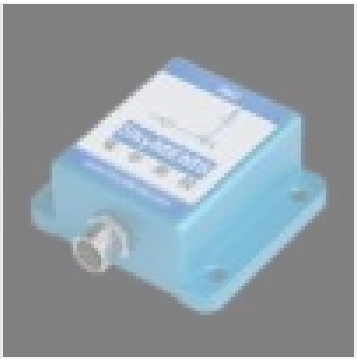

IMU100 Mems Angular Rate Sensor

High precision 6 DoF mems angular rate sensor, full calibration, widely applied in unmanned aircraft, automatic vehicles and ROVs, AGV, etc.

- High Precision 6 DoF MEMS IMU with Full Calibration
- 7 Sensor Outputs: angular rate (x3), linear acceleration (x3), and temperature; Data Output Rate: up to 1000Hz
- Range: Gyro ±500°/s, Acc ±10g, (more options)

- Bias Instability: Gyro 5°/h, Acc 0.03mg (Allan Variance)
- IP67 Protection, Voltage: 5V or 9~36VDC
- Compact and Light weight – 50 x 45 x 21 (mm), 70grams
- Wide Working Temperature: -40°C〜+85°C

Contact

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Product Categories

Brief Introduction

IMU100 Inertial Measurement Unit is a high performance 6 DoF MEMS Inertial Measurement Unit providing precise 3-axis outputs of angular rate and acceleration, and temperature.

IMU100 Inertial Measurement Unit adopts latest capacitive technology and advanced MEMS components, which reduces the cost deeply. The system enjoys small size and light weight, it features a Mil-Standard connector and is housed in an ultra-durable and compact aluminum housing.

IMU100 has been widely applied in Unmanned Aircraft, Automatic Vehicles and ROVs, AGV, Industrial Robot, Machine Control, Precision Agriculture, Platform Stabilization, Antenna Pointing, etc.

Technical Specifications

Parameter ValueRemarksAccelerometersCommunication ProtocolPhysical Parameter

Gyroscopes		
Range:	±500°/s (default setting) ±900°/s (Optional)	
Bias Stability	5°/h (Allen Variance) 30°/h (1σ)	
Bias Repeatability	50°/h (1σ)	test three times repeatedly
Non-linearity	0.05% of FS	
Angle Random Walk	0.45°/√hr	Allen Variance
Bias Error Over Full Temperature Range	0.3°/s	-40~85°C
Bandwidth	133Hz	

Sampling Rate	10000Hz	
Range: X, Y, Z	±10g (default) ±20g, ±40g(optional)	
Bias Stability	0.03mg (Allan variance) 0.15mg (1σ, 1s smooth)	
Bias Repeatability	0.05mg (1σ)	test three times repeatedly
Non-linearity	0.1%FS	
Noise Density	80μg/√Hz	@10g
Bias Error Over Full Temperature	3mg	-40~+85°C
Bandwidth	1~1000Hz	
Sample Rating	3000Hz	
Environment Condition		
Working Temperature	-40~+85°C	
Protection Level	IP67	
MTBF	≥25000hours	
Power Supply		
Input Voltage	5VDC or 9~36VDC	
Power Consumption	<0.5W	
Default Interface	RS232 (default)	RS422, RS485, RS232 3964(R) optional
Baud rate	460800bps (default)	115200bps, 230400bps, 921600bps can be set

Data Update Rate	500Hz	10Hz, 20Hz, 50Hz, 100Hz, 200Hz, 250Hz, 1000Hz can be set
Dimension	50mm*45mm*21mm	
Weight	around 70 grams	
Connector	6 pin mini aviation connector	
Location Hole	4 holes	

Typical Application

IMU100 Inertial Measurement Unit is a high performance 6 DoF MEMS-based inertial sensors, which has been widely used in the following fields:

– Unmanned Aircraft and ROVs

– Smart Agriculture

– Robotics Control

– AGV

– Platform Stabilization

– Antenna Pointing

IMU100 Inertial Measurement Unit widely used in Unmanned Aircraft

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.

SkyMEMS IMU100 Inertial Measurement Unit is an industrial level IMU module, it can provide continuous acceleration and gyro angle for the UAV, which has been widely used in small UAV flight control.

IMU100 Inertial Measurement Unit widely used in smart agriculture

Smart agriculture has changed the way farmers work their land. Real-time location information also allows farmers to maximize field utilization by avoiding missed or overlapping planting and harvesting efforts while minimizing time and fuel usage through optimized travel. Such systems can also provide semi-autonomous piloting of farm machinery to reduce driver fatigue and allow efficient operation even in low visibility conditions such as dust, fog, rain, and darkness. Currently more than 50% of farmland, great and small in extent, now utilizes smart agriculture methods with adoption continually increasing.

