

IMU-ISA-100C

High Performance Tactical Grade IMU Combines With SPAN Technology to Deliver 3D Position, Velocity and Attitude Solution



World-Leading GNSS+INS Technology

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 deeply coupled to provide an exceptional 3D navigation solution that is continuously available, even through periods when satellite signals are blocked.

Overview

The IMU-ISA-100C features Northrop-Grumman Litef GMBH's proven inertial measurement technology offering exceptional performance when paired with SPAN technology. A near navigation grade sensor, the IMU-ISA-100C contains fiber optic gyros and fully temperature compensated Micro Electromechanical Systems (MEMS) accelerometers. The IMU-ISA-100C operates from 10-34 VDC and interfaces with GNSS receivers through a highly reliable IMU interface. IMU measurements are used by SPAN technology to compute a blended GNSS+INS position, velocity and attitude solution at rates up to 20 Hz.

Advantages Of IMU-ISA-100C

The IMU-ISA-100C offers extremely high performance and precise accuracy at an affordable price point. It is commercially exportable and offers an ideal solution for marine applications. SPAN technology with Hexagon | VERIPOS receivers provide your choice of accuracy and performance, from decimeter to RTK-level positioning.

Benefits

- Premium performance IMU
- Optimized for hydrographic survey and marine applications
- Easy integration with the LD900 receiver from VERIPOS and Quantum visualization software
- Commercially exportable

Features

- Low noise fiber optic gyros and MEMS accelerometers
- SPAN GNSS+INS capability for marine applications
- Non-ITAR IMU

SPAN Technology Performance¹

Horizontal Position Accuracy (RMS)

Single point L1/L2	1.2 m
SBAS ²	60 cm
VERIPOS DGPS	1 m
VERIPOS PPP	5 cm
RTK	1 cm +1 ppm

Data Rate⁵

IMU Raw Data Rate	20 Hz
INS Solution	Up to 20 Hz

Time Accuracy⁶

Time Accuracy	20 ns RMS
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Max Velocity⁷

Max Velocity	515 m/s
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IMU Performance⁸

Gyroscope Performance

Input range	±495 deg/sec
In-run bias stability	≤0.05 deg/hr
Scale factor repeatability	≤100 ppm
Scale factor non-linearity	≤100 ppm
Angular random walk	0.012 deg/√hr

Accelerometer Performance

Range ⁹	±10 g
In-run bias stability	≤100 µg
1 year scale factor repeatability	≥1250 ppm
Scale factor non-linearity	≤100 ppm
Velocity random walk	≤100 µg/√Hz

Physical and Electrical

Dimensions 180 x 150 x 137 mm

Weight 5.0 kg

Power

Power consumption	18 W (typical)
Input voltage	+10 to +34 V

Connectors

Power	SAL M12, 5 pin, male
Data	SAL M12, 4 pin, female

Environmental

Temperature

Operating	-40°C to +55°C
Storage	-40°C to +85°C

Humidity

MIL-STD-810G, Method 507.5

Random Vibe

MIL-STD-810G, Method 514.6 (2.0 g)

MTBF

>46,100 hrs

Environment

IEC 60529 IP67

Compliance

FCC, ISCED, CE

Included Accessories

- Power cable
- Communication cable

Performance During GNSS Outages^{1,10}

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 ¹¹	0.02	0.03	0.008	0.008	0.006	0.006	0.010
	PPP	0.06	0.15					
10 s	RTK ¹¹	0.08	0.08	0.013	0.013	0.008	0.008	0.013
	PPP	0.12	0.20					
60 s	RTK ¹¹	0.92	0.53	0.048	0.023	0.009	0.009	0.018
	PPP	0.96	0.65					

1. Typical values. Performance specifications subject to GNSS system characteristics, Signal-in-Space (SIS) 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 a subscription to Apex[®] Correction Service. Subscriptions available from VERIPOS. 4. Correction service available depends on the GNSS receiver used. See the receiver product sheet for details. 5. 20 Hz data is an optional configuration. Contact NovAtel for details. 6. Time accuracy does not include biases due to RF or antenna delay. 7. Export licensing restricts operation to a maximum of 515 meters/second. 8. Supplied by IMU manufacturer. 9. GNSS receiver sustains tracking up to 4 g. 10. Ground Mobile Operating Environment. 11. 1 ppm should be added to all values to account for additional error due to baseline length.

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