

G50Z Gyro "LN Series"

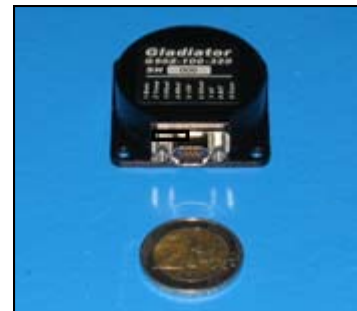


- **G50Z "LN Series" Low Noise MEMS Single Axis Gyro**
- **Low Noise** $0.005^\circ/\text{sec}/\sqrt{\text{Hz}}$ Typical
- **Short Term Bias** $\leq 0.002^\circ/\text{sec}$ 1σ
- **Bias Over Temperature** $\leq 0.05^\circ/\text{sec}$ 1σ
- **G-Sensitivity** $\leq 0.005^\circ/\text{sec}/g$ Typical
- **Axis 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 hours (MIL-STD-217F)

Low Noise, G-Sensitivity and Bias Over Temperature

Export Classification: Commerce ECCN7A994

The new G50Z "LN Series" Gyro is our standard performance model featuring low noise of $0.005^\circ/\text{sec}/\sqrt{\text{Hz}}$, bandwidth of 140 Hz, industry leading short term bias $0.002^\circ/\text{sec}$ and bias over temperature $0.05^\circ/\text{sec}$ with excellent environmental sealing and MILSPEC connector. Designed for commercial stabilization and aircraft applications, the gyro has a voltage output with the standard -3XX unit outputting $+2.5\text{V} \pm 2.2\text{V}$ and the -4XX model offering a bipolar "VSG" compatible signal outputting balanced $0\text{V} \pm 5\text{V}$. The signature features of the G50Z "LN Series" are very low $0.005^\circ/\text{sec}/\sqrt{\text{Hz}}$ noise, short term bias of $0.002^\circ/\text{sec}$ as well as impressive bias over temperature performance, low power consumption, light weight, as well as excellent g-sensitivity and misalignment. The unit offers rugged durability and can withstand environmental vibration and shock typically associated with commercial aerospace requirements. The unit has no inherent wear-out modes for long life and the rate output is also free from bias steps. The gyro is designed for automotive testing, commercial aircraft applications, platform and antenna stabilization and pointing, general aviation and laboratory use. The G50Z "LN Series" is ideal where low noise, excellent bias over temperature performance, low power consumption, low g-sensitivity, light weight and rugged durability are desired for commercial environments and applications. Thermal model available - consult factory.



QMS

AS9100 Rev B &
ISO 9001:2000
Cert# FM 509639



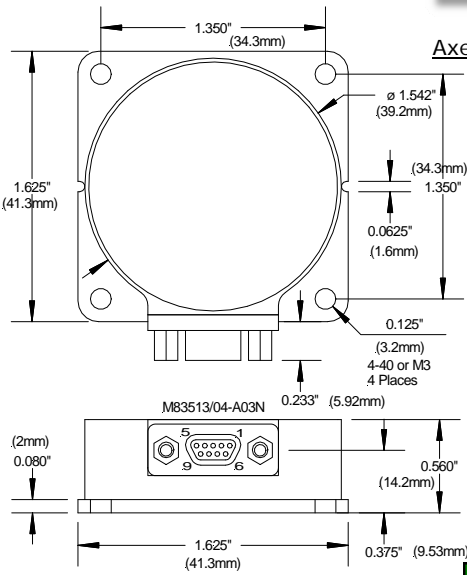
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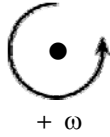
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G50Z Gyro "LN Series"



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

Pin No.	-3XX Assignment
1	Gyro Rate Output Voltage +2.5V <i>Nominal</i> *
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 No.	-4XX Assignment (VSG Signal)
1	Gyro Rate Output Voltage 0V <i>Nominal</i> *
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 (<i>Nominal</i>) -320	+2.5V ±2.2V DC				
Full Scale Output (<i>Nominal</i>) -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
	°/hr	°/hr	°/hr	°/hr	°/hr
	7°/hr	8°/hr	10°/hr	14°/hr	18°/hr
Long Term Bias Stability (1 Year)	°/sec	°/sec	°/sec	°/sec	°/sec
	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.1°/sec	≤0.2°/sec
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 (<i>Typical</i>)	<4mrad				
Start-Up Time	<0.05 sec				
Bandwidth (-3 dB)	140 Hz				
Non-Linearity (<i>of Full Range</i>)	≤0.5%				
Threshold/Resolution	≤0.002°/sec	≤0.002°/sec	≤0.002°/sec	≤0.0025°/sec	≤0.003°/sec
Output Noise (<i>Typical</i>)	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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