SPAN® OEM-IMU-STIM300

COMMERCIAL MEMS IMU INTEGRATES WITH SPAN TECHNOLOGY TO DELIVER 3D POSITION, VELOCITY AND ATTITUDE

ABOUT SPAN: TIGHTLY-COUPLED 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 Systems (INS). The absolute accuracy of GNSS positioning and the stability of Inertial Measurement Unit (IMU) measurements combine to provide an exceptional 3D navigation and attitude solution that is stable and continuously available, even through periods when satellite signals are blocked.

LOW NOISE COMMERCIAL MEMS

The STIM300 is a Micro Electromechanical System (MEMS) IMU from Sensonor. It features low noise gyros and accelerometers in a small, lightweight, environmentally sealed enclosure. The STIM300 enables precision measurements for applications that require low cost, high performance and rugged durability in a very small form factor. When integrated with NovAtel's SPAN technology, this IMU is ideal for airborne and ground applications that require accurate 3D position, velocity and attitude (roll, pitch and azimuth) data.

COMBINING SPAN AND MEMS TECHNOLOGY

A proprietary NovAtel MEMS Interface Card (MIC) couples the STIM300 with SPAN receiver cards, offering a unique, powerful GNSS+INS system for weight and size constrained applications. Designed as a board stack configuration for ease of integration, the MIC interfaces directly with NovAtel's small form factor OEM615™ SPAN receiver.

REQUIRE HIGHER 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 offers the highest level of accuracy.

BENEFITS

+ Tactical grade IMU performance
+ Commercially exportable IMU
+ Ideal for size constrained applications
+ Easy to integrate with SPAN GNSS receivers
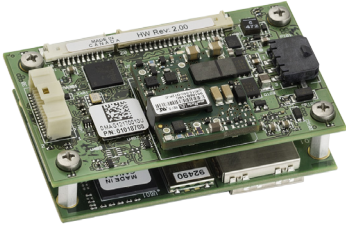+ Ideal for airborne, ground and marine applications

FEATURES

+ Low noise commercial grade gyros and accelerometers
+ Small size and lightweight
+ 10-30 VDC power input[1]
+ 125 Hz data rate
+ Long MTBF
+ SPAN INS functionality

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

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1. Voltage range for the MIC not the IMU.

OEM-IMU-STIM300

MIC SPECS:[1]

PHYSICAL AND ELECTRICAL

Dimensions
75.1 × 45.7 × 19.5 mm

Weight
31 g

Power
Input voltage 10 VDC – 30 VDC
Power consumption   3.6 W[2]

COMMUNICATION PORTS

1 LV-TTL COM port to interface
  to NovAtel GNSS receiver
1 IMU port with RS-422 interface
1 pass through USB port[3]

CONNECTORS

20-pin OEM615 mating
connector
3-pin locking power connector
30-pin locking communication
connector
20-pin locking IMU connector
10-pin locking IMU connector

ENVIRONMENTAL

Temperature
Operating   –40°C to +75°C
Storage   –50°C to +90°C

Vibration
Random   MIL-STD 810G
                (Cat 24, 7.7 g RMS)
Sine   IEC 60068-2-6
Bump   IEC 68-2-29 (25 g)
Shock   MIL-STD-810G (40 g)

OEM-IMU-STIM300

PERFORMANCE[4]

Gyroscope Performance
Input range   400 deg/sec
In-run bias stability   0.5 deg/hr
Angular random walk
                    0.15 deg/√hr

Accelerometer Performance
Range   10 g
In-run bias stability   0.05 mg
Velocity random walk
                    0.06 m/s/√hr

PHYSICAL AND ELECTRICAL

IMU dimensions
39 × 45 × 22 mm

IMU weight
55 g

For the most recent details of
this product: www.novatel.com/
products/span-gnss-inertial-
systems/span-imus/span-
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PERFORMANCE DURING GNSS OUTAGES[5, 6]

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	0.020	0.010	0.015	0.015	0.080
	SP	1.00	0.60	0.020	0.010	0.015	0.015	0.080
	PP[8]	0.01	0.02	0.020	0.010	0.006	0.006	0.019
10 s	RTK[7]	0.27	0.14	0.051	0.017	0.025	0.025	0.095
	SP	1.20	0.71	0.051	0.017	0.025	0.025	0.095
	PP[8]	0.02	0.02	0.020	0.010	0.007	0.007	0.021
60 s	RTK[7]	6.61	1.46	0.280	0.051	0.044	0.044	0.130
	SP	7.56	2.03	0.280	0.051	0.044	0.044	0.130
	PP[8]	0.22	0.10	0.024	0.011	0.008	0.008	0.024

1. Stacked configuration shown with OEM615 receiver. OEM615 sold separately.
2. With OEM615 supplied 10 V.
3. OEM615 USB port in stack configuration.
4. Supplied by IMU manufacturer.
5. Outage statistics were calculated by taking the RMS of the maximum errors over a minimum of 30 complete GNSS outages. Each outage was followed by 200 seconds of full GNSS availability before the next outage was applied. High accuracy GPS updates (fixed ambiguities) were available immediately before and after each outage. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e. as normally observed in ground vehicle environments).
6. Outage performance information is applicable to firmware version OEM060240RN0000 and up.
7. 1 ppm should be added to all position values to account for additional error due to baseline length.
8. Post-processing accuracy using Inertial Explorer processing software. The survey data used to generate these statistics is ground vehicle data collected with frequent changes in azimuth (i.e., as normally observed in ground vehicle environments).

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