RUGGED INERTIAL NAVIGATION SYSTEM

FEATURES

- Rugged field proven MIL specs INS
- Superior GNSS denied performance, <1% CEP of DT
- Accepts External Aiding Data
- High Precision Tactical class IMU, <1 °/hr gyro bias instability
- Centimeter level position accuracy with RTK Multi-Constellation
- Multi-channel, L1/L2/L5 (IRNSS/NavIC) GNSS Receiver
- Withstands harsh mechanical shocks or vibrations
- Isolated Interfaces and Power Supply
- Compliant to MIL-STD-810G, JSS-55555, MIL-STD-704D, MIL-STD-461F, MIL-STD-2164 and MIL-STD-1275E



APPLICATIONS

- Inertial Guidance and Dead Reckoning
- Armored Vehicle Navigation
- Platform Stabilization and Control
- Unmanned Vehicle Navigation
- Antenna Orientation and Stabilization
- Mapping and Surveying
- Tactical Grade Navigation

DESCRIPTION

The Octantis 2, OCT2-NS7300D-01A is a next generation GNSS-aided MEMS based Inertial Navigation system which offers high-end tactical class performance. The OCT2-NS7300D-01A is equipped with Aeron's proprietary Inertial Measurement Unit (IMU) which consists of 3-axis low-noise accelerometers, low-drift gyroscopes, magnetometer and GNSS receiver to provide accurate attitude, heading and navigation information. The IMU sensing elements are characterized in-house and compensated for temperature drifts, mis-alignment, non-linearity and other errors over the entire dynamic operating ranges.

The OCT2-NS7300D-01A has a proprietary parameter estimation engine based on a multi-modal Kalman filter. It works optimally by utilizing the high-speed processor architecture offering superior performance in demanding applications. The Kalman estimator calculates low drift position, velocity and attitude estimations in GPS denied conditions at high update rates.

The system has multiple interfaces for data capture, provision for interfacing external odometer/air data input and feeding in aiding data from other external GNSS systems. The built-in low noise magnetometer is a redundant heading estimation source in GNSS denied/poor visibility conditions. The OCT2-NS7300D-01A model has a multi-frequency (L1/L2/L5), multi-constellation GNSS receiver with Multi-channels and best in class signal sensitivity. The OCT2-NS7300D-01A performs well in dynamic conditions and gives the highly accurate attitude, heading, position, velocity and altitude data over high update rates for guidance, navigation and control applications. The device gives <1% CEP of DT performance in GPS denied environment based on the external aiding accuracy.

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Datasheet Ver. 2.2, Sept. 2026

TECHNICAL SPECIFICATIONS

Parameter Name	Parameter Value
	OCTANTIS 2
	NS7300D-01A
Acceleration	
Range (g)	±16
Bias Instability (µg) *	<50
Bias Stability (mg)	3
Angular Rate	
Range (°/s)	±450
Bias Instability (°/hr)	1 (typical)
Position & Velocity Accuracy	
Horizontal Position[1,2,3]	<0.8 cm with RTK[8] 1.5 m CEP with GNSS 1 m CEP with SBAS <1% CEP of DT with external Odometer[4] / external Air Speed Data
Vertical Position[1,2,3]	<2 cm with RTK[8] 5 m (1σ) with GNSS 3 m (1σ) with SBAS 2 m (1σ) relative with Barometer
Velocity (m/s)	0.05 RMS with GNSS
Attitude	
Roll Range (deg)	±180
Pitch Range (deg)	±90
Roll, Pitch Accuracy[2] (deg)	0.06 RMS (static/low dynamics) 0.1 RMS (dynamic)
Heading Range (deg)	±180
Heading Accuracy[1,2,5,6] (deg)	<0.3 RMS with GNSS in dynamic conditions <0.5 RMS with magnetometer
Angle Resolution (deg)	<0.01
Barometer	
Range (hPa)	300-1100
Accuracy (hPa)	±1
Magnetometer	
Range (guass)	±8
GPS / GNSS	
Type	GPS L1CA/L2C, GLONASS L1OF/ L2OF, Galileo E1BC/E5b, BeiDou B1i, SBAS L1C/A, IRNSS/NAVIC
TTFF[7] Cold Start (seconds)	45
Reacquisition Time (seconds)	1
Connector	TNC Female Connector
Electrical	
Input Voltage (V DC)	12 to 32
Power Consumption (W)	<7
Connector	D38999 Series III
Interface Options	RS232 (COM1), RS422 (COM2), RS232_CH2 (COM3), GNSS_RTK (COM4), CAN, Ethernet and 1PPS from GNSS

