BS-FU28-XX Fiber Optic Gyro

Product Specification

1 General

The BS-FU28 high precision fiber optic gyroscope is structurally packaged with an optical system and a circuit system, which is stable and reliable in performance and simple and convenient in installation. Users only need to provide power supply and receive output data of the gyroscope through a plug. The product can be used in navigation guidance, attitude measurement and other fields.

The appearance of BS-FU28 fiber optic gyroscope is shown in Figure 1.

Figure 1 Appearance of BS-FU28 Fiber Optic Gyroscope

2 Performance index

BS-FU28 gyroscope series is mainly divided into BS-FU28A-5-D1EC, BS-FU28B-5-D1EC, BS-FU28C-5-D1EC and BS-FU28D-5-D1EC. The main performance indexes are shown in Table 1.

Table 1 Performance Index of BS-FU28 Fiber Optic Gyro

Serial number	Parameter	Unit	Technical requirements			
			BS-FU28A	BS-FU28B	BS-FU28C	BS-FU28D
1	Zero bias	°/h	≤0.2	≤0.5	≤0.8	≤1
2	Bias stability (1σ, 10s)	°/h	≤0.008	≤0.02	≤0.05	≤0.08
3	Bias repeatability (1 σ, 10 s)	°/h	≤0.008	≤0.02	≤0.05	≤0.08

4	Bias stability at full temperature (1σ, 10s)	°/h	≤0.03	≤0.060	≤0.150	≤0.200
5	Zero bias variation at full temperature	°/h	≤0.1	≤0.18	≤0.50	≤0.60
6	Change of zero position in vibration	°/h	≤0.03	≤0.06	≤0.10	≤0.20
7	Random walk coefficient	°/h1/2	≤0.001	≤0.002	≤0.005	≤0.008
8	Scale factor nonlinearity	ppm	≤20	≤30	≤40	≤50
9	Scale factor asymmetry	ppm	≤20	≤30	≤40	≤50
10	Scale factor repeatability	ppm	≤20	≤30	≤40	≤50
11	Measuring range	°/s	-500~+500	-500~+500	-500~+500	-500~+500
12	Bandwidth	Hz	200	200	200	200
13	Steady-state power consumption	W	≤5.0	≤5.0	≤5.0	≤5.0
14	Insulation resistance	MΩ	＞100	＞100	＞100	＞100
15	Operating temperature	℃	-45~+70	-45~+70	-45~+70	-45~+70
16	Storage temperature	℃	-50~+75	-50~+75	-50~+75	-50~+75

3 Mechanical and electrical interface

The main mechanical and electrical structure of BS-FU28 fiber optic gyroscope is shown in Table 2, and the structure outline is shown in Figure 2.

Table 2 Mechanical and electrical interfaces of BS-FU28 fiber optic gyroscope

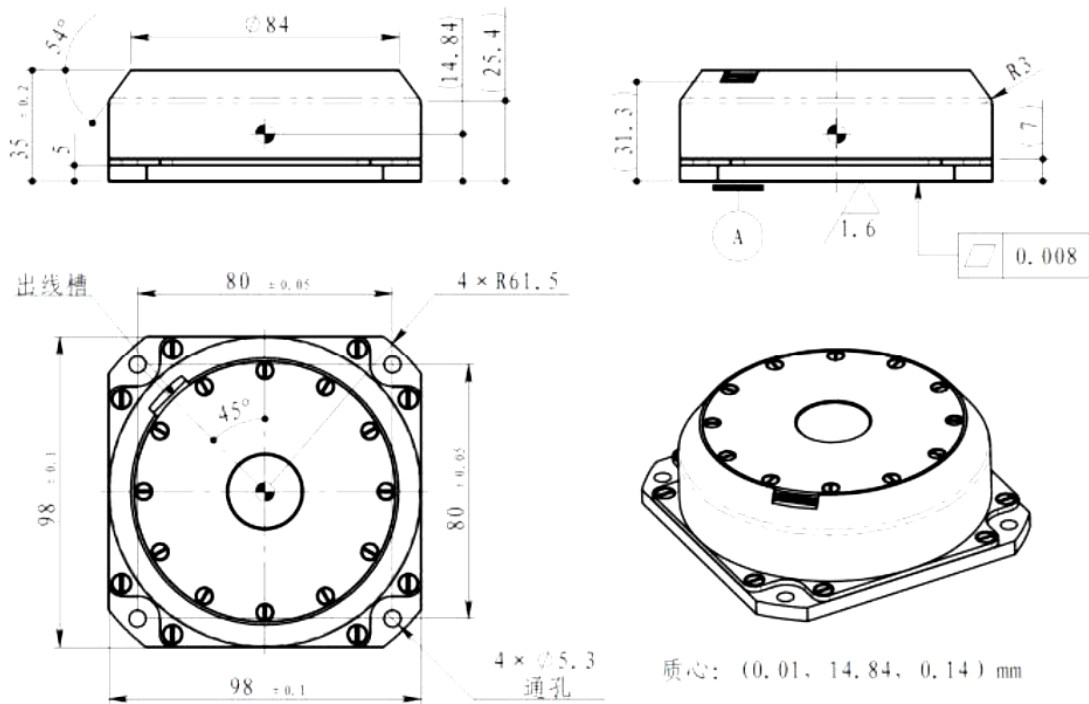| Overall dimensions	98mm×98mm×35mm
Weight	≤570g
Mounting hole pitch	80mm×80mm
Install the screws	M5
Power supply	± 5V DC (power supply accuracy ± 5%, ripple less than 50 mV)
Output interface	Comply with RS-422 interface standard;

