

**Concept Question 4-17:** If the goal is to measure small deviations between a pair of input signals, what is the advantage of using an instrumentation amplifier over using a difference amplifier?

A difference amplifier has to measure each of the two signals and then subtract them. In contrast, the output of the instrumentation amplifier is proportional to the difference between two signals, rather than to the signals themselves. Consequently, the instrumentation amplifier provides superior measurement precision, typically by two or more orders of magnitude.