1 - Open sky conditions
2 - RMS levels
3 - Baseline <40 km
4 - % DT subject to external aiding accuracy
5 - Accuracy after magnetic calibration and setting correct declination / offset angle
6 - After magnetic calibration for Hard Iron and Soft Iron disturbances, and in static magnetic field
7 - Time to First Fix
* Short Term/ Allan Variance

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TECHNICAL SPECIFICATIONS

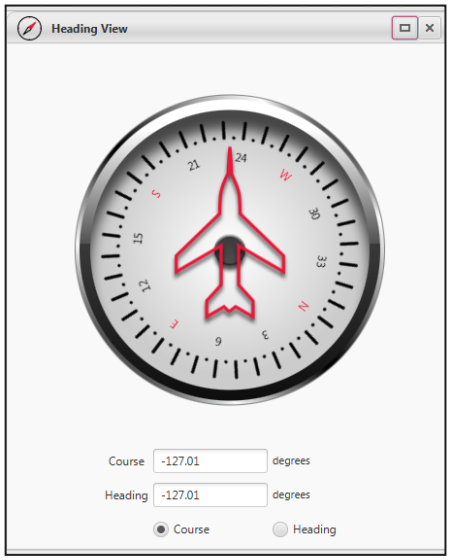
Parameter Name	Parameter Value
	OCTANTIS 2
	NS7300D-01A
Physical	
Weight (kg)	1100 ± 50 gm
Dimensions (mm)	142 (L) x 115 (W) x 65 (H)
Update Rate (Hz)	100 (Navigation data) 200 (IMU data)
Data Format	NMEA / Binary
External I/Ps	Velocity (CAN Odometer/Air Speed data)/Position/Altitude/ Heading/Pulse Odometer/Magnetometer Speed
Output Parameters	Euler angles, Position in Geodetic, NED velocities, Body Accelerations, Body Rates and Quaternion
Environmental Compliant	
Operating Temperature (°C)	-40 to +65
Storage Temperature (°C)	-40 to 85
Survival Shock	Up to 40g
IP Protection	IP65
EMI/EMC	As per MIL-STD-461F[8]
Environmental Tests	As per MIL-STD-810G[8] (JSS-55555)
ESS Test	As per MIL-STD-2164[8]
Power Supply Test	As per MIL-STD-1275E[8] and MIL-STD-704D[8]

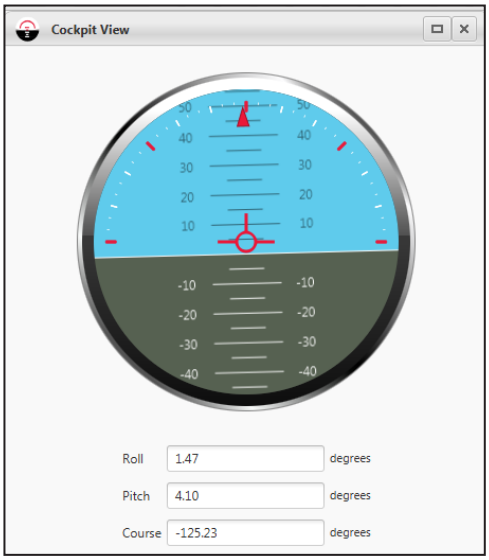
8 - MIL-STD Complied

SOFTWARE SUITE

The Octantis 2 INS is accompanied by a feature software suite, for easy configuration, magnetic calibration, data display and data logging.

