

PRODUCT SPECIFICATION



PRODUCT TYPE: G-F98H

**PRODUCT DESCRIPTION: MEDIUM AND HIGH PRECISION
FIBER OPTIC GYROSCOPE**



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1 Introduction

As a new type of all-solid state gyro, fiber optic gyroscope has the advantages of fast start, wide measurement range and high reliability. G-F98H uniaxial medium and high precision fiber optic gyroscope can be applied to the application requirements of high precision inertial navigation system, such as land positioning orientation, vehicle north finding instrument, airborne navigation posture and Marine gyro.

1.1 Applied range

The specification is only applicable to G-F98H type products, including performance indicators, technical conditions, external dimensions and installation and use. Among them, the technical conditions include the environmental range, electrical performance and physical characteristics of the product.

1.2 Main parameter

1.2.1 Main performance index of the fiber-optic gyroscope:

Table 1. Main performance indicators of the products

	G-F98H-A	G-F98H-B	G-F98H-C	Unit
Zero bias stability	≤0.015	≤0.015	≤0.010	°/hr(1σ,10s)
Stabilization time	<10	<10	<10	s
Zero bias repeatability	≤0.015	≤0.015	≤0.010	° /hr(1σ)
Full-temperature zero-bias repeatability	≤0.05	≤0.05	≤0.03	°/hr
Random walk coefficient	≤0.002	≤0.001	≤0.001	°/√hr
The Scale factor of Nonlinearity	≤10	≤10	≤10	ppm (1σ)
The Scale factor of Repeatability	≤20	≤10	≤10	ppm (1σ)
Full-temperature scale factor	≤200	≤50	≤50	ppm

repeatability			
Dynamic range	±500		°/s
Magnetic field sensitivity	≤0.02		°/hr/Gs
Working temperature	-40~+70		°C
Storage temperature	-50~+70		°C

1.2.2 Mechanical test

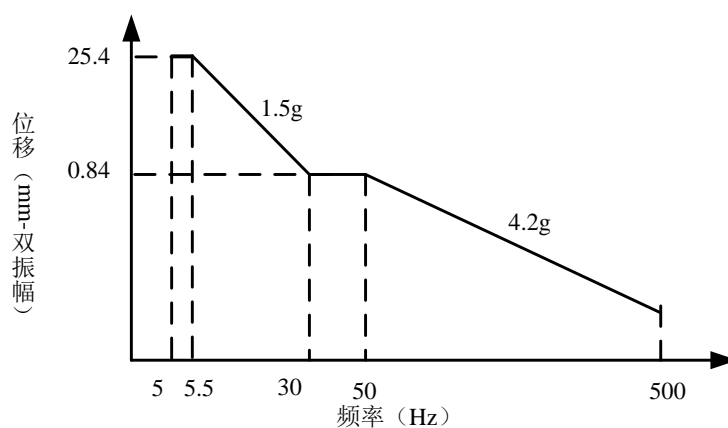
1) The vibration condition are as follows, and the vibration map is shown in Figure 1.

frequency of oscillation: 5Hz~500Hz~5Hz;

Vibration time: 15min of each axis;

Vibration direction: X, Y and Z three directions;

Vibration spectrum: as shown in Figure 1.



Graph 1.1 Sweep frequency vibration spectrum

2) Random vibration of vehicle use

frequency of oscillation: 20Hz~500Hz;

Vibration time: 15min per axis;

Vibration direction: X, Y and Z three directions;

Vibration spectrum: as shown in Figure 1.



Graph 1.2 Random vibration spectrum for vehicles

3) Impact and vibration

Impact conditions:

20g, 11ms half sinusoid, impacted 3 times in 1 second in either direction X, Y, and Z

2. Communication protocol

2.1 RS-422 mode (bi-directional)

- 1) Two-way serial port communication complies with RS-422 interface standard;
- 2) External trigger signal, 10 ~ 2000 HZ square wave;
- 3) The gyro effective data is 32 bits;
- 4) The temperature valid data is 14 bits;
- 5) The data transmission wave rate is 460.8kbps;
- 6) Data format:
 - a) Data transmission format: each frame is 11 data, including: the first bit is the start bit (0), the second to ninth bit is the data bit, the tenth bit is the parity bit, and the 11th bit is the stop bit;
 - b) Verification method: even calibration;
 - c) Effective data of gyro is 32 (highest is symbol bit, 0 is "+", 1 is "-"), temperature effective

