

## **2-Axis MEMS Rate Gyroscope**

### **Introduction**

The ER-2MG-201 is a two axis MEMS gyroscope, the pitch and heading of the carrier can be measured in real-time, and the angular rate can also be output in real-time. It has the advantages of small size, low power consumption, light weight and good reliability. The products can also meet the application requirements of the corresponding fields. That is, it can replace traditional rate gyros, including DTG and semi-liquid floating gyros.

### **Application**

Measure the angular rate of pitch and roll of the carrier and output it in real-time.

### **Features**

Short startup time

Digital or analog output (optional)

Small size, low power consumption, light weight, simple interface, easy to install and use

Output the measured value of two axial angular rate of carrier independently, continuously

Measure the angular rate of pitch and heading of the carrier and output it in real-time

## Specifications

| No. | Specifications                        | Analog output  | Digital output   |
|-----|---------------------------------------|--|--|
| 1   | Zero voltage                          | $\leq 3\text{mV}$  | $\leq 0.1^\circ/\text{s}$  |
| 2   | AC noise                              | $\leq 10\text{mV}$   | –  |
| 3   | Bias repeatability (Full temperature) | $\leq 0.6\text{mV}$  | $\leq 10^\circ/\text{h}$   |
| 4   | Bias stability (Full temperature)     | $\leq 0.6\text{mV}$  | $\leq 10^\circ/\text{h}$   |
| 5   | Measurement range                     | $\pm 80^\circ/\text{s}$ ( $\pm 100^\circ/\text{s}$ , $\pm 200^\circ/\text{s}$ ) optional   | –  |
| 6   | Resolution                            | $\leq 0.005^\circ/\text{s}$  | $\leq 0.005^\circ/\text{s}$  |
| 7   | Start up time                         | $\leq 1\text{s}$   | $\leq 1\text{s}$   |
| 8   | Scale factor                          | $(150 \pm 10)\text{mV}/^\circ/\text{s}$  | –  |
| 9   | Non-linearity (Full temperature)      | $\leq 0.02\%\text{FS}$   | $\leq 0.02\%\text{FS}$   |
| 10  | Dynamic performance                   | $90^\circ$ phase-shift-frequency $\geq 150\text{HZ}$   | $\geq 150\text{HZ}$  |
| 11  | Cross-coupled                         | $\leq 0.5\%$   | $\leq 0.5\%$   |
| 12  | Voltage (DC)                          | $\pm 15\text{V} \pm 0.3\text{V}$   | $+7\text{V} \pm 0.3\text{V}$ ripple wave: $\leq 20\text{mv}$ (RMS) |
| 13  | Weight                                | Gyro $\leq 100\text{g}$ , circuit board $\leq 100\text{g}$   | Gyro $\leq 100\text{g}$  |
| 14  | Polarity                              | The product rotates around the positive direction of the input axis, counter clock rotation, the output is negative, if clockwise rotation, the output is positive |  |
| 15  | Self-checking function                | Check whether the product works normally.  |  |
|     |                                       | "0" means normal, and "1" means failure.   |  |
|     |                                       | "1" level voltage is greater than or equal to 3.5V.  |  |
|     |                                       | "0" level voltage is less than or equal to 0.5V.   |  |

Working temperature:  $-45^\circ\text{C} \sim +60^\circ\text{C}$

**Impact** : Impact test value

| Testing axes         | Waveform     | Peak acceleration | Duration | Impact times |
|----------------------|--------------|-------------------|----------|--------------|
| Gyro: $\pm X(\pm Y)$ | 1/2 sin wave | 150g              | 3ms      | each 3 times |

**Mechanical interface**

Gyro dimension:  $\phi 28 \times 43\text{mm}$ .