



## Watson Industries Application Notes

### Yacht and Ferry Stabilization

Ocean-going yachts and ferries are susceptible to rolling and pitching with waves. To minimize the effects of wave motions on the passengers and cargo, a sensor is needed that can provide the necessary information to an active stabilization system.



Yachts are stabilized primarily to provide additional comfort to the passengers. The main purpose of stabilizing ferries is safety related. The roll angle of the vessel is controlled so that any cargo stored inside will not shift.

These applications require a high quality, reliable vertical reference sensor that can survive for extended periods in a marine environment. Our VRS line of vertical references is ideal for this application. It provides roll angle output data in both analog and digital formats. The ADS line of vertical references provide roll angle data in analog format only. These sensors have provided accurate data and reliable performance for customers in this field for many years.

#### **Technical Challenges:**

A vertical reference mounted on a ship susceptible to oscillations generated by wave motion. This makes it very difficult to sense vertical, because the dynamics of the application are better compensated for by a long time constant, but removing these errors quickly requires a short one.

This problem is overcome with Watson Industries proprietary data processing algorithms and our variable time constant settings. The Watson VRS line of vertical references is a microprocessor based system that is capable of changing the time constant of the system depending on the current situation of the camera. This allows us to effectively compensate for the dynamics of this environment while at the same time keeping errors from entering the system.



#### **Watson Industries, Inc.**

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## Watson Experience:

Watson Industries has been involved in the development and production of vertical reference products for this application since 1982.

## Requirements:

- Level:  $\pm 0.3^\circ$

## Applicable Products:

- VRS-E232-1AD
- ADS-C232-1A
- Pro Gyro<sup>®</sup> Rate Gyros
- ARS Rate Gyros

## Typical Options:

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

- 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-232, RS-485, RS-422, USB, 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.

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