



Exiguo-LP[®] Industrial-Grade Inertial Navigation System



EXLP-100



IMU/VG/AHRS

EXLP-200



GNSS/INS

EXLP-300



Dual-Ant GNSS/INS

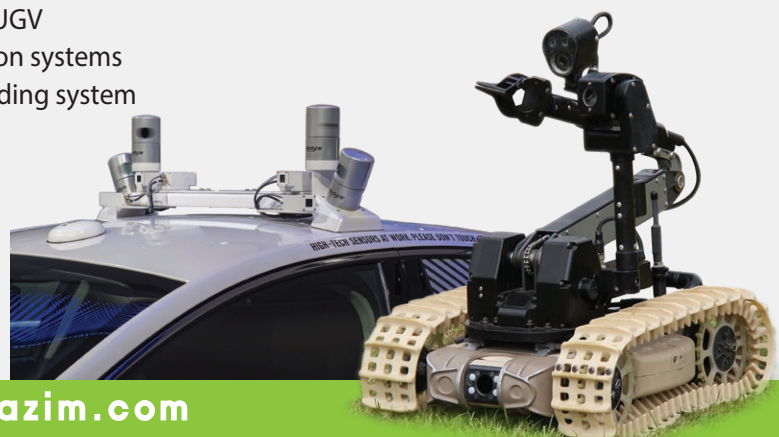
The Exiguo-LP[®] is family of MEMS-Based Industrial-grade inertial navigation systems built within rugged miniature package. These Industrial grade series includes VG, IMU, AHRS, GNSS/INS and Dual-Antenna (GNSS-Compass) INS system. Built-In survey-grade multi-frequency/multi-constellation L1/L2/L5 GNSS RTK receiver provide the Exiguo-LP[®] Unprecedented performances and capabilities for such small size, low-cost navigation system. Fully calibrated sensors over temperature range and advanced Unscented Kalman Filter (Sigma-points) provide robust cutting-edge solution for various operation modes and applications.

Main Features

- Gyro $2^\circ/\text{hr}$
- Roll / Pitch accuracy <math>< 0.25^\circ</math>
- Heading Accuracy 0.2°
- Multi-Freq. (L1/L2/L5) / Multi GNSS
- 2 cm RTK accuracy
- Up to 1000 Hz update rate raw data
- Calibrated Inertial sensors
- Robust Unscented Kalman Filter
- Miniature package
- ITAR-Free

Typical Applications

- Camera Gimbal
- Antenna Tracker
- Small size UAV/UGV
- Target Acquisition systems
- Radar North Finding system



	EXLP-100	EXLP-200	EXLP-300
Navigation			
Heading - Magnetic	2.0 °	2.0 °	2.0 °
GNSS-Dynamic		0.1 °	0.1 °
Dual-Ant (static)			0.2 ° *
Roll/Pitch – Dynamic	0.25 °	0.25 °	0.25 °
Static	0.15 °	0.15 °	0.15 °
Position - Horizontal		1.5 m	
SBAS		< 0.5 m	
RTK		1 cm + 1ppm	
Vertical		2.5 m	
SBAS		< 1 m	
RTK		1.5 cm + 1ppm	
Velocity Accuracy		< 0.05 m/sec (rms)	< 0.05 m/sec (rms)
Output Rate	1000 Hz (Raw)	200 Hz (Nav)	200 Hz (Nav)
Angular Resolution	< 0.01°	< 0.01°	< 0.01°
Latency		< 5 msec	

GNSS	
Receiver Type	1408 Channels GPS L1C/A, L2C, L2P(Y), L5 GLONASS G1, G2 Galileo E1, E5a, E5b BDS B1I, B2I, B3I QZSS L1C/A, L2C, L5, L6 SBAS L1C/A RTK
Update Rate	20 Hz
TTFB	Cold start < 30 sec Warm start < 1 sec
RTK format	RTCM v3.0/3.2
Initialization Time	< 5 sec
Velocity Accuracy	0.03 m/sec (rms)
Time Accuracy	20 ns (rms)

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

(*) 1m separation

	Accelerometer	Gyro	Mag	Pressure
Sensors				
Full Scale Range	± 10g	± 500 °/sec	± 4000 μ T	10-1200 mBar
Bandwidth	0...200 Hz	0...200 Hz	0...50 Hz	0...100 Hz
Non Linearity	< 0.1%	< 0.05%	< 0.15%	< 0.25%
Bias				
Stability In- Run	< 20 μ g	< 2 °/hr		< 1 mbar
Repeatability	< 5 mg	< 0.1 °/sec		< 1 mbar
Over Temp	< 3 mg	< 0.05 °/s		< 2 mbar
Random Walk	0.05 m/sec/ \sqrt Hr	0.1 °/ \sqrt Hr	-	-
Resolution	< 100 μ g	< 0.01 °/sec	< 1 μ T	0.1 mBar (20cm)
Noise density	< 100 μ g / \sqrt Hz	0.005 °/ \sqrt Hz	< 1 μ T rms	< 0.05 mbar/ \sqrt Hz
Mis-Alignment	< 2 mRad	< 2 mRad	< 2 mRad	-
Output Rate	1000 Hz	1000 Hz	10 Hz	50 Hz

Communication	
Digital Interface	RS232 (optional RS422)
Frame Rate	1000 Hz Max
Start Up Time	< 800 msec

Power & Mechanical	
Input Voltage	9 VDC – 32 VDC
Power Consumption (including Antenna)	EXLP-100: 100 mA @ 12VDC EXLP-200/EXLP-300: 150 mA @ 12VDC
Connectors	Power/Data: Micro D-Type 9-pin GNSS antenna input: MMCX
Size	40 x 40 x 14.8 mm (without connectors / mounting holes)
weight	40 gr

Environmental Conditions	
Temp Operation	-40° C to +71° C
Temp Storage	-40° C to +85° C
Power	EN55022 Class A&B
Enclosure	IP65

* All parameters are typical, RMS values

* Specification subject to change without notice