# CruizCore® XG1350

## Features

- Ultra Low Bias Drift
- High Resolution and Accuracy
- Outstanding Scale Factor Linearity
- Fast Start-up
- Fully Self Contained
- Digital Output (USB)
- Low Power Consumption
- Low Cost
- Roughed and Compact Package
- User Friendly Monitoring and Testing Program
- Adjustable Parameters

## Applications

**Robotics, Vehicles**, **Virtual Reality, Medical Devices**

## Description

The CruizCore® XG1350 is a fully self-contained MEMS digital gyroscope and accelerometer based on the CruizCore® R1 Series platform. Compared with the R1 Series, the XG1350 was designed with convenient packaging and communication interfaces to allow its use as a standalone sensor. It provides USB, the output and baud rate are adjustable for the customers' convenience. The XG1350 includes a MEMS gyroscope, 3axis 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 XG1350 is packaged in a hard case for increasing protection against external impact. The XG1350 uses an adaptive reduced order Kalman filter to stabilized angular rates and heading angles, virtually eliminating the most common errors (i.e. bias drift, scale factor, temperature effects). The XG1350 has a 50Hz bandwidth and can precisely measure angular rates up to ± 100 deg/sec, it can also measure rates up to ± 150 deg/sec with lesser accuracy. The start-up time is less than one second, which is used to compute bias parameters; it does not require further calibration thereafter. The XG1350 is the best single axis rate measuring solution for navigation applications.

## Specification

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|---|---|---|---|
| Performance | Angle & rate | Input Dynamic Range | ± 100 ˚/sec (Continuous) |
| | | | ± 150 ˚/sec (Instantaneous) |
| | | Rate Noise (1σ @ 50Hz bandwidth) | < 0.1 ˚/sec |
| | | Scale Factor Nonlinearity | 0.5 % (Typical) |
| | | Bandwidth | 50 Hz |
| | | Bias Drift | 10 ˚/hr |
| | Acceleration | Input Dynamic Range | ± 2 g (Typical) |
| Physical | | Weight | < 15 grams |
| | | Size | 35.9mm X 35.9mm X 17mm |
| Electrical | | Power Consumption | < 50mW (@5V) |
| | | Input Power Voltage | 4.75 ~ 5.25 V |
| | | Output Rate | Selectable(10, 25, 50 and 100Hz) |
| Environmental | | Operating Temperature | -20 ~ 80 °C |
| | | Storage Temperature | -40 ~ 100 °C |



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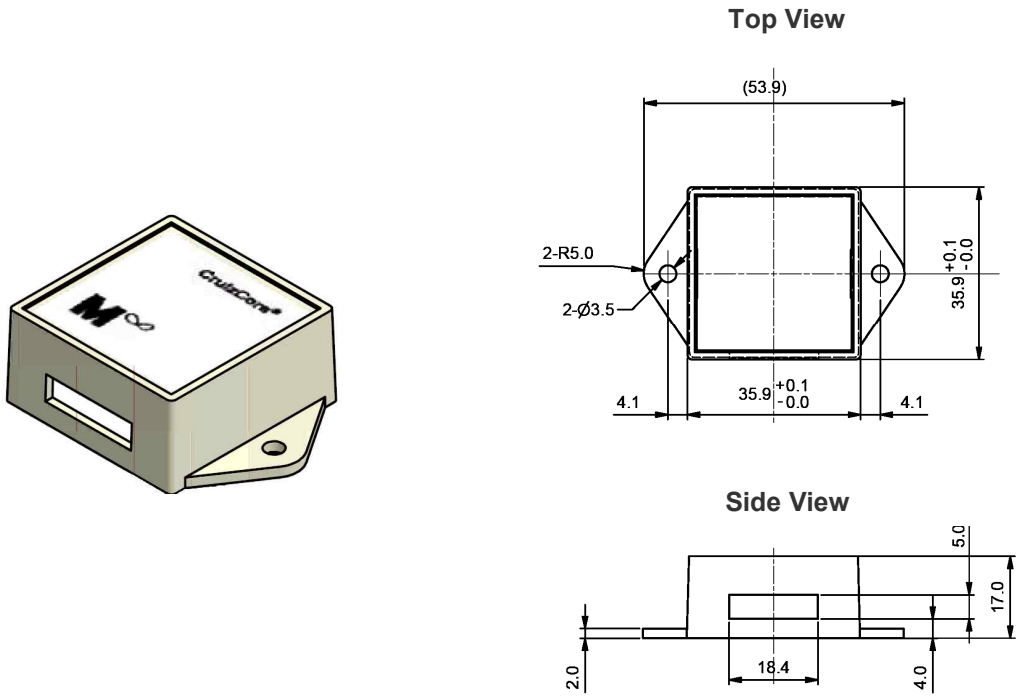
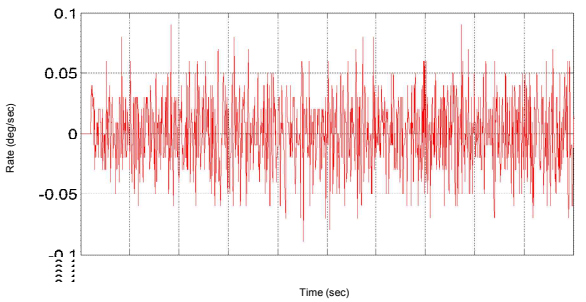
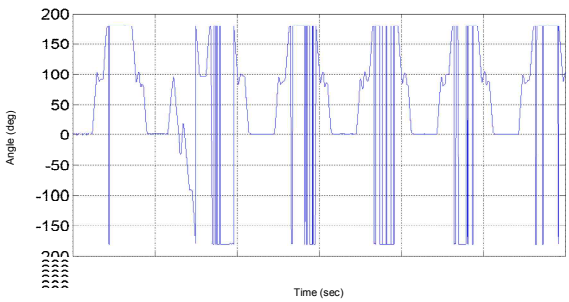


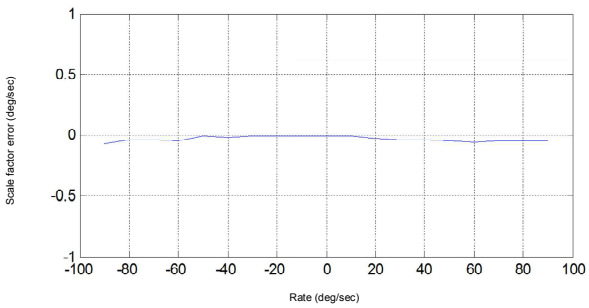

**Figure 1. Dimension**



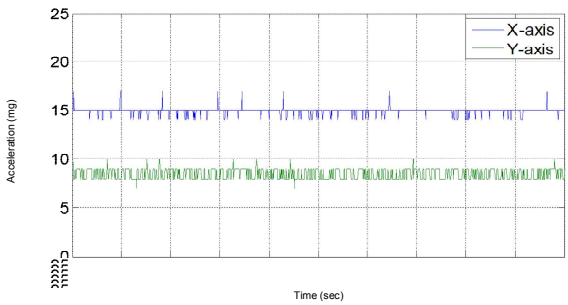

*(a) Rate short term noise*




*(b) Angle output (Robot test)*




*(c) Rate scale factor error*




*(d) Acceleration short term noise*

**Figure 2. Performance Test**



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