Because they can accurately measure the movement of objects in three dimensions, IMU modules are essential to modern society. They are utilized in many more applications than just the automatic control and autonomous driving on tractors and other agricultural machinery used for precision agriculture. Examples include orientation measurement during autonomous driving, drone orientation control, camera and antenna vibration detection and control, and controlling the angle and attitude of blades and arms on construction and mining equipment. The high-precision detection of tiny changes in movement, which are too small for the human eye to detect, makes IMUs vital to high-precision data measurement and control of machinery.

SkyMEMS's IMU modules use high-performance MEMS sensors that features excellent stability, low power consumption and low noise characteristics.. And their linearity characteristics enable high-precision measurement of various kinds of movement over a wide range from slow to fast. This allows them to be used in a broad array of smart agriculture applications.

IMU100 Inertial Measurement Unit widely used in robotics control system

IMU100 Inertial Measurement Unit can work in dynamic environment, and provide accurate angle and acceleration information, which is widely used in robotics control system.

Product Advantages

Why Selecting IMU100 Inertial Measurement Unit?

IMU100 Inertial Measurement Unit is designed and produced by SkyMEMS, it enjoys high performance and accuracy, and high reliability with competitive price. It is a popular inertial measurement unit sensor in the market, which has the main following advantages:

1. **High Accuracy, High Performance and Powerful Functions**

IMU100 Inertial Measurement Unit is a precision 6 DoF MEMS inertial measurement unit, which enjoys excellent technical advantages:

– High Precision 6 DoF MEMS IMU with Full Calibration

– 7 Sensor Outputs: angular rate (x3), linear acceleration

(x3), and temperature; Data Output Rate: up to 1000Hz

– Range: Gyro ±500°/s, Acc ±10g, (more options)

– Bias Instability: Gyro 5°/h, Acc 0.03mg (Allan Variance)

– IP67 Protection, Voltage: 5V or 9~36VDC

– Compact and Light weight – 50 x 45 x 21 (mm), 70grams

– Wide Working Temperature: -40°C～+85°C

IMU100 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 Tens of Fields, 1000+ Customers are Using**

We are continuously focusing on MEMS measurement & control technologies, and have developed the most advanced inertial measurement unit IMU100. and IMU100 has been widely used in UAS navigation & control, smart agriculture, platform stabilization, movement control system, robotics control, antenna pointing, etc. and now more than 1000 customers are using our 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

Q: What is Disadvantages of INS?

A: 1) Mean-squared navigation errors increase with time.

2) Cost, including:

– Acquisition cost

– Operations cost,

– Maintenance cost.

3) Size and weight, which have been shrinking

4)Power requirements, which have been shrinking along with size and weight but are still higher than those for GPS receivers.

5)Heat dissipation, which is proportional to and shrinking with power

requirements.

Q: What is the Degrees of freedom of IMU sensor?

A: IMUs measure six degrees of freedom. This includes the measurement of linear motion over three perpendicular axes (surge, heave, and sway), as well as rotational movement about three perpendicular axes (roll, pitch, and yaw). This yields six independent measurements that together define the movement of an object or vehicle.

Q: What is the Sensor types that IMU sensor is composed of?

A: The IMU is comprised of at least two dedicated sensors, one or more linear accelerometers and one or more gyroscopes or angular accelerometers. An optional magnetometer may be integrated into the unit to calibrate against orientation drift.

Accelerometers detect the direction and magnitude of change in velocity. Simple accelerometers measure linear motion while biaxial and triaxial accelerometers detect a change in velocity over a plane or three-dimensional space, respectively. The IMU possesses a triaxial (sometimes referred to as a triad) accelerometer, or otherwise uses multiple accelerometers that are aligned across perpendicular axes.

Gyroscopes detect the angular rate or orientation about a given directional vector. The angular rate is relative to a reference surface. The IMU uses multi-axis gyros to provide measurements in three orthogonal directions. These angular movements must be aligned with those of the accelerometer.

Q: How about the delivery time?

A: for our standard model, if we have them in stock, only need 2~3days to re-test before shipping, if it is out of stock, then need around 2 weeks to arrange the production and tests. For the ODM electronic product, if needing to modify the structure, it will need around 3~4 weeks to arrange the production and

tests.

Q: How to arrange the payment?

A: about the payment, please pay to our company account, the beneficiary's name: NANJING SKY MEMS TECHNOLOGY CO., LTD. And our email is only @skymems.com to contact with u formally. To notice this to avoid the loss.

Related Products

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

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IMU90 High Precision 6DoF Mini IMU (https://www.skymems.com/products/imu90-high-precision-6dof-mini-imu/)

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- 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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