IMU60

High Performance Inertial Measurement Unit

Main Features

- High Precision 6 DoF MEMS IMU with Full Calibration
- 7 Sensor Outputs: angular rate (x3), linear acceleration (x3), temperature; Data Output Rate: 100Hz
- Range: Gyro ±300° /s, Acc ±2g, (ODM supported)
- Bias Instability: Gyro 24° /h, Acc ±70mg
- Wide Input Power Range: 5~18VDC
- Compact and Light weight - 50 x 45 x 21 (mm), 70g
- Wide Working Temperature: -40° C～+85° C

IMU60 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, at 100Hz.

IMU60 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.

IMU60 has been widely applied in Automonous Vehicles and ROVs, Machine Control, Precision Agriculture, Platform Stabilization, Antenna Pointing, etc.

- ✓ **12-Step Quality Control, Super Reliability, More Functions**
- ✓ **Adopting Original Big Brand Component, High-class Material, Competitive Price**
- ✓ **Real Actual Precise after Calibration, Perfect Performance**
- ✓ **Successful Applications in Tens of Fields, More than 1000 Customers are Using**

Typical Applications


Unmanned Aircraft


Precision Agriculture


Machine Control


Platform Stability

Super Reliability & Performance

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Focus on MEMS Measurement & Control Technologies, Products include:
MEMS Acc MEMS Gyro IMU Vertical Gyro AHRS
INS GNSS/INS E-compass Inclinometer FOG

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Technical Specifications

Technical Specs		
Parameter	**Value**	**Comments**
Gyroscopes		
Range: Roll, Pitch, Heading	±300°/s ±75°/s, ±150°/s, ±900°/s	default setting optional
Noise	< 0.3°/s(RMS)	
Zero Error (25°C)	< 0.2°/s	
Bias Instability	24°/h (75°/s range) 40°/h (900°/s range)	typical value, Allen Variance
Bias Temperature Error	±3°/s	
Zero Drift Repeatability	0.14°/s(RMS)	
Scale Factor Non-linearity	0.2%	
Bias Acceleration Sensitivity	0.077°/s/g (typical) 0.17°/s/g (max)	
Rate Noise Density	0.025°/s/sqrHz	
Angle Random Walk Coefficient	0.28°/h	Allen Variance
Bias Vibration Sensitivity	0.001°/s/g2rms (typical) 0.003°/s/g2rms (max)	12g (RMS), 10Hz ~5kHz, random
Bandwidth	5~160Hz	
Accelerometers		
Range: X, Y, Z	±2g ±6g	
Noise	< 5mg (RMS) (Max)	
Zero Error	±16mg (typical)	including calibration error, working drift
Bias Full Temperature Stability	±70mg (max)	including calibration error, working drift, power jitter and full temperature error
Bias Full Temperature Error	±30mg (max)	-40~+125°C
Scale Factor Error	±0.5% range (max)	
Sacle Factor Temperature Drift	±0.8% range (max)	-40~+125°C
Resolution	0.5%	12bit
Bandwidth	30~55Hz	-3dB

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Technical Specifications

Technical Specs		
Parameter	**Value**	**Comments**
Environment Condition		
Working Temperature	-40~+85°C	
Protection Level	IP67	
Electromagnetic compatibility	Compatible with EN61000 and GBT17626	
MTBF	≥5000hours	
Vibration Resistance	10grms, 10~1000Hz	
Shock Resistance	100g@11ms, 3 axes, (half sine wave)	
Power Supply		
Input Voltage	5~18VDC	
Current	60mA@9VDC	
Communication Protocol		
Default Interface	RS232	
Baud rate	115200	
Data Update Rate	100Hz	
Physical Parameter		
Dimension	50mm*45mm*21mm	
Weight	around 70 grams	
Connector	5 pin mini aviation connector	
Location Hole	4 holes	

