SENOFEE

ITEM NO: IMU390

Three Axis Gyroscope Fiber

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IMU390 Three Axis Gyroscope Fiber

General Description

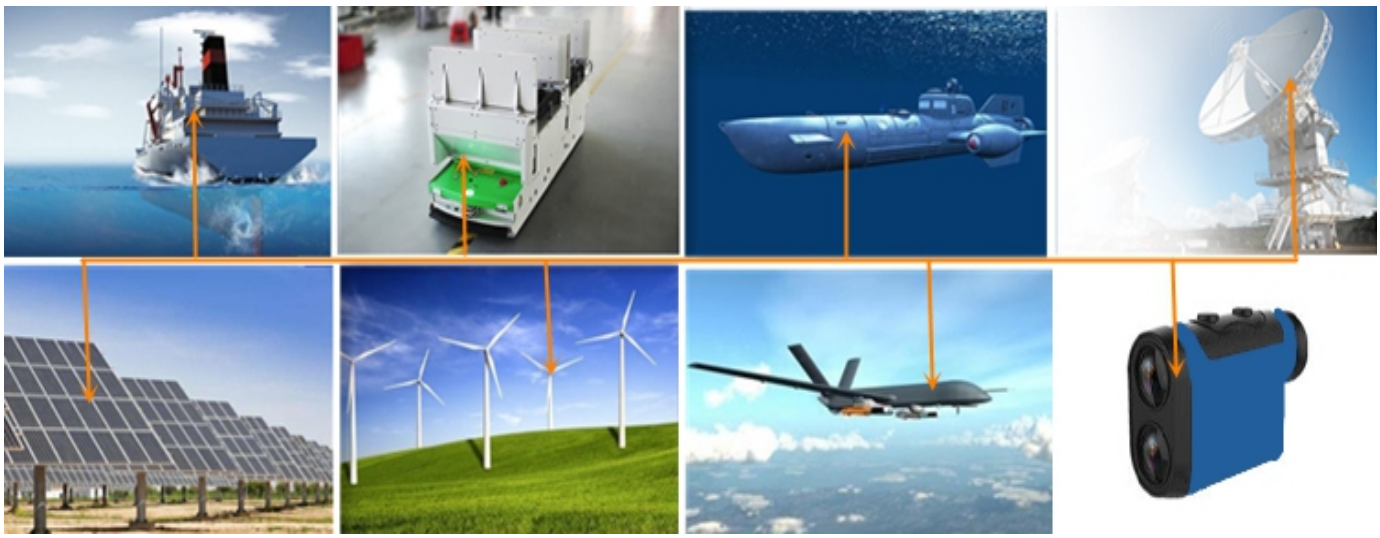
The optical fiber inertial measurement unit is a research and development system for navigation guidance, attitude measurement and control of small missiles and guided bombs.The inertial product manufactured by the company consists of three all-solid-state fiber optic gyroscopes, three quartz accelerometers, and a data package board. The measurement loadThe angular velocity and linear acceleration of the body motion provide information for the attitude and navigation control of the carrier, and the measurement results are passed through the RS422 serial portOutput.This manual is only applicable to IMU390 products, including performance indicators, technical conditions, dimensions and safetyInstall and use. Among them, the technical conditions include the environmental range, electrical performance, and physical characteristics of the product.

Specifications

Zero bias stability:≤0.01/0.006°/hr(1σ)
Measuring axis: Single-axis
Output signal:RS422 output
Store temperature : -55°C~+100°C
Measuring range: ±500°/s
Random walk coefficient:≤0.005°/$\sqrt{hr}$

Applications

1:Motionattitude control
2:Damping of high speed train swing
3: Servo tracking
4: Robot balance
5: Automatic cargo truck
6: Locking of the aiming system
7: Oil drilling
8: Monitoring structural deformation
9:Drone
10:Building monitoring
11.Airborne attitude



Performance Specification

	F380H	F390L
Zero bias stability	≤0.1°/hr(1σ,10s)	≤0.2°hr(1σ,10s)
Room temperature bias repeatability	≤01°/hr(1σ,10s)	≤0.2°/hr(1σ,10s)
Room temperature scale factor repeatability	≤20 ppm(1σ)	≤50ppm(1σ)
Scale factor nonlinearity	≤30 ppm(1σ)	≤50 ppm(1σ)
Scalefactor asymmetry	≤20 ppm(1σ)	≤50 ppm(1σ)
Threshold	≤0.2°/ h	
Angular rate range	-500 ~ +500 °/s	
Bandwidth	≥200HZ	
Working temperature	-40℃ ~ +65℃	

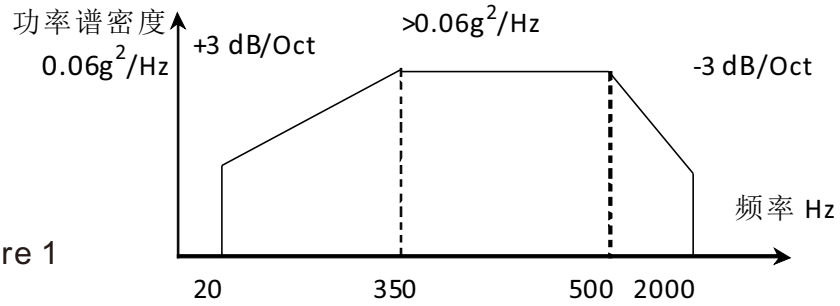
Performance Specification

No	Item	Technical Parameters
1	Range (g)	≥±30
2	Scale factor temperature coefficient (ppm/℃)	≤100
3	Monthly stability of scale factor (ppm))	≤100
4	Bias (mg)	≤±7
5	Partial temperature coefficient (μg /℃)	≤100
6	stability of partial value ((μg))	≤100
7	Second-order nonlinear coefficient (μg /g2)	≤100
8	Installation angle (")	≤200
9	Appearance	No scratches, cracks, rust

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 1°/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-15ZK	Definition	Remark	
1、2	+5V	Gyro power supply	
3、4	±5V（地）		
5、6	-5V		
7	+15V	Plus meter power supply	
8	±15V（地）		
9	-15V		
10	T1+	Send +	400HZ Inertial output
11	T1-	Send-	
12	T2+	Send+	4KHZ Gyro output
13	T2-	Send-	
14	T3+	Send+	4KHZ Add table output
15	T3-	Send-	

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