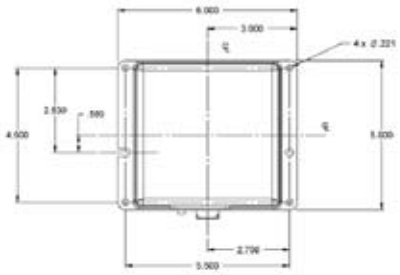
VG700

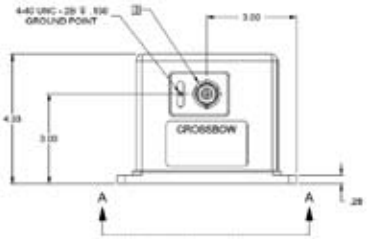
FIBER OPTIC VERTICAL GYRO

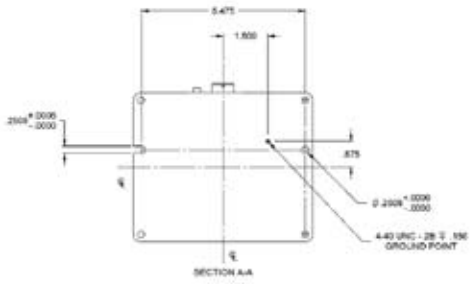
- MIL-Qualified Vertical Gyro
- Fiber Optic Gyro Stability <20°/hr
- Stabilized Roll and Pitch Angle Outputs
- Optional Relative Heading Output
- Environmentally Sealed Enclosure
- MIL-STD-810E, MIL-STD-461D

Applications

- Avionics
- Platform Stabilization
- Land Vehicle Guidance
- Robotics







VG700MB

The VG700MB is a "MIL-Qualified" vertical gyro used for measuring roll, pitch and heading angles (-206 only) in dynamic environments. The VG700MB incorporates Crossbow's third generation Fiber Optic Rate Gyro technology providing superior performance, reliability, and long term stability. The VG700MB has been qualified to meet airborne, land and marine environmental protection and power conditioning requirements.

Example applications for the VG700MB include avionics, platform stabilization, land vehicle guidance and robotics.

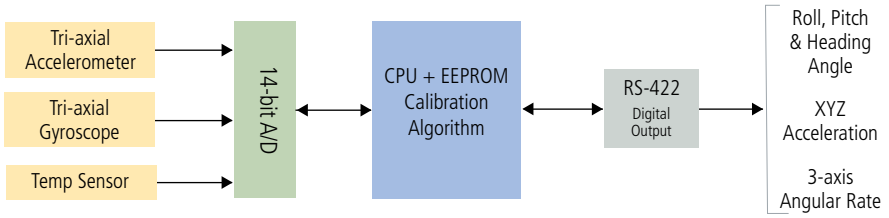
The VG700MB calculates roll, pitch and heading angles by integrating the angular rate sensor outputs. An adaptive vertical erection algorithm compensates the roll and pitch for gyro bias-induced errors using the long term gravity reference provided by the accelerometers. The "authority" of the drift correction can be set via the serial command 'T' (refer to the User Manual).

The heading output (-206 only) is a "free running" signal that is not slaved to a long term reference. The heading output is initialized to zero during power up.

The VG700MB also measures acceleration and rotation rate about three orthogonal axes. The VG700MB employs on-board digital processing to provide a factory calibrated unit with internal compensation for deterministic error sources.

Each VG700MB comes with a User's Manual offering helpful hints on programming, installation, and product information. In addition, Crossbow's GYRO-VIEW software is included to assist you in system development and evaluation, and allows you to perform data acquisition (requires RS-422 to RS-232 converter - not included).

The VG700MB does not calculate or output navigation or position data.



VG Block Diagram

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Specifications	VG700MB	Remarks
Performance		
Update Rate (Hz)	>100	Continuous Update Mode
Start-up Time Valid Data (sec)	< 1	
Relative Heading (-206 only)		
Range (°)	± 180	
Resolution (°)	< 0.1	
Attitude		
Range: Roll, Pitch (°)	± 180, ± 90	
Static Accuracy (° pk-pk)	< 1.5	
Dynamic Accuracy (° rms)	2.5	
Resolution (°)	< 0.1	
Angular Rate		
Range: Roll, Pitch, Yaw (°/sec)	± 200	
Bias: Roll, Pitch, Yaw (°/sec pk-pk)	< 0.3	
Bias: Roll, Pitch, Yaw (°/hr)	< 20	Constant Temperature
Scale Factor Accuracy (%)	< 1.5	
Non-Linearity (% FS)	< 1.5	Up to 100°/sec
Bandwidth (Hz)	> 40	-3 dB point
Random Walk (°/hr$^{1/2}$)	< 0.4	
Acceleration		
Range: X/Y/Z (g)	± 4	
Bias: X/Y/Z (mg pk-pk)	< 24	
Scale Factor Accuracy (%)	< 1	
Non-Linearity (% FS)	< 1	
Resolution (mg)	< 1.25	
Bandwidth (Hz)	> 15	-3 dB point
Random Walk (m/s/hr$^{1/2}$)	< 1.0	
Environment		
Operating Temperature (°C)	-40 to +71	
Non-Operating Temperature (°C)	-40 to +71	
Non-Operating Vibration (g rms)	6	20 Hz - 2 KHz random
Non-Operating Shock (g)	100	1 ms half sine wave
Electrical		
Input Voltage (VDC)	16 to 32	
Input Current (A)	< 0.3	@28V
Power Consumption (W)	< 9	
Digital Output Format	RS-422	
Physical		
Size (in)	5.0 x 6.0 x 4.33	Incl. mounting flanges
(cm)	12.70 x 15.24 x 11.00	Incl. mounting flanges
Weight (lbs)	< 4.4	
(kg)	< 2.0	
Connector	38999 Series II 22 Pins	

Notes:
Specifications subject to change without notice.

Pin	Function
1	RS-422 Transmit (-)
2	RS-422 Transmit (+)
3	RS-422 Receive (-)
4	Power Input Ground
5	Positive Power Input (+)
6	Do Not Connect
7	Factory Use Only
8	Factory Use Only
9	Factory Use Only
10	Factory Use Only
11	Factory Use Only
12	Factory Use Only
13	Factory Use Only
14	Factory Use Only
15	Do Not Connect
16	RS-422 Receive (+)
17	Signal Ground
18	Factory Use Only
19	Do Not Connect
20	Case Ground
21	Factory Use Only
22	Do Not Connect

Pin Diagram

Ordering Information

Model	Description	Gyro (°/sec)	Accel (g)
VG700MB-200	Fiber Optic Vertical Gyro	± 200	± 4
VG700MB-206	Fiber Optic Vertical Gyro (with Relative Heading)	± 200	± 4
VG700MB-208	Fiber Optic Vertical Gyro (Marine Configuration)	± 200	± 4

CALL FACTORY FOR OTHER CONFIGURATIONS

The Crossbow VG700MB products are subject to United States export controls under the International Traffic in Arms Regulations, 22 C.F.R. Parts 120-130, or the Export Administration Regulations, 15 C.F.R. Parts 730-774. In accordance with those export control regulations, an export license from the competent United States Government agency must be obtained before exporting any of the VG700MB products to any foreign destination.

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