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-810F/G, JSS55555, MIL STD-704D, and MIL STD-461E/F, and MIL-STD-1275D/E

OCT2 NS7300D-01A

Note: This is a representational image

APPLICATIONS

- Inertial Guidance and Dead Reckoning
- Armoured 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 and low-drift gyroscopes. 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 delivers 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.

TECHNICAL SPECIFICATIONS

Parameter Name	Parameter Value
	OCTANTIS 2
	NS7300D-01A
Acceleration	
Range	±16 g
Bias Instability	<50 µg
Angular Rate	
Range	±450 °/s
Bias Instability	<1 °/hr
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	0.05 m/s RMS with GNSS
Attitude	
Roll Range	±180°
Pitch Range	±90°
Roll, Pitch Accuracy[2]	0.06° RMS (static/low dynamics) 0.1° RMS (dynamic)
Heading Range	±180°
Heading Accuracy[1,2,5,6]	<0.3° RMS with GNSS in dynamic conditions <0.5° RMS with magnetometer
Angle Resolution	<0.01°
Barometer	
Range	300-1100 hPa
Accuracy	±1 hPa
Magnetometer	
Range	±8 gauss
GPS / GNSS	
Type	184 Channel, GPS L1C/A, GLONASS L1OF, Galileo E1B/C, BeiDou B1I, QZSS L1C/A L1S L5, SBAS L1C/A, GPS L2C, GLONASS L2OF, Galileo E5b, BeiDou, IRNSS/NAVIC
TTFF[7] Cold Start	45 s
Reacquisition Time	1 s
Connector	TNC Female
Electrical	
Input Voltage	12 V to 32 V DC
Power Consumption	<7 W
Connector	D38999
Interface Options	RS232(CH1), RS232(CH2)[8], RS422, 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
8 - RTK mode of operation requires differential corrections from RTK base station
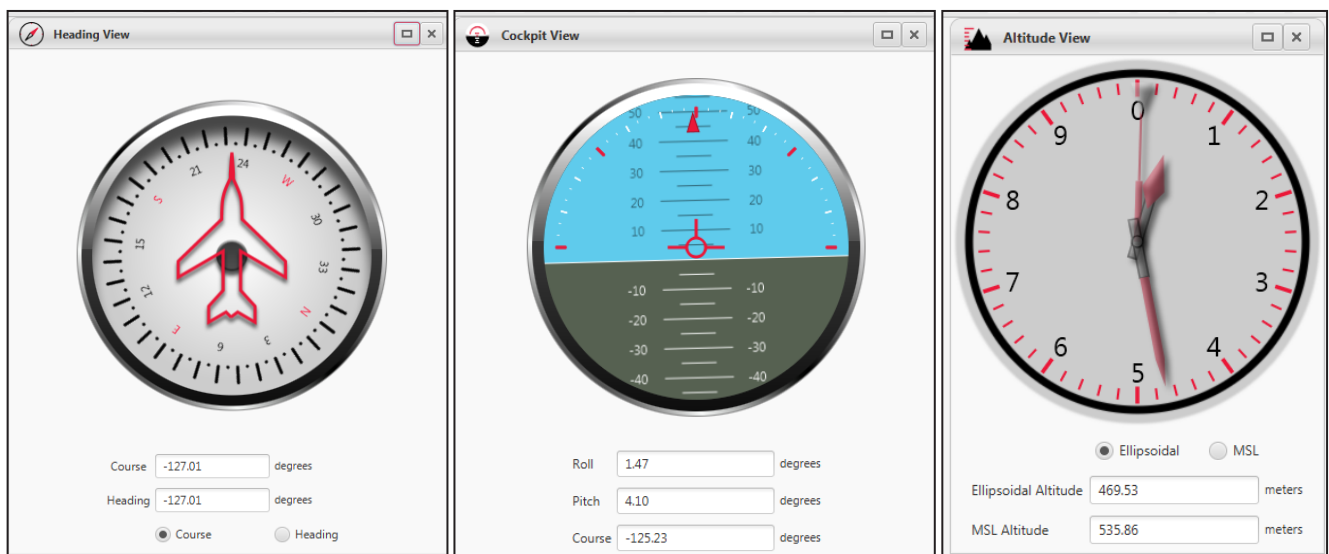* - MIL-STD Complied

