

STIM210

- Small size, low weight and low cost
- ITAR free
- Insensitive to magnetic fields
- 10 °/h bias error over temperature gradients
- 0.3 °/h bias instability
- 0.15 °/√h angular random walk
- ±400 °/s angular rate input range
- 2000 samples per second
- 1500 g shock capability



(39 mm x 45 mm x 22 mm)

STIM210 is a tactical grade multi-axis gyro module with up to 3 axes of highly accurate gyros. Each axis is factory calibrated for bias and sensitivity, and compensated for temperature effects.

The STIM210 is based upon Sensoror's proven gyro sensor technology in production for more than two decades. It performs exceptionally well across many applications due to its very low vibration and shock sensitivity. The gyro is qualified according to high-performance aircraft vibration standard.

Input range, orthogonality and output formats

The STIM210 full-scale angular rate input range is 400 °/s and the output is capped at ±480 °/s. The 3-axis modules feature electronic axis alignment, improving orthogonality between axis to 1 mrad and has a non-linearity 25 ppm over full scale. Selectable output formats are angular rate, increment angle, average angular rate and integrated angle, at sample rates up to 2000 samples per second.

Reliability and robustness

STIM210 (three axes) modules have an MTBF at 70k operating hours (according to MIL-HDBK 217), which is outperforming current FOG systems. Tuning of excitation and detection frequencies, as well as perfectly balanced vibrational masses, result in very low vibration and shock sensitivity in any direction.

Power and interface

The unit is powered by a single 5 V supply and communicates via a Plug-and-Play high-level RS422 interface at bit rates up to 3.75 Mbits/s.

Device configurations and self diagnostics

The use of a 32-bit RISC ARM microcontroller provides flexibility in device configuration. Choices for output unit, sample rate, LP filter cut-off frequency, RS422 transmission bit rate, line termination ON/OFF, etc. can be done in device Service Mode.

The Service Mode also provides the ability to perform single measurements on demand and access detailed diagnostics information.

Evaluation kits

STIM210 evaluation kits for PCIe and USB connectivity are available. The PCIe kit is the recommended choice for thorough characterization. The USB kit is the alternative solution, e.g. for smaller, portable laptop setups, providing an excellent choice for quick gyro module configurations and shorter measurement series.

Application areas

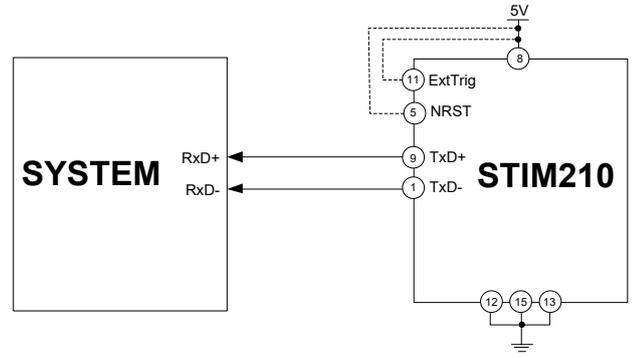
STIM210 applications are typically found within Industrial, Aerospace and Defense markets, for various platform stabilizations, pointing and navigation systems (e.g. antennas, cameras and gimbals), attitude heading reference systems (AHRs), inertial navigation systems (INSs) for UAVs, AUVs, AGVs, UGVs and ROVs, smart munitions, 3D mapping systems, range finders, trains, robotics and more.

For many applications STIM210 directly replaces FOGs and improves system solutions with respect to robustness, reliability, size, weight, power and cost.

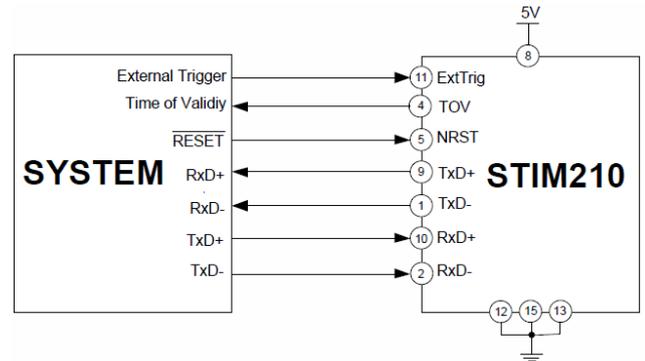
STIM210 can also open new markets, where adequate solutions previously have not yet been possible to realize.

