CruizCore® XG1300L

Features

- Ultra Low Bias Drift
- High Resolution and Accuracy
- Outstanding Scale Factor Linearity
- Fast Start-up
- Fully Self Contained
- Digital Output (I2C)
- Low Power Consumption
- Low Cost
- Roughed and Compact Package
- Selectable Output(Angular Rate, Angle, Acceleration)

Applications

Robotics, Vehicles, Aerospace, Virtual Reality

Description

The CruizCore® XG1300L is a fully self-contained MEMS digital gyroscope and digital accelerometer based on the CruizCore R1350 platform. Compared with the R1350, the XG1300L was designed with convenient packaging and communication interfaces to allow its use as a standalone sensor for LEGO® MINDSTORMS® NXT. It provides I2C communication interfaces, the output is selectable for the customers' selection. The XG1300L includes a MEMS gyroscope and accelerometer, internal voltage regulation, data acquisition and signal processing circuitry, communication interfaces and a RISC microprocessor running our patented error correcting algorithm. Because it uses MEMS sensors, it has the advantage of being light weight, small size and consuming low power. The XG1300L uses an adaptive reduced order Kalman filter to stabilize angular rates and heading angles, virtually eliminating the most common errors (i.e. bias drift, scale factor, temperature effects). The XG1300L has a 50Hz bandwidth and can precisely measure angular rates up to ± 100 °/sec, it can also measure rates up to ± 150 °/sec with lesser accuracy. And it can select measure range, ±2G, ±4G, ±8G. The start-up time is less than 1 second, which is used to compute bias parameters; it does not require further calibration thereafter. The XG1300L is the best single axis rate measuring solution for navigation applications.

Note: This Product is not connected to or endorsed by the LEGO Group. LEGO MINDSTORMS are trademarks of The LEGO Group.

Specification

Performance	Input Dynamic Range	± 100 °/sec (Continuous)
		± 150 °/sec (Instantaneous)
	Rate Noise (1σ @ 50Hz bandwidth)	< 0.1 °/sec
	Scale Factor Nonlinearity	0.5 % (Typical)
	Measurement Range(Acceleration)	±2G, ±4G, ±8G(Selectable)
	Bandwidth	50 Hz
	Output Rate	100Hz
	Bias Drift	10 °/hr
Physical	Weight	< 15 grams
	Size	48 mm X 32 mm X 21 mm
Electrical	Power Consumption	< 50mW (@5V)
	Input Voltage	3.75 ~ 4.75 V
Environmental	Operating Temperature	-20 ~ 80 °C
	Storage Temperature	-40 ~ 100 °C
	Shock	200 gRMS

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MICROINFINITY
http://www.minfinity.com, E-mail: support@minfinity.com, TEL: +82-31-546-7408, FAX: +82-31-546-7409
(USA) E-mail: usa.support@minfinity.com, TEL: +1-734-223-5904, FAX: +1-866-400-3125

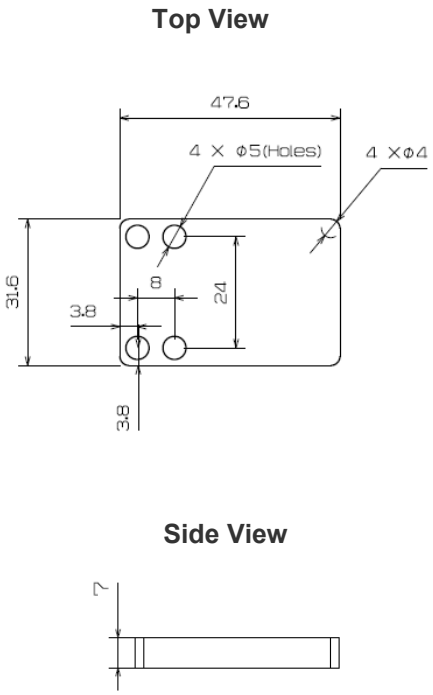
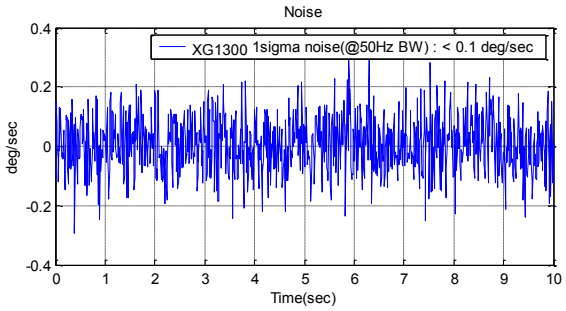
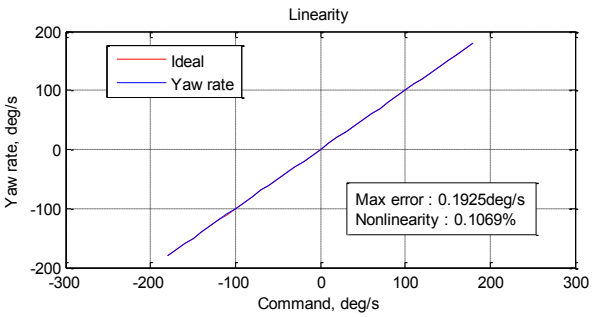


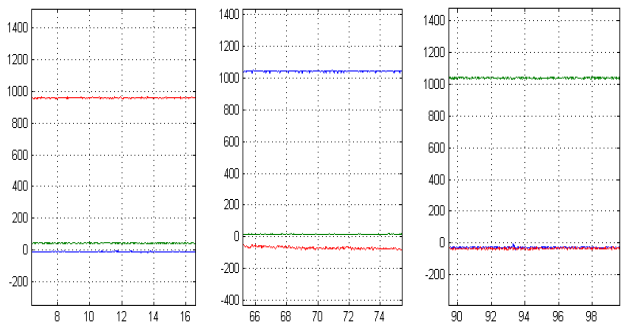
Figure 1. Dimension



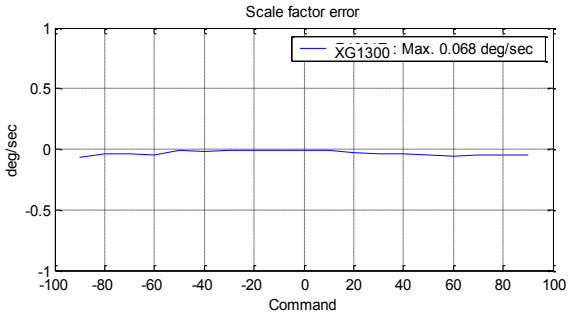
(a) Short Term Noise
N1σ < 0.1 deg/sec



(c) Rate Output vs Real Rate



(b) Acceleraton Output(±2G range, 1G level)



(d) Rate Error

Figure 2. Performance Test

http://www.minfinity.com, E-mail: support@minfinity.com, TEL: +82-31-546-7408, FAX: +82-31-546-7409
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