3DMGQ7

Hardware platform for sensor fusion development

Engineers faced with complex navigation problems generally need to make a fundamental choice about their sensor fusion algorithm: design their own or purchase a product with an integrated solution. The **3DM**GQ7 aims to be a product that that can meet the needs of both approaches.

The Extended Kalman Filter integrated into the **3DM**GQ7 combines ease of use with an advanced navigation algorithm. However, in some navigation applications, additional sensor inputs are required, such as LiDAR, vision, radar and more. The complexity of these systems requires a sensor fusion algorithm that supports a wider away of measurements and is specifically designed for an application. In this case, the **3DM**GQ7 serves as an excellent, fully integrated hardware platform that provides a customer interface to all raw data quantities used in the internal filter.

Integrated EKF benefits:

- Significantly reduces development time
- Extensive testing and tuning
- Dual antenna heading integration
- Factory post processing support to help with applicating tuning and troubleshooting
- System error tracking, including IMU biases, GNSS antenna lever arm errors, and odometer scale factor errors
- Measurement latency corrections
- GNSS tight coupling
- External message support for position, velocity, heading, and speed

Available data quantities

- Temperature compensated accel and gyro
- Coning and sculling integrals (delta theta/delta velocity)
- Magnetometer
- Pressure
- Hardware encoder interface for odometer speed measurements
- PPS output for time synchornization
- ROS support for raw data
- RTK-capable GNSS position and velocity solution
- Raw GNSS signals including psuedorange and carrier phase measurements

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