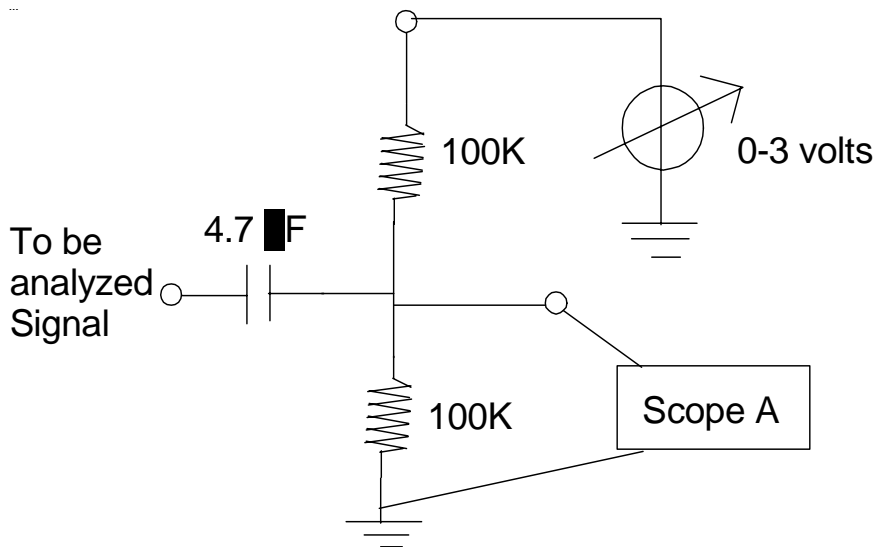


Spectrum analyzer:

- As far as we know the DSA can only analyze positive signals. So if you have a negative signal you have to add a voltage on top of it. This can be done by building the circuit given below. The RC time constant of the circuit is 470 msec or the breakpoint of the high pass filter defined by R and C is 0.33 Hz.
- Use for the input the scope A input of the NI-scope card. Regulate the variable voltage source so that the scope signal is completely positive.



- Start the Digital Signal Analyzer: Go to Start – Programs - National Instruments Virtual Bench – Virtual Bench DSA.
- Maximize the window. The window will show two graphs. Select channel 0 for both graphs with the buttons on the right side of the graph.
- Directly above each graphs are four menu options. For the upper graph:
 - a. Choose Time Waveform for the first menu option.
 - b. Choose Linear Magnitude for the 2nd menu option.
 - c. Choose None for the 3rd menu option.
 - d. Choose Markers Off for the 4th menu option.For the lower graph:
 - a. Choose Amp Spectrum for the first menu option.
 - b. Choose Linear Magnitude for the 2nd menu option.
 - c. Choose None for the 3rd menu option.
 - d. Choose Dual Markers for the 4th menu option.
- On the right at the top of the window are three menu options. Click the first menu option and choose the Triggering tab. Select “Analog Trigger” for Triggering Type. Select for the Trigger Channel “A”, and for the Slope “Rising”. Put the Level on “1 volt” and the Trigger Time out on “1 sec”. Click the Averaging tab. Choose for Averaging Mode “Off”.
- Click Apply, and click OK.

- The upper graph should show the time domain of the signal. The units on its X-axis are seconds. The lower graph should show the calculated frequency spectrum. The units on its X-axis are Hz. It is possible to change the total range of the X-axis by clicking the maximum value printed on the far right. Select the Span tab. Choose “Custom” for Alias Free Range. The “Baseband Span” determines the total frequency range of the calculated spectrum. The “# of lines” parameter determines the total range of the X-axis of the upper graph.
- By clicking on the numbers along the Y-axis of the graph it is possible to change the range on the y-axis.