Note: *These images of the software suite are for reference.*



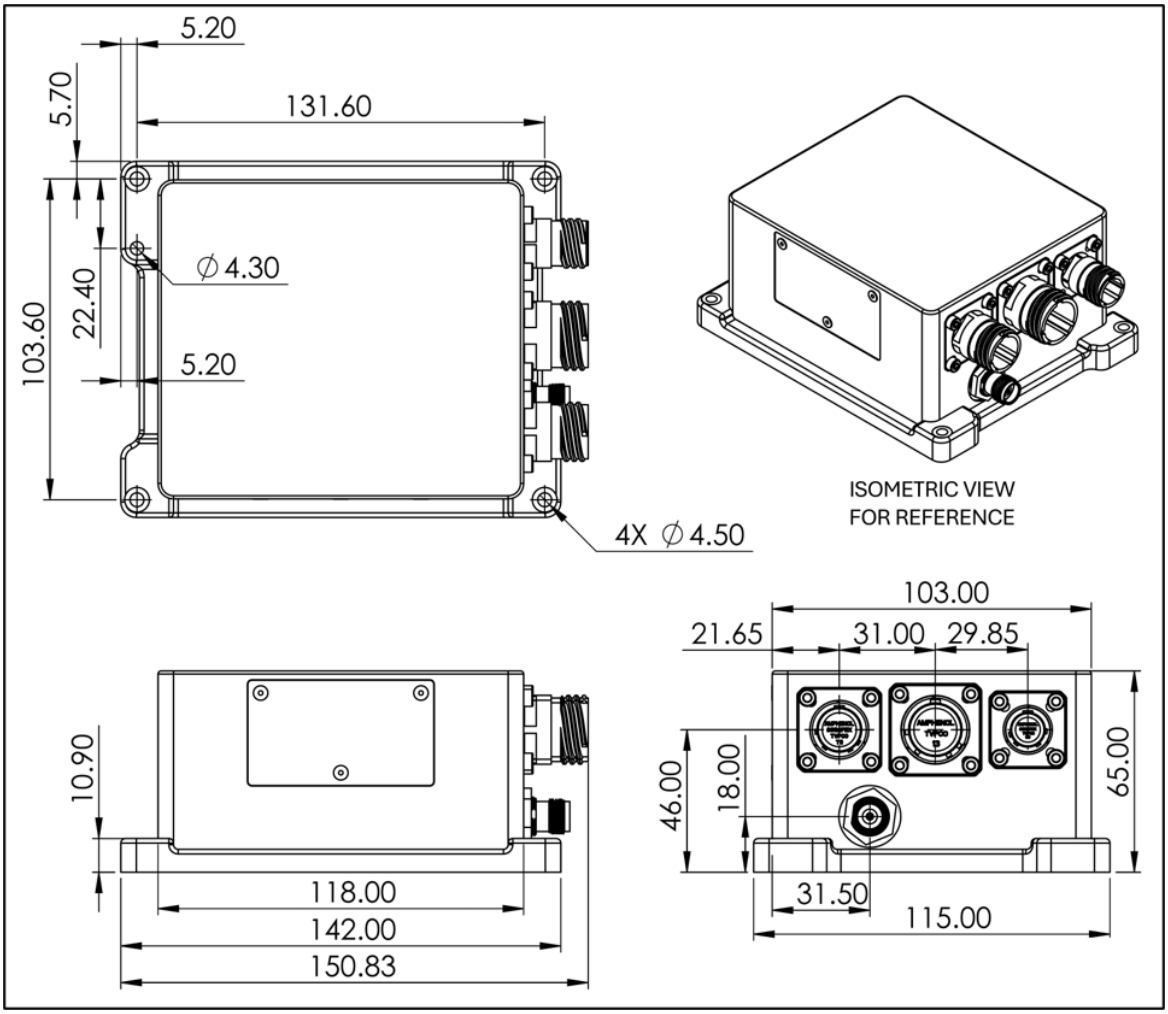




MADE IN INDIA

MECHANICAL DIMENSIONS

All the dimensions in mm



ORDERING INFORMATION

OCT2 - NS7300D-01A (Product Code: 19021)