

### Exercise 8-3: Using Analysis Functions and VIs to Analyze Data

#### Goal

- Use analysis tools on your VI block diagram to analyze data.

#### Instructions

Analysis tools with the Waveform Data Type

- Open `C:\Exercises\LabVIEW Core 1\Analysis tools\Analysis tools.lvproj`.
- From the **Project Explorer** window, open the Using Analysis tools (Waveform data type) VI.
- Examine the front panel and the block diagram.
  - Set **Physical Channel**, **Desired Sample Rate (Hz)**, and **Number of Samples** controls appropriately to acquire a signal from your DAQ device.

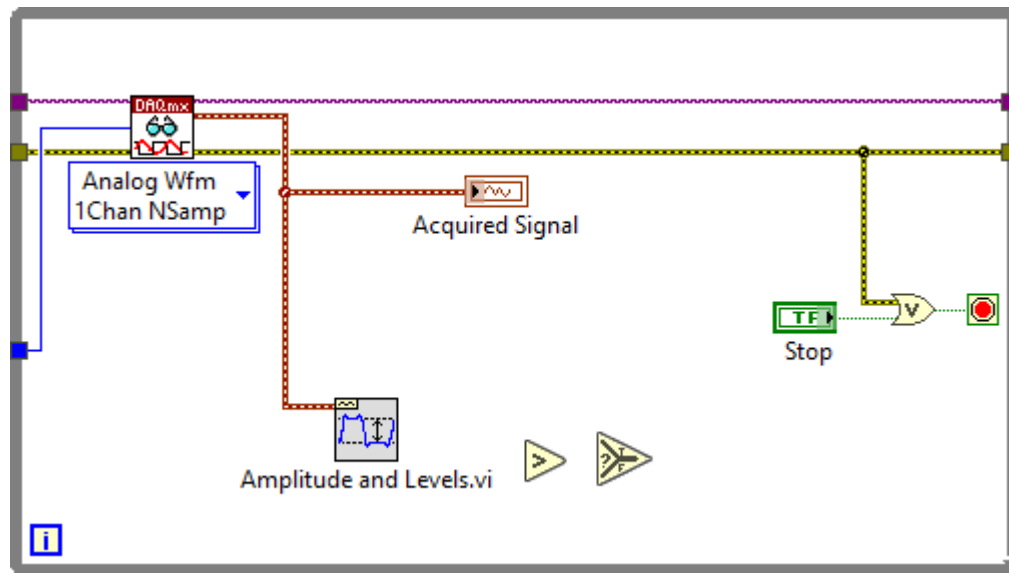


**Note:** Make sure that you have your thermocouple connected to the Thermocouple Input Connector, and that the BNC/Thermocouple Switch is in the right position.

|                          | Simulated Hardware | BNC-2120                             |
|--------------------------|--------------------|--------------------------------------|
| Physical Channel         | PCI-6221/ai1       | PCI-6221/ai1<br>(Thermocouple Input) |
| Desired Sample Rate (Hz) | 1000               | 2560                                 |
| Number of Samples        | 1000               | 256                                  |

- Notice that this VI performs a continuous acquisition.
  - Notice that the **Acquired Signal** indicator is a waveform data type.
- Observe the behavior of the VI.
    - Run the VI.
    - On the front panel, observe the behavior of the **Acquired Signal** waveform chart.
    - Stop the VI.
  - Analyze your data using analysis tools from the Signal Processing palette.
    - Right-click in **block diagram**, find the Amplitude and Levels VI under **Signal Processing»Waveform Measurements**, and drag it to the block diagram.
    - Place it inside the loop.
    - Wire the **data** output of DAQmx Read VI to the **signal(s) in** input of the Amplitude and Levels VI.

- Find and place **Greater** and **Select** functions inside the loop.



