

SINGLE ENCLOSURE GNSS+INS RECEIVER DELIVERS 3D POSITION, VELOCITY AND ATTITUDE



SPAN: WORLD LEADING GNSS+INS TECHNOLOGY

Synchronous Position, Attitude and Navigation (SPAN) technology brings together two different, but complementary technologies: Global Navigation Satellite System (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.

SPAN-CPT OVERVIEW

SPAN-CPT is a compact, single enclosure GNSS+INS receiver, powered by NovAtel's world class OEM6® technology. Capable of delivering up to centimetre-level accuracy, customers can choose from a variety of positioning modes to ensure they have the optimal level of accuracy for their application.

The IMU components within the SPAN-CPT enclosure are comprised of Fiber Optic Gyros (FOG) and Micro Electromechanical System (MEMS) accelerometers, maximizing price/performance value. FOGs offer exceptionally long life and stable performance compared with other similar gyro technologies.

SPAN-CPT ADVANTAGES

The tight coupling of the GNSS and IMU measurements delivers the most satellite observations and the most accurate, continuous solution possible. Further, SPAN-CPT is comprised entirely of commercial components, which means cross-border difficulties involved with traditional GNSS+INS systems are greatly minimized.

IMPROVE SPAN-CPT 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® Products Group can be used to post-process SPAN data and offers the highest level of accuracy.

BENEFITS

- + Continuous, stable positioning
- + Easy to integrate into space constrained applications
- + Minimizes import/export issues
- + Withstands harsh environments
- + Innovative OEM6 technology

FEATURES

- + Fiber optic gyros and MEMS accelerometers
- + SBAS, NovAtel CORRECT™ with PPP and RTK support
- + 100 Hz raw data and solution
- + Wheel sensor input for ground applications
- + Optional dual antenna

If you require more information about our SPAN products, visit www.novatel.com/span

SPAN-CPT™

SPAN SYSTEM PERFORMANCE¹

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
NovAtel CORRECT™	
» SBAS ²	0.6 m
» DGPS	0.4 m
» PPP ³	4 cm
» RT-2®	1 cm + 1 ppm

Data Rate

GPS measurement	20 Hz
GPS position	20 Hz
IMU measurement	100 Hz
INS solution	Up to 100 Hz

Time Accuracy⁴ 20 ns RMS

Max Velocity⁵ 515 m/s

IMU PERFORMANCE

Gyroscope Performance

Gyro technology	FOG
Output range	±375°/s
Bias	20°/hr
Bias stability	±1°/hr
Scale factor	1500 ppm
Angular random walk	0.0667°/√hr (max)

Accelerometer Performance

Range	±10 g
Bias	50 mg
Bias stability	±0.75 mg
Scale factor	4000 ppm

PHYSICAL AND ELECTRICAL

Dimensions

152 x 168 x 89 mm

Weight 2.28 kg

Power

Power consumption 16 W max

Input voltage +9 to +18 VDC

Antenna Port Power Output

Output voltage +5 VDC

Maximum current 100 mA

Connectors

Power and I/O	MIL-DTL-38999 Series 3
Antenna Input	TNC Female

COMMUNICATION PORTS

RS-232 UART COM	2
USB Device	1
CAN	1
Event Input Trigger	1
Configurable PPS	1

ENVIRONMENTAL

Temperature

Operating -40°C to +65°C

Storage -50°C to +80°C

Humidity 95% non-condensing

Waterproof

MIL-STD-810F, 506.4, Procedure I

INCLUDED ACCESSORIES

- Combined I/O and power cable

OPTIONAL ACCESSORIES

- GPS-700 series antennas (dual-frequency required)
- ANT series antennas (dual-frequency required)
- RF cables—5, 10 and 30 m lengths
- Inertial Explorer post-processing software

Optional Dual Antenna⁶

Baseline	Accuracy
0.5 m	0.4°
1.0 m	0.2°
2.0 m	0.1°

For the most recent details of this product:
www.novatel.com/products/span-gnss-inertial-systems/span-combined-systems/span-cpt/

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Version 9 Specifications subject to change without notice.

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PERFORMANCE DURING GNSS OUTAGES¹

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 ⁷	0.02	0.03	0.015	0.010	0.020	0.020	0.060
	SP	1.00	0.60	0.020	0.010	0.020	0.020	0.060
	PP ⁸	0.01	0.02	0.020	0.010	0.015	0.015	0.030
10 s	RTK ⁷	0.26	0.16	0.045	0.024	0.030	0.030	0.080
	SP	1.21	0.73	0.050	0.024	0.030	0.030	0.080
	PP ⁸	0.02	0.02	0.020	0.020	0.015	0.015	0.030
60 s	RTK ⁷	6.09	2.05	0.255	0.080	0.045	0.045	0.101
	SP	7.04	2.62	0.260	0.080	0.045	0.045	0.101
	PP ⁸	0.23	0.07	0.030	0.020	0.016	0.016	0.032

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.

2. GPS only.

3. Requires subscription to TerraStar-C data service. Subscriptions available from NovAtel.

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

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

6. Dual antenna requires a second NovAtel receiver to be paired with the SPAN-CPT.

7. 1 ppm should be added to all values to account for additional error due to baseline length.

8. Post-processing accuracy using Inertial Explorer processing software.

