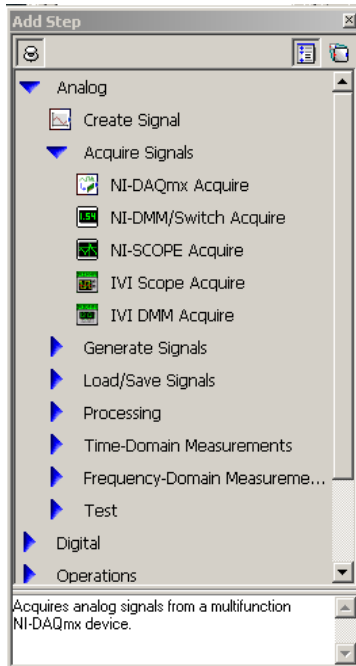**The following are some short notes to help with using LabVIEW express.**
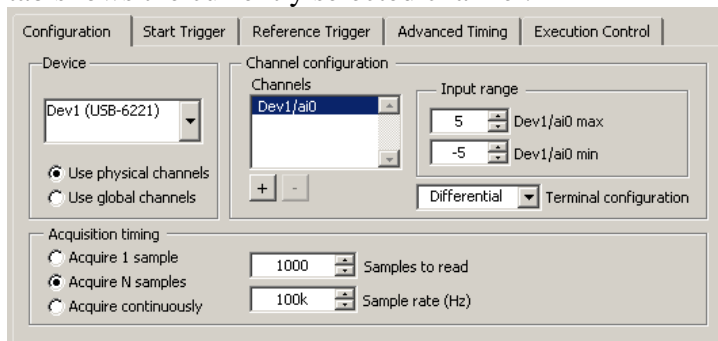
Create a new data input stream:

Add step | analog | acquire signals | NI-DAQmx Acquire

This will generate a single acquisition channel setup.

The step setup window will allow you to choose which and how many channels you wish to acquire. The configuration tab shows the currently selected channel.

Clicking on the + sign under the channel window will allow you to choose additional channels to add to your data input. Once you have set the voltage ranges and acquisition speed and samples on this window, you can select the data view tab to take you to an output window.
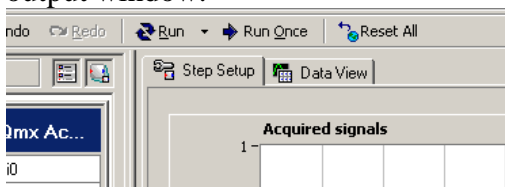
If you select the run button , you will notice that it changes to running mode, but you don't see any data. You must still tell it which of the channels you have selected to acquire you wish to display.

If you right click on the dev/ai0 (or whatever channels you have selected) you get the menu shown here. Using the "Display" selection you can choose to either add it to the existing active data display window, or to open a new display window and insert it into there. Once this is done, you are ready to work.
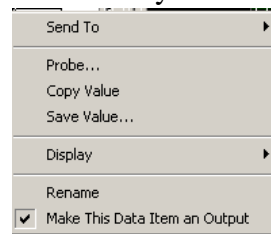
View data information by using cursors:

There are data cursors that allow you to read the values of specific points. Cursors are best used on stopped data screens. To turn on the cursors, right click on the data view and you should be presented with the menu shown at the right. Simply select the "Cursors" to turn them on.

On the display menu you will find a small window in the lower corner that pops up looking like this:
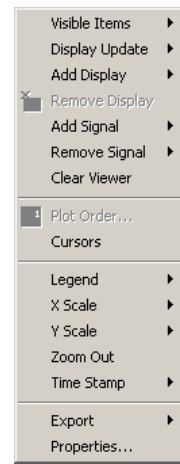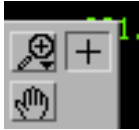
This menu has three selections. The hand allows you to move the display around when you are zoomed. The + allows you to use the pointer tool, which is used to move the cursors around and the magnifying glass allows you to zoom in a variety of modes. Note that if you are zooming, you can return to the base view by selecting the "zoom out" on the above menu.

The two cursors are known as tracked cursors. This means that fore each cursor, if you drag the vertical back and forth, changing the time index, it will automatically move the horizontal to the voltage level of that time value. Both vertical cursors can be moved independently to measure either absolute values or values relative with each other. Placing your pointer tool over the vertical line should change the cursor to a double line with arrows, indicating you are in move mode. To change between signals right click on the cursor output window. You will be presented with a menu to select. *Each cursor can be changed individually, so be careful that you have both cursors on the trace you want before you read delta values.*

Dev1/ai2	x1: 3.225m	y1: 4.0102	Dx: 4.215m	1/Dx: 237.248
Dev1/ai0	x2: 7.44m	y2: -974.369m	Dy: -4.98457	Dy/Dx: -1.18258k

This output window shows the x and y values of both cursors as well as the differential between the two. Unless you have changed the display from the standard voltage / time display x displays time in seconds (m=milli) and y is volts.

The cursors can also be used in any of the zoomed modes, as long as the zoom window contains the vertical cursor line.


Visible Items ▶
Display Update ▶
Add Display ▶
Remove Display
Add Signal ▶
Remove Signal ▶
Clear Viewer

Plot Order...
Cursors

Legend ▶
X Scale ▶
Y Scale ▶
Zoom Out
Time Stamp ▶

Export ▶
Properties...

