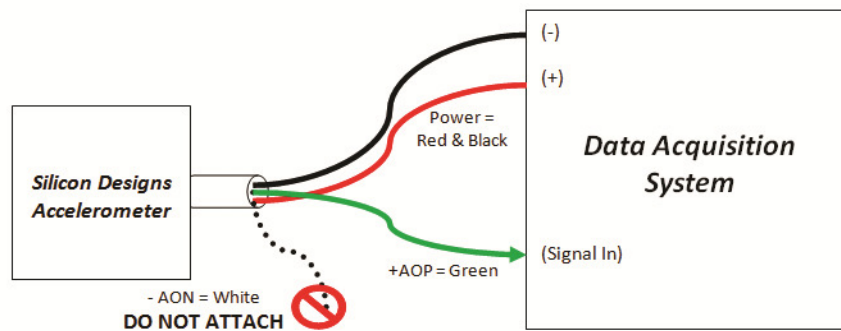


Using a Silicon Designs Accelerometer module in Single Ended Mode

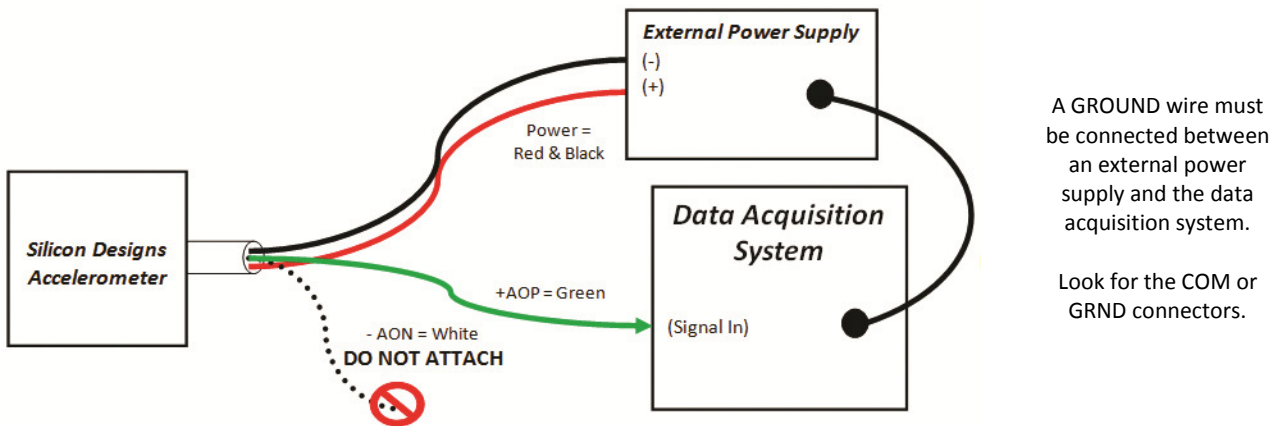
For the best performance we recommend differential mode, however if only single ended data acquisition equipment is available you should follow these guidelines.

1. Single ended sensitivity is $\frac{1}{2}$ the differential sensitivity. For example, a 2260-010 module is 200mV /G in single ended mode. Data sheets will contain information specific to each accelerometer.
2. In Single ended mode +/- Full Scale is (+0.5 volts) – (+4.5 volts). For a 2260-010 module (-10G) = +0.5 volts and +10G = +4.5volts. If you are seeing voltages outside this range, turn off your power and recheck your connections.
3. All of the test data on the NIST traceable calibration sheets or printed on the ESD bag label are for differential mode. Dividing the differential value by 2 does not always provide the most accurate Scale Factor value. For lower G units we suggest you use a +/-1G Flip Test Calibration (using Earth's gravity) to determine single ended values for 0G Bias and Scale Factor.
4. The output wiring AOP/ AON provides actual voltage signals on all (2) or (6) conductors. When using the sensor in single ended mode only the XYZ (+AOP) signal wires (green, brown, blue) are used.
5. **The unused XYZ (-AON) signal wires (white, orange, yellow) should be either trimmed off or well insulated with electrical tape (do NOT tape them all together). Connecting these (-) wires to the frame of the test equipment or to the 0 volt power supply rail will potentially cause the sensor to overheat and prematurely fail. Test equipment like oscilloscopes with BNC type connections may often cause this problem, since the outside shell of the BNC typically connects directly to the frame ground of the instrument. See the attached information regarding using an oscilloscope. One of the first symptoms of this is unstable readings with increasing electronic noise as the output circuits of the accelerometer overheat.**

Using a data acquisition system with an integrated power supply



Using a data acquisition system with a separate power supply



This information is valid for all Silicon Designs 2012, 2210, 2220, 2240 & 2260 single axis modules and all 2422, 2460, 2470 & 2480 tri-axis modules.

Using a Silicon Designs Differential accelerometer module with an oscilloscope

Connecting the AOP + & AON- signal to an oscilloscope using a conventional oscilloscope probe will ground the AON – signal to the case of the device, can cause signal problems, and may cause the accelerometer to overheat and eventually fail.

Use a differential probe to make sure both AOP + and AON - remain isolated from the ground of the oscilloscope.

Single Ended Probe



Differential Probe



Differential probes tend to be expensive so if you have at least a (2) channel oscilloscope there is a workaround that will allow you to view the signal in differential mode.

With a multi channel oscilloscope connect AOP + to Channel A and AON - to Channel B. Using the MATH functions do an A -B the output is “pseudo” differential. Oscilloscope probes are grounded to the black (-) power wire.

This information is valid for all Silicon Designs 2012, 2210, 2220, 2240 & 2260 single axis modules and all 2422, 2460, 2470 & 2480 tri-axis modules.