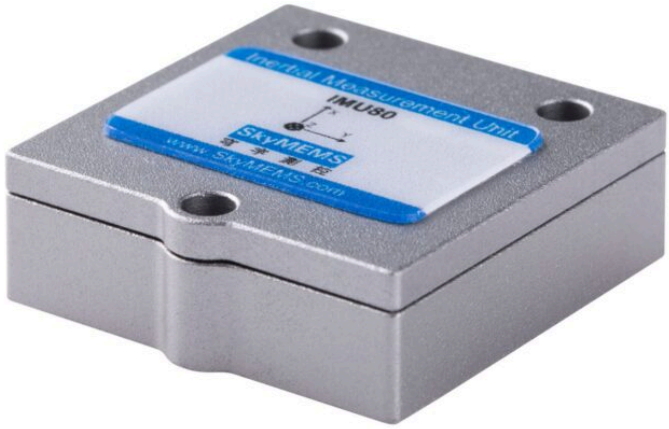

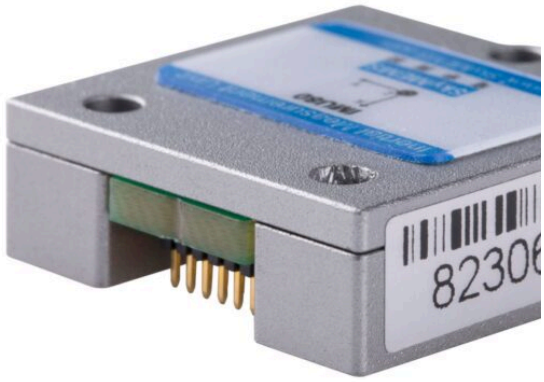

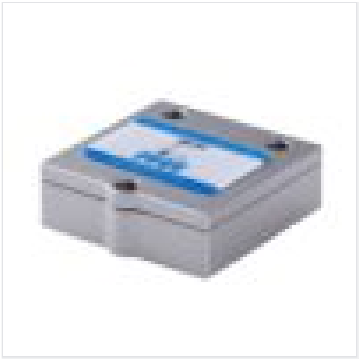

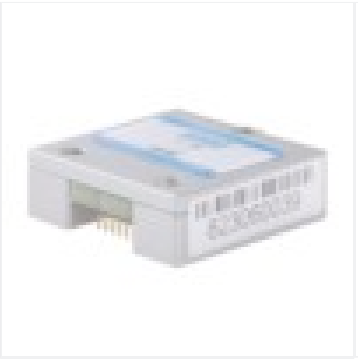

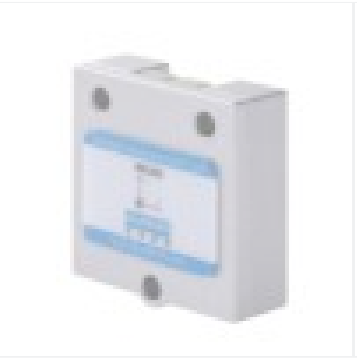

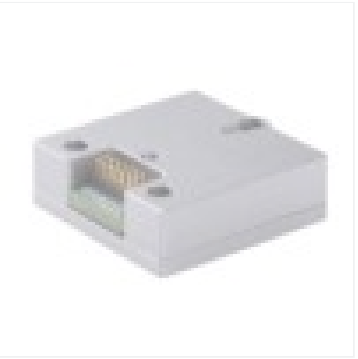

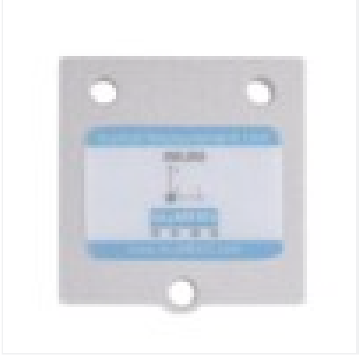

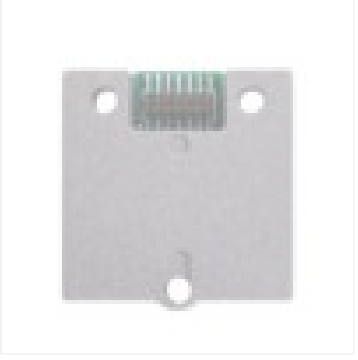

IMU80 6DoF Mini IMU

- High Precision 6 DoF Mini IMU with Full Calibration
- Fully Similar as ADIS16460, Better Performance
- Range (Typical): Gyro ±400°/s, Accelerometer ±8g
- Bias Instability (Allan): Gyro 3°/h, Accelerometer 50μg
- Interface: SPI (2000Hz), UART (200Hz)
- Compact and Light weight, 23.3 × 22.4 × 7.5 mm, < 15 grams
- Wide Working Temperature: -40°C〜+85°C

Contact

WhatsAPP
(tel:+86-13372038516)

Skype
(skype:+8613372038516?chat)

Product Categories

Brief Introduction

IMU80 High Performance Inertial Measurement Unit is a rugged industrial inertial navigation system providing precise yaw, pitch, roll as well as 6-axis outputs of angular rate and acceleration through SPI (2000Hz) and UART (200Hz) interfaces. IMU80 adopts MEMS-based inertial sensors and extended Kalman filter algorithm, which provides super cost-effective inertial system solution for customers.

IMU80 Inertial Measurement Unit enjoys small size and light weight, and it is housed in an ultra-durable and compact aluminum housing, it enjoys high reliability and provides accurate sensor measurements in harsh environment, it has been widely applied in dynamic control systems and attitude systems including AGV, smart agriculture, unmanned aircraft and ROVs, robotics, machine control, platform stabilization, etc.

Technical Specifications

Parameter	Test Condition	Min.	Typical	Max.	Unit
Gyroscopes					
Range①			±400		°/s
Bias Instability	Allan variance	2	3	4	°/h
Initial Bias Error		0.05	0.08	0.1	°/s
Random Walk		0.1	0.2	0.3	°/√h
Scale Factor Accuracy			0.1		%
