

STIM202 MULTI-AXIS GYRO MODULE

ButterflyGyro™

Features

- Miniature package
- Excellent performance in vibration and shock
- Excellent environmental robustness
- 1, 2 or 3 axes capability
- Electronically calibrated axis alignment
- Plug & play high-level RS422 interface
- 24 bit resolution
- Single-crystal silicon technology
- Low bias drift
- Low noise
- Fully configurable device (output unit, sampling frequency, LP filter frequency, RS422 bit rate, line termination ON/OFF)



(Actual size)

Description

STIM is a cluster of 1, 2 or 3 high accurate MEMS-based gyros in a miniature package. Each axis is factory calibrated for bias and sensitivity, and compensated for temperature effects to provide high-accuracy measurements.

For many applications the excellent performance of STIM202 will replace FOG's and improve the system solution in respect to robustness, reliability, size/weight, power and cost. This is accomplished by combining the well proven Sensoror ButterflyGyro™ with fully digital operation.

Perfect tuning of excitation and detection frequency, as well as perfect balancing dual masses, result in very low sensitivity to vibration and shock. To enable use on weapon platforms, or in similar extreme environments, the STIM202 provides a vibration isolated internal assembly to avoid rectification errors.

The unit runs off a single +5V supply and communicates via a "plug & play" high-level RS422 interface. The use of a 32-bit RISC ARM microcontroller provides flexibility in configuration, like choices of output unit, sampling frequency, LP filter -3dB frequency, RS422 bit rate, and line termination ON/OFF. In addition a diagnosis function is provided, and a status byte will flag any detected errors in the system.

For more advanced users, STIM202 may be put in Service Mode. In this mode all the configuration parameters can be intermediately or permanently changed by overwriting current settings in flash memory. Service mode also provides the ability to perform single measurements, diagnostics, and obtain a higher detail of the status byte.

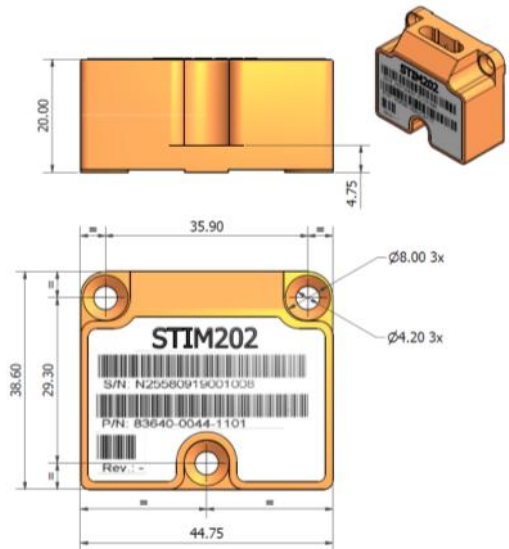
Evaluation kits are available, supporting all measurements, and all configurations in Service Mode. The evaluation kit also has a rate and increment angle demonstration.

SPECIFICATIONS

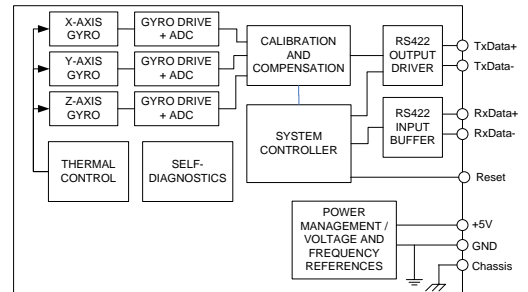
Parameter	Min	Nom	Max	Unit
Weight		55		g
Input range		± 400		°/s
Resolution		24		bit
Operating temperature	- 40		85	°C
Power supply	4.5	5.0	5.5	V
Supply current		200		mA
Start-up time			10	s
Sampling frequency			1000	SPS
Storage temperature	- 50		90	°C
Dynamic overload			5000	°/s
Mechanical shock			1500	g
Bias accuracy	- 250	0	250	°/h
In-run bias stability		0.5		°/h
Angular random walk		0.2		°/√h
Bandwidth (-3dB)			262	Hz
Non-linearity (BSL over +/- 200 °/s)			200	ppm
Scale Factor accuracy		± 0.2		%
Bias temperature accuracy (1σ)		± 30		°/h rms
G sensitivity			18	°/h/g
RS422 bit rate			921600	bit/s
Input resistance (termination ON)		120		Ω
Input resistance (termination OFF)		125		Ω
RESET PIN (NRST)				
Logic levels	CMOS and TTL compatible			
Minimum hold time for reset	5			ms

MECHANICAL DIMENSIONS

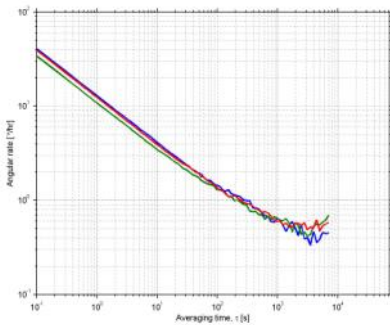
All dimensions in mm.



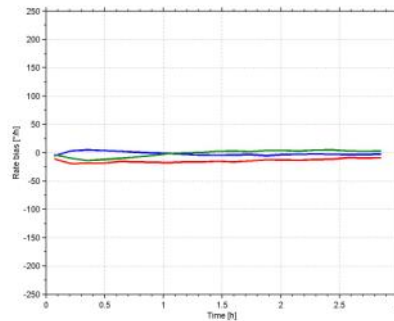
FUNCTIONAL BLOCK DIAGRAM



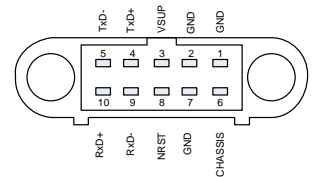
ALLAN VARIANCE



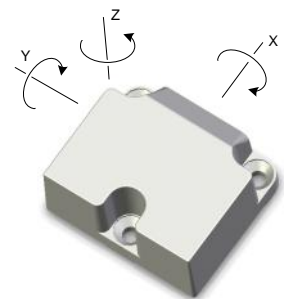
BIAS STABILITY



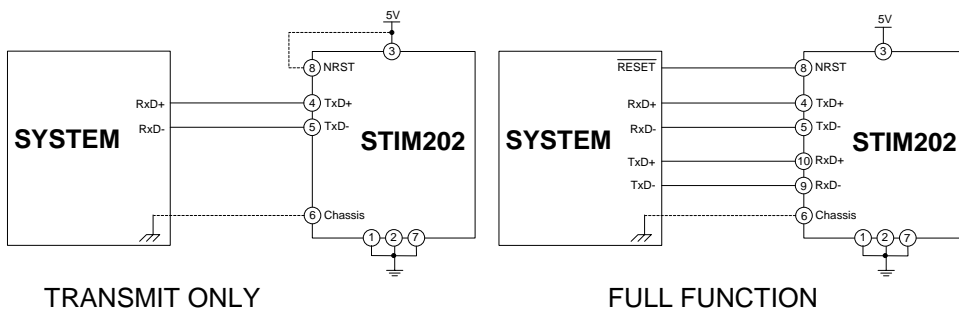
PIN OUT



AXIS DEFINITIONS



ELECTRICAL CONNECTIONS



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