Inertial Measurement Unit
IMU588
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IMU588 Precision 6DoF MEMS Inertial Measurement Unit

- Precision 6DoF MEMS Inertial Measurement Unit
- Range (Typical): Gyro ±450°/s, Accel ±16g (Z axis ±50g)
- Bias Instability (Allan): Gyro: 1°/h, Accel 30μg (±16g)
- Full Temperature Range Accuracy Assured
- High Bandwidth(Typical) : 200Hz
- UART and SPI, SPI Output Rate up to 2000Hz
- Compact & Light Weight 47×44×15mm, < 50g
- Working Temperature: -40~+85°C

Contact

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Product Categories

Brief Introduction

IMU588 Inertial Measurement Unit is a high performance tactical grade MEMS Inertial Measurement Unit, which MEMS gyroscope enjoys 1°/h (Allan) bias instability and MEMS accelerometer enjoys 30μg (Allan, ±16g range) bias instability, it adds another ± 50g (±100g optional) in Z axis, which increase the Z axis measurement range up to ± 50g (±100g), and it can output precise 3 axis outputs of angular rate and 3 axis acceleration data.

IMU588 Inertial Measurement Unit adopts latest MEMS technology and advanced MEMS components, and IMU588 has been produced in bulk, which reduces the cost deeply. IMU588 enjoys excellent measurement performance, small size, light weight, and high reliability and robustness, it can output precise measurement data in harsh environment, and it has been widely applied in rain-seeding rocket, target drone, unmanned aircraft, unmanned surface vessel, platform stabilization, etc.

Technical Specifications

Parameter	Test Condition	Min.	Typical	Max.	Unit
Gyroscopes					

Range①			±450		°/s
Bias Instability	Allan variance		0.6		°/h
	10s average(-40~+85°C, fixed temp.)		2		°/h
Bias Repeatability			1.8		°/h
Random Walk			0.08		°/√h
Bais	Bias change at full temp. range②		±0.03		°/s
	Bias change in vibration conditions③		6		°/h
Non-linearity			100		ppm
Bandwidth			200		Hz
Accelerometers(X/Y)					
Range①			±16		g
Bias Instability	Allan variance		30	45	ug
	10s average(-40~+85°C, fixed temp.)		60		ug
Bias Repeatability			60		ug
Random Walk			0.01		m/s/√h
Non-linearity			100		ppm
Bandwidth			200		Hz
Accelerometers(Z)					
Range④			±50/±100		g

Bias Instability	Allan variance		0.15		mg
	10s average(-40~+85°C, fixed temp.)		3		mg
Bias Repeatability			5		mg
Random Walk			0.1	0.2	m/s/√h
Non-linearity			200		ppm
Bandwidth			200		Hz
Magnetometer					
Dynamic Range		±2			Gauss
Resolution			120		uGauss
Noise RMS	10Hz		50		uGauss
Bandwidth			200		Hz
Barometer					
Pressure Range		450		1100	mbar
Resolution			0.1		mbar
Absolute Accuracy			1.5		mbar
Interface					
*UART*⑤					
Baud Rate			230400		bps
Output Rate			200		Hz
SPI					

Serial clock frequency				25	MHz
Output Rate			2000		Hz
Reliability					
MTBF	20000 h				
Continuous Working Time	120 h				
Electrical Features					
Supply Voltage	3.3 V				
Power Consumption	0.15 W				
Ripple Wave	100mV (P-P)				
Environment Conditions					
Operating Temperature	-40°C ~ 85°C				
Storage Temperature	-55°C ~ 105°C				
Vibration Resistance	20-2000Hz, 6.06g				
Shock Resistance	1000g, 0.5ms				
Physical Parameter					
Size	47 × 44 × 14 mm				
Weight	50grams				
Connector	2 × 12 pins				

NoA1:F60te:
①: The range of Gyroscopes and Accelerometers can be configured in our factory.
②: The bias value is calculated based on the whole temperature change period, the temperature changing rate<=2°C/minute, temperature range:-40~+85°C;
③: (before vibration average value +after vibration average value) /2-during vibration average value, the vibration conditions are 6.06g, 20~2000Hz
④: The Z-axis can be equipped with an accelerometer with a range of ±50g or ±100g in our factory.
⑤: The baud rate and output rate can be configured in our factory.

Typical Application

IMU588 Inertial Measurement Unit is a high performance 6DoF MEMS-based inertial sensors, which has been widely used in the following fields:

– Rain-Seeding Rocket

– Target Drones

– Unmanned Surface Vessel

– Unmanned Aircraft

Product Advantages

FAQ

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- Fiber Optic Gyro(/product-category/fiber-optic-gyro/)
- MEMS Accelerometer(/product-category/mems-accelerometer/)

- Tilt Sensor(/product-category/inclinometer/)
- Integrated Navigation System(/product-category/gnss-ins/)

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