Non-linearity	Full scale (FS)		0.01		%FS

Resolution			0.01		°/s
Bandwidth			50		Hz
Accelerometers					
Range①			±8		g
Bias Instability	Allan variance	40	50	60	ug
Initial Bias Error		3	4	5	mg
Random Walk		0.03	0.05	0.07	m/s/√h
Scale Factor Accuracy			0.1		%
Non-linearity	Full scale (FS)		0.01		%FS
Resolution			0.1		mg
Bandwidth			50		Hz
Interface					
UART					
Baud Rate			115200		bps
Output Rate			200		Hz
SPI					
Serial Clock Frequency				10	MHz
Output Rate			2000		Hz
Electrical Features					
Supply Voltage	3.3 V				

Power Consumption	< 0.1 W
Environment Conditions	
Operating Temperature	-40°C ~ 85°C
Storage Temperature	-55°C ~ 100°C
Housing Material	aluminum
Physical Parameter	
Size	23.3 × 22.4 × 7.5 mm
Weight	< 15 grams
Connector	7×2 pins (Matching SAMTEC CLM-107-02 socket)
Note: g = 9.80665 m/s2； ①: The range of Gyroscopes and Accelerometers can be configured in our factory.	

Typical Application

IMU80 industrial grade IMU from China factory is a high performance 6 DoF MEMS-based inertial sensors, which has been widely used in the following fields:

– Smart Agriculture

– AGV

– Unmanned Aircraft and ROVs

– Robotics

China IMU80 Industrial Grade IMU widely used in unmanned vehicle

The typical IMU for unmanned vehicle use includes a three-axis accelerometer and three-axis angular 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. IMU80 IMU module provide reliable performance with good accuracy in dynamic environment, it has been widely used in unmanned vehicles by the Chinese leading companies, now more than hundreds of thousands IMU80 IMU modules are used in the unamend vehicles.

China IMU80 Industrial Grade IMU from supplier widely used in UAS Navigation & Control

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 IMU80 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.

China IMU80 Industrial Grade IMU manufacturer 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.

