arazim



gINS®

Tactical-Grade Inertial Navigation System

gX-100 VG/IMU/AHRS | gX-200 GNSS/INS | gX-300 Dual-Ant GNSS/INS

The gINS® is family of MEMS-Based Tactical-grade inertial navigation systems built within rugged miniature package. These Tactical- grade series includes VG, IMU, AHRS, GNSS/INS and Dual-Antenna (GNSS-Compass) INS system.

Built-In survey-grade multi-frequency/multi-constellation L1/L2/L5 GNSS RTK receiver provide the gINS® Unprecedented performances and capabilities for such small size, low-cost navigation system.

Fully calibrated Tactical-Grade Gyro's (< 1°/hr) & Tactical-Grade Accelerometer (< 1mg over-temp) along with advanced Unscented Kalman Filter (Sigma-points) provide robust cutting-edge solution for various operation modes and applications.

Main Features

- Tactical Grade Gyro < 1°/hr
- Tactical grade Accelerometer < 1mg over temp range
- Multi-Frequency/Multi-constellation GNSS
- 2 cm L1/L2 RTK accuracy
- Up to 1000 Hz update rate
- Robust Unscented Kalman Filter
- Rugged Miniature package
- ITAR-Free

arazim

	gX-100	gX-200	gX-300
Navigation			
Heading - Magnetic	2.0 °	2.0 °	2.0 °
GNSS-Dynamic		0.1 °	0.1 °
Dual-Ant (static)			0.15 ° (1m)
Roll/Pitch – Dynamic	0.10 °	0.10 °	0.10 °
Static	0.05 °	0.05 °	005°
Position - Horizontal		1.5 m	
SBAS		< 0.5 m	
RTK		10 mm + 1ppm	
Vertical		2.5 m	
SBAS		< 1 m	
RTK		1.5 cm + 1ppm	
Velocity Accuracy		< 0.03 m/sec (rms)	
Output Rate	1000 Hz	200 Hz	

GNSS	
Receiver Type	Multi-Frequency /Multi-Constellations 432 Channels GPS L1/L2 Glonass L1/L2 Galileo E1/E5b BDS B1/B2 QZSS L1/L5 SBAS RTK
Update Rate	20 Hz
TTFF	Cold start < 25 sec Warm start < 1 sec
RTK format	RTCM v2.3/3.0/3.2
Initialization Time	< 5 sec
Velocity Accuracy	0.03 m/sec (rms)
Time Accuracy	20 ns (rms)

	gX-100	gX-200	gX-300
Data Output			
IMU - Raw Data & Compensated Gyro, Acc, Mag, Baro Conning & Sculling (ΔV, ΔΘ)	✓	✓	✓
GNSS - UTC, Position, RTK		✓	✓
Attitude - Roll/pitch/Yaw Quaternions, Euler, DCM		✓	✓
Inertial Navigation Velocity, Position, Attitude		✓	✓
GNSS - Compass INS Heading Static			✓

	Accelerometer		Gyroscope		Magnetometer
Sensors					
Full Scale Range	± 5g	± 10g	± 100 °/sec	± 300 °/sec	+ 2 Gauss
Bandwidth	0…400Hz		0…50Hz		10 Hz
Non Linearity	0.15%		< 0.5 % (over FTR & life-time)		0.1%
Bias					
Stability In- Run	< 30 µg		< 1 °/hr	2 °hr	
Repeatability	± 300 µg		< 0.05°/sec		
over Temp	< ± 1mg RMS		< 0.05°/sec		
Scale Factor					
Repeatability	500 ppm		< 2% (over FTR & Life-Time)		
Over Temp	100 ppm		< 1% (-40c to +125c)		
Random Walk	0.02 m/sec/√Hr		0.45 °/√Hr	0.85 °/√Hr	
Resolution	< 100 µg		0.02 °/Sec	0.02 °/Sec	1.2 mGauss
Noise density	< 20 µg /√Hz		< 0.01 °/sec/√Hz	< 0.02 °/sec/√Hz	
Vibration Rectification	100 µg/g2 RMS				
G-Sensitivity			30 °/hr/g		
Latency			< 2 msec		
MisAlignment			< 3 mRad		

Communication	
Digital Interface	RS232/RS422
Frame Rate	1000 Hz Max
Peripherals	2 x GPIO 1 x RS232
GPIO Functionality	Trigger Input Sync Out PPS Out Odometer External GNSS External Magnetometer Air-Data
Start Up Time	< 800 msec
Power & Mechanical	
Input Voltage	9 VDC – 32 VDC
Power (incl. Antena)	gX-100: 250 mA @ 12VDC gX-200/gX-300: 360 mA @ 12VDC
Connectors	Power/Data: Mini D-Type 21-pin GNSS: SMA
Size	80 x 66 x 56 mm
weight	< 250 gr

Compliance (Design-to-Spec)	
Temp Operation	-40º C to +71º C Mil-Spec 810-G Method 501.5 Procedure I
Shock	500g, 3 mSec ½ Sine Mil-Spec 810-G Method 516.6 Procedure V
Vibration	12 G rms, 20-2000 Hz Mil-Spec 810-G Method 514.6 Category 17
Altitude	70,000 feet Mil-Spec 810-G Method 500.5 Procedure III
Power	EN55022 Class A & B
Enclosure	IP65 EN 595
MTBF	50,000 Hours Mil-HDBK 217

* All parameters are typical, RMS values

* PRELIMINARY. Specification subject to change without notice

ver1, Nov 2019

info@arazim.com • www.arazim.com

Hamelacha 4 Lod Israel • POBox 9021 Lod 7152022 Israel • Tel: +972-8-9230555 • Fax: +972-8-9230044