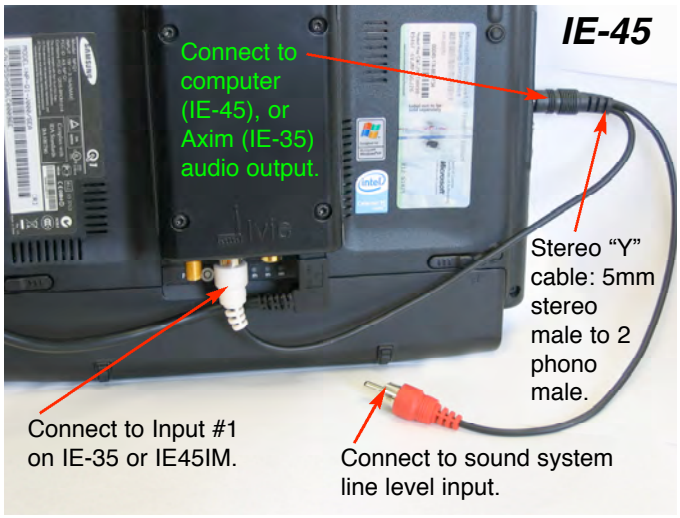
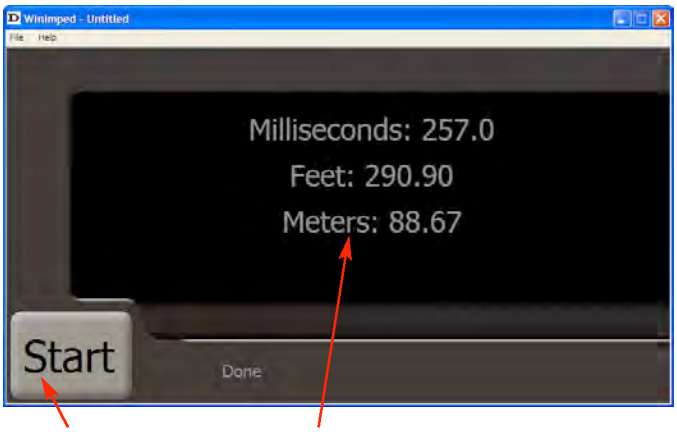
Delay Quick Start
IE-35 & IE-45





Introduction: Measurement of delay with the IE-35 and IE-45 delay software measures the delay (hence, the distance) between a sound source and the measure - ment microphone.

***Hookup:** Using a "Y" cable (available from Ivie or else - where) connect the Ivie instrument to the sound system as shown above.*

***Measurement Setup:** Place the instrument micro - phone in the physical location where you wish to know the delay from the loudspeaker. Double-check our sys - tem connections and make sure you can see the dis - play screen of the IE-35, or IE-45.*

***Procedure:** With the delay software running, press the "Start" button (see illustration at top-right). If the pulse does not have sufficient amplitude, a warning will appear on your instrument screen and you will need to increase the audio output of your IE-35, or IE-45 "com - puter" (generally to maximum). With sufficient level for a valid measurement, press the "Start" button to make a measurement. Do this several times, making several successive measurements. You should begin to see a reasonable, repeatable measurement. The delay measurement will be triggered by the loudest sound that arrives at the microphone. In perfect conditions, the accuracy of the measurement will be within about 0.1 milliseconds - or, about an inch. Most measure - ments will not be in perfect conditions, so accuracy will be affected accordingly.*

***Cautions, Warnings & "Gotchas:"** Improper gain structure can prevent an accurate delay measurement. Start with maximizing the output of your IE-35, or IE-45 - unless, of course, you are feeding your instrument output into a mic input instead of a line input. Make sure you have enough gain through your audio system to drive the loudspeaker such that the measurement "pulse" can clearly be heard at the microphone location.*

Signal-to-noise is always something to consider. Such things as slammed doors, running vacuums, worker's hammers and wrecking balls can trigger false measure - ments.

Sound path obstructions can cause inaccurate delay measurements. If there is not a clear, line-of-sight path between the loudspeaker and the measurement micro - phone, early reflections or combined reflections could reach the microphone first, or loudest, thus triggering a false measurement. Temperature and humidity changes can also affect the speed of sound, corre - spondingly altering a delay time measurement.

Speaker inertia delay can "slow" a delay measurement. When the electrical pulse hits the speaker, inertia must be overcome before the speaker cone can begin to move, thus generating sound. The lower the frequen - cy, the more cone inertia to overcome, and therefore, the longer the "measured" delay time. A woofer located exactly the same distance from the microphone as a tweeter will likely have a longer measured delay time.

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