

CTC AppNotes

A series of technical documents written by members of the CTC community

Vibration Measurement using biaxial accelerometers

Measuring vibration in two axes simultaneously can help analysts pinpoint possible failure modes in many different applications.

While triaxial accelerometers have become very popular for machinery analysis due to the increasing use of multichannel data collectors and the improved speed they provide in capturing data for route collection,



Triaxial accelerometer popular for route collection.

Biaxial accelerometers also have a place as a lower cost option to triaxial sensors for applications where all three axes are not required.

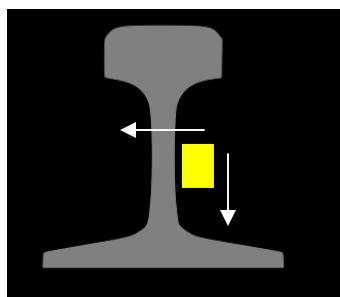
Biaxial accelerometers primary use is in applications where 2 axes must be monitored simultaneously. By proper choice of the mounting position the installer can choose which two axes the sensor will be taking data from.



AC119-1D Biaxial accelerometer.

Mounting a sensor on the top of the bearing will give X/Y readings while mounting on the face of the bearing will give either x/z or Y/Z readings depending on the orientation of the sensor.

Biaxial sensors are also indicated for use when taking readings on what might be termed "linear" applications such as railroad tracks and bridge supports, where the expected vibrations will primarily be in only two planes.



Railroad sensors: Vibration is measured axially (from side to side) and vertically (up and down). Due to the extreme stiffness of the rail itself, vibration is not expected to be significant horizontally (along the length of the rail).

As shown above, vibration in railroad tracks would be expected to be greatest axially (through the track) and vertically up and down on the rail)

rather than horizontally (along the length of the rail).



Collapse of the Tacoma narrows bridge monitoring is probably best accomplished using both biaxial sensors (in the anchoring locations such as suspension towers and at the land connections) and triaxial sensors along the suspended portions of the bridge.

If you have any questions or for further information please contact CTC directly via Email at dgripe@ctconline.com or jsmith@ctconline.com or feel free to call 1-800-999-5290 in the US and Canada or +1-585-924-5900 internationally.

**

If any CTC vibration analysis hardware product should ever fail, we will repair or replace it at no charge.