68-2-27, 60g
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## Regulatory

Emissions	FCC Part 15, Class B EN 55022, Class B
Immunity	EN 55024
Safety	EN 609050-1

## Included Accessories

VDC Power Cable  
2x Serial Cables  
SD Card  
Mounting Brackets

## Optional Accessories

GPS-700 series antennas  
ANT-500 series antennas  
RF cables – 5, 10 and 30m 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

- GNSS/INS performance is dictated by the IMU integrated with SPAN. For GNSS/INS performance please see the individual product sheets at: [http://www.novatel.com/products/span\\_product\\_matrix.htm](http://www.novatel.com/products/span_product_matrix.htm)  
For additional GNSS Specifications please see: <http://www.novatel.com/Documents/Papers/OEMV3.pdf>
- Time accuracy does not include biases due to RF or antenna delay.
- Export licensing restricts operation to a maximum of 514 metres per second.



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