MicroStrain 3DM-GQ7-GNSS/INS

Tactical Grade RTK-Enabled Navigation System



Setting the Standard in Inertial Navigation:

The MicroStrain 3DM-GQ7-GNSS/INS is a complete RTK-enabled navigation solution featuring centimeter-level position accuracy.

The system includes dual multiband GNSS receivers, low-noise and low-drift MEMS inertial sensors, and a robust Adaptive Extended Kalman Filter (EKF).

MicroStrain sensors have set the standard for inertial sensor performance for over 20 years. The 3DM-GQ7-GNSS/INS continues to build upon that legacy and includes a host of new features that ensure optimum performance in even the most demanding applications.

Product Features:



1.5°/h Gyro Bias Instability

- Dual Antenna GNSS Heading
- Centimeter Level Accuracy with RTK
- (4) Adjustable Sampling Rates Up to 1 KHz
 - Tactical Grade IMU
- Advanced Tightly-Coupled EKF
 - Lightweight (78g) and Low Profile

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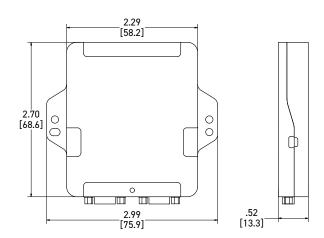


https://prker.co/3QvDWft

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MicroStrain 3DM-GQ7-GNSS/INS Specifications

System Performance	
Position	
Single Point, Horizontal [1]	1.25 m
Single Point, Vertical [1]	2 m
RTK ^[1,2]	2 cm
Attitude	
Roll, Pitch	0.05°
Heading ^[3]	0.25°
Dynamic	
Velocity	0.05 m/s



IMU

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	Accelerometer	Gyroscope	Magnetometer	Barometer
Range	±8 g	± 300 °/s	±8 Gauss	260 to 1260 mbar
Random Walk	20 μg/√Hz	0.15 °/√h	-	-
Bias Instability	5 µg	1.5 °/h	-	-
Noise Density	20 µg/√Hz	8.75 °/h/√Hz	-	-
Turn-on to Turn-on Bias ^[4]	50 µg	0.002 °/s	-	-
Bias Error Over Temperature	0.4 mg	0.03 °/s	-	-
Scale Factor Error Over Temperature	600 PPM	1000 PPM	-	-

Interface

Connectors	2x Micro-D9
Communications Interface	2x RS-232, 2x USB
GNSS Antenna Ports	2x MMCX
Output Data Rate (<u>IMU</u> and <u>EKF</u>)	1 to 1000 Hz
External Aiding Input	RTCM 3.1, GNSS, Odometer, Heading
I/O	4x GPIO

GNSS

Number of Receivers	2
Channel Count	184
Constellations	GPS/QZSS, GLONASS, Galileo, BeiDou*, SBAS
Frequencies	L1C/A, L2C, L1OF, L2OF, E1B/C, E5b, B1, B2
Operational Limits	Altitude 50,000 meters, Velocity 500 m/s

[*] BeiDou support to be provided in future firmware release

Physical and Electrical

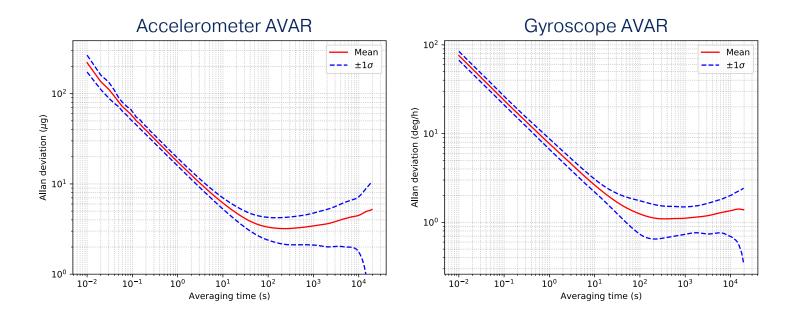
Weight	78 g
Size	76 mm x 68.6 mm x 13.3 mm
Power Consumption	2.0 W (Typical), 2.5 W (Max)
Operating Voltage	5 to 16 VDC
GPIO Voltage	5 V
Operating Temperature	-40°C to 85°C
Antenna Output Voltage	3 V
Antenna Output Current	100 mA
MTBF	389,237 hours (Telecordia Method, GM/35C)

[1] 24 hour static, RMS

[2] 1 cm + 1 ppm, 2 cm at 10 km from base station
[3] Dual antenna, RMS, 1.5 m baseline

[4] Bias repeatability, <24 hours

MicroStrain 3DM-GQ7-GNSS/INS Allan Variance (AVAR)



MicroStrain 3DM-RTK

Minimizing your time to market by removing the need for base station infrastructure

The MicroStrain 3DM-RTK Cellular Correction Modem transmits easy-to-use Real Time Kinematic (RTK) correction data to be utilized by the 3DM-GQ7-GNSS/INS. It provides the simplicity of a cellular connection to our SensorCloud RTK base station network, replacing cumbersome radiobased stations.

With RTK corrections the 3DM-GQ7 can achieve centimeter-level positional accuracy.

1 Hz
Micro-D9, RS 232, USB
MIP, RTCM 3.1, NMEA
Cellular Coverage: Global*
5 to 16 VDC
1.0 W (Typical), 2.0 W (Max)
48 g

[*] Some regional restrictions apply. Coverage only where LTE CAT-M1/2G deployment is available.





SensorConnect is PC software for sensor configuration and data collection. Configure inertial parameters, device settings, data channels, and sample rates.

Visualize massive amounts of data instantly using built-in intelligent data collection and graphing algorithms. Create immersive dashboards with rich data visualization.





MSCL[™] API and MIP SDK

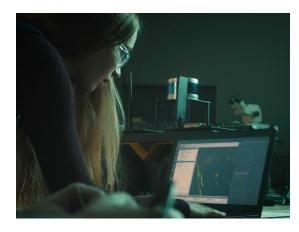
The MicroStrain Communication Library (MSCL) is our open-sourced API that simplifies writing code to interact with our sensors. MIP SDK is a lightweight C/C++ library for interacting with MicroStrain G and C-series products via bare-metal and resource constrained microcontrollers.

Both APIs are readily available and fully-documented on GitHub, featuring valuable tools such as full documentation, example code, and a quick start guide.

HROS

MicroStrain offers an open source, license-free (MIT License) series of actively supported drivers specifically designed and tested for Robot Operating System (ROS).

Use ROS for building and simulating robotics applications, unmanned ground vehicles (UGVs) and simultaneous localization and mapping (SLAM).







Seamless cloud-based network RTK corrections. Plug and play functionality with our 3DM-RTK modem allows for fast, easy deployment across the globe.

Get started instantly with our commitment-free subscription service, available immediately after registration.

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