SPAN™

SPAN-SE™

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

Benefits

Continuous, stable navigation

Supports IMUs from a variety of 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 dual antenna support

Wheel sensor input for ground systems

Real time Heave filter for marine applications

SPAN: World-Leading GNSS+INS Technology

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 satellite signals are blocked.

SPAN-SE Overview

The SPAN-SE receiver enclosure 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 is available.

SPAN-SE Advantages

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

Improve SPAN-SE Accuracy

Take advantage of our Advance RTK as well as support for satellite-based augmentation systems such as OmniSTAR® or SBAS to improve real-time performance and accuracy. For more demanding applications, Inertial Explorer® (IE) post processing software from our Waypoint® product group can be used to post process SPAN-SE data and offers the highest level of accuracy with the system.

Dual Antenna option provides users with faster initial alignments in difficult low dynamics applications such as marine survey.

SPAN System Performance[1]

Horizontal Position Accuracy (RMS)

Single Point L1	1.5 m
Single Point L1/L2	1.2 m
SBAS	0.6 m
CDGPS	0.6 m
DGPS	0.4 m
OmniSTAR	
VBS	0.6 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[2]	50 ns RMS

Maximum Velocity[3]   **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 to +28 VDC

Antenna Port(s) Power Output

Output Voltage	+5 VDC
Maximum Current	100 mA

COM Port Output Power

Output Voltage	+9 to +30 VDC
Maximum Current	1.5 A

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 Strobes	3

Environmental

Temperature

Operating	-40°C to +65°C
Storage	-50°C to +80°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, 25 g

Compliance

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

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

Included Accessories

- VDC power cable
- Two serial cables
- SD card
- Mounting brackets
- CD
- USB 2.0 cable

Optional Accessories

- GPS-700 series antennas
- ANT series antennas
- RF cables – 5, 10 and 30 m lengths
- Easy post-processing using Inertial Explorer

Optional Dual Antenna
ALIGN® Heading Accuracy

0.5 m Baseline	0.40°
1.0 m Baseline	0.20°
2.0 m Baseline	0.10°

Supported SPAN IMUs

- UIMU-LCI
- UIMU-LN200
- UIMU-HG58/62
- IMU-FSAS
- IMU-CPT
- IMU-HG1900
- IMU-HG1930