Product Advantages

Why Selecting IMU80 Inertial Measurement Unit?

China IMU80 Industrial Grade IMU 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

China IMU80 Industrial Grade IMU supplier is a precision 6 DoF MEMS inertial measurement unit, which enjoys excellent technical advantages:

- High Precision 6 DoF Mini IMU with Full Calibration
- Fully Similar as ADIS16460, Better Performance
- Range (Typical): Gyro ±400°/s, Accelerometer ±8g
- Bias Instability (Allan): Gyro 3°/h, Accelerometer 50μg
- Interface: SPI (2000Hz), UART (200Hz)
- Compact and Light weight, 23.3 × 22.4 × 7.5 mm, < 15 grams
- Wide Working Temperature: -40°C～+85°C

IMU80 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 IMU80. and IMU80 Industrial Grade IMU from China factory has been widely used in Unmanned Vehicle, Smart Agriculture, Unmanned Aircraft and ROVs, Robotics Control, AGV, Drones, Machine Control, Platform Stabilization, 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: Why does IMU80 IMU module become so hot selling product?

A:

1. IMU80 IMU module has been widely used in unmanned vehicles, smart agriculture, AGV, etc., and now the sold qty can reach 50k per year .
2. Since we produce IMU80 in big qty, so IMU80 IMU module can enjoy ultra-cost-effective, which assure that it can be widely used.
3. IMU80 is similar as ADIS16460 with better performance, and we can provide faster delivery, usually we have them in stock, we only need to do the tests before delivery.
4. We can provide customized design based on this model, so that make the IMU module more suitable for your application, we can provide the most flexible solution to our customers.
5. IMU80 IMU module provide the most reliability, its quality has been proven by the leading companies in China.

Q: What is IMU80's g-sensitivity parameter?

A: It is 0.1 dps/g

Q: What is shocking resistance of IMU80?

A: It is 2000g, <1ms, with power or power off.

Q: How to keep IMU80 bias calibration good after time? What a procedure?

A: In fact, before we do the high and low temperature compensation and turntable calibration, we have done ESS in the high and low temperature box for 48 hours to release the environmental stress and ensure that the stress deformation is as small as possible. But after a long time, 10 months or a year later, due to the characteristics of the MEMS sensor itself, the performance may have little change. At this time, if the customer has high accuracy requirement, they can return to our factory for calibration again.

Q: if turning off the fusion algorithm that IMU80 itself has, can be the output frequency of IMU80 up to 500Hz?

A: We have done 400Hz before, for 500Hz, theoretically IMU80 can.

Q: What is IMU80 working temperature?

A: The test temperature is -40 to 85 °, and the actual temperature may exceed 85 ° when testing high temperature. Actually, during the test, we kept IMU80 stay at both -40° and 85° for an hour.

Q: What is IMU80's sampling frequency of raw inertial measurements?

A: 1Khz

Q: Whether IMU80 support raw 1k frequency data output?

A: No, IMU80 doesn't support direct 1k frequency raw data output, IMU80 needs to do the data processing for the raw data.

Q: How about IMU80's bandpass filter?

A: IMU80 has 3rd order low pass filter inside, and the cutoff frequency can be set by the IMU80 management software. And the low pass cutoff frequency should be set according to the actual application. And the low pass filter is mainly used to filter some high-frequency noise interference. Customers need to test the interfering signal frequencies in their own environment and then set the cutoff frequency. If the settings are wrong, the data will be worse. For example, if the IMU80 is used in the vehicle, we suggest that set the cutoff frequency into 25Hz for accelerometer, 30Hz for gyro, and test it at your side. And to get better performance, please contact with us and let us know your application, so that we can recommend our solution for you. Usually first analyze the test data, and test the frequency spectrum, then set the parameter, and then test again to do the best settings.

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.

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Contact Us

+86-025-83356968(tel:+86-025-83356968)

+86 133 7203 8516(https://wa.me/8613372038516)

sales@skymems.com(mailto:sales@skymems.com)

Zhongshan South Road,Qinhuai District,Nanjing City,China

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