

***BGM-5 Gravity Meter***

***High-Accuracy Gravity Measurement in Dynamic Marine and Airborne Environments***



## BGM Family Characteristics

The BGM-5 is the latest generation gravimeter from Lockheed Martin, incorporating new technology to improve overall performance and reliability. It also provides flexibility to enable shipboard or airborne use. Salient BGM-5 features include:

- Outstanding Accuracy: Typically < 0.4 mGal
- Operational Experience > 4,000,000 hours
- Completely Unattended Operation
- Flexible Airborne/Shipboard Capability
- Highly Maintainable.

### Gravity Sensor Subsystem

- Triple oven controlled for improved ambient temperature isolation
- Serial output format for easier interface
- Wide dynamic range and finer resolution of output increases accuracy

### Stabilized Platform Subsystem

- Computer controlled 2-axis platform provides improved dynamic accuracy
- Elimination of gears improves reliability and performance
- Improved accuracy and longer life gyro
- Simplified and improved gimbal control
- Keyboard entry to change platform control parameters to accommodate different survey modes (ship, fixed wing aircraft, helicopter)

### Data Processing Subsystem

- Can be supplied with computer and printer complete with software to filter, and scale gravity in mGal units, reduce to Free Air or Bouguer anomalies using vehicle derived navigation, and record to disk, external serial interface and printer
- Optionally provides navigation derived corrections to platform stabilization system for error reduction

### Software Features

- In port (on board ship)/preflight capability to automatically calibrate all system parameters
- Improved built-in on-line status and diagnostics for automatic fault isolation

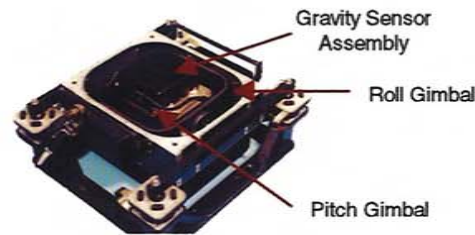
## Component Size, Weight and Power<sup>(1)</sup>

Item	Size (inches) W x D x H	Wt (lb)	Power (Watts)
Platform (with gravity sensor & vibration isolation mount)	20.8 x 23.6 x 17.0	79	-
Platform Control Drawer	19.0 x 22.5 x 7.0	36	160
Sensor Drawer	19.0 x 18.0 x 7.0	30	130
Sensor Battery Pack	19.0 x 9.0 x 7.6	45	-
Computer & Keyboard	19.0 x 24.0 x 10.5	73	250
Rack	27.0 x 40.2 x 52.2	202	-

(1) 107-127V, 40-70 Hz

## Gravity System Performance

<b>Noise:</b>	Short Term (1 hour)	0.10 mGals rms
	Long Term (30 days)	0.30 mGals rms
<b>Drift:</b>		1 mGal/day max
<b>Drift Uncertainty:</b>		1 mGal/month
<b>Range:</b>		880-1080 Gals
<b>Accelerations:</b>		< 1 mGal error
	when motion is within envelopes specified in Figures 1 and 2.	
<b>Output:</b>		
	Format:	RS232 or RS422
		10 Hz sample rate with 0.1 mGal resolution
<b>Internal Sensor Hardware Filter:</b>		T = 5 to 50 second single order lag (prespecify)
<b>Environmental:</b>		
	Temp:	<1 mGal error from 59 to 93°F
	Humidity:	<1 mGal from 10 to 90% RH
	Pressure:	<1 mGal error from 0-10000 ft



Two-Axis Stable Platform

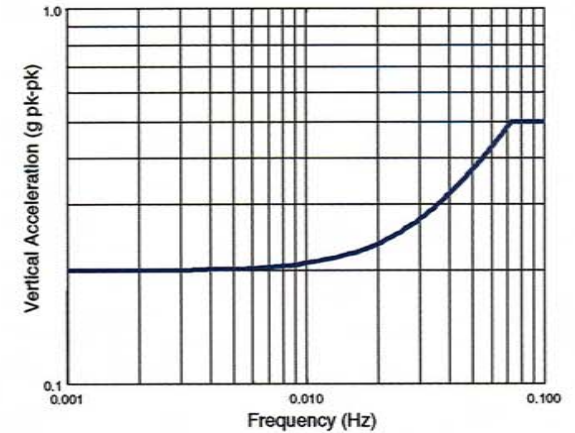


Figure 1 - Max. Allowable Vertical Acceleration for < 1 mGal Error

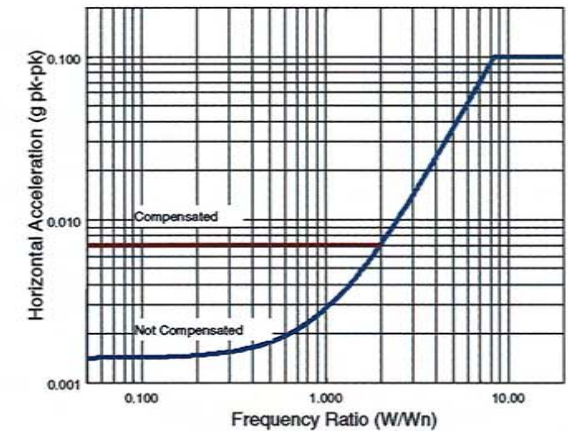


Figure 2 - Max. Allowable Horizontal Acceleration for < 1 mGal Error  
Where  $w_n$  is platform natural frequency, nominally 2.83 radians/minute for shipboard use.

For additional information on High Accuracy Gravimeter Systems, contact:  
 Lockheed Martin Naval Electronics and Surveillance Systems-Niagara  
 2221 Niagara Falls Boulevard  
 Niagara Falls, NY 14304  
 Telephone: (716) 298-6905  
 Fax: (716) 298-6990