FOG INERTIAL NAVIGATION SYSTEM

FEATURES



- Extended Kalman filter
- Accepts External Aiding Data
- Tactical class IMU, <0.1°/hr gyro
- Centimeter level position accuracy with RTK
- Multi-Constellation L1/L2/L5 GNSS with IRNSS
- Superior tracking robustness under heavy mechanical shocks or vibrations
- Isolated Interfaces and Power Supply
- Complied to MIL-STD-810G, JSS-55555, MIL-STD-461E, MIL-STD-1275E and MIL-STD-704D.

APPLICATIONS

- Unmanned Aerial Vehicle
- Marine Navigation
- Armored Vehicle Navigation
- Antenna Stabilization and Control
- Autonomous Vehicle Navigation
- Antenna Orientation and Stabilization
- Mapping and Surveying
- Land Navigation

DESCRIPTION

Aldebaran ALD-NS3500S is a Rugged GNSS aided high performance Fiber Optic Gyro (FOG) based Inertial Navigation System. The device incorporates High end tactical class three axis accelerometers, three axis fiber-optic gyroscopes and an integrated multi-constellation GNSS receiver. The sensors are characterized and calibrated in Aeron's state of art facility. Aeron's proprietary parameter estimation engine delivers fast alignment and tactical class navigation performance in a matter of minutes.

The ALD-NS3500S model has a multi-frequency (L1/L2/L5), multi-constellation GNSS receiver with multi tracked channels and best in class signal sensitivity. The ALD-NS3500S model has a multi-frequency (L1/L2/L5), multi constellation GNSS receiver including IRNSS and best in class signal sensitivity.

The Aldebaran series INS offers superior pure-inertial performance in short term GNSS outages. External air data/velocity and position aiding can also be provided to the system. ALD-NS3500S is suitable for positioning and pointing in airborne, land & naval applications.

MADE IN INDIA

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TECHNICAL SPECIFICATIONS

Parameter	Value	Unit	Confidence Band/Condition
Acceleration			
Range	±10	g	-
Bias Instability	15	µg	-
Bias Repeatability	1.2	mg	-
Raw Bandwidth	>1	kHz	-
Angular Rate			
Range	±450	°/s	-
Bias Instability	0.1	°/hr	-
Raw Bandwidth	>1	kHz	-
ARW	<0.012	°/√hr	-
Position/ Velocity Accuracy			
Horizontal Position[1,2,3]	<0.8 1.5 1 0.5	cm m m % of DT	With RTK With GNSS With SBAS With external Odometer[4]
Vertical Position[1,2,3]	<2 2.5 1.5 2	cm m m m	with RTK (1σ) with GNSS (1σ) with SBAS (1σ) relative with Barometer
Velocity	0.05	m/s	RMS with GNSS
Attitude			
Roll Range	±180	°	-
Pitch Range	±90	°	-
Roll, Pitch Accuracy	±0.05	°	(2σ) Static
Roll, Pitch Resolution	0.01	°	-
Heading			
Heading Range	±180	°	-
Heading Accuracy[1,2,6,7]	0.5 0.3	°	RMS with magnetometer RMS with GNSS in dynamic conditions[8]
Resolution	0.01	°	-
GPS / GNSS			
Type	445 channel, L1/ L2/ L5 Code / Carrier phase GPS, GLONASS, QZSS, BEIDOU and IRNSS/NavIC	-	-
Diff. Correction Type[4]	RTCMv2, RTCMv3, CMRv2 (for RTK mode)	-	-
TTFF[6] Cold Start	45	sec	-
Reacquisition Time	1	sec	-
Connector	TNC Female Socket	-	-
Barometer			
Range	300-1100	hPa	-
Accuracy	±1	hPa	-

TECHNICAL SPECIFICATIONS

Electrical			
Input Voltage	12 to 32	VDC	-
Power Consumption	<12	W	-
Update Rate	100 200	Hz	Navigation Raw measurement
Interface	RS232(CH1), RS232(CH2)[5], RS422 x 2, 1PPS	-	-
Data Format	NMEA / Binary	-	-
External Inputs	- External GNSS feed - External Magnetometer feed - External Airspeed feed - External Position and Speed input - Odometer input	-	-
Physical			
Dimensions	172.4 (L) x 155 (W) x 114 (H)	mm	-
Weight	2.5	Kg	Tolerance: 50 grams
Environment			
Operating Temperature	-40 to +71	°C	-
Storage Temperature	-55 to +85	°C	-
Humidity	10 to 90	% RH	(non - condensing)
IP Protection	IP65	-	-
Vibration and Environmental Test[9]	MIL-STD-810G	-	-
Hardware Design Compliant			
Power Supply[9]	MIL-STD-704D, MIL-STD-1275E	-	-
EMI/EMC[9]	MIL-STD-461E	-	-

1 - Open sky conditions
2 - RMS levels
3 - Baseline <40 km
4 - RTK mode of operation requires differential corrections from the RTK base station
5 - Time to First Fix
6 - Accuracy after magnetic calibration and setting the correct declination/offset angle
7 - After magnetic calibration for Hard Iron and Soft Iron disturbances, and in the static magnetic field
8 - 50% at 30 m/s for dynamic operation
9 - MIL– STD Complied

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