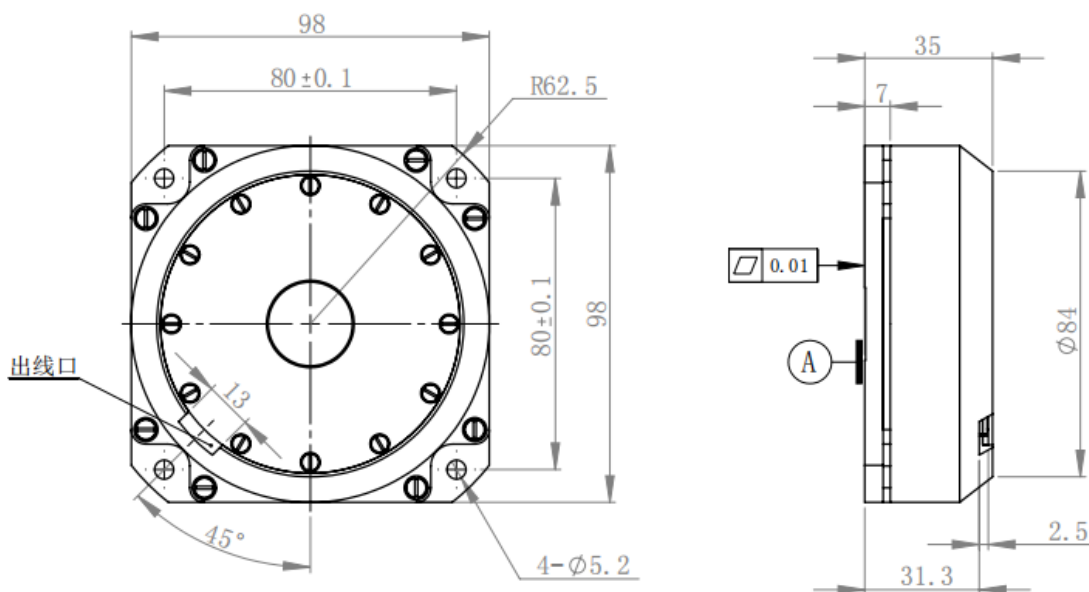
data bit is 14 (highest is symbol bit, 0 is "+", 1 is "-");

- d) Packet format: each transmission includes 10 bytes, Byte 1 is the frame head (80H); Second byte is the first byte of gyro data (low byte); The third byte is the second byte of the gyro data; The fourth byte is the third byte of the gyro data; The fifth byte is the fourth byte of the gyro data; The sixth byte is the fifth byte of the gyro data (high byte); The 7th byte is the check bit, The XOR value of the first 5 bytes (gyro data) in the data packet; byte 8 is low byte of temperature data; The 9th byte is the high byte of the temperature data; The 10th bit is the check bit, The XOR value of the first 8 bytes (gyro data) in the data packet;
- e) Method of data storage.

	high-order				low-order			
Bytes 1 (frame head):	1	0	0	0	0	0	0	0
Bytes 2:	0	D6	D5	D4	D3	D2	D1	D0
Bytes 3:	0	D13	D12	D11	D10	D9	D8	D7
Bytes 4:	0	D20	D19	D18	D17	D16	D15	D14
Bytes 5:	0	D27	D26	D25	D24	D23	D22	D21
Bytes 6:	0	0	0	0	D31	D30	D29	D28
Bytes 7:	0	X	X	X	X	X	X	X
Bytes 8:	0	T6	T5	T4	T3	T2	T1	T0
Bytes 9:	0	T13	T12	T11	T10	T9	T8	T7

Bytes 10:

0	X	X	X	X	X	X	X
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Graph 2 Outline dimensions of G-F98H

J30-15 ZK socket, the connector is defined in Table 2.

Table 2. Electrical characteristics of the gyro output socket

Connect the point number	Connection definition	Tab	Color
1	Serial port T+	TX+	Yellow
2	Serial port T-	TX-	Orange
3	Serial port R+	RX+	Blue
4	Serial port R-	RX-	Green
5、13	Power source +5V	+5V	Red
6、7	Power ground	GND	Black