Full Scale Testing of 7310 Angular Rate Sensors

Our standard A2LA certified calibration for our 7310 angular rate sensors includes testing them from -3,000 degrees per second to +3,000 degrees per second on our proprietary calibration system. In order to verify that the units are functioning properly to full scale range, a special validation was needed.

The full scale validation test of our 7310 angular rate sensor was conducted using a centrifuge with capability of accurate speed control from 500RPM to 21000RPM. The unit under test (UUT) was a 7310-18K and a portable data recorder was used to record the data. An Endevco Model 726C-2K accelerometer was used to calculate actual RPM from acceleration and radius. The output voltage of 7310-18K and the 726C-2K reference accelerometer were recorded by the DAQ system and later exported for linearity analysis.

To ensure a valid linearity result we took over 10,000 points and measured in both positive and negative rotation (counter-clockwise) to verify linearity in both directions. As observed in the results below, the 7310-18K shows good linearity to over 19,000 deg/sec, at which point the output hits the electrical rail of +/-2.4V. The jitters at the low end of the data were caused by the wobbling of the centrifuge equipment and there is no concern on linearity at the low end which has been well verified on our 3,000 deg/sec rate table.

![Linearity Graphs](image.png)