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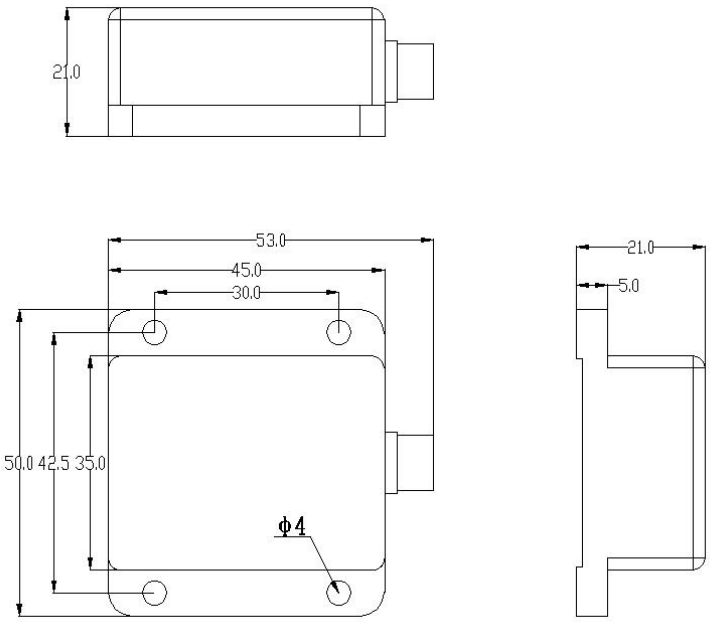
Pins Definition

Pins Definition

Pins No.	5 pin mini aviation connector Line Color	Name	Description
1	Brown	Vcc	power positive pole
2	Black	GND	power gound
3	White	RS232_TX	RS232 data transmitting
4	Blue	RS232_RX	RS232 data receiving
5	Gray	RS232_GND	RS232 signal ground (short circuit with power ground inside the sensor)
6	-	-	disabled
7	-	-	disabled
8	-	-	disabled
9	-	-	disabled

Dimension & Package



three-view drawing with 5 pin mini aviation connector

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Communication Protocol

the electronic parameters of RS232 communicaiton protocol are as follows:

- Baud rate: 115200
- Data bit: 8
- Stop bit: 1
- Check bit: none

IMU mode:

the data string is sent out every 10ms, and each data string includes 58 bytes, the detailed description see as follows:

Data String Definition		
Name	**Byte Length**	**Description**
Initial Code	4	0x4E 0x4A 0x35 0x93
X axis of acceleromter	4	float mode floating number, 4 bytes, high byte in front, unit: g
Y axis of acceleromter	4	float mode floating number, 4 bytes, high byte in front, unit: g
Z axis of acceleromter	4	float mode floating number, 4 bytes, high byte in front, unit: g
X axis of gyro	4	float mode floating number, 4 bytes, high byte in front, unit:deg/s
Y axis of gyro	4	float mode floating number, 4 bytes, high byte in front, unit:deg/s
Z axis of gyro	4	float mode floating number, 4 bytes, high byte in front, unit:deg/s
X axis of magnetic sensor	4	0
Y axis of magnetic sensor	4	0
Z axis of magnetic sensor	4	0
Temperature	4	float mode floating number, 4 bytes, high byte in front, unit: °C
Heading Angle (divergence)	4	0
Roll Angle	4	0
Pitch Angle	4	0
Sum Check	2	high byte in front, low byte in behind, the sum of all the front data

Remarks: during turning on the sensor, please keep the sensor in static status, and after turning on the sensor, please keep the sensor in statis status more than 10 seconds

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Order Information

IMU60: model name

XXX: Gyro Measurement Range:
300 = ±300°/sec (Default)
075 = ±75°/sec
150 = ±150°/sec
900 = ±900°/sec

XX: Accelerometer Measurement Range: 02= ±2g (Default)
06= ±6g

For example, IMU60-900-02 means that the IMU60 with gyro range: ±900°/sec, accelerometer range: ±2g.