Storing data to a file:

It may be useful to save the data from a trace or set of traces to a file. This is easily accomplished by selecting "Send To" after right clicking on the device in the acquire window.

Send To | Analog | Load / Save signals | Save to ASCII/LVM

This will generate a new step with a window similar to the following:
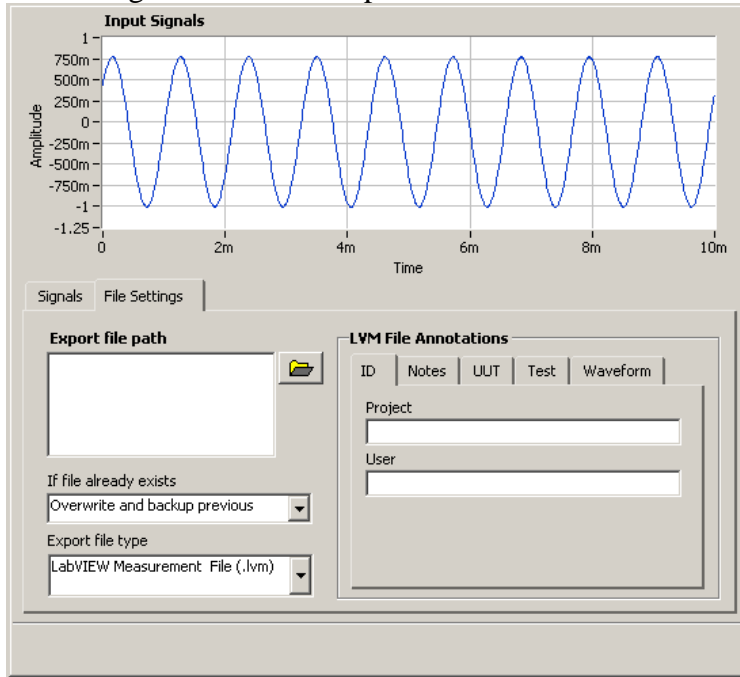
The export file path window shows what the file name is that will be used. Below that window is a selection for what to do if the file exists. Be cautious of the append and next available file name selections. The way the system works is that while the process is running it will save a file full of data for each run cycle. This is NOT each time you hit run, but each time the system takes a new set of data. To get only ONE file or data set you must hit the "run once" instead of "run" button. It is possible with the two settings indicated to quickly fill a disk drive with data, one with a single huge file, and the other with a series of sequentially numbered files.

In general you want to set the export file type to "Generic ASCII (.txt)", Time reference to "Relative time" and X Value Columns to "one column only".

Saving a waveform picture to file.

Since acquiring the new data will erase what is on the display, you can save the image of the display to a file. This is easily accomplished by right clicking the data view window and selecting export from the menu that is generated. You probably want to save the image as a black and white image if you plan on putting it into your report.

Making Measurements:

In addition to making measurements using the cursors, you may choose to make measurements using one of the other available methods. By right clicking on the channel you can select "send to | Analog". This will bring up a number of choices. In addition to sending the data to a file, you can send it to "processing" for such things as filtering, to "time domain measurements" for such tings as timing and amplitude measurements, and to "frequency domain measurements" for such things as a power spectrum, which is similar to what you would see on a typical spectrum analyzer. The following is a typical power spectrum output screen showing the output of a simple sine wave.
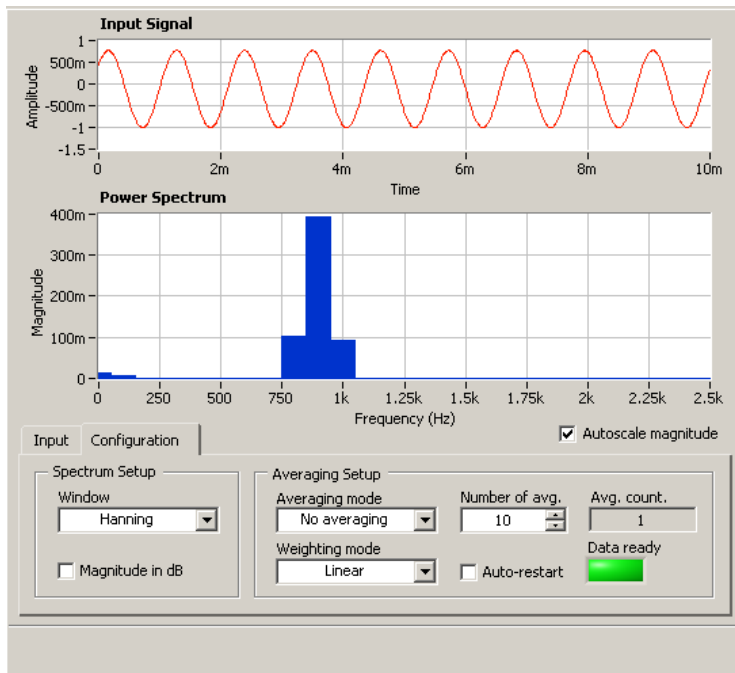
Windows are easily re-scaled by typing over the end point values on the scale. In this example the signal has been zoomed to a range of 500 Hz to 1.2KHz. The amplitude can be zoomed in the same way.