STIM210 Multi-Axis Gyro Module

Parameter	Min	Nom	Max	Unit
Weight		52		g
Input range		±400		°/s
Resolution		0.22		°/h
Operating temperature	-40		85	°C
Storage temperature	-50		90	°C
Power supply	4.5	5.0	5.5	V
Power consumption		1.2	1.5	W
Time to valid data		0.7	1	s
Sample rate			2000	SPS
Mechanical shock			1500	g
Bias instability		0.3		°/h
Angular random walk		0.15		°/√h
Bias error over temperature gradients		±10		°/h rms
Bandwidth (-3dB)		262		Hz
Group delay		2.2		ms
Non-linearity (condition: ±200 °/s)		15		ppm
Scale factor accuracy		500		ppm
Misalignment		1		mrad
RS422 bit rate			3.75	Mbits/s
Linear acceleration effect				
Bias		7		°/h/g
Scale factor		400		ppm/g
Logic levels NRST, EXT TRIGGER and TOV pins	CMOS and TTL compatible			

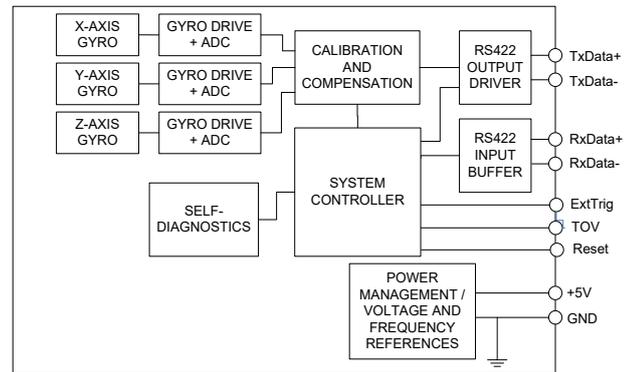


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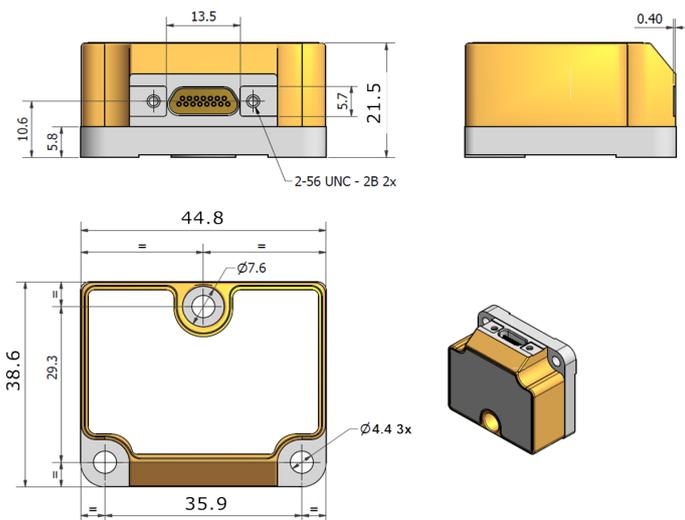
(FULL FUNCTION)

FUNCTIONAL BLOCK DIAGRAM

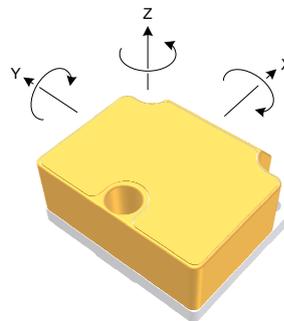


MECHANICAL DIMENSIONS

All dimensions in mm. Volume < 2,0 cu. in (33 cm³)



AXIS DEFINITIONS



PINOUT

