

L1+ Silicon Optical Inertial Measurement Unit

Description

The L1+ Silicon Optical Inertial Measurement Unit is a dual-parameter silicon photonic sensing product integrating angular velocity and acceleration detection, capable of real-time sensing of both 3-axis angular velocity and 3-axis acceleration simultaneously. It has an angular velocity measurement range of $\pm 800^\circ/\text{s}$ with a full-temperature zero bias stability of $\leq 1^\circ/\text{h}$, and an acceleration measurement range of $\pm 30\text{g}$ with a normal-temperature zero bias stability of $\leq 0.5\text{mg}$. The product features a bandwidth of $\geq 400\text{Hz}$ and excellent scale factor performance, supporting customizable RS-422 data output with an adjustable 400Hz update rate. Powered by +5V with a steady-state power consumption of $< 6\text{W}$, it measures $63 \times 63 \times 25\text{mm}$ and weighs $185 \pm 15\text{g}$, with a standardized electrical interface. Combining the merits of small size, light weight and low cost, it can output comprehensive motion inertial parameters.

Feature

- Small Size
- Light Weight
- Low Cost
- Temperature Zero Bias Stability $\leq 1^\circ/\text{h}$

Application

- Unmanned Aerial Vehicle (UAV)
- Guided Missile, Pod
- Mobile Satellite Communication



Specifications

L1+ Silicon Optical Inertial Measurement Unit			
1.Performance parameter			unit
1.1 Gyroscope			
1.1.1	Measurement Range	±800	°/s
1.1.2	Temperature Stability (10s, 1σ, -45°C~+65°C)	≤1	°/h
1.1.3	Zero Bias Repeatability (1σ)	≤1	°/h
1.1.4	Scale Factor Nonlinearity (1σ)	≤50	ppm
1.1.5	Scale Factor Asymmetry (1σ)	≤50	ppm
1.1.6	Scale Factor Repeatability (1σ)	≤50	ppm
1.1.7	Angular Random Walk Factor	≤0.1	(°) /h ^{1/2}
1.1.8	Bandwidth	≥400	Hz
1.1.9	Threshold	≤1	°/h
1.2 Accelerometer			
1.2.1	Measurement Range	±30	g
1.2.2	Temperature Stability (10s, 1σ)	≤0.5	mg
1.2.3	Thermal Bias Repeatability	≤0.5	mg
1.2.4	Scale Factor Nonlinearity (1g)	≤0.5	mg
1.2.5	Scale Factor Asymmetry (1g)	≤1	mg
1.2.5	Scale factor non-linearity (1g)	≤300	ppm
1.3 Other indicators			
1.3.1	Working Temperature	-45 ~ +65	°C
1.3.2	Storage Temperature	-55 ~ +85	°C
2.Electrical Parameter			
2.1	Maximum Power Consumption Over Full Temperature Range	< 7	w
2.2	Transient Power Consumption	< 7	w
2.3	Steady State Power Consumption	< 6	w
2.4	Data Output Format	RS-422 (customizable)	/
2.5	Data Update Rate	400 (customizable:200,100,50)	Hz
2.6	Baud Rate	614.4 (customizable)	Kbps
2.7	Power Input	+5V	V
2.8	Power Ripple (Vpp)	≤50	mV
3. Physical Parameters			

3.1	Dimensions	63×63×25	mm
3.2	Weight	185±15	g
3.3	Electrical Interface	J63A-242-015-261-TH	/

Mechanical Dimension

