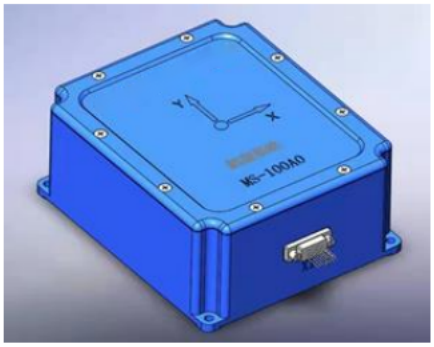
Attitude measurement system

Model: MS-100A0



Product Features

MS-100A0 is a three-degree-of-freedom attitude based on micro-mechanical technology (MEMS) Measurement system, built-in high-performance MEMS gyroscope and MEMS accelerometer, through the filtering algorithm calculates the pitch angle, roll angle and heading angle of the carrier in real time. also optionally matched with a magnetometer to achieve high-precision north finding, and output 3-axis angular velocity and 3-axis acceleration is used for motion control.

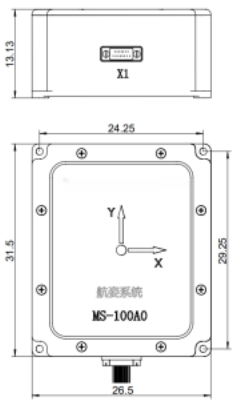
Product Characteristic

- Better than 0.1° attitude accuracy
- Attitude measurement range ±90°
- Operating temperature range: -40~65℃
- Vibration environment: 10~2000Hz, 6g (RMS)
- Rich interface types, support RS232, RS422, CAN and other standard interfaces
- Waterproof seal design

Electrical Characteristics

- Power supply: 5V (typ.), customizable wide voltage input 12~36V
- Rated power: 0.5W (max)
- Ripple: 100mV (peak-to-peak)

Mechanical Dimensions



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Technical indicators

Gyro parameters				
Parameter	Test Conditions	Typical value	Max value	Unit
Dynamic measurement range			450	°/s
Zero bias stability	Allan variance, Z axis	0.8		°/h
	Allan variance, X-axis and Y-axis	1.6		°/h
	10s average, X, Y axis (-40°C~+80°C, constant temperature)	6		°/h
	1s average, X, Y axis (-40°C~+80°C, constant temperature)	9		°/h
Zero offset	Zero offset range	±0.2		°/s
	Zero bias change over the full temperature range	±0.06		°/s
	Start-to-start repeatability	0.006		°/s
	Day-to-day start repetition	0.009		°/s
	Influence of Linear Acceleration on Zero Bias	0.002		°/s
	The influence of vibration on zero offset, the change before and after vibration	0.002		°/s
	The influence of vibration on zero offset, the change before vibration	0.002		°/s
Scale Factor	Scale factor accuracy, Z axis	0.3		%
	Scale factor accuracy, X, Y axis	0.6		%
	Scale factor nonlinearity, Z axis	0.01		%FS
	Scale factor nonlinearity, X, Y axis	0.02		%FS
Angle random walk		0.001		°/√hr
Noise density		0.001		°/s/√hr
Resolution		3.052×10−7		°/s/LSB
Bandwidth		200		Hz
Accelerometer parameters				
Parameter	Test conditions	Typical value	Max value	Unit
Dynamic measurement range		16		g
Zero bias stability	Allan variance	0.03		mg

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	10s average (-40°C~+80°C, constant temperature)	0.2		mg
	1s average (-40°C~+80°C, constant temperature)	0..3		mg
Zero offset	Zero offset range	5		mg
	Zero offset variation (peak-to-peak) over the full temperature range	5		mg
	Start-to-start repeatability	0.5		mg
	Day-to-day start repetition	0.8		mg
	Zero Bias Temperature Coefficient	0.05	0.1	mg/°C
Scale factor	Scale factor accuracy	0.5		%
	Scale factor nonlinearity	0.1		%FS
Speed random walk		0.029		m/s/√hr
Noise density		0.025		mg/√Hz
Resolution		1.221×10−8		g/LSB
Bandwidth		200		Hz
Magnetometer parameters (optional)				
Parameter	Test conditions	Typical value	Max value	Unit
Dynamic measurement range		2.5		gauss
Zero offset	Non-magnetic environment	15		mgauss
Heading accuracy				
Magnetic heading accuracy		0.5		°
Horizontal attitude accuracy				
Pitch angle accuracy		0.1		°
Roll angle accuracy		0.1		°

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