

# SENOFEE

ITEM NO: FOG120



## Single Axis Gyroscope Fiber

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## 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. The FOG120B single-axis medium and high precision fiber optic gyroscope can be applied to land positioning and orientation, vehicle north finder, airborne attitude, ship Application requirements for high-precision inertial navigation systems such as gyro compasses. This manual is only applicable to FOG120B products, including performance indicators, technical conditions, overall dimensions and installation use. Among them, the technical conditions include the environmental range, electrical performance, and physical characteristics of the product.

## Specifications

Zero bias stability:  $\leq 0.01/0.006^\circ/\text{hr}(1\sigma)$

Measuring axis: Single-axis

Output signal: RS422 output

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

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

Random walk coefficient:  $\leq 0.005^\circ/\sqrt{\text{hr}}$

## 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

	A	B	C
Zero bias stability	$\leq 0.01^{\circ}/\text{hr}(1\sigma, 10\text{s})$	$\leq 0.007^{\circ}/\text{hr}(1\sigma, 10\text{s})$	$\leq 0.006^{\circ}/\text{hr}(1\sigma, 10\text{s})$
Zero Bias repeatability	$\leq 0.004^{\circ}/\text{hr}(1\sigma, 10\text{s})$	$\leq 0.003^{\circ}/\text{hr}(1\sigma, 10\text{s})$	$\leq 0.002^{\circ}/\text{hr}(1\sigma, 10\text{s})$
Random walk coefficient	$\leq 0.002^{\circ}/\sqrt{\text{hr}}$	$\leq 0.001^{\circ}/\sqrt{\text{hr}}$	$\leq 0.001^{\circ}/\sqrt{\text{hr}}$
Total temperature scale factor repeatability	$\leq 100 \text{ ppm}(1\sigma)$	$\leq 100 \text{ ppm}(1\sigma)$	$\leq 50 \text{ ppm}(1\sigma)$
Scale factor nonlinearity	$\leq 10 \text{ ppm}(1\sigma)$	$\leq 10 \text{ ppm}(1\sigma)$	$\leq 10 \text{ ppm}(1\sigma)$
Scalefactor asymmetry	$\leq 10 \text{ ppm}(1\sigma)$	$\leq 10 \text{ ppm}(1\sigma)$	$\leq 10 \text{ ppm}(1\sigma)$
Full temperature offset repeatability	$\leq 0.05^{\circ}/\sqrt{\text{hr}}$	$\leq 0.05^{\circ}/\sqrt{\text{hr}}$	$\leq 0.03^{\circ}/\sqrt{\text{hr}}$
Magnetic field sensitivity	$\leq 0.02^{\circ}/\text{hr/Gs}$		
Vibration conditions	4.2g, 20Hz ~ 2000Hz		
Dynamic Range	$\pm 500^{\circ}/\text{s}$		
Working temperature	$-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$		
Storage temperature	$-50^{\circ}\text{C} \sim +70^{\circ}\text{C}$		
Connector	J30-15ZK		
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.

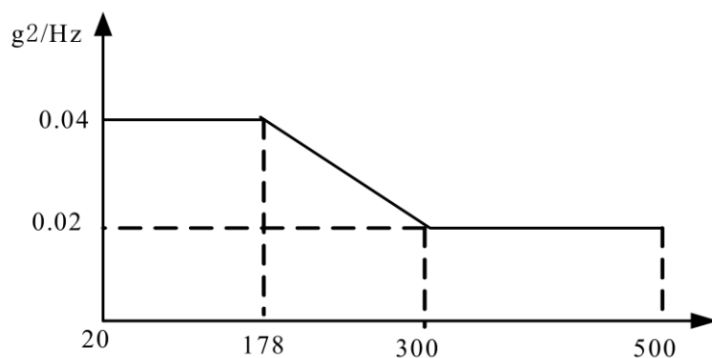
Random vibration

Vibration frequency: 20Hz~2000Hz

Vibration time: 15min 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 0.05°/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

Node number	Definition	Remark	colour
1	T+	X gyroscope output signal+	Yellow
2	T-	X gyroscope output signal-	Orange
3	R+	R gyroscope output signal+	Blue
4	R-	R gyroscope output signal-	Green
5、 13	+5V	+5V power input	Red
6、 7	$\pm 5V$ GND	GND	Black

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