SYSTRON DONNER INERTIAL

Miniature MEMS Quartz Vertical Gyro

MMQ™VG

Applications

The MMQ™VG has a wide variety of applications.

- **Antenna Pointing**
- **Targets and drones**
- **EO/IR Stabilization**
- **Unmanned Aerial Vehicles**
- **Remotely Operated Vehicles (Underwater)**
- **General Aviation (Experimental)**
- **Agriculture (Smart Farming)**
- **Robotics**
- **Automotive Testing**

Description

The MMQ™VG offers a unique combination of the Systron Donner Inertial solid-state MMQ50 Inertial Measurement Unit (IMU) and advanced software that calculates a Vertical Gyro (VG) solution from the gyro and accelerometer sensors. The MMQVG's MEMS quartz rate sensors and MEMS accelerometers make up an IMU system that is used to calculate a highly accurate Roll and Pitch angle solution in varying dynamic applications. The user can configure the MMQVG to output data at various sample rates with extremely low output rate jitter, and the data output format is simple to understand containing the 6 sensor outputs, the angle outputs, a Built-In-Test (BIT) word output and a multi-parameter revolving word output that provides system information including version string. The MMQVG combines tremendous performance and versatility with an extremely compact size, low power consumption and low weight.

Key Performance Features

- **Extremely Small Size**
- **Vertical Gyro Solution for many Dynamic Applications**
- **RS-232 Digital Interface**
- **Low Power Consumption (<5W)**
- **Configurable Output Rate**
- **Jitter Free Output Rate (400 Hz Max)**
- **Tested to meet TSO-C4c bank (roll) and pitch angle performance**
- **MMQVG Demo Software supplied to facilitate integration**

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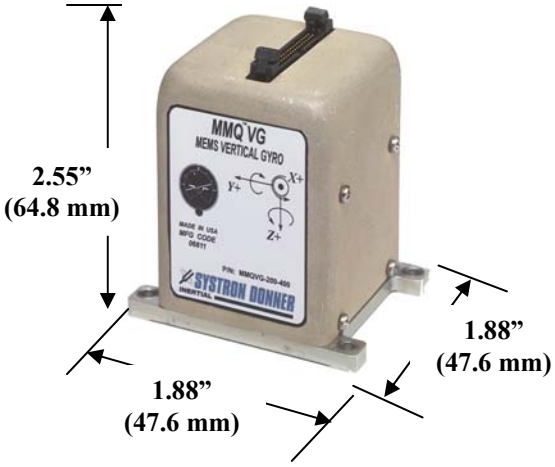

Physical Characteristics	
Part Number	MMQVG-200-400
Size (Vol.)	9.0 in3 (1.88"W x 1.88"D x 2.55"H) (48 mm x 48 mm x 65 mm)
Weight	<0.50 lbs (<0.227 kg)
Power	+ and – 12 Vdc at < 5 watts total
I/O	RS-232 – 400 Hz Output Rate with < 100 microsecond jitter
Attitude Performance	
Static Accuracy (Roll/Pitch)	< 0.5 Deg
Dynamic Accuracy (Roll/Pitch)	1.5 Deg RMS – **Tested to TSO-C4c bank and pitch performance standards**
Rate Channels	
Range	±200°/ sec
Bias Turn-on to turn-on Stability	≤100°/hr, 1 σ
Bias In-run Stability (at any temperature)	100°/hr, 1 σ
Bias Instability	<4-15°/hr
Angle Random Walk	0.3 °/rt-hr (0.005 °sec/rt-Hz)
Scale Factor error	≤5000 ppm (0.5%)
Alignment	≤5 mrad
Bandwidth (-90°)	50 Hz, nominal
Acceleration Channels	
Range	± 10g
Bias Turn-on to turn-on Stability	≤2.5 mg, 1σ
Bias In-run Stability (at any temperature)	≤3 mg, 1 σ
Velocity Random Walk	0.5 mg/rt-Hz
Scale Factor Error	≤5000 ppm (0.5%)
Alignment	≤5 mrad
Bandwidth (-90°)	50 Hz, nominal
Environmental	
Temperature Range	-54°C to +70°C (operating)
Vibration, random	6.0g rms, 20Hz –2kHz, flat **Meets DO-160D Curves C, C1**
Shock, operating	30g, powered **Meets DO-160D operational shock and crash safety**
Altitude	35,000 ft. **Meets DO-160D Category C**

For more information contact:

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