

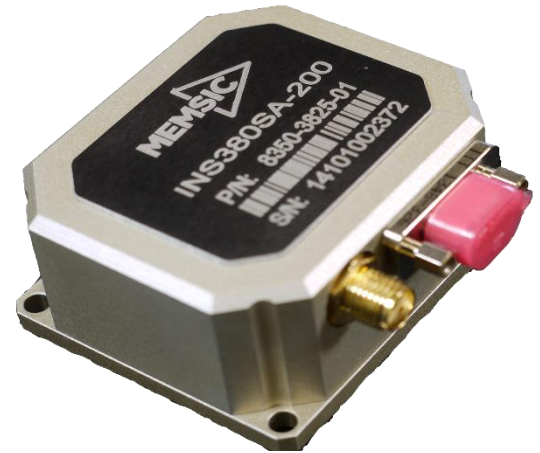


Power Sensing Solutions for a Better Life

# INS380SA

INERTIAL NAVIGATION SYSTEM

The MEMSIC 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



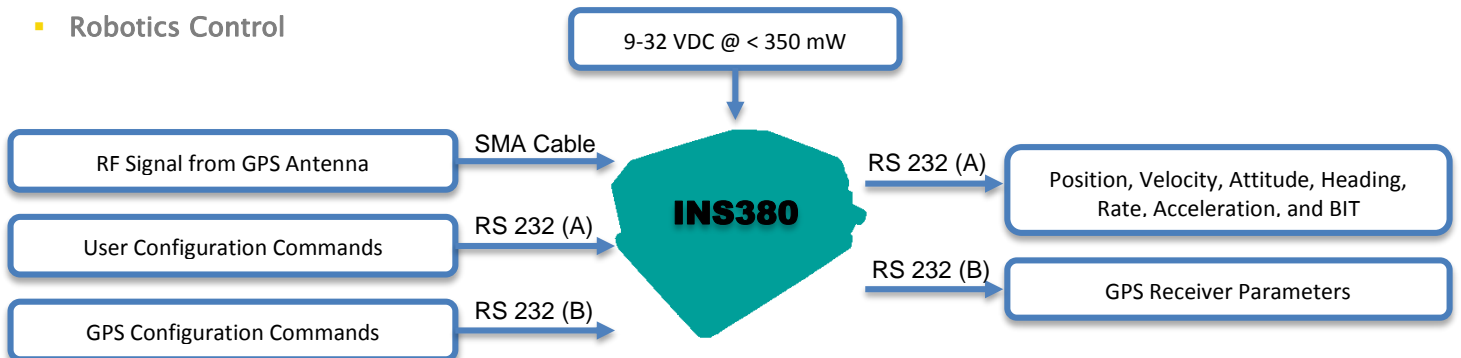
Platform Stabilization

### 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

### Applications

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



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## Performance INS380SA

Position/Velocity	
Position Accuracy (m CEP) <sup>1</sup>	< 2.5m CEP, <4m VEP, Max, Alt 60,000ft
Velocity Accuracy (m/s) <sup>1</sup>	0.1 Horizontal, 0.1, Vertical, Max, 1000knots
1PPS Accuracy (ns)	< 100
TTF (Cold Start)	<35sec
Heading	
Range (°)	± 180
Accuracy (°) <sup>4</sup>	< 1.0
Resolution (°)	< 0.02
Attitude	
Range: Roll, Pitch (°)	± 180, ± 90
Accuracy (°) <sup>4</sup>	< 0.2
Resolution (°)	< 0.02
Angular Rate	
Range: Roll, Pitch, Yaw (°/sec)	± 200 (± 400 High Range Model)
Bias Instability (°/hr) <sup>2,3</sup>	< 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) <sup>2</sup>	< 0.75
Bandwidth (Hz)	5-50 (user-configurable)
Acceleration	
Range: X, Y Z (g)	± 4 (± 8 High Range Model)
Bias Instability (mg) <sup>2,3</sup>	< 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) <sup>2</sup>	< 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

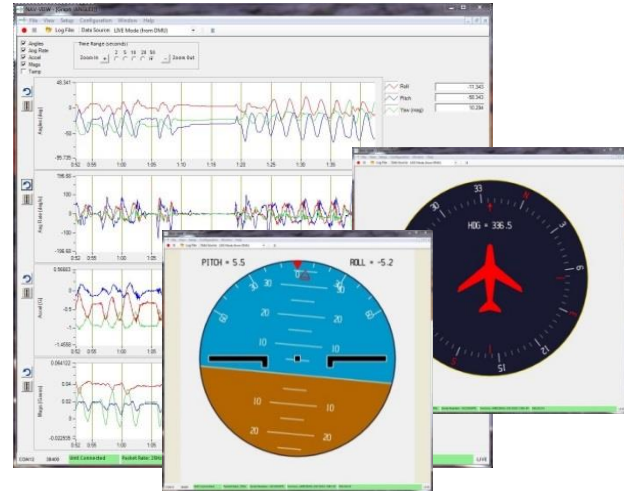
## Ordering Information

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

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<sup>1</sup> With GPS lock. <sup>2</sup> 1-sigma error. <sup>3</sup> Allan variance curve, constant temperature. <sup>4</sup> 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.

NAV-VIEW software is available for download from MEMSIC's website at: [www.memsic.com/support](http://www.memsic.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.