

PHOTONIC SENSORS

L2 Silicon Photonic 3-Axis Gyroscope

Three-axis solid-state optical gyroscope with $0.2^\circ/\text{h}$ bias stability and $0.02^\circ/\sqrt{\text{h}}$ random walk.



Key Features

- Solid state — no moving parts, no spin-up time
- Bias stability $\leq 0.2^\circ/\text{h}$ at room temperature
- Angular random walk $\leq 0.02^\circ/\sqrt{\text{h}}$
- Measurement range $\pm 800^\circ/\text{s}$ on three axes
- Bandwidth ≥ 400 Hz
- Operating range -40°C to $+60^\circ\text{C}$

Applications

- Inertial navigation where GNSS is denied or intermittent
- Platform and gimbal stabilization
- Autonomous vehicle and robotics attitude reference
- Structural and geotechnical monitoring

Overview

The L2 measures angular rate on three axes using silicon photonic interferometry. There is no spinning mass and no vibrating structure — rotation is read out from light traveling in a waveguide, so there is nothing in the sensor to wear out or to be knocked out of calibration by shock.

It is the higher-performance of our two gyroscope grades: bias stability and repeatability of $0.2^\circ/\text{h}$, angular random walk of $0.02^\circ/\sqrt{\text{h}}$, and scale factor nonlinearity within 100 ppm. Bandwidth is at least 400 Hz over a $\pm 800^\circ/\text{s}$ range, which covers fast platform dynamics without saturating.

Specifications

Performance

PARAMETER	VALUE	UNIT	CONDITIONS
Measurement Range	-800 to +800	°/s	
Bias Stability	≤ 0.2	°/h	Room temperature, 10 s, 1 σ
Bias Repeatability	≤ 0.2	°/h	1 σ
Scale Factor Nonlinearity	≤ 100	ppm	1 σ
Angular Random Walk	≤ 0.02	°/√h	
Bandwidth	≥ 400	Hz	

Environmental

PARAMETER	VALUE	UNIT
Operating Temperature	-40 to +60	°C

Order or request a quote

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Specifications are subject to change without notice and do not constitute a warranty. Confirm all parameters with Lightwit Photonics sales before ordering.