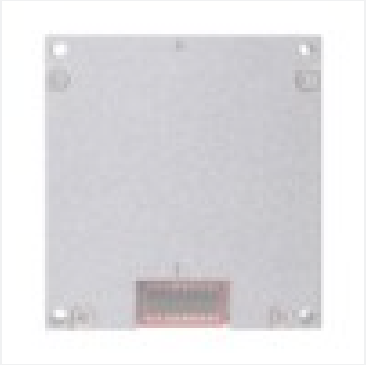

IMU488M High Performance 10DoF MEMS IMU

- Precision 10DoF MEMS IMU, Pin to Pin Replace ADIS16488
- Range (Typical): Gyro ±450°/s, Accel ±16g
- Bias Instability (Allan): Gyro: 1°/h, Accel 30μg
- Full Temperature Range Accuracy Assured
- High Bandwidth (Typical) : 200Hz
- UART and SPI, SPI Output Rate up to 2000Hz
- Compact & Light Weight 47×44×14mm, < 50g
- Working Temperature: -40~+85°C

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Brief Introduction

IMU488M 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) bias instability, and it can output precise 3 axis outputs of angular rate, 3 axis acceleration data, 3 axis magnetometer data, and barometer data, etc.

IMU488M Inertial Measurement Unit adopts latest MEMS technology and advanced MEMS components, and IMU488M has been produced in bulk, which reduces the cost deeply. IMU488M 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 tactical unmanned aerial vehicles, surface vehicle, platform stabilization, industrial robotics, etc.

IMU488M Inertial Measurement Unit

High Accuracy Gyro: 1°/h Acc: 30ug (Allan)

Compatible with ADIS16488

Competitive Price

World Class Quality

Service with Heart

SkyMEMS
穹 宇 测 控

Technical Specifications

Parameter	Test Condition	Min.	Typical	Max.	Unit
Gyroscopes					
Range①			±450		°/s
Bias Instability	Allan variance		1		°/h
	10s average(-40~+85°C, fixed temp.)	2	3	4	°/h
Bias Repeatability			2		°/h
Random Walk			0.1		°/√h
Bais	Bias change at full temp. range②		±0.04		°/s
	Bias change in vibration conditions③		6		°/h

Non-linearity			100		ppm
Bandwidth			200		Hz
Accelerometers					
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
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*④					
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
Note: 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 baud rate and output rate can be configured in our factory.	

Typical Application

IMU488M Inertial Measurement Unit is a high performance 10 DoF MEMS-based inertial sensors, which has been widely used in the following fields:

– Unmanned Aircraft

– Industrial Robotics

– Unmanned Surface Vessel

– Platform Stabilization

IMU488M Inertial Measurement Unit widely used in unmanned aircraft

Inertial Measurement Unit (also name as IMU), is an electronic device that measures and reports acceleration, orientation, angular rates, and other gravitational forces. It is composed of 3 accelerometers, 3 gyroscopes, and other sensors also can be optional.

UAV is unmanned aerial vehicle, commonly known as a drone, is an aircraft without a human pilot aboard. The flight of UAVs may operate with various degrees of autonomy: either under remote control by a human operator or autonomously by onboard computers.

IMU488M UAV IMU is a tactical-grade MEMS-based IMU (inertial measurement unit), it is ideal for a range of critical UAV applications, including flight control, antenna stabilization, and navigation, and is also an essential component for inertial navigation systems (INS).

IMU488M UAV IMU provides reliable performance with good accuracy in dynamic environment, it has been widely used in unmanned aircraft by the Chinese leading companies, now more than tens of thousands IMU488M IMU modules are used in the unamend aircraft.

IMU488M Inertial Measurement Unit widely used in Autonomous Vehicles

The typical IMU for autonomous vehicles use includes a three-axis accelerometer and three-axis rate sensor. The inertial measurement unit (IMU) is a device that directly measures a vehicle's three linear acceleration components and three rotational rate components (and thus its six degrees of freedom). An IMU is unique among the sensors typically found in an unmanned vehicle because an IMU needs no connection to or knowledge of the external world. This environment independence makes the IMU a core technology for both safety and sensor-fusion.

An accurate IMU can also determine and track attitude precisely. When driving, the direction or heading of the unmanned vehicle is as crucial as its position. Driving in a slightly wrong direction even briefly may put the unmanned vehicle in the wrong lane. Dynamic control of the unmanned vehicle requires sensors with dynamic response. An IMU does a nice job of tracking dynamic attitude and position changes accurately. Its fully environment-independent nature lets an IMU track position even in tricky scenarios such as slipping and skidding where tires lose traction.

IMU488M IMU modules provide reliable performance with good accuracy in dynamic environment, it has been widely used in autonomous vehicles by the Chinese leading companies, now more than hundreds of thousands IMU488M IMU modules are used in the autonomous vehicles.

Product Advantages

Why Selecting IMU488M Inertial Measurement Unit?

10DoF MEMS IMU Inertial Measurement Unit is designed and produced by SkyMEMS, it enjoys high performance and accuracy, and high reliability with competitive price, which can be compatible with ADIS16488 interface and protocol. It is a tactical inertial measurement unit sensor, which has the main following advantages:

1. High Accuracy, High Performance and Powerful Functions

IMU488M Inertial Measurement Unit is a precision 10 DoF MEMS inertial measurement unit, which enjoys excellent technical advantages:

- Precision 10DoF IMU, Pin to Pin Replace ADIS16488
- Range (Typical): Gyro ±450°/s, Accel ±16g
- Bias Instability (Allan): Gyro: 1°/h, Accel 30μg
- Full Temperature Range Accuracy Assured
- High Bandwidth (Typical) : 200Hz
- UART and SPI, SPI Output Rate up to 2000Hz
- Compact & Light Weight 47×44×14mm, < 50g
- Working Temperature: -40~+85°C

IMU488M Inertial Measurement Unit adopts big brand components, high-class glue encapsulation, advanced production craft, and fully calibrated, which assured that our products have real actual precise and perfect performance.

2. Aerospace Level Reliability, 12-step Strictest Quality Control

We have advanced product test team and measurement equipment, and we cherish the quality as the life of the company, all our products must pass the strictest quality control procedures, our unique 12-step quality control assures our products enjoy top level quality.

3. Competitive Price, ODM supported

With strict cost control and massive production, we can provide the most competitive cost-effective prices, and we have abundant ODM service experience for customers around the world, that is why we can build up long term win-win cooperation with our customers.

4. Successful Applications in many Fields, 200+ Customers are Using

We are continuously focusing on MEMS measurement & control technologies, and have developed the most advanced inertial measurement unit IMU688M. and IMU488M has been widely used in tactical UAS Navigation & Control, Seeker, Platform Stabilization, etc. and now more than 200 customers are using our tactical IMU around the world.

5. World-class Production Line, Fast Delivery

We have the world class production line to assure that the production procedures are scientific, precise, and normative, which also can assure our products to be fast delivered.

6. Service with Heart, Professional Technical Support

We have the professional technical support engineer team, which can provide 24-hour technical support and excellent after-sale service.

Serving customers with heart is the principle of SkyMEMS, Customer demand is the fundamental driving force of our development.

We treat our customers with heart, customers' satisfaction is the direction and target of SkyMEMS. Through continuously technology innovation and service upgrading, we will realize win-win cooperation with customers.

FAQ

Related Products

IMU80 6DoF Mini IMU (https://www.skymems.com/products/imu80-6dof-mini-imu/)

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CateGories

- Inertial Measurement Unit(/product-category/imu/)
- Eltectronic Compass(/product-category/e-compass/)
- 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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