SPAN-CPT

Features

Single-enclosure GPS/INS

Fiber optic gyros and MEMS accelerometers

SBAS, L-band and RTK support

100 Hz raw data and solution

Wheel sensor input for ground applications

Benefits

Tightly-coupled GNSS/INS using NovAtel SPAN technology

NovAtel OEMV GNSS technology

Commercial components for easy import/export

Integrated GPS/INS Receiver

Compact, Portable, Tightly Coupled

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

SPAN-CPT Overview

SPAN-CPT is a single-enclosure GPS+INS positioning system, powered by NovAtel's professional-grade OEMV® GNSS technology. Solution accuracy can be varied by application by enabling different positioning modes including SBAS, L-band (Omnistar and CDGPS) and RTK.

The IMU components are comprised of Fiber Optic Gyros (FOG) and Micro Electrical Mechanical Systems (MEMS) accelerometers from KVH Industries that offer the best price/performance available. FOGs offer exceptionally long life and stable performance compared with other gyro technologies.

All of this is combined into one compact, environmentally sealed enclosure for simple installation and easy integration.

SPAN-CPT Advantages

Like all SPAN products, SPAN-CPT tightly couples the GPS and IMU measurements together in order to get the most satellite observations and the most accurate solution possible.

Applications often require operation in multiple countries. SPAN-CPT is comprised entirely of commercial components, which means that export headaches involved with traditional GPS/INS systems are greatly minimized.

NovAtel

Precise thinking

SPAN-CPT

System Performance[1]

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
Velocity Accuracy	0.02m/s RMS
Attitude Accuracy	
Roll	0.05° RMS
Pitch	0.05° RMS
Azimuth	0.1° RMS
Data Rates	
GPS Measurement	5Hz
GPS Position	5Hz
IMU Measurement	100Hz
INS Solution	Up to 100Hz
Time Accuracy[2]	20ns RMS
Maximum Velocity[3]	515 m/s

For additional GNSS Specifications please see: http://www.novatel.com/Documents/Papers/OEMV3.pdf

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	4000ppm

Physical and Electrical

Size	152 x 168 x 89 mm
Weight	2.36 kg
Power Input Voltage	9-18 VDC
Power Consumption	15 W Max
Antenna Port Power Output	
Output Voltage	+5VDC
Maximum Current	100mA
Input/Output Connectors	
Power & I/O	MIL-DTL-38999 Series 3
Antenna Input	TNC Female
Communication Ports	
RS232 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
Vibration (operating)	MIL-STD-810F, 6gRMS
Shock (operating)	MIL-STD-810F, 30g
Shock (non operating)	MIL-STD-810F, 60g
Regulatory	
Emissions	FCC Part 15, Class B EN 55022, Class B
Immunity	EN 55024
Safety	EN 609050-1

Included Accessories

Combined I/O & Power Cable

Optional Accessories

GPS-700 series antennas (dual frequency required)
ANT-500 series antennas (dual frequency required)
RF cables – 5, 10 and 30m lengths

Performance During GNSS Outages[4]

Outage Duration	Position Error (m)		Velocity Error (m/s)		Attitude Error (degrees)		
	Horizontal	Vertical	Horizontal	Vertical	Roll	Pitch	Yaw
10s	0.20	0.15	0.04	0.02	0.010	0.010	0.010
30s	1.75	1.10	0.15	0.05	0.015	0.015	0.018
60s	6.50	3.00	0.25	0.10	0.025	0.025	0.030

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.
Time accuracy does not include biases due to RF or antenna delay.
Export licensing restricts operation to a maximum of 514 metres/second.
2 Time accuracy does not include biases due to RF or antenna delay.
3 Export licensing restricts operation to a maximum of 514 metres per second.
4 RMS, incremental error growth from steady-state accuracy. Computed with respect to full GPS, RTK Trajectory.

ISO 9001:2000 FM 92323

Precise thinking

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