




THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN

G-2000 Gyroscope Inertial Product Family

The Northrop Grumman G-2000 two-axis gyroscope is the smallest tactical-grade dynamically-tuned gyroscope available. The G-2000 gyro offers proven high performance, small size, excellent reliability and low cost.

The commercial-off-the-shelf G-2000 gyroscope and integrated product family are only subject to Export Administration Regulation (EAR) for export control.

Description

The G-2000 provides high accuracy for platform/gimbal stabilization and targeting applications. More than 60,000 gyros have been delivered since 1992 for use in a wide variety of military and commercial applications around the world.

The G-2000 requires control electronics and power conditioning to provide rate outputs (e.g., delta thetas). This is accomplished using a Northrop Grumman miniature Digital Gyro Control Unit (DGCU) servo card specifically designed to maximize G-2000 performance, or these can be incorporated into the host application.

Using a single input voltage source (11 to 34 Volt DC), the DGCU includes all power regulation circuitry and software needed to operate the G-2000 gyro. The DGCU offers digital RS-422 synchronous 21.6 kHz outputs.

Applications

- Downhole drilling and North-Finding
- Line-of-Sight stabilization
- Tactical missile and torpedo guidance/navigation
- Ground vehicle navigation
- Electro-optical/infrared cameras (EO/IR)
- Targeting and pointing
- Gun/turret stabilization

Advantages

The two-axis G-2000 gyroscope offers superior performance, high Mean Time Between Failure (MTBF), light weight, small volume and low operating power. The G-2000 is well-suited for high vibration and high shock environments where fiber-optic or micro-electro-mechanical gyros are unable to perform. Key advantages of the G-2000 include:

- Small size (.37 cubic inches) and light weight (<25 grams)
- Angle Random Walk of <0.005°/√hr
- Random drift of 0.02° to 0.6°/hr, 1σ
- High shock capability of 750 g's (2 µsec, 1/2 sine)
- High MTBF of 100,000 hours
- Low power consumption
- Fully qualified to MIL-spec performance
- DGCU servo card option for turnkey, enhanced performance.

Parameters	Performance	
Random Drift (in-run stability)	0.02° to 0.6°/hr, 1σ	
Angle Random Walk	<0.005°/√hr	
Threshold (Resolution)	0.0003°/sec	
Dynamic Range	±200°/sec (continuous)	
Torquer Scale Factor (TSF)	1445 ±5% °/hr/mA	
TSF Non-linearity	<200 PPM	
Gyro Axis Misalignment	0-1° (adjustable)	
G-Sensitive Drift	<±25°/hr/g (adjustable)	
G^2-Sensitive Drift	0.3°/hr/g^2	
Motor Spin Frequency	800 Hz (16,000 RPM) (adjustable)	
Pickoff (PO) Scale Factor	7.0 ±5% Vrms/°	
PO Excitation	43.2 kHz, 6.5 Vrms	
Bandwidth (-90°)	270 Hz (adjustable)	120 Hz (adjustable)
Parameters	**Characteristics**	
Dimensions	Gyro only: Length: 0.74 in (1.88 cm) Width: 0.75 in (1.91 cm) Height: 0.97 in. (2.46 cm)	DGCU only: Length: 2.1 in. (5.3 cm) Width: 1.4 in. (3.56 cm) Height: 0.4 in. (1 cm)
Weight	<25 grams (gyro only)	<15 grams (DGCU only)
Input Voltage	Start: 32 Vrms (0.5 amp) Run: 12 Vrms (0.15 amp)	11 to 34 VDC (20W for 3 sec, <4W continuous)
Start Time	<1.4 sec	3 sec
Digital Outputs Format	N/A	RS-422 synchronous
Loop Rate	N/A	21.6 kHz
Bit Rate	N/A	2.75 mbps
Latency	N/A	<200 µsec
Transmit	N/A	96 bit-frame
Parameters	**Environmental**	
Operating Temperature	-54°C to 100°C	-40°C to 85°C
Storage Temperature (non-operational)	-54°C to 100°C	

G-2000 Family of Products

G-2000 Gyro with DGCU card

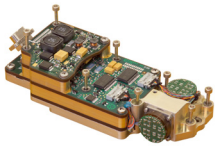
2-axis Digital Gyro Control Unit

LRS-2000

2-axis Analog Rate Sensor Assembly

LRS-2001

3-axis Digital Rate Sensor Assembly

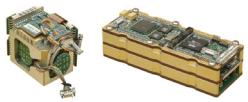


LRS-2003

2-axis Digital Rate Sensor Assembly

LR-2000

Digital Inertial Measurement Unit with micro-electro-mechanical accelerometers



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