Galaxy Navigation Corp.

Tactical grade GM-250® GNSS/IMU

GM-250® is a high performance silicon based 10-degree-of-freedom sensors which integrated with next generation GNSS receiver. This high reliability inertial measurement system provides high precision 3-axis angular rate and linear acceleration. Inertial package intended for navigation, control, dynamics testing and instrumentation applications.

GM-250® achieves its excellent performance by employing proprietary algorithms to characterize and correct for the effects of temperature, linearity and misalignment.

Product Features：

- ITAR free
- 10-DoF high stability silicon based MEMS sensors
- Factory calibrated sensitivity, bias and axis alignment
- All sensors have temperature compensation
- Time synchronization between GNSS and IMU signals
- Next-generation RF technology
- Supports GPS, GLONASS, BeiDou, Galileo, QZSS and SBAS
- GNSS heading accuracy 0.3 degree
- Digital output
- Compact and robust design

Applications

- Platform stabilization and control
- Navigation
- Instrumentation
- Guidance and control
- Robotics
- Positioning

Output

- 3-axis angular rate
- 3-axis acceleration
- 3-axis magnetic flux
- Altitude
- GNSS coordinates and time

Specification

IMU				
Sensors	Gyroscope	Accelerometer	Magnetometer	Barometer
● Operation range	±450°/sec	±18g	±2.5 gauss	300~1100 mbar
● In run bias stability (1σ)	5.1°/hr	0.07 mg (1σ)		
● Random walk (1σ)	0.26°/√hr	0.029 m/sec/√hr		
● Bias temperature coefficient	±0.0005°/sec/°C	±0.1 mg/°C	0.03 mgauss/°C	
● Noise density (RMS)	0.0025°/sec/√Hz	0.063 mg/√Hz	0.042 mgauss/√hr	0.025 mbar
● Non-linearity (FS : full scale)	±0.01% of FS	±0.1% of FS	±0.5% of FS	±0.1% of FS
● Misalignment (axis to axis)	±0.05 deg.	±0.035 deg.	0.035 deg.	

GNSS module (u-blox NEO- M8N)	
Channel	72-channel
Supports	GPS + GLONASS + BeiDou + Galileo + SBAS + QZSS
Protocol	NMEA-0183 V4.0
Time-to-First-Fix	
● Cold start	27 sec
● Hot start	1 sec
Sensitivity	
● Cold start	-148 dBm
● Hot start	-156 dBm
● Re-acquisition	-160 dBm
● Tracking sensitivity	-167 dBm
Position accuracy	2.0 m CEP (SBAS) , 2.5 m CEP autonomous
Velocity accuracy	0.05 m/ sec
Heading accuracy	0.3°
Time accuracy (1PPS)	30 ns (RMS)
Operation limits	Altitude 50,000 m , Velocity 1,800 km/hr (972 knots)

Electrical	
● Power input	9 ~ 32 VDC (5 VDC for optional)
● Power consumption	< 1.2 W

I/O	
● Digital output	RS232
● Update rate	5 Hz, (GPS+GLONASS), 10 Hz (GPS only)
● Output sampling rate	100 Hz default (200 Hz for optional)
● Baud rate	4800 / 9600 / 38400 / 57600 / 115200 bps are adjustable, 115200 bps (default)
● GPS receiver	SMA female connector
● I/O	DB-9 connector

Environment	
● Operation temperature	-40 ~ +85°C
● Storage temperature	-40 ~ +85°C
● Vibration	4 g, RMS (20~2000 Hz)
● Shock	40 g, 11 ms 1/2 sine wave

Physical	
● Size	85 mm × 50 mm × 40 mm (L × W × H)
● Weight	< 200 grams
● Material	Aluminum alloy
● Mounting	4ea M4 screws