

# ULTRA-HIGH PERFORMANCE GYRO MODULE



STIM210

PRODUCT BRIEF

## FEATURES

- 10°/h bias error over temperature
- 0.5°/h in-run bias instability
- 50g module weight
- ±400°/s input range
- Up to 2000 samples per second
- 1500g shock capability



## DESCRIPTION

STIM210 is a multi-axis gyro module with up to 3 axes of highly accurate MEMS gyros. Each axis is factory calibrated for bias and sensitivity, and compensated for temperature effects. This new design of the STIM200-series allows for an improved bias error over temperature (10°/h) and an improved non-linearity (nom. 50ppm BSL over FS).

STIM210 industrialization is realized by combining the well proven Sensor ButterflyGyro™ technology with a full digital operation.

### Input range, orthogonality and output formats

The STIM210 full-scale angular rate input range is 400°/s.

3-axis modules feature electronic axis alignment, further improving orthogonality between axis (down to 1mrad).

Selectable output formats are angular rate, increment angle, average angular rate and integrated angle, at sampling rates up to 2000 samples per second.

### Reliability and robustness

STIM210 modules have MTBF > 120k

hours per axis (according to MIL-HDBK 217), outperforming current FOG systems.

Perfect tuning of excitation and detection frequencies, as well as perfectly balanced vibrational masses, result in very low vibration and shock sensitivity (1500g/0.5ms sine) in any direction.

### Power and Interface

The unit is powered by a single +5V supply and communicates via a Plug-and-Play high-level RS422 interface at a bit rate of up to 1.84Mbit/s.

### Device configurations and self diagnostics

The use of a 32-bit RISC ARM microcontroller provides flexibility in configuration. Choices for output unit, sampling frequency, LP filter cut-off frequency, RS422 transmission bit rate, line termination ON/OFF, etc. can be done in the Service Mode. The Service Mode also provides the ability to perform single measurements on demand and access detailed diagnostics information.

### Evaluation kits and kit add-on

STIM210 evaluation kits for USB are available, supporting initial testing and all device configuration.

An add-on PCI card for the kit is also available (this is recommended for extensive testing and characterization). The connector of the PCI card is directly pin compatible with the plug of the STIM210 communication cable of the kit, thus enabling an easy alteration between usage of USB cable and PCI card when required.

### Application areas

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

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

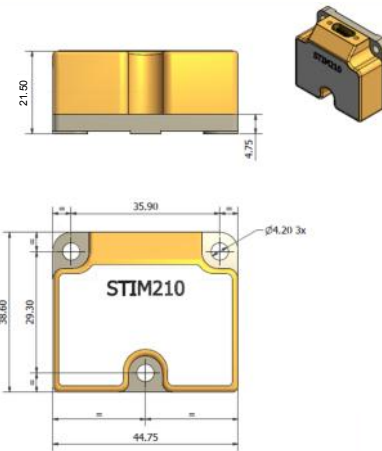
STIM210 can also open new markets, where previously it would not have been possible to realize adequate solutions.

SPECIFICATIONS

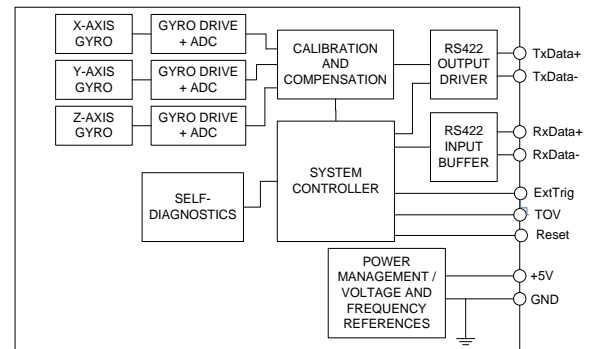
Parameter	Min	Nom	Max	Unit
Weight		50		g
Input range		±400		°/s
Resolution		24		bit
Operating temperature	-40		85	°C
Storage temperature	-50		90	°C
Power supply	4.5	5.0	5.5	V
Supply current			300	mA
Start-up time			1	s
Sampling frequency			2000	SPS
Mechanical shock			1500	g
In-run bias instability		0.5		°/h
Angular random walk		0.15		°/√h
Bias error over temperature		±10		°/h rms
Bandwidth (-3dB)			262	Hz
Group delay		1.6		ms
Non-linearity (BSL over FS)		50		ppm
Scale Factor accuracy		500		ppm
RS422 bit rate			1.84	Mbit/s
Linear acceleration effect			18	°/h/g
Vibration rectification coefficient (VRC)		0.1		°/h/g rms
<b>NRST, EXT TRIGGER AND TOV PINS</b>				
Logic levels	CMOS and TTL compatible			

MECHANICAL DIMENSIONS

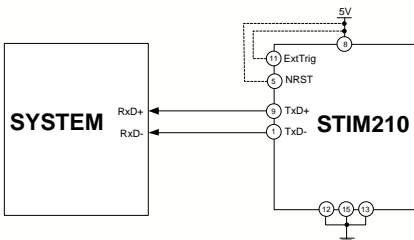
All dimensions in mm.



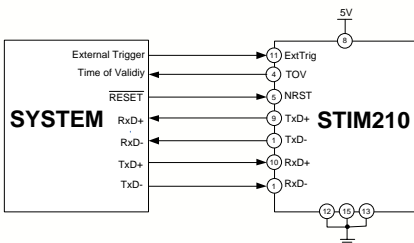
FUNCTIONAL BLOCK DIAGRAM



ELECTRICAL CONNECTIONS

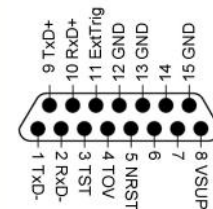


TRANSMIT ONLY



FULL FUNCTION

PIN OUT



AXIS DEFINITIONS

