





MEMS Inertial Measurement Unit V 2.10.

BS-IU206



Product characteristics

-  Gyroscope measuring range: 500 ~ 2000 °/s optional
-  5 °/H gyroscope bias stability (Allan variance)
-  Acceleration range: 16g
-  0.2 mg acceleration bias stability (Allan variance)

Field of application

UAV Navigation Robot Navigation AUV Navigation

Various air carriers flight navigation land vehicle navigation ROV navigation



1. Product overview

The BS-IU206-Mx-D6EW is an inertial measurement unit (IMU) based on micromachining technology (MEMS) with built-in high-performance MEMS gyroscope and MEMS accelerometer, which outputs 3 angular velocities and 3 accelerations. The utility model has the advantages of high reliability and strong environmental adaptability. By matching different software, the product can be widely used in tactical and industrial UAV, smart ammunition, seeker and other fields.

2. Product features

1) Three-axis digital gyroscope:

- A) $\pm 500^\circ/s$ (Max: $2000^\circ/s$) dynamic measurement range;
- B) Zero bias stability: $20^\circ/H$ (GJB, 10s), $5^\circ/H$ (ALLAN);

2) Triaxial digital accelerometer:

- A) ± 16 G dynamic measuring range;
- B) Bias stability: 1mg (GJB, 10s), 0.2: mg (ALLAN);

3) High reliability: MTBF > 20000h;

4) Guaranteed accuracy within the full temperature range ($-40^\circ\text{C} \sim 80^\circ\text{C}$): built-in

high-performance temperature calibration and compensation algorithm;

5) Suitable for working under strong vibration conditions

6) Overload resistant up to 20000 G

7) Interface 1-way RS422

8) National production design

Product code:

BS-IU206-Mx-D6EW

BS - Blitz Sensor

M - multi-axial

x - gyro parameters:

5 - $\pm 500^\circ/s$

10 - $\pm 1000^\circ/s$

20 - $\pm 2000^\circ/s$

D6EW - digital output

six axis

Connected through wires

3. Product indicators

Parameter		Test conditions	Typical value			Unit	
Angular velocity	Range	Turntable	500	1000	2000	$^\circ/s$	
	Zero bias	Stability	10 s average, $+70^\circ\text{C}$,	20	30	40	$^\circ/h$
			Allan variance, $+20^\circ\text{C}$	5	7.5	10	$^\circ/h$
	Zero bias	Zero-bia	$-40^\circ\text{C} \sim +70^\circ\text{C}$,	0.04	0.06	0.08	$^\circ/s$
		Zero	Life-cycle change,	0.15	0.22	0.3	$^\circ/s$
	Scale factor	Non-line	$+20^\circ\text{C}$	200	300	400	ppm
				400	600	800	ppm
Full		$1^\circ\text{C}/\text{min}$, 1σ	300	4500	6000	ppm	

Parameter		Test conditions	Typical value			Unit	
	Acceleration		8	12	16	°/h/g	
	Resolution		0.02	0.03	0.04	°/s	
	Random walk		0.4	0.6	0.8	°/√hr	
	Noise density		0.00	0.012	0.01	°/s/√Hz	
	Bandwidth	3dB	200			Hz	
	Data delay	Excluding	5ms			ms	
Acceleration	Range		16			g	
	Zero bias	Stability	10 s average, + 70 °C,	1		mg	
			Allan variance, + 20 °C	0.2		mg	
		Zero-bia	-40 °C ~ + 70 °C,	1.6		mg	
		Zero	Life-cycle change,	5		mg	
	Scale factor	Non-line	+20°C	200		ppm	
		Full	After full temperature	400		ppm	
		Scale	Life-cycle change,	3000		ppm	
	Bandwidth		3dB	200			Hz
	Resolution			0.16			mg
	Data delay		Excluding	5ms			ms
Start time		Time from power-on	500			ms	
Reset time	Time from reset to		500			ms	
	Time from reset to		300			ms	
3 gyro axes and 3		+70°C、+20°C、-40°C	0.05			°	
Power supply			5±0.1			V	
Power consumption			0.8			W	
Communication update		1-way RS422	500			Hz	
Communication baud rate		1-way RS422	921.6 (Max.)			kbps	

4. Electrical interface

Color	Name	Type	Description
Red	5V	Power source	
Black	GND	Power source	
White	R+	Input	RS422
Brown	R-	Input	
Green	T-	Output	
Yellow	T+	Output	
Orange	Spare		
Blue	Spare		

5. Fabric interface

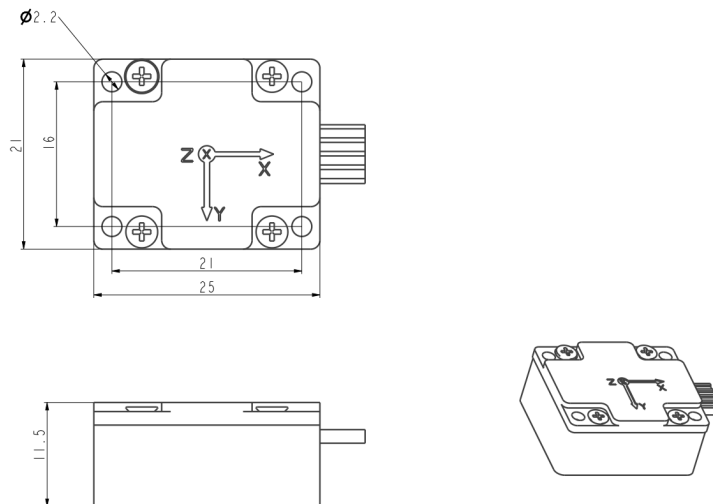


Fig. 1 Schematic diagram of structure outline

6. Instructions for use

6.1 UART read-write data

6.1.1 interface

Default configuration: 460800bps, 8 data bits, 1stop bit, no parity;

6.1.2 configuration commands

- 1) \$GPENB
Enable UART power-on automatic output
- 2) \$GPDIS
Close UART power-on automatic output

3) \$GPSEER

View the serial number

4) \$GPIINF

View configuration information

6.1.3 protocol format

A protocol head, a protocol body and a protocol tail; 500Hz; The coordinate axis is defined as front right down.

Agreeme	Byte	Data	Unit	Data	Remark
Protocol header	0	0x5a			
	1	0x5a			
Protocol body	2~5	X-axis	°/s	float	
	6~9	Y-axis	°/s	float	
	10~13	Z-axis	°/s	float	
	14~17	X-axis	g	float	
	18~21	Y-axis	g	float	
	22~25	Z-axis	g	float	
	26~29	Spare			
	30~33	Spare			
	34~37	Spare			
	38~41	Spare			
	42~45	Spare			
	46~49	Temperat	°C	float	
50~53	Spare				
54~57	Spare				
End of	58	Checksum			Accumulate and sum 2

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