

## GLOSSARY

**BIAS (ZERO OFFSET)** It is the electrical output of the sensor when there is no applied input.

**BIAS STABILITY (BIAS DRIFT)** It is the minimum of the Allan Variance when the gyro data are recorded at the fixed temperature.

**ENDURANCE TEMPERATURE RANGE** It is the temperature range in which a non-operating sensor will survive for a limited period of time without damage.

**GYRO AXIS ORIENTATION** The sensitive axis direction is indicated by an arrow in the drawings in the Product Specifications & Drawings. When a gyro is mounted on a surface that rotates clockwise the gyro produces a positive (+) change in the output signal.

**INPUT RANGE (IR)** It is the max angular rate a gyroscope uniquely translates into its output. IR of the sensor is defined as the negative range limit or the positive range limit which is the lowest in absolute value. Values given on datasheets are approximate values and may vary with each sensor.

**LINEARITY** It is the deviation of the sensor output signal from a theoretical straight line which has been fitted to the data points of an actual calibration at low rates. It is expressed as a percentage of reading.

**MEASUREMENT RANGE (RATE RANGE)** Within IR the measurement (conversion) error may vary. Rate range is defined as a part of the IR where measurement error does not exceed a certain value (usually in %).

**MINIMUM MAGNETIC SENSITIVITY (MMS)** It is the residual nonadjustable sensitivity to magnetic field due to optical non-reciprocal phenomena. Represents absolute lower limit of gyro magnetic response without shielding.

**OPERATING TEMPERATURE RANGE (OTR)** It is the temperature range in which the sensor functions without damage from thermal effects. Operating at temperatures above or below the OTR may cause permanent damage to the sensor.

### **OPTICAL SCALE FACTOR (OSF)**

It is a coefficient between angular rate and Sagnac phase. It is equal to  $2\pi L \cdot D / \lambda c$ , where L – fiber length, D-coil diameter. For the SLD wavelength 820nm the formular gives the following:

$$OFS = 4.5 L \cdot D \mu\text{rad/deg/s}, [L] - \text{m}, [D] - \text{cm}$$

For example, VG103S OSF = 2.1 mrad/deg/s or 1 rad at 480 deg/s

**OUTPUT IMPEDANCE** It is the resistance measured between the output line and the common line.

**REPEATABILITY** It is the deviation in sensor output signal levels when a specific input is applied in consecutive cycles of short time duration under the same conditions such as temperature. It can be determined by performing multiple consecutive short time duration calibration cycles and can be expressed in deg/h or % or what is applicable.

**READINESS TIME (START-UP)** It is the time from the initial application of power for a gyroscope to reach 90% of the specified Scale Factor value.

**SCALE FACTOR (SF)** If the gyro is exposed to rotation its output voltage changes. SF is defined as a coefficient between the voltage change and angular rate of rotation (mV per deg/s). For an open-loop FOG the SF depends slightly on rotation rate (SF nonlinearity) decreasing at the increasing rate. The actual measured SF is provided for each gyro and referenced to its individual serial number. SF also has natural temperature dependence ( $T_1 \approx -0.05\%$  per °C) caused by SLD wavelength temperature change.