

GUIDELINES FOR SCREW MOUNTING ACCELEROMETERS VIBRATION SENSORS

Accelerometers measure shock and vibration by providing an output signal proportional to the object to which it is attached. There are many methods of attaching accelerometers (magnetic, tape, epoxy and studs/screws). Where possible and practical, screw or stud mounting is preferred because this method provides the stiffest connection with the object under test.

Accelerometers manufactured with holes or flanges for screw/stud mounting provide end users with the most effective way of attaching these sensors to obtain best quality of data possible.

However, even the most experienced users end up with bad data because they forget or ignore basic mounting guidelines. The table on the right provides critical guidelines to consider when evaluating your accelerometer installations.



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MOUNTING GUIDELINES

- The mass of the accelerometer must be $<1/10$ of the mass of the object under study.
- Mounting surfaces need to be clean, free of any residue from epoxies, waxes, paint or other foreign materials.
- Mounting surface should be flat.
- The surface roughness of mating surfaces should be 32 micro-inches RMS (MAX).
- The mounting holes need to be perpendicular - within 1 degree.
- The mounting hole must be checked to ensure it is longer than the mounting screw so as to prevent "bottoming out".
- Use a torque wrench for tightening screws to the manufacturer's specifications. Do not use electric tools as their frequencies may damage the accelerometer.
- Spread mating surface with a light coating of silicone grease, heavy machine oil or bees wax to ensure contact is secure thereby maximizing the usable frequency range.
- Secure the cable using clamps, O-rings, tape or other materials most suited to the application. Ensure that you have sufficient slack to allow for free movement of the sensor.
- Inspect mounting holes and remove any debris, burrs or other foreign materials.