- Wire the VI as shown in the follow

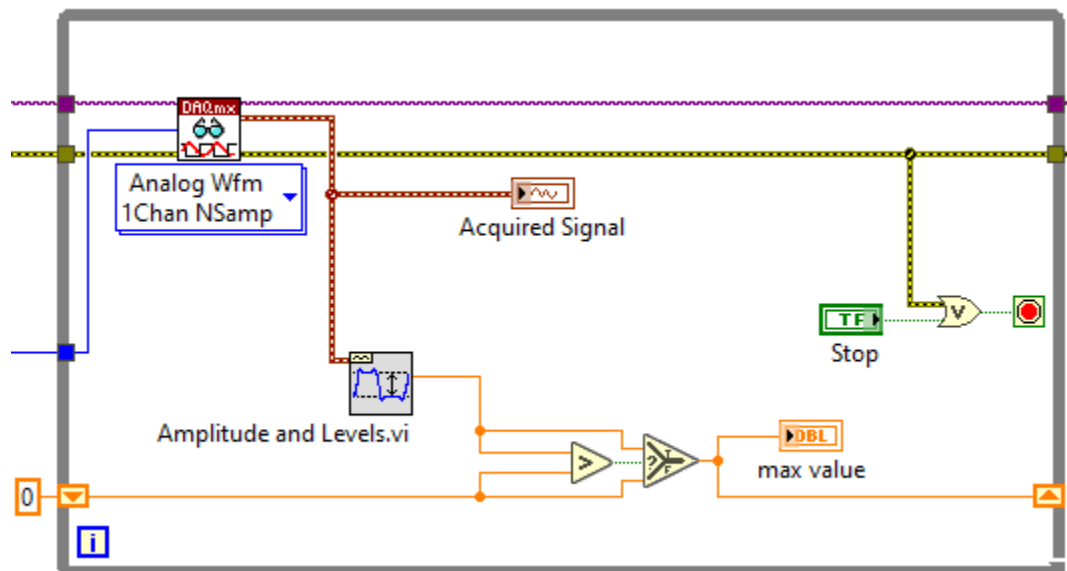
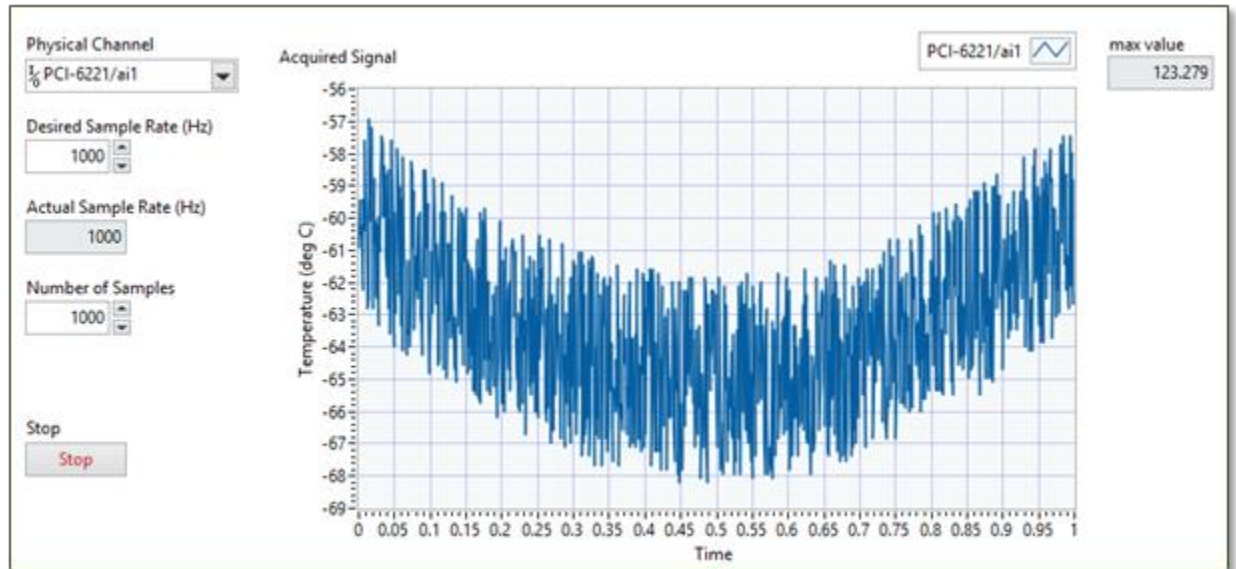


figure.

- This is to compare the high state level value of each iteration to the previous one, and if it is greater, then VI overwrites the value passed to the max value indicator. If the new value is less than the previous one, then VI proceeds to the next iteration while keeping the previous value. The initial 0 constant wired to the shift register initializes the first value as 0.

6. View the results of the analysis tool.

- Switch to the front panel and arrange the items as shown in the following figure.



- Run the VI and keep it running for a couple of seconds. Notice that the **max value** indicator is constantly rising and peaks at some point.
- Stop the VI.
- Save the VI.

### Your Turn

Experiment with using other analysis tools.

### End of Exercise 8-3