

## Technical Note

# 6DF Series 6 Degrees of Freedom Inertial Measurement Unit, 6-D Motion Variant Glossary of Terms

### A

**Acceleration** – The rate at which velocity varies with time. Earth's gravity creates an acceleration of approximately  $9.81 \text{ m/s}^2$  on objects near its surface.

**Accelerometer** – A device that measures specific force.

### B

**Best Fit Straight Line (BFSL)** – The straight line fitted through a set of points which minimizes the sum of the square of the deviation of each of the points from the straight line ("least squares" method).

### C

**Compensated Temperature Range** – The temperature range over which the sensor will produce sensor outputs that are within specification.

**Cross-Axis Sensitivity** – The change in output of a sensor when it is subjected to inputs on an axis perpendicular to its sensitive axis.

### D

**Drift** – A slow change in output independent of the measured property, typically over a period of weeks or months. See also **Noise**.

### F

**Frequency Response** – Frequency response is the 3 dB cutoff point on a curve representing the output to input ratio of a sensor as a function of frequency.

**Full Scale Span (FSS)** – The algebraic difference between the output signal measured at the upper and lower limits of the operating range of the sensor. Also known as "Span" or ambiguously called "Full Scale Output". Sensor errors are often defined as a percentage of this value (%FSS).

### G

**g Sensitivity** – The change in output of a sensor (typically a gyro) caused by acceleration or gravity.

### I

**Inclination** The angle relative to the Earth's surface level.

**Inclinometer** – A sensor that measures inclination using the Earth's gravity.

**Input Range** – The algebraic difference between the upper and lower values of the measurable input of a sensor.

### L

**Linearity Error** – The maximum deviation of sensor output from a straight line fitted to the output measured over the specified **Input Range**. The straight line fit specified is calculated as a **Best Fit Straight Line (BFSL)**.

### M

**Mean Time To Failure (MTTF)** – MTTF is a basic measure of reliability for non-repairable systems. It is the mean time predicted under typical usage conditions until the first failure of a piece of equipment.

### N

**Noise** – The random high speed deviation from the ideal output under steady state conditions

### O

**Offset** – The output signal obtained from a sensor when the input condition is set to zero.

**Offset Error** – The maximum deviation in measured offset relative to the ideal value.

**Operating Temperature Range** – The temperature range over which the sensor will produce an output proportional to the input but may not remain within the specified performance limits.

### P

**Percent Full Scale Span (%FSS)** – See **Full Scale Span**.

### R

**Resolution** – The smallest difference between input readings that can be meaningfully distinguished or

### S

**Sensitivity** – The ratio of change in output signal to the corresponding change input signal. Sensitivity is determined by computing the ratio of the span to the specified input signal range. It is the slope of the calibration curve.

**Sensitivity Error** – The maximum deviation in measured sensitivity relative to the ideal value.

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**Specific Force** – Non-gravitational force per unit of mass.

**Storage Temperature Range** – The temperature range over which the sensor may safely be exposed without excitation applied. Under these conditions the sensor will remain in specification after excursion to any temperatures within this range. Exposure to temperatures outside this range may cause permanent damage to the sensor.

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**Supply Current** – The current drain on the supply terminals.

**Supply Voltage Operating Limits** – The range of voltage excitation which can be supplied to the sensor to produce a valid output.

## U

**Update Rate** – The rate at which new sensor output readings are available.

## SALES AND SERVICE

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