

# Using DAQmx

## Goal

Explore a DAQmx example program that continuously acquires data, and then modify it to wait on a digital trigger.

## Scenario

Explore a DAQmx example program that continuously acquires a voltage signal on channel analog input 1 (AI1) of the DAQ device. Modify the VI to use a digital trigger. The VI begins measuring when a digital trigger is pressed and released. The VI stops measuring when the user clicks the stop button.

## Implementation

This exercise assumes that you have a simulated DAQ device defined in MAX. If you do not have a simulated DAQ device, complete the exercise in the DAQ: Acquiring Data module to create a simulated DAQ device.

The files that you need to complete this exercise are here: <NI eLearning>\LV Core 1\DAQ Programming\Exercise.

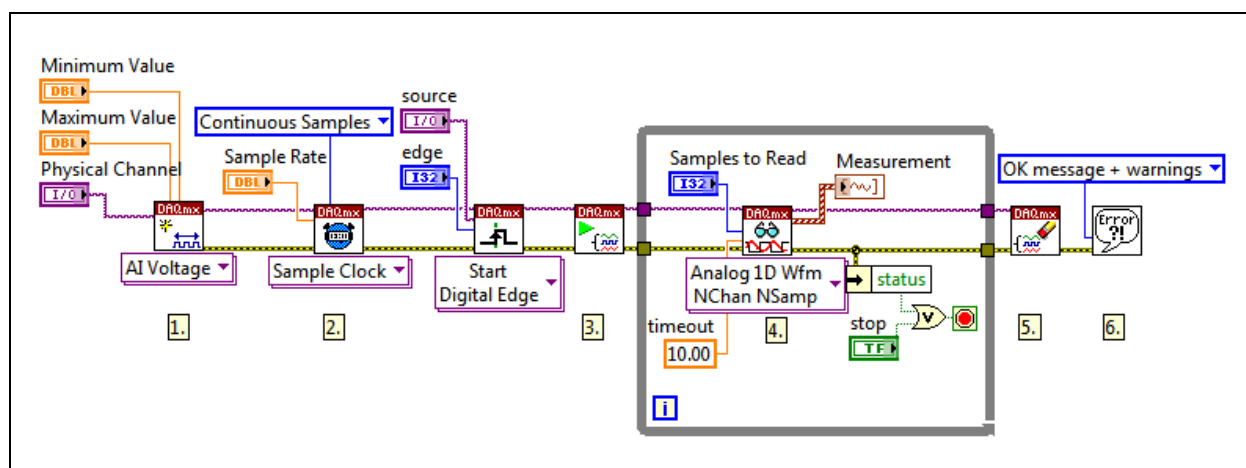
### Open and run a DAQmx example

1. In LabVIEW, select **Help»Find Examples** to start the NI Example Finder.
2. Confirm that you are browsing according to task.
3. Navigate to **Hardware Input and Output»DAQmx»Analog Measurements»Voltage** in the task structure.
4. Double-click **Cont Acq&Graph Voltage-Int Clk.vi** to open the example program. This VI demonstrates how to acquire a continuous amount of data from a DAQ device.
5. Explore the block diagram.
  - ☐ Go to the block diagram.
  - ☐ Press <Ctrl-H> to open the Context Help window. Hover over each of the DAQmx functions to learn about each function. Read the steps listed in the comment to understand the functionality of the example program.

- ☐ Click the pull-down menu of the DAQmx Create Channel VI and notice that it is set to **Analog Input»Voltage**.
6. Set the default values and settings on the front panel.
  - ☐ Set Physical Channel to **Dev1\ai1**.
  - ☐ Set Minimum Value to -1.
  - ☐ Set Maximum Value to +1.
  - ☐ Enable autoscaling of the y-axis of the waveform graph by right-clicking the Waveform Graph and selecting **Y Scale»AutoScale Y**.
7. Run the VI. The VI should begin acquiring data continuously.

