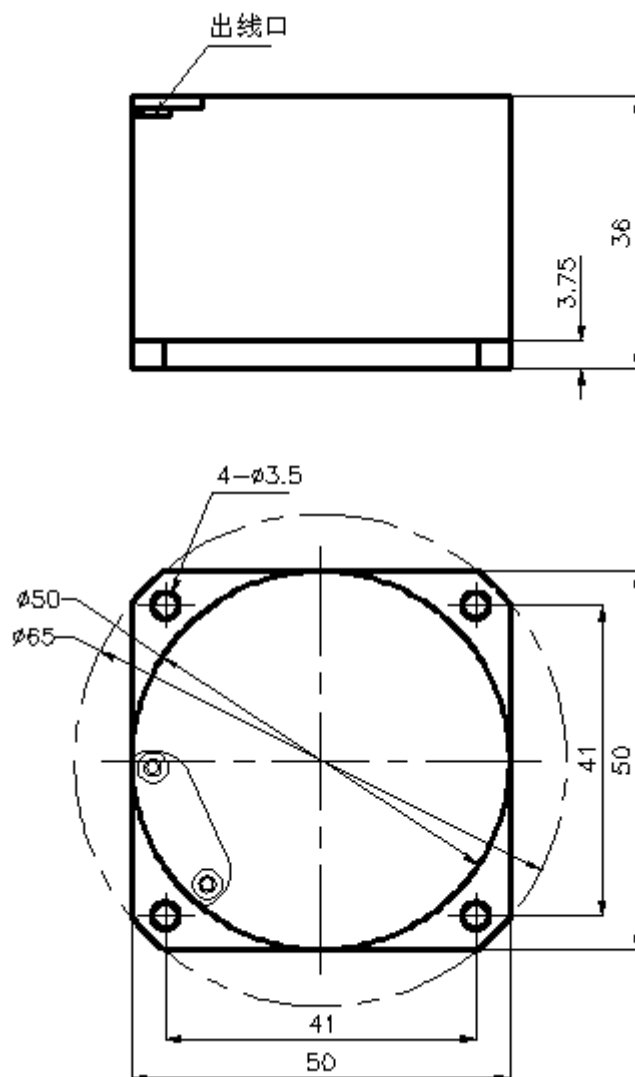


Technical Description of BS-FU50 Single-axis Fiber Optic Gyroscope



1. Overall dimension:



Overall dimension: (unit: mm)

Φ50 X 36 (OD X H)

Mounting face 50 X 50mm

Installation dimensions : 41 X 41, 4 M3 screws

Weight : 220±30g

ORDER CODE

BS-FU50A-300-D1EW

BS-FU50B-300-D1EW

***A and B series differ according to Performance index below**

2. Performance index:

2.1 Scale factor

Non-linearity of scale factor at room temperature: < 100 ppm
Normal temperature scale factor repeatability: < 100 ppm (1 σ).

2.2 Zero-bias stability

Zero-bias stability at room temperature:

BS-FU50A: < 0.1 °/H (1 σ) 10s smooth 1H test result

BS-FU50B: < 0.2 °/H (1 σ) 10s smooth 1H test result

2.3 Zero-bias repeatability

Normal-temperature zero-bias repeatability:

BS-FU50A: < 0.2 °/H (1 σ) 6 test data calculation

BS-FU50B: < 0.3 °/H (1 σ) 6 test data calculation

Full temperature operating range:

BS-FU50A: < 0.5 °/H (full temperature extreme difference)

BS-FU50B: < 0.6 °/H (full temperature limit difference)

2.4 Random walk

Less than $0.02^\circ / \sqrt{hr}$

2.5 Bandwidth

Greater than 200Hz

2.6 Initialization time

Less than 5S

2.7 Dynamic Range

$\pm 300^\circ/s$

3. Environmental adaptability:

3.1 Operating temperature

-45°C ~ +60°C

3.2 Storage temperature

-55°C ~ +75°C。

3.3 Impact

100g (11 ms), 3 times in a row, in three directions. Mean change of zero deviation before and after impact $\leq 0.5^\circ /H$.

3.4 Vibration

(A) Randomly swept spectral lines:

20~80Hz : 3dB/oct

80~350 Hz : 0.04 g^2 /Hz

350~2000Hz: -3dB/oct

(B) 3 minutes for each of the three directions, the gyroscope is in the working state during the vibration test, and the mean change of zero deviation before, during

and after the vibration is $\leq 0.5^\circ / H$.

4. Electrical interface:

4.1 Gyro socket model

Model of external interface socket of gyroscope: J30-15ZK, connecting line: 0.12 mm AFR line, line length: 250 mm.

4.2 Wiring definition table

Pin number	Definition	Explain	Remark
1, 9	T+	Serial port output RS422 +	
2, 10	T-	Serial port output RS422-	
4, 5	+5VA	Analog supply + 5V	
6, 7	AGND	Analog power ground	
8, 15	-5VA	Analog power supply -5V	
12, 13	VCC	Digital supply + 5/+ 3.3V	
11, 14	GND	Digital power ground	

Power requirements:

+ 5V A: + 5V \pm 5%, 0.4A (transient peak about 1.5A), ripple less than 50mV

-5V A: -5V \pm 5%, 100mA, ripple less than 50mV

VCC: + 5V \pm 10% or + 3.3 V \pm 10%,

Note: GND and AGND shall not be connected to the gyro housing.

5. Communication

When the standard RS-422 serial communication interface is used, the protocol can be adjusted as required.

Hardware interface: the baud rate is 614.4kbps. The communication format is 11 bits of data per frame, including 1start bit, 8 data bits, 1 even parity bit and 1stop bit. The data update period is 0.5ms.

Software communication protocol:

Gyro valid data is 32 bits (32-bit signed integer). The data packet transmits 7 bytes of data in total: the first byte is the frame header 80H; Bytes 2 to 6 are gyro data; The 7th byte is a check bit (the check bit is an exclusive or value of the data of the 2nd to 6th bytes).

Data format:

The first byte (frame header) is 80H:

1	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---

The second byte is gyro data D6 ~ D0:

0	D6	D5	D4	D3	D2	D1	D0
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The third byte is gyro data D13 to D7:

0	D13	D12	D11	D10	D9	D8	D7
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The fourth byte is gyro data D20 ~ D14:

0	D20	D19	D18	D17	D16	D15	D14
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The 5th byte is gyro data D27 ~ D21:

0	D27	D26	D25	D24	D23	D22	D21
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The 6th byte is gyro data D31 ~ D28:

0	0	0	0	D31	D30	D29	D28
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The 7th byte (check bit) is the exclusive or (XOR) of the 2nd to 6th bytes of data.

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