AP185 Activity 2

INPUT-RESPONSE CURVE OF A SYSTEM[1]

In this experiment we will practice how to setup electronic instruments to plot the input-output (I/O) curve of a device. The I/O curve is a STATIC characteristic of the system.

Materials: passive electrical devices (resistors, capacitors, inductors, light bulb, LED, etc.), signal generator, oscilloscope with two probes. Camera optional.

Procedure:

1. Using your Wheatstone bridge circuit, pick two points where the input goes and two points where the output should be measured from. Draw your circuit diagram.

2. Using the signal generator set up a triangular wave that goes from -2.5 to +2.5 volts at the lowest possible frequency. Use this as input to your circuit. Use the oscilloscope probe Channel 1 to observe this input signal.

3. Attach oscilloscope probe Channel 2 at the output of your circuit.

4. Set Oscilloscope in X-Y mode to see Channel 1 and 2 simultaneously.

5. Capture an image of the oscilloscope output. Increase the amplitude of the input signal to 1.5 times the amplitude. Any changes on the output?

6. Based on your result is your system linear or nonlinear? What can you do to check this assertion?

1 Modified from Dr. Msoriano 185