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

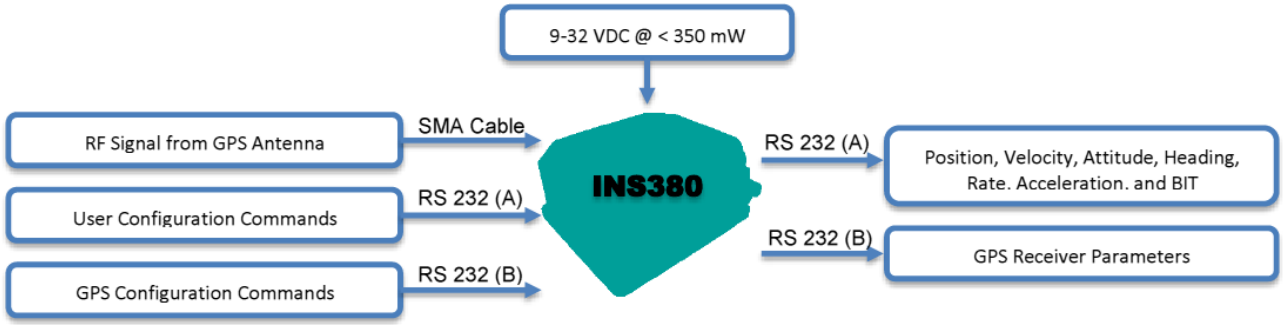
Platform Stabilization

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**



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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
TTFF (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

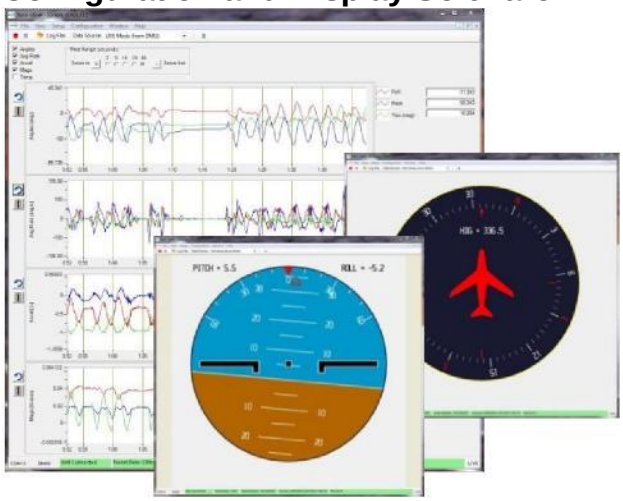
Specifications

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)

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.

NAV-VIEW software is available for download from ACEINNA's website at: **www.aceinna.com/support**

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.

Support

For more detailed information please refer to the DMU380SA-Series User's Manual available online at: **www.aceinna.com/support**

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