

# SENOFEE

ITEM NO: FOG160M



## Single Axis Gyroscope Fiber

Email: [info@senofee.com](mailto:info@senofee.com) / <http://www.senofee.com>

## General Description

As a new type of all-solid-state gyroscope, fiber optic gyroscope has the advantages of fast start-up, wide measurement range and high reliability. FOG160M The single-axis low- and medium-precision fiber optic gyroscope can be used in land positioning and orientation, vehicle north finder, airborne attitude, marine gyro compass, etc. Application requirements of medium and high precision inertial navigation system. This manual is only applicable to FOG160M products, including performance indicators, technical conditions, overall dimensions and installation and use. Among them, the technical conditions include the environmental range, electrical performance, and physical characteristics of the product.

## Specifications

Zero bias stability:  $\leq 0.2/0.05^\circ/\text{hr}(1\sigma)$

Measuring axis: Single-axis

Power supply voltage range: 9-35v

Anti-vibration performance:  $>2000g$

Store temperature :  $-55^\circ\text{C}\sim+100^\circ\text{C}$

Zero temperature drift ( $-40^\circ\text{C} \sim 85^\circ\text{C}$ ):  $\pm 0.005^\circ$

Random walk coefficient:  $\leq 0.02^\circ/\text{hr}$

Measuring range:  $\pm 500^\circ/\text{s}$

Output signal: RS422 output

Wide temperature working:  $-40^\circ\text{C} \sim +85^\circ\text{C}$

## Applications

1: Motion attitude control

3: Servo tracking

5: Automatic cargo truck

7: Oil drilling

9: Drone

11: Airborne attitude

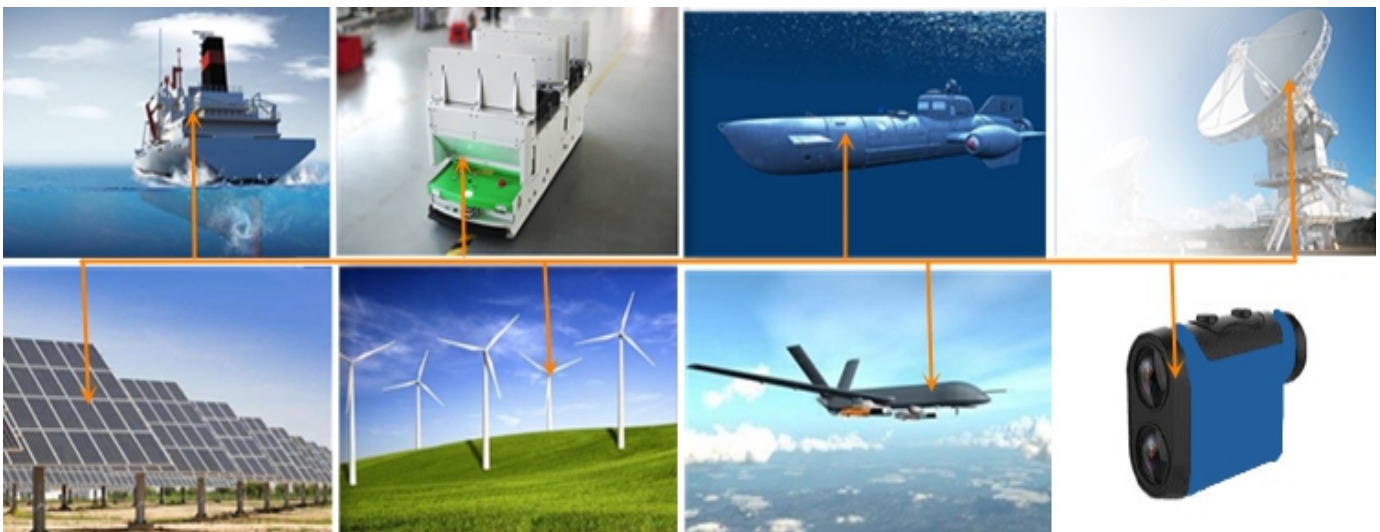
2: Damping of high speed train swing

4: Robot balance

6: Locking of the aiming system

8: Monitoring structural deformation

10: Building monitoring



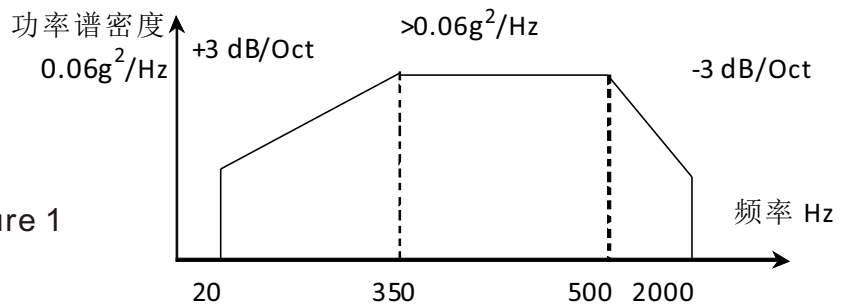
## Performance Specification

Measuring range	$\pm 400^\circ/\text{s}$	$\pm 400^\circ/\text{s}$
Zero bias stability	$\leq 0.20^\circ/\text{hr}(1\sigma, 10\text{s})$	2h continuous test, 10s smooth result
Zero Bias repeatability	$\leq 0.20^\circ/\text{hr}(1\sigma)$	6 test data calculation results
Random walk coefficient	$\leq 0.01^\circ/\text{hr}$	$\leq 0.01^\circ/\text{hr}$
Total temperature scale factor repeatability	$\leq 600\text{ ppm}(1\sigma)$	$-40^\circ\text{C} \sim +60^\circ\text{C}$
Scale factor nonlinearity	$\leq 50\text{ ppm}(1\sigma)$	Room temperature
Scalefactor asymmetry	$\leq 50\text{ ppm}(1\sigma)$	Room temperature
