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OPERATING GUIDE

SERIES 7576A

6DOF MOTION SENSOR



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INTRODUCTION

Dytran Series 7576A is a family of high-performance, wide temperature range MEMS-based 6DOF motion sensors. The 7576A family utilizes a separate MEMS chip for each acceleration and angular rate channel with high drive, low-impedance buffering for measuring acceleration and angular velocity in commercial and industrial environments. The 7576A series is tailored for zero-to-medium frequency and input range instrumentation applications. The sensing element contains a hermetically-sealed, micromachined capacitive sensing element, a custom integrated circuit amplifier, and a single-ended output stage for each measurement channel.

The hermetically-sealed titanium case has an integral 5/16-32, 9-pin receptacle, and is easily mounted using two 0.18 inch holes. On-board regulation is provided to minimize the effects of supply voltage variation. Model 7576A is relatively insensitive to temperature changes and thermal gradients. When used with Dytran 6964AXX cable, the cable shield is electrically connected to the titanium case; the power and signal wires are isolated from the case. An initial calibration certificate is included and periodic calibration checking is available.

OPERATION

Model 7576A is powered using basic DC power. Refer to PS7576AX for allowed voltage range and current consumption. An on-board set of power filters, as well as a linear voltage regulator provide power conditioning before feeding the sensing elements.

Dytran Model 7576A produces six single-ended analog output voltage signals, which vary with acceleration and angular rate centered around bias voltages. Bias voltage for each channel is individual and is reported on the calibration certificate. Nominal value for the bias voltage is 2.5 Volts.

At zero acceleration, the output differential voltage normally equals to the bias voltage with approximately +/-2.5 Volts of swing for the full scale output. The axis directions are marked on the case with positive acceleration and angular motion.

CABLE LENGTH CONSIDERATIONS

Cable lengths of up to 15 meters (50 feet) can be used with the 7576A sensor without the need to test for output instability. For lengths longer than 15 meters, we recommend that you check each individual installation for oscillation by tapping the sensor and watching the output for oscillation in the 20kHz to 50kHz region. If no oscillation is present, then the cable length being used is acceptable. From the standpoint of output current drive and slew rate limitations, Model 7576A is capable of driving over 600 meters (2000 feet) of its cable type, but at some length between 15 and 600 meters, each device will likely begin to exhibit oscillation.

MAINTENANCE AND REPAIR

Should you experience a problem with your system, contact Dytran factory for technical assistance in analyzing and troubleshooting the problem. If the product must be returned for evaluation and/or repair, you will be given an RMA (returned materials authorization) number and instructions for returning the instrument to the factory. Do not return the instrument without first obtaining this authorization to return the system.