MADE IN INDIA

TECHNICAL SPECIFICATIONS

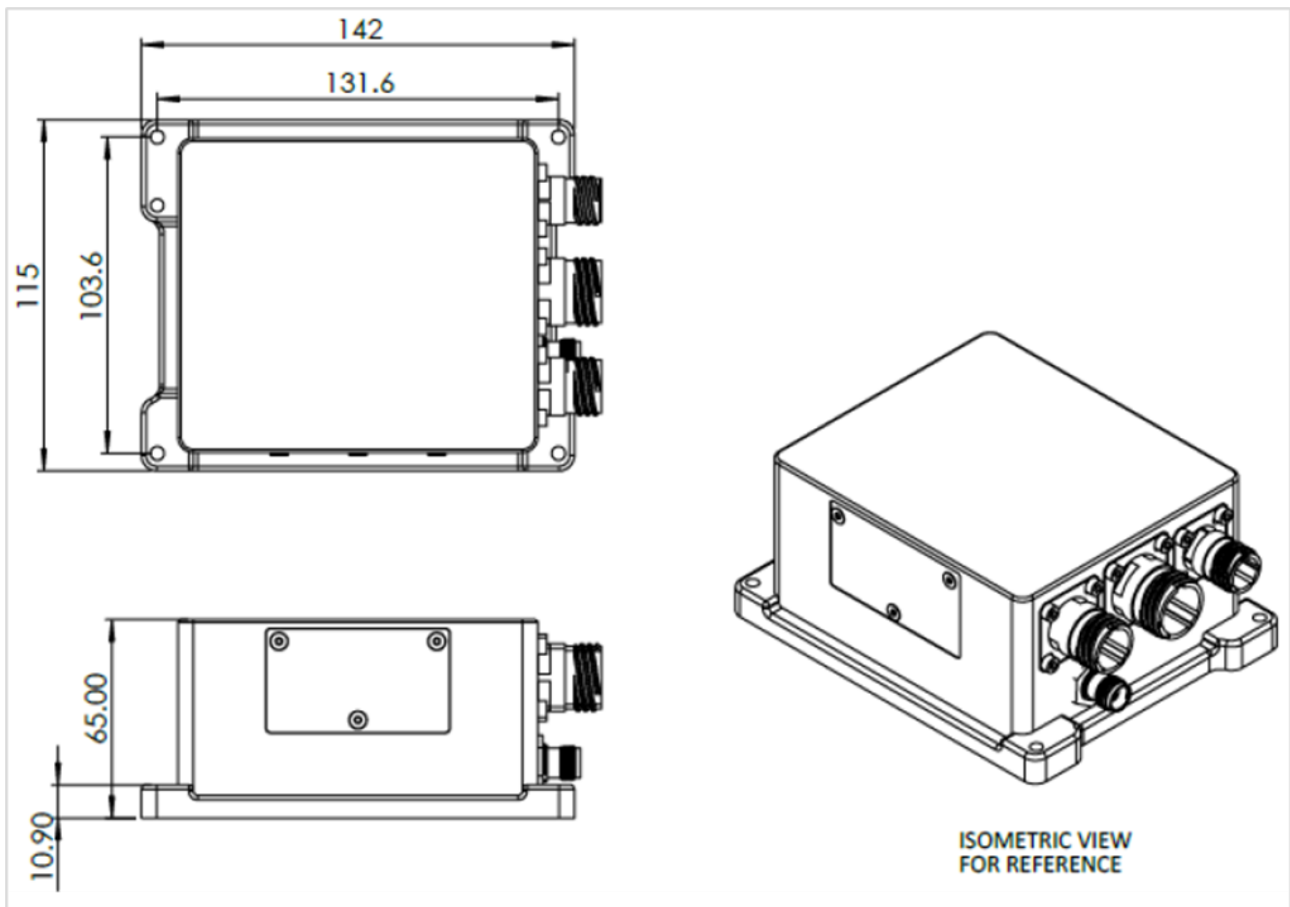| Parameter Name	Parameter Value
	OCTANTIS 2
	NS7300D-01A
Physical	
Weight	<1.1 kg
Dimensions	142 mm (W) x 115 mm (B) x 65 mm (H)
Update Rate	100 Hz (Navigation data) 200 Hz (IMU data)
Data Format	NMEA / Binary
External I/Ps	Velocity (CAN Odometer/Air Speed data) /Position/Altitude/ Heading/Pulse Odometer
Output Parameters	Euler angles, Position in Geodetic, NED velocities, Body Accelerations, Body Rates and Quaternion
Environmental Compliant	
Operating Temperature	-40 °C to +85 °C
Humidity	10% to 90% RH (non - condensing)
Survival Shock	Up to 40 g*
IP Protection	IP65*
EMI/EMC	As per MIL-STD-461E/F*
Environmental Tests	As per MIL-STD-810F/G (JS55555)*
Power Tests	As per MIL-STD-704D*
ESS Test	As per MIL-STD-2164*

SOFTWARE SUITE

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

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

Heading View

Course `-127.01` degrees

Heading `-127.01` degrees

⦿ Course ◯ Heading

Cockpit View

Roll `1.47` degrees

Pitch `4.10` degrees

Course `-125.23` degrees

Altitude View

⦿ Ellipsoidal ◯ MSL

Ellipsoidal Altitude `469.53` meters

MSL Altitude `535.86` meters

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MECHANICAL DIMENSIONS

All dimensions in mm

ISOMETRIC VIEW
FOR REFERENCE

ORDERING INFORMATION

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