

A5500: HIGH PERFORMANCE MEMS IMU SENSOR



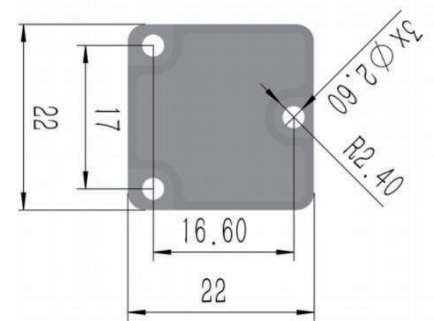
■ PRODUCT DESCRIPTION

A5500 series is an IMU/VRU/AHRS sensor composed of high-performance MEMS-IMU, magnetometer, and enhanced single axis gyroscope. It is equipped with self-developed adaptive extended Kalman filter, IMU noise dynamic analysis algorithm, and carrier motion state analysis algorithm, which can meet the accuracy of attitude angle under high dynamic conditions and reduce heading angle drift. Every sensor undergoes fine compensation including temperature, zero bias, scaling factor, and cross axis before leaving the factory.

■ PRODUCT MAIN SPECIFICATION

Parameter	A5500	Unit	
Attitude Precision			
Pitch ($\pm 90^\circ$)	0.1(normal), 0.2(max)	°	
Roll ($\pm 180^\circ$)	0.1(normal), 0.2(max)	°	
Yaw ($\pm 180^\circ$) Static drift 2hrs (6DOF) ^①	0.1(normal), 0.2(max)	°	
Dynamic drift (6DOF) ^②	5	°	
Magnetic assist (AHRS) ^③	2(normal), 3(max)	°	
Rotation error (6DOF) ^④	<1(normal), <1.3(max)	°	
Resolution	0.01	°	
3-Axis Gyroscope			
Measurement range	± 400	°/s	
Full temperature zero bias stability (10s, 1 σ)	Z axis: 0.015~0.035 Y axis: 0.05~0.18 X axis: 0.03~0.08	°/s	
Scale factor nonlinearity	<40	ppm	
Zero bias instability (Allan)	5.1	°/h	
Zero bias instability (10s, 1 σ)	3.06	°/h	
Zero bias repeatability (Allan)	0.09	°/s	
Zero bias repeatability (10s, 1 σ)	0.054	°/s	
Angle random walk (Allan)	0.6	°/√h	
Angle random walk (10s, 1 σ)	0.36	°/√h	
3dB Bandwidth	116	Hz	
Sampling	1000	Hz	
Resolution	16bit		
Accelerometer sensitivity (All 3 axis)	0.1	°/s/g	
3-Axis Accelerometer			
Measurement range	$\pm 12/\pm 16/\pm 24$ (can be customized)	g	
Full temperature zero bias stability (10s, 1 σ)@ -40-85°C	1	mg	
Zero bias stability (10s, 1 σ)?	10	mg	
Zero bias instability (Allan)	60	μg	
Zero bias repeatability (Allan)	2.52	mg	
Angle random walk (Allan)	0.08	m/s/√h	
Scale factor nonlinearity	0.5	%FS	
3dB Bandwidth	145	Hz	
Sampling	1600	Hz	
Resolution	16bit		
Magnetometer			
Range	± 8	Gauss	
Resolution (Fs=2G)	2	mGauss	
Sampling	200	Hz	
Linearity (Best fitting straight line Fs=2G)	0.1	Fs%	
Temperature sensor			
	Min	Normal	Max
Range	-104		150
Offset error		± 1	K

■ PRODUCT DIMENSION



SIZE: L22*W22*H10MM

■ PRODUCT APPLICATION

- Autonomous mining or coal vehicles or machines
- Industry automation
- Robotics
- Autonomous agriculture vehicle or machines
- Communication in moving system
- Automated guided vehicle (AGV)
- Unmanned aerial vehicles (UAV)
- Unmanned surface vehicle (USV)
- Engineering dump trucks