



PowerSpectrum.vi

C:\Users\mcintyre\Documents\PowerSpectrum.vi

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Connector Pane

PowerSpectrum.vi



Front Panel

PowerSpectrum.vi

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Overview: Demonstrates the use of the **FFT Power Spectrum and PSD VI**.

Details: Computes the averaged power spectrum of a simulated input signal. This example allows you to specify various averaging modes for your measurement, such as RMS averaging, vector averaging, or peak hold, as well as the number of averages. You can observe the influence of these averaging parameters, typically on the noise floor, and notice that vector averaging requires the use of a trigger in order to lower the noise floor without lowering the fundamental along with it. You also can specify the type of window to use in this measurement, such as a Hanning or Flat Top window.

Instructions:

1. Run the VI.
2. Change the **sine frequency** and see how the averaged **Power Spectrum** results change.
3. Change the **averaging parameters** to explore various FFT averaging and weighting modes.
4. Note that if the **averaging mode** is "Vector averaging", **Trigger** should be ON so the sine signal is the same phase for each record.
5. Click **Stop** to stop the VI.

Power Spectrum

dB

Restart averaging

linear averaging done

averages completed

Stop

sine frequency

4000 6000

2000 -8000

0 10000

sine amplitude

10- 8- 6- 4- 2- 0-

Trigger

Off

1

averaging parameters

averaging mode

RMS averaging

weighting mode

Exponential

number of averages

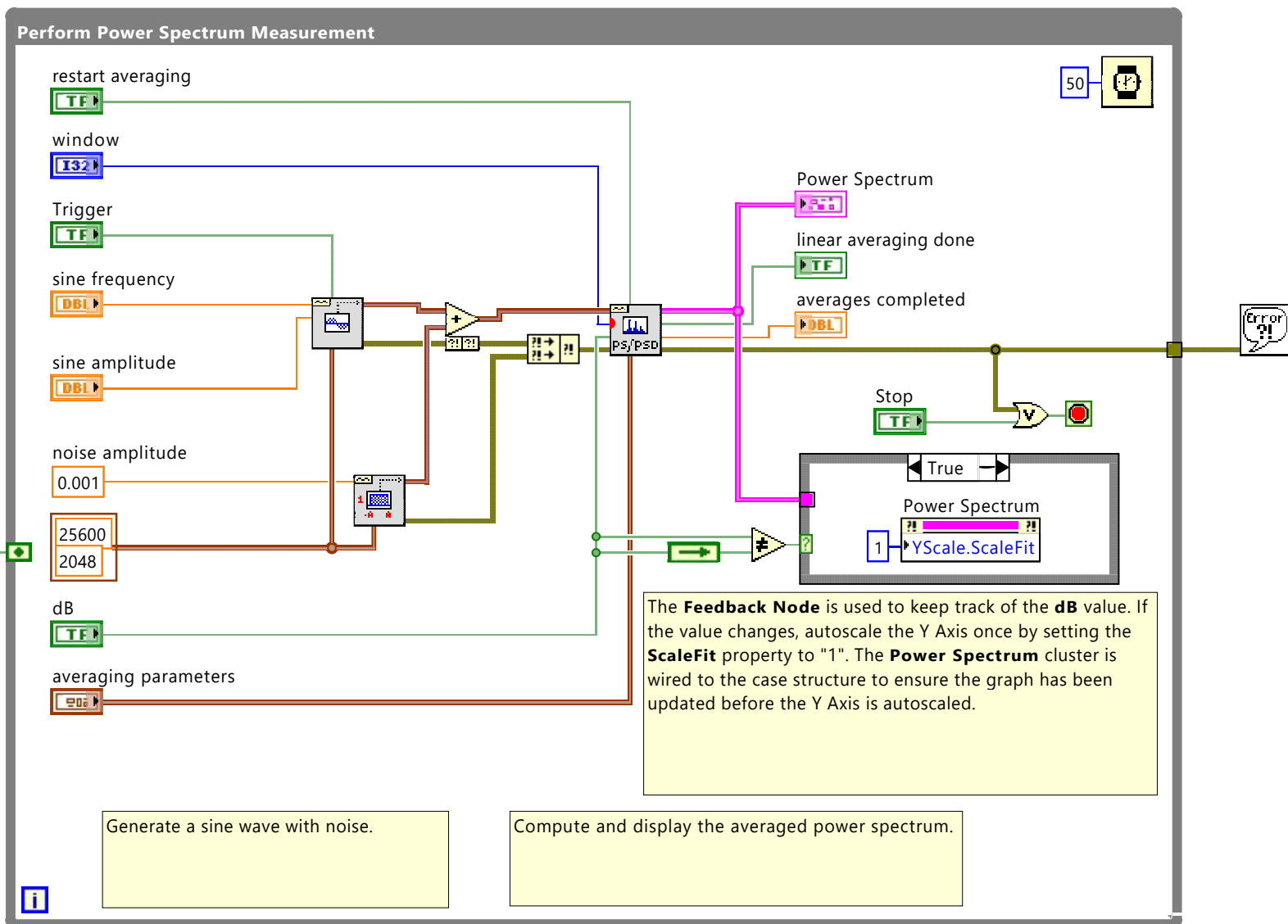
10

window

Hanning



Block Diagram



The **Feedback Node** is used to keep track of the **dB** value. If the value changes, autoscale the Y Axis once by setting the **ScaleFit** property to "1". The **Power Spectrum** cluster is wired to the case structure to ensure the graph has been updated before the Y Axis is autoscaled.

Generate a sine wave with noise.

Compute and display the averaged power spectrum.

