



Watson Industries Application Notes

Flight Test Instrumentation

Aircraft flight testing is a part of the design evaluation and validation process for new and modified airframes. Many kinds of data, from the attitude of the aircraft to measurements of structural torsion and flight control flutter are necessary for an accurate and complete evaluation of an aircraft design. Incomplete or inaccurate test data can be costly and can affect pilot safety.



Rate gyros are the primary component for flight testing instrumentation, and Watson Industries' line of vibrating structure gyros is the best choice. For testing applications that require many data sources, Watson Industries offers larger sensor packages that include our VSG-series gyros with accelerometers

Technical Challenges:

The size, weight and power consumption of flight testing instrumentation a very important part of being successful in this application. Watson Industries always strives to keep our sensor packages as small and light as possible while maintaining the high accuracy our customers expect. Our sensors have very low power draw as well.

Watson Experience:

Watson Industries has been manufacturing gyros for this application since 1982.

Requirements:

The requirements for this application vary widely based on the type of airframe testing that is to be performed. Single axis gyros to full attitude reference systems may be necessary depending on the testing involved.



Watson Industries, Inc.

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Applicable Products:

- ARS-E332-3A
- VSG-E Series Gyros
- DMS-E604
- AHRS-E304

Typical Options:

We are able to accommodate your custom needs. Shown below is a listing of our most common custom modifications.

- Digital velocity input – Watson can support digital velocity inputs in many formats such as GPS and Airspeed Indicators.
- External GPS reference – We have built custom units that utilize GPS data as a reference.
- Custom specifications – For certain applications, customers require specifications that are different from our standard units. Watson Industries engineering is willing and able to accommodate these needs.
- Input Voltage – Many different input voltages can be accommodated.
- Output Format – Communications Protocols RS-422, USB, ARINC, Syncro
- Data Format – We have made many products with custom formatted data outputs.
- Sensor Ranges – The ranges for most of our sensors can be expanded or reduced to meet your requirements. Some of our gyros can have ranges of up to $\pm 3000^\circ/\text{sec}$.



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