

G50Z Gyro



- G50Z Low Noise MEMS Single Axis Gyro
- Low Noise $0.005^\circ/\text{sec}/\sqrt{\text{Hz}}$ Typical
- Short Term Bias $\leq 0.002^\circ/\text{sec } 1\sigma$
- Bias Over Temperature $\leq 0.05^\circ/\text{sec } 1\sigma$
- G-Sensitivity $\leq 0.005^\circ/\text{sec}/g$ Typical
- Axis Alignment $< 4\text{mrad}$ Typical
- Low Power $< 50\text{ mA}$ Typical
- Single Sided or Bipolar "VSG" Compatible Signal G50Z -XXX-420
- Light Weight $< 34\text{ grams}$
- Low Voltage $+5\text{V}$ (single sided power)
- Bandwidth 140Hz
- Voltage Output
- Internal Temperature Sensor
- Environmentally Sealed with MILSPEC Connector
- Built-In-Test (BIT)/Self-Test
- Shock Resistant $500g$
- Vibration 6 gRMS
- MTBF $81,000\text{ hours}$ (MIL-STD-217F)

Export Classification:
Commerce ECCN7A994 (NLR)



Applications

Airborne Platform Stabilization
Antenna Stabilization & Pointing
EO/IR Stabilization
LIDAR Stabilization
Navigation
Flight Testing
Racing Yacht Marine Compass

**Low Noise, G-Sensitivity and
Bias Over Temperature**



Gladiator Technologies
Division of LKD Aerospace
High Performance Inertial MEMS

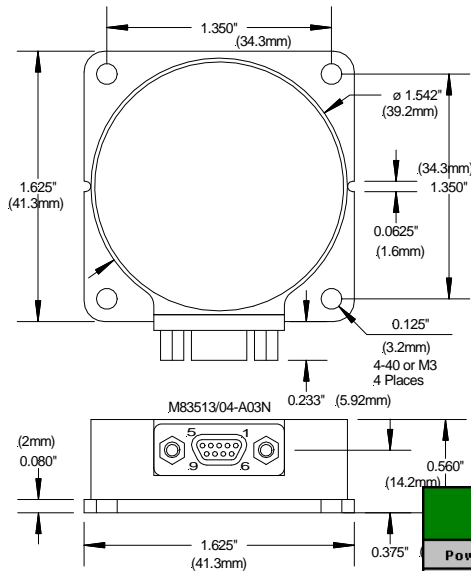
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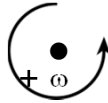
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Rev. 15Feb02
SN: 145

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Axes (Top View) Right Hand Rule



G50Z "LN Series" Configuration Options		
Part Number	Bandwidth	Output
G50Z-XXX-320	140Hz	Single Sided
G50Z-XXX-420	140Hz	Bipolar "VSG"

Specification

Mating Connector: M83513/01-AN

Pin No.	-3XX Assignment
1	Gyro Rate Output Voltage +2.5V Nominal*
2	Gyro Temperature +2.5V @ 20°C*
3	Power Ground
4	Gyro +2.5V Reference Voltage*
5	+4.75V to +5.25V DC Input
6	Signal Ground
7	Self Test Input
8	BIT Output
9	Case

For -3XX: Rate output is Pin 1 with respect to Pin 4.
Pin 4 Vref has 1.25k Ohm Source Impedance

Pin No.	-4XX Assignment (VSG Signal)
1	Gyro Rate Output Voltage 0V Nominal*
2	Gyro Temperature +2.5V @ 20°C*
3	Power Ground
4	Gyro +2.5V Reference Voltage*
5	+4.75V to +5.25V DC Input
6	Signal Ground
7	Self Test Input
8	BIT Output
9	Case

For -4XX: Rate output is Pin 1 with respect to Pin 6.

BIT Conditions	Self Test	BIT
Normal	0 or open	1
Fail (during operation)	0 or open	0
Fail (during Self Test)	1	1
Pass	1	0

Temperature is Pin 2 with respect to Pin 6. Self Test On is 4V to 5V on Pin 7. Self Test Off is open or 0V to 1V.
*Loads: RL>5K Gyro:<100pf Vref & Temp: <500pf

PARAMETER	"LN Series" MILSPEC Connector				
	G50Z-025-XXX	G50Z-050-XXX	G50Z-100-XXX	G50Z-175-XXX	G50Z-350-XXX
Power Requirements					
Input Voltage	+5V DC (±5%)				
Input Current <i>Typical (Max)</i>	50mA (60mA)				
Performance					
Standard Full Scale Ranges	±25°/sec	±50°/sec	±100°/sec	±175°/sec	±350°/sec
Full Scale Output (Nominal) -320	+2.5V ±2.2V DC				
Full Scale Output (Nominal) -420	0V ±5.0V DC				
Scale Factor <i>Nominal</i> -320	80mV/°/sec	40mV/°/sec	20mV/°/sec	12mV/°/sec	6mV/°/sec
Scale Factor <i>Nominal</i> -420	180mV/°/sec	90mV/°/sec	45mV/°/sec	27mV/°/sec	13.5mV/°/sec
Scale Factor Over Temperature	±5%				
Temperature Sensor	2.5V ±0.05V DC Nominal at 20°C				
Temperature Sensor Scale Factor	8.4mV/°C Nominal				
Bias Factory Set 2σ	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.2°/sec
Bias Variation Over Temperature 1σ	≤0.05°/sec	≤0.07°/sec	≤0.1°/sec	≤0.15°/sec	≤0.25°/sec
Short Term Bias Stability 1σ (150 sec at constant temp.)	°/sec	°/sec	°/sec	°/sec	°/sec
	≤0.002°/sec	≤0.002°/sec	≤0.003°/sec	≤0.004°/sec	≤0.005°/sec
Long Term Bias Stability (1 Year)	°/hr	°/hr	°/hr	°/hr	°/hr
	7°/hr	8°/hr	10°/hr	14°/hr	18°/hr
G-Sensitivity 2σ	≤0.005°/sec/g	≤0.01°/sec/g	≤0.02°/sec/g	≤0.04°/sec/g	≤0.08°/sec/g
Axis Alignment (Typical)	<4mrad				
Start-Up Time	<0.05 sec				
Bandwidth (-3 dB)	140 Hz				
Non-Linearity (of Full Range)	≤0.5%				
Threshold/Resolution	≤0.002°/sec	≤0.002°/sec	≤0.002°/sec	≤0.0025°/sec	≤0.003°/sec
Output Noise (Typical)	0.005°/sec/√Hz	0.0055°/sec/√Hz	0.006°/sec/√Hz	0.008°/sec/√Hz	0.01°/sec/√Hz
MTBF	81,000 hrs (per MIL-STD-217F, Notice 2 based on AIC environment with ambient temperature at 40°C)				
Environments					
Operating Temperature	-40°C to +85°C				
Storage Temperature	-55°C to +100°C				
Vibration Operating	6 gRMS (20Hz to 2KHz)				
Shock	500g, any axis 30msec 1/2 sine				
Weight	< 34 grams				

Specification subject to change without notice



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