



INS380SA

INERTIAL NAVIGATION SYSTEM

The ACEINNA INS380SA is a standalone fully-integrated Inertial Navigation System offering a complete dynamic measurement solution in a miniature environmentally protected package. The INS380SA combines a highly reliable MEMS 9 DOF sensor suit (3 DOF accelerometer, 3 DOF gyro, 3 DOF magnetometer) with a 48-channel high-sensitivity SBAS GPS receiver in a miniature fully-calibrated standalone module that offers consistent performance in a wide variety of dynamic control and navigation applications. The INS380SA offers a highly-effective solution for cost-sensitive demanding applications.



UAV Flight Control



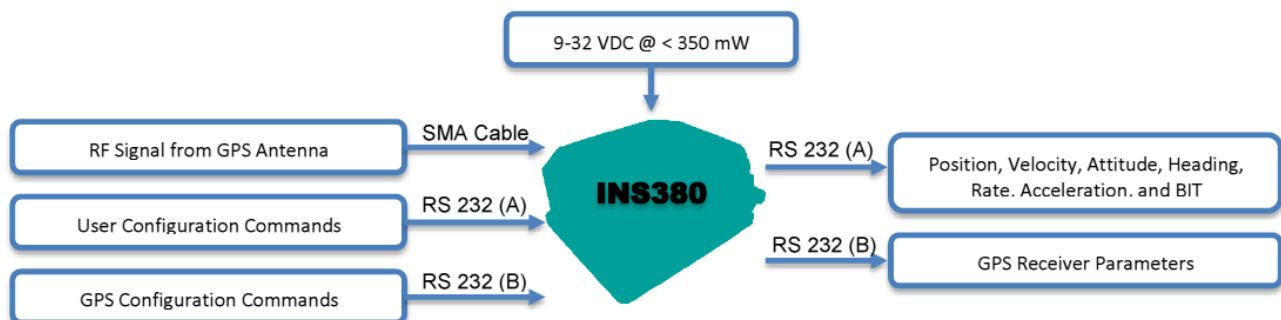
Platform Stabilization

Applications

- Unmanned Vehicle Control
- Platform Stabilization
- Mobile Mapping
- Robotics Control

Features

- Complete Inertial Navigation System
- 9 DOF Sensor Suit (Accel / Gyro / Mag)
- Built-in 48 Channel GPS Receiver
- RS-232 or RS-422 Interface
- Update Rate, 1Hz to 100Hz
- Miniature Package, 41 x 48 x 22mm
- Wide Input Voltage Range, 9-32VDC
- Low Power Consumption < 350 mW
- Wide Temp Range, -40C to +85C
- High Reliability, MTBF > 50k hours
- Environmentally Protected Enclosure



INS380SA

INERTIAL NAVIGATION SYSTEM

Performance		INS380SA
Position/Velocity		
Position Accuracy (m CEP) ¹	< 2.5m CEP, <4m VEP, Max, Alt 60,000ft	
Velocity Accuracy (m/s) ¹	0.1 Horizontal, 0.1, Vertical, Max, 1000knots	
1PPS Accuracy (ns)	< 100	
TTF (Cold Start)	<35sec	
Heading		
Range (°)	± 180	
Accuracy (°) ⁴	< 1.0	
Resolution (°)	< 0.02	
Attitude		
Range: Roll, Pitch (°)	± 180, ± 90	
Accuracy (°) ⁴	< 0.2	
Resolution (°)	< 0.02	
Angular Rate		
Range: Roll, Pitch, Yaw (°/sec)	± 200 (± 400 High Range Model)	
Bias Instability (°/hr) ^{2,3}	< 10	
Bias Stability Over Temp (°/sec)	< 0.1	
Resolution (°/sec)	< 0.02	
Scale Factor Accuracy (%)	< 0.1	
Non-Linearity (%FS)	< 0.1	
Angle Random Walk (°/√hr) ²	< 0.75	
Bandwidth (Hz)	5-50 (user-configurable)	
Acceleration		
Range: X, Y Z (g)	± 4 (± 8 High Range Model)	
Bias Instability (mg) ^{2,3}	< 0.02	
Bias Stability Over Temp (mg)	< 5	
Resolution (mg)	< 0.5	
Scale Factor Accuracy (%)	< 0.1	
Non-Linearity (%FS)	< 0.1	
Velocity Random Walk (m/s/√hr) ²	< 0.05	
Bandwidth (Hz)	5-50 (user-configurable)	
Magnetic Field		
Range: X, Y Z (Gauss)	± 4	
Resolution (mGauss)	< 5	
Noise Density (mGauss /√Hz)	< 1	
Bandwidth (Hz)	5	

Specifications

Environment	
Operating Temperature (°C)	-40 to +85
Non-Operating Temperature (°C)	-55 to +105
Enclosure	Anodized Aluminium
Electrical	
Input Voltage (VDC)	9 to 32
Power Consumption (mW)	< 350
Digital Interface	RS-232 or RS-422 (user-configurable)
Output Data Rate	2Hz to 100Hz (user-configurable)
Physical	
Size (mm) (LxWxH)	48 x 42 x 22
Weight (gm)	< 75
Interface Connector	9-Pin Micro-D
GPS Connector	SMA

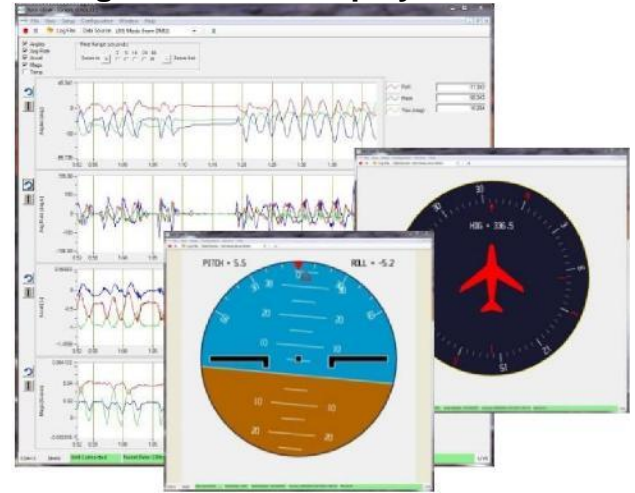
Ordering Information

Model	Description
INS380SA-200	Inertial Navigation System (Low Range)
INS380SA-400	Inertial Navigation System (High Range)

This product has been developed exclusively for commercial applications. It has not been tested for, and makes no representation or warranty as to conformance with, any military specifications or its suitability for any military application or end-use. Additionally, any use of this product for nuclear, chemical or biological weapons, or weapons research, or for any use in missiles, rockets, and/or UAV's of 300km or greater range, or any other activity prohibited by the Export Administration Regulations, is expressly prohibited without the written consent and without obtaining appropriate US export license(s) when required by US law. Diversion contrary to U.S. law is prohibited. Specifications are subject to change without notice.

¹ With GPS lock. ² 1-sigma error. ³ Allan variance curve, constant temperature. ⁴ RMS Error.

NAV-VIEW Configuration and Display Software



NAV-VIEW provides an easy to use graphical interface to display, record, playback, and analyze all of the INS380SA System parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the INS380SA to optimize the system performance for highly dynamic applications.

Other Components

The INS380SA evaluation kit includes an INS380SA, interface cable and USB cable, allowing direct connection to a PC for use with NAV-VIEW display and configuration software.