

GYPRO[®]4300



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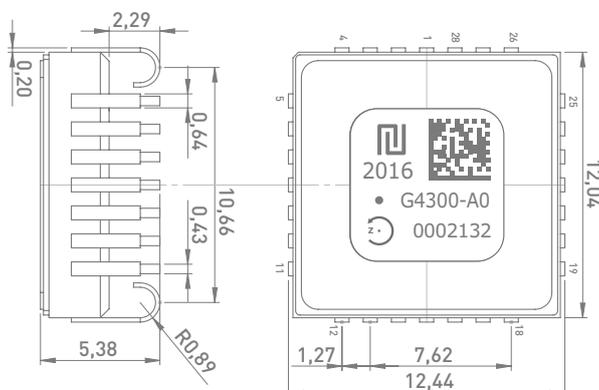
High performance ± 300 °/s MEMS gyroscope with digital interface

High stability rate gyro for precision navigation and positioning

GYPRO[®]4300 is a high-performance, closed-loop digital MEMS gyroscope with ± 300 °/s input range that offers a cost-effective alternative to entry-level Fiber Optic Gyroscopes (FOG) and Dynamically Tuned Gyroscopes (DTG) at a fraction of their size, weight, and power consumption.

Its high bias stability and vibration rejection make GYPRO[®]4300 an industry-leading rate gyro to build high-performance IMU (Inertial Measurement Units) for attitude and motion control systems, as well as INS (Inertial Navigation Systems) for GNSS-aided positioning and navigation in dynamic applications.

The hermetic ceramic SMD package combined with a 24 bits SPI interface eases the integration of GYPRO[®]4300 and reduces the BOM. The built-in self-test ensures initial verification of the sensor's integrity and continuous in-operation functionality test.



12 x 12 x 5.5 mm³, 1.4 g, J-Lead ceramic package

Key performances

- ± 300 °/s range, single-axis gyroscope
- Bias instability: 0.4 °/h (typ), 2°/h (max)
- Angular Random Walk: 0.07 °/ $\sqrt{\text{hr}}$
- Vibration rejection: 0.5 °/h/g²
- Residual scale factor over temperature range: 160 ppm
- Latency: ≤ 1 ms
- Mean Time Between Failure (MTBF): $> 1\,000\,000$ hours
- Available in 3 resonant frequency configurations to minimize mechanical cross-coupling in multi-axis applications

Key features

- 24-bit digital SPI interface
- Initial and continuous self-test
- Factory-calibrated over temperature
- Hermetic ceramic SMD package
- Non classified under dual-use export control
- REACH and RoHS compliant

Applications

- INS for GNSS-assisted positioning and navigation of ground vehicles & trains
- AHRS for UAV and e-VTOL
- MRU (Motion Reference Units)
- IMU for precision robotics and remotely operated vehicles
- Stabilization systems
- Borehole drilling and surveying instruments

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Key specifications

Parameter	Typ. value	Unit	Note
Range			
Input range	±300	°/s	
Scale Factor			
Residual temperature error (1 σ)	160	ppm	Compensated
Non linearity	60	ppm	
Run to run repeatability	60	ppm	
Bias			
Instability (Allan Variance)	0.4	°/h	Maximum 2°/h (90% of production < 1°/h)
In-run stability	7	°/h	
Run to run repeatability	10	°/h	
Residual temperature error (1 σ)	40	°/h	Compensated
Vibration rectification error (VRE)	0.5	°/h/g ²	Under 7.3 g rms (20 to 2000 Hz)
Bandwidth, noise and output signal			
Bandwidth	200	Hz	Customizable upon request
Angular Random Walk (ARW)	0.07	°/√hr	
RMS Noise	0.015	°/s	1 to 100 Hz
Data rate	1800	Hz	User-configurable
Latency	≤ 1	ms	
Operating Conditions			
Operational vibrations	7.3	g rms	Random (20 – 2000 Hz)
Operational shock	50 6	g ms	Half-sine
Survival shock	2000 0.3	g ms	
Operating temperature range	-40 to +85	°C	
Reliability			
Mean Time Between Failure (MTBF)	> 1 000 000	h	
Power and supply			
Power supply	5	V	
Current consumption	25	mA	

Sensors are factory calibrated and compensated for temperature effects to provide a high-accuracy digital output over the temperature range. Raw data output can also be chosen to enable compensations at the IMU or at the system level.

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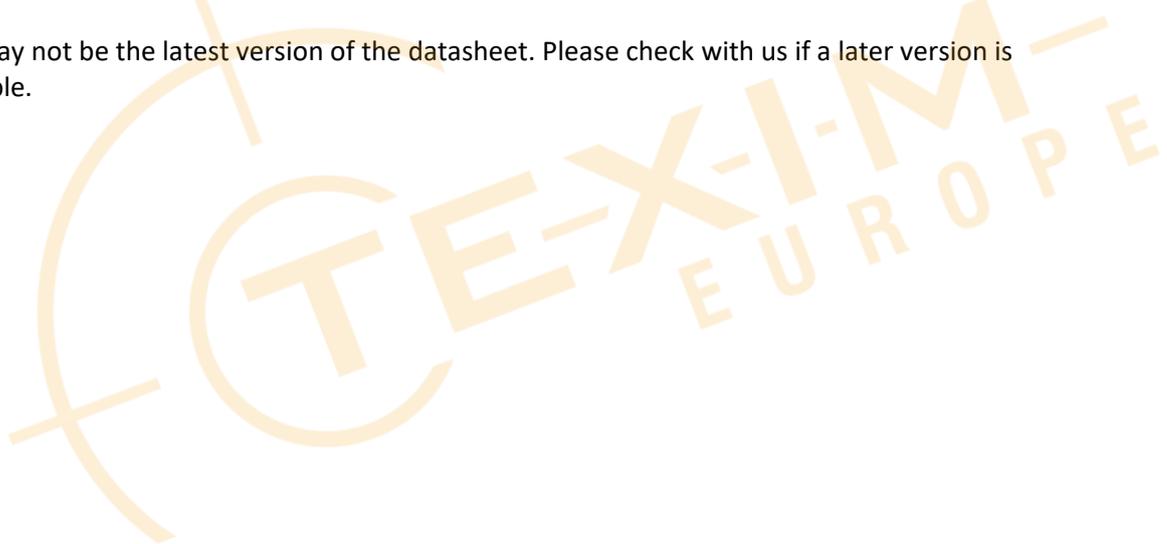
It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application.

Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time.

All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts.

Please contact us if you have any questions about the contents of the datasheet.

This may not be the latest version of the datasheet. Please check with us if a later version is available.





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