When size and performance matter, professionals trust the proven MEMS-based IG-500 series. After many years of success, the IG-500 Series is recognized for its high performance and reliability.
The IG-500N is a miniature inertial navigation system with an embedded GPS. It is composed of:

- a MEMS-based Inertial Measurement Unit (IMU) integrating 3 gyroscopes, 3 accelerometers, and 3 magnetometers,
- a 4 Hz, 50 channels GPS receiver,
- a barometric pressure sensor (altitude),
- and an on board Extended Kalman Filter (EKF).

**The Most Advanced Calibration Techniques**

To ensure high data integrity, the IG-500N is calibrated from -40 to 85°C for bias, gain, linearity, misalignments, cross-axis and gyro-g. Every sensor is then intensively tested and shipped with its own calibration report.

**Miniature and Robust**

- Compact and lightweight 44 grams
- Low power design down to 800 mW
- Robust Aluminum enclosure

**Compensation of Magnetic Disturbances**

The magnetometer calibration tool compensates both soft and hard iron effects using a powerful algorithm. A calibration library is provided to be integrated in your system. You can easily calibrate your sensor in real conditions to obtain the most efficient compensation.

**High Immunity to Vibrations**

The IG-500N is especially reliable in vibrating environments. Each accelerometer is calibrated, and powerful algorithms have been designed to filter vibrations such as a 1 kHz coning and a FIR filtering.
Performance adjusted to your application

MOTION PROFILES
Motion Profiles adjust automatically to:
» Kalman Filter parameters,
» Vibration level,
» Dynamic model,
» Magnetic disturbance immunity, etc.
In a few clicks, Motion Profiles tune your sensor to your application constraints.

Example: If you want to install the IG-500 sensor in an airplane, select the “Aircraft High Dynamics” motion profile and all parameters will be automatically adjusted.

UAV & PAYLOADS
This INS/GPS comes with a barometric pressure sensor, making the IG-500N a perfect all-in-one solution for UAV navigation and stabilization, as well as payload orientation and positioning.

PERFORMANCE SAILING
The IG-500N provides robust heading, 360° attitude, and GPS position. It distinguishes itself by automatically computing the magnetic declination, and the local gravity.

GYRO-STABILIZED CAMERA
Payload orientation & stabilization is more efficient thanks to IG-500N high update rate, low latency, and the provided true heading based on GPS and accelerations.

CAR MOTION ANALYSIS
The IG-500N is ready-to-use for chassis roll over detection, optimal trajectory determination, over and under steering characterization in high dynamics, and extreme temperature.

Development kit
The Development Kit which comes with your IG-500N sensors contains:
» A quick start guide and the user manual,
» The calibration report of your IG-500N,
» A USB converter cable,
» Useful software and tools:
  ▪ A C library and some code sources examples
  ▪ The Magnetometer Calibration Tool
  ▪ LabView & Matlab plugins
  ▪ The sbgCenter configuration & analysis software
  ▪ The sbgUpdater that automatically alerts you and install the new software version.
### IG-500N - Specifications

**PARAMETER** | **SPECIFICATIONS** | **REMARKS**
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**Performance** | Aerospace | Ground | Marine / Subsea |  
Roll/Pitch (Dynamic) | 1.0° RMS | 0.8° RMS | 0.35° RMS | Under good GPS availability
Heading (Dynamic) | 1.0° RMS | 0.5° RMS | 1.0° RMS | Depends on heading aiding source
Resolution | < 0.05' | < 0.05' | < 0.05' |  
Velocity (RMS) | < 0.1 m/s | < 0.1 m/s | < 0.1 m/s | Under good GPS availability
Position (SEP) | 2 m | 2 m | 10 cms or 10 % | Under good GPS availability | Whichever is greater
Heave | - | - | - |  
Sensing range | 360° in all axes, no mounting limitation | Solid state sensors |  

**Inertial Sensors**

| Measurement range | ± 5 g | ± 300 /s | ± 1.2 Gauss |  
| Non-linearity | < 0.2 % | < 0.05 % | < 0.2 % | % of full scale
| Initial bias error | ± 5 mg | ± 0.5 /s | ± 0.5 mGauss | Over temperature range
| Bias in-run stability | ± 0.06 mg | 20°/hr | - | Allan variance - constant temperature
| Scale factor stability | < 0.1 % | < 0.05 % | < 0.5 % | Over temperature range
| Noise density | 0.25 mg/√ Hz | 0.05 /s√ Hz | 0.01 mG/√ Hz |  
| Alignment error | < 0.05' | < 0.05' | < 0.1' |  
| Bandwidth | 250 Hz | 240 Hz | 500 Hz | 1 k Hz gyroscopes coning integrals
| Sampling rate | 10,000 Hz | 10,000 Hz | 1,000 Hz | Advanced anti-aliasing FIR filters

**GPS Receiver**

| Receiver type | L1 frequency, C/A Code, 50 Channels, SBAS, 4 Hz |  
| Acquisition time | < 1.0 s / 29 s | Hot start / Cold start |  
| Tracking sensitivity | -160 dB |  

**Pressure Sensor**

| Resolution | 2.5 Pa / 20 cms / < 1 feet |  
| Pressure accuracy | ± 50 Pa / ± 150 Pa | Relative / Absolute |  
| Sampling rate | 50 Hz |  

**Communication**

| Available data | Euler angles, quaternion, rotation matrix, velocity, position, heave, calibrated sensor data, delta angles, barometric data, device status, raw GPS data, UTC time reference, etc. | Each output can be enabled or disabled by the user. Output rate is user selectable |  
| Output rate | 100 Hz for orientation, velocity and position | 500 Hz in IMU mode only |  
| Serial interface | RS-232, RS-422, TTL 3.3V or USB | Binary proprietary protocol and NMEA/ASCII | RS-422 only for S and O packages | USB using an external adapter
| CAN interface | CAN 2.0/A/B up to 1 Mbit/s | Only available for S and O packages |  

**Physical**

| Dimensions OEM | 27 x 30 x 14 mm, 1.1 x 1.2 x 0.6” |  
| Dimensions box | 36 x 49 x 22 mm, 1.4 x 1.9 x 0.9” | B package |  
| | 36 x 49 x 25 mm, 1.4 x 1.9 x 1” | S package |  
| Weight OEM | 10 grams, 0.02 pounds |  
| Weight box | 44 grams, 0.1 pounds | B package |  
| | 48 grams, 0.1 pounds | S package |  
| Specified temperature | -40 to 85°C, -40 to 185°F | - Non-condensing environment
| Shock limit | 1,000 g (Powered); 2,000 g (Unpowered) | Shocks can affect performance |  
| Operating vibration | 3 g RMS (20 Hz to 2 k Hz per MIL-STD810G) | Valid for 18g accelerometers |  

**Electrical**

| Operating voltage | 3.3 V to 30 V |  
| Power consumption | 800 mW @ 5.0 V | High efficiency DC/DC converter |  
| SyncOut, Trigger | Open drain pull-up voltage -0.3 to 25 V | Open drain, use a pull-up resistor |  
| Start-up time | < 1 s | Valid data |  

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**MECHANICAL DRAWING**

All dimensions are in millimeters

**PRODUCT CODE**

* standard product options

**OEM VERSION**

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