Full temperature offset repeatability	$\leq 0.3^\circ/\text{hr}$	$-40^\circ\text{C} \sim +60^\circ\text{C}$
Magnetic field sensitivity	$\leq 0.30^\circ/\text{hr}(1\sigma, 10\text{s})$	$-40^\circ\text{C} \sim +60^\circ\text{C}$
Vibration conditions	4.2g, 20Hz ~ 2000Hz	
Start time	1S	
Working temperature	$-40^\circ\text{C} \sim +70^\circ\text{C}$	
Storage temperature	$-50^\circ\text{C} \sim +70^\circ\text{C}$	
Connector	J30J-9ZKP	
OutPut mode	RS422	

## Sinusoidal sweep vibration

The gyroscope is fixed on the vibrating table through tooling according to the vibration direction, and the gyroscope performs sinusoidal scanning in 3 directions, corresponding to the X-axis, Y-axis, and Z-axis directions. Vibration step: add excitation to the vibrating table, power up the gyroscope, warm up for a certain period of time (gyro-start time), test the gyroscope output value, about 5min; perform sinusoidal vibration. Vibration conditions: 20Hz-2000Hz, scan time 5min, amplitude 4.2g. During the vibration, record the gyroscope output.

Random vibration  
 Vibration frequency: 20Hz~2000Hz  
 Vibration time: 5min for each axis  
 Vibration direction: X, Y, Z axis  
 Vibration spectrum: see attached picture 1



picture 1

Indicator requirements:

The fiber optic gyroscope has no resonance in the sine frequency sweeping range of 20HZ ~ 2000Hz;

Random vibration: the absolute value of the zero offset value in the vibration and the average value of the front and back zero offsets must be less than 0.5°/h.

## Impact test conditions

Peak acceleration (g)	30
Duration (ms)	10
Number of impacts	3 times in each direction
Waveform	Half sine wave
Direction	X、Y、Z
Note: The interval between two impacts is not less than 1.5s	

During the impact, the product is in the energized state, and the product should be able to work normally after completing the mechanical impact. The zero change value before and after the impact is less than 0.3°/h.

## Definition of output interfaces

J30J-9ZKP	Definition	Remark
1	power supply +5V	Main circuit board power supply
2	GND	
3	power supply -5V	
4	VI (+5V)	Light source board power supply
5	GND (地)	
6	T+	Gyro sending 422T+
7	T-	Gyro sending 422T-
8	R+	Gyro sending 422R+
9	R-	Gyro sending 422R-

# SENOFEE

ITEM NO: FOG160M

## **Single Axis Gyroscope Fiber**

Email: [info@senofee.com](mailto:info@senofee.com) / <http://www.senofee.com>