SPAN®

SPAN-CPT™

Single Enclosure GNSS + INS Receiver Delivers 3D Position, Velocity and Attitude

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, L-Band and RTK support

100 Hz raw data and solution

Wheel sensor input for ground applications

Optional dual antenna

SPAN: World Leading GNSS + INS Technology

SPAN technology brings together two different, but complementary technologies: 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. Available modes include SBAS, L-Band and RTK.

The IMU components within the SPAN-CPT enclosure are comprised of Fiber Optic Gyros (FOG) and Micro Electrical Mechanical 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 our Advance RTK as well as support for satellite based augmentation systems such as SBAS to improve real-time performance and accuracy. For more demanding applications Inertial Explorer® (IE) post processing software from our Waypoint® Products Group can be used to post process SPAN data and offers the highest level of accuracy.

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SPAN-CPT™

SPAN System Performance[1]

Signal Tracking

GPS	L1, L2
GLONASS	L1, L2
SBAS	
L-Band	

Horizontal Position Accuracy (RMS)

Single Point L1/L2	1.2 m
SBAS	0.6 m
DGPS	0.4 m
RT-2™	1 cm + 1 ppm

Data Rates

GPS Measurement	20 Hz
GPS Position	20 Hz
IMU Measurement	100 Hz
INS Solution	Up to 100 Hz
Time Accuracy[2]	20 ns RMS

Maximum Velocity[3]	515 m/s

IMU Performance

Gyro Technology	FOG
Gyro Output Range	±375°/s
Gyro Bias	20°/hr
Gyro Bias Stability	±1°/hr
Gyro Scale Factor	1500 ppm
Angular Random Walk	0.0667°/√hr (max)
Accelerometer Range	±10 g
Accelerometer Bias	50 mg
Accelerometer Bias Stability	±0.75 mg
Accelerometer 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 Antenna[4]

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

Performance During GNSS Outages[1]

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	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[5]	0.01	0.02	0.020	0.010	0.015	0.015	0.030
10 s	RTK	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[5]	0.02	0.02	0.020	0.020	0.015	0.015	0.030
60 s	RTK	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[5]	0.23	0.07	0.030	0.020	0.016	0.016	0.032