

MicroStrain Sensing Product Datasheet

3DMGQ7-GNSS/INS

RTK Ready, All-In-One Navigation Solution



The **3DMGQ7-GNSS/INS** is an all-in-one navigation solution featuring centimeter-level position accuracy. It is equipped with dual multiband GNSS receivers, low noise and low drift MEMS inertial sensors, and a robust adaptive Kalman filter.

Integrate easily using our open-source MSCL and ROS drivers, or our fully documented backwards-compatible MIP protocol.

Combine the **3DMGQ7** with the SensorCloud RTK network service and cell-enabled **3DMRTK** for a complete RTK navigation solution.



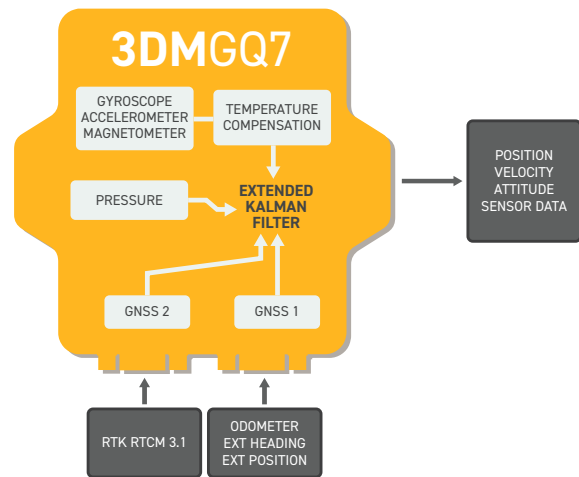
FEATURES AND BENEFITS

- Dual antenna GNSS
- Centimeter-level accuracy with RTK
- Tactical Grade IMU
- Advanced tightly-coupled extended Kalman filter (EKF) for sensor fusion
- Low profile and lightweight at 78 grams
- Adjustable sampling rates up to 1 KHz
- <2 deg/hour gyro bias instability

APPLICATIONS

- Autonomous vehicle (AV) operation
- Wheeled and legged robotics
- Simultaneous localization and mapping (SLAM)
- Beyond visual line of sight (BVLOS) navigation

SYSTEM ARCHITECTURE



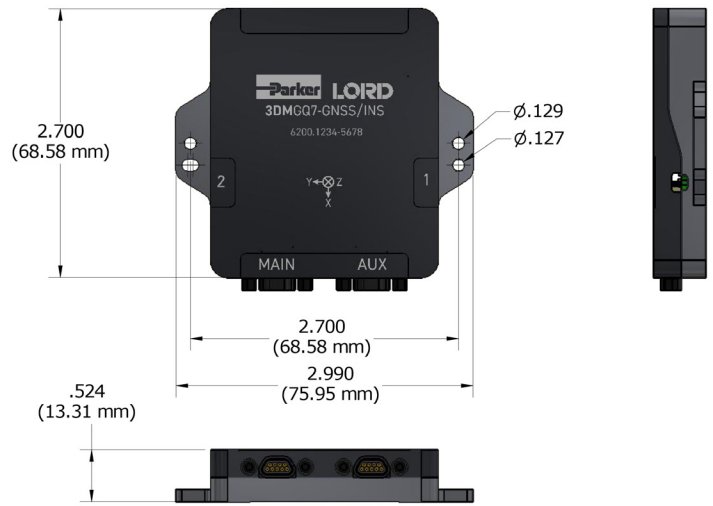
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Specifications

Featured Specifications	
Position accuracy	2 cm with L1/L2 RTK corrections*
Velocity accuracy	0.05 m/sec
Attitude accuracy	±0.1° RMS roll & pitch ±0.25° RMS heading (typical)
Attitude repeatability	0.1° (typical)
Data output rate	1KHz
Gyro in-run bias stability	1.5°/h
Gyro bandwidth/range	300Hz / ±300°/s
Accel in-run bias stability	0.005 mg
Accel bandwidth/range	225Hz / ±8g
Accel noise density	20ug/√Hz
Interface	Dual Micro-D9, USB, RS-232, Dual MMCX
Protocols	MIP, RTCM 3.1
GNSS	GPS/QZSS, GLONASS, Galileo, BeiDou**
GNSS Freq Bands	L1C/A, L2C, L1OF, L2OF, E1B/C, E5b, B1I, B2I
Size	76 mm x 68.6 mm x 13.3 mm
Weight	78g

* 1cm + 1ppm, 2cm at 10km from the base station

**Kalman filter support for BeiDou measurements (tightly-coupled and RTK) to be provided in a future firmware release.



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