Figure 2 Outline and Installation Dimensions of BS-FU28 Fiber Optic Gyroscope

4 Electrical interfaces

4.1 Power Requirements

See Table 3 for the main technical specifications of BS-FU28 fog power supply. Table 3 Power Supply Requirements for Fiber Optic Gyroscope

Parameter	Technical requirements	Remark
Supply current (A)	+ 5V: current ≥ 0.8 A	Impulse current ≥ 1 A
	-5V: current ≥ 0.2A	
Supply voltage (V)	±5(±5%)	
Power Ripple (MV)	≤50	Vpp

4.2 Interface definition

J30-21 ZK plug shall be used for the electrical connection between the gyroscope and the external. The outgoing cable shall be no less than 250 mm and shall be covered with a protective hose. See Table 4 for the definition of the interface.

Table 4 Requirements for External Electrical Connection of Gyro (J30-21ZK)

Contact number	Name	Code name	Source	Where to
8 、 10	+ 5V power supply	+5V	Power supply	Peg-top
6 、 7	± 5V power ground	GND	Power supply	Peg-top
13 、 14	-5V power supply	-5V	Power supply	Peg-top

16	RS422 communication +	T+	Peg-top	Upper computer
19	RS422 communication send-	-T	Peg-top	Upper computer
15	RS422 communication receiver +	R+	Upper computer	Peg-top
18	RS422 communication receive-	- R	Upper computer	Peg-top

4.3 Communication protocol

1) Gyroscope signal output adopts digital signal output, and the communication protocol is as follows:

2) Serial communication, conforming to RS-422 interface standard;

3) External trigger signal: after the falling edge of the external trigger signal (400Hz square wave) is detected by the gyroscope, the data is latched, and all data is sent and transmitted within 2.5ms after the falling edge, with a corresponding update rate of 2.5ms;

4) Data output baud rate is 115.2k bps;

5) Data transmission format: the data transmitted in each byte is 11 bits, the first bit is the start bit (0), the second to ninth bits are data bits, the tenth bit is the even parity bit, and the eleventh bit is a stop bit;

6) Verification mode: even verification;

7) The effective data of gyroscope is 32 bits (the most significant bit is the sign bit, 0 is "+", 1 is "-"), and the effective data of temperature is 14 bits (the most significant bit is the sign bit, 0 is "+", 1 is "-");

8) Data packet format: each transmission includes 10 bytes, the first byte is the frame header (80 H), and the second byte is the first byte of gyro data (low byte); The third byte is the second byte data of the top, the fourth byte is the third byte data of the top, the fifth byte is the fourth byte data of a top, and the sixth byte is a fifth byte data (high byte) of a top; The 7th byte is the check bit, which is the Xor value of the first five bytes (gyro data) in the data packet; No

Byte 8 is the low byte of temperature data; The 9th byte is the high byte of temperature data; The 10th byte is the check bit, which is the Xor value of 2 to 9 bytes in the data packet.

9) Data storage method is shown in Table 5:

Table 5 Data storage method

	High position							Low position
1	1	0	0	0	0	0	0	0
2	0	D6	D5	D4	D3	D2	D1	D0
3	0	D13	D12	D11	D10	D9	D8	D7
4	0	D20	D19	D18	D17	D16	D15	D14
5	0	D27	D26	D25	D24	D23	D22	D21
6	0	0	0	0	D31	D30	D29	D28
7	0	X	X	X	X	X	X	X
8	0	T6	T5	T4	T3	T2	T1	T0
9	0	T13	T12	T11	T10	T9	T8	T7
10	0	X	X	X	X	X	X	X