



Watson Industries Application Notes

Cable Supported Camera Stabilization

At sporting events, getting as close to the action as possible without interfering with the athletes is the goal. Video cameras suspended by cables allow the audience to feel like they are on the field without disturbing the competitors. This application has strong commercial value since a more exciting telecast will draw a larger viewing audience.



For optimal quality, a vertical reference system is required that is stable and capable of holding the camera level even during accelerations and cable oscillations generated by the wind or other causes.

Watson Industries produces sensor packages that work very well in this application. Our VRS line of vertical references has a proven track record of accurate level sensing even while under acceleration.

Technical Challenges:

A camera suspended by cables is very susceptible to oscillations whether they are generated by the wind or by changing the camera's position. This makes it very difficult to keep the camera stabilized and level, 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 a cable supported camera while at the same time keeping errors from entering the system.

The size, weight and power consumption of the stabilizing device is also 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.



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Watson Experience:

Watson Industries been involved in the development and production of vertical reference products for this application since 1990.

Requirements:

- Level: $\pm 0.3^\circ$
- Weight: Less than 2 lbs.
- Power: Less than 4W

Applicable Products:

- VRS-E232-1AD
- ADS-C232-3AD
- Pro Gyro® Rate Gyros
- ARS-G152
- SPS-P230

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-232, 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.

Options specific to this application:

- Velocity input – To better compensate for dynamics, velocity can be input through use of GPS or an analog tachometer.



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