

FAQ for MicroGyro 100

1. What is the drift for the gyro?

Drift can be evaluated in two categories: time-based drift and temperature-based drift. Time based drift decreases from a typical value of up to ± 0.18 degrees/second in the first 5 seconds to a typical value of up to ± 0.12 degrees/second after 15 seconds. Temperature based drift is typically up to ± 0.18 degrees/second/ $^{\circ}\text{C}$. Please refer to the specification for more detailed information.

2. What is the resolution, or accuracy, of the MicroGyro 100?

A: The resolution, or accuracy, of the MicroGyro 100 is defined by the noise floor of the device. The typical value (refer to specification document DE00019-001 for the most current figures) for noise is 0.17 mVRMS. We then divide this number by the Sensitivity of 1.11 mV/degree/second to obtain a typical noise value of 0.15 degrees/second.

3. What is the maximum rate detected by the MicroGyro 100?

The maximum angular velocity of the MicroGyro 100 is ± 150 degrees/second.

4. How can rotational position be obtained from the MicroGyro 100, instead of rotational rate?

A: The MicroGyro 100 output is always in terms of mV/degrees/second, or rotational rate. The output must be integrated in order to obtain rotational position. This can be done using any standard integration process (e.g. the signal can be processed through an analogue integrator, or the signal can go through an Analogue to Digital converter, then integrated in a microprocessor.

A simple technique is to sample the rotational turn rate in equal intervals and then multiply the current gyro output by the sample time spacing. This is an approximation which works extremely well in applications like computer mice. So if you sample the gyro axis every 2mS, the change in the gyroscope's angular displacement works out to:

$$\begin{aligned}\Delta \text{Yaw} &= 2\text{mS} * \Omega_{\text{yaw}} = 2\text{mS} * [(\text{VG}_1 - \text{VREF}_1) / \text{SE}] \\ \Delta \text{Pitch} &= 2\text{mS} * \Omega_{\text{pitch}} = 2\text{mS} * [(\text{VG}_2 - \text{VREF}_2) / \text{SE}]\end{aligned}$$

Important Note

5. All information provided above is for reference only. Refer to the most recent revision of the MicroGyro 100 specification, Gyration document DE00019-001, for detailed and up to date information.