## Add Triggering to the Example Program

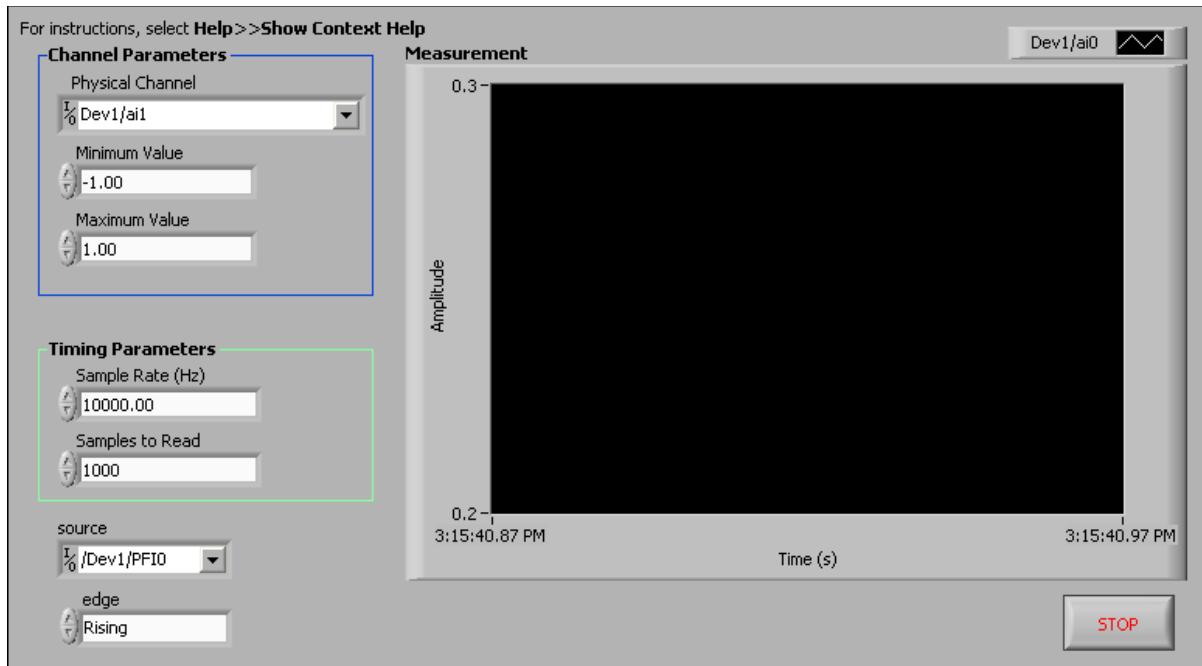
1. Save the VI as `Trigger AI Acquisition.vi` in the `<Exercise>` directory.
2. Modify the block diagram as shown in Figure 1 to add triggering functionality.



**Figure 1.** Trigger AI Acquisition VI Block Diagram

- ❑ Delete the task wire and error wire connecting the DAQmx Timing VI and the DAQmx Start Task VI.
- ❑ Place a **DAQmx Trigger VI** on the block diagram between the DAQmx Timing VI and DAQmx Start Task VI.
- ❑ Click the DAQmx Trigger VI pull-down menu and select **Start» Digital Edge**.

- ☐ Right-click the source input of the DAQmx Trigger VI and select **Create» Control**.
  - ☐ Right-click the edge input of the DAQmx Trigger VI and select **Create» Control**.
  - ☐ Connect the wires as shown in Figure 1.
3. Go to the front panel.



**Figure 2.** Trigger AI Acquisition VI Front Panel

- 4. Set the source.
  - ☐ Set source to **Dev1/PFI0**.
- 5. Set edge to **Rising**.
- 6. Save the VI.
- 7. This VI will begin measuring when a digital trigger is detected from the defined source. If you do not have a device to create a digital trigger, such as the BNC-2120 or the DAQ Signal Accesory, you have completed this exercise.
- 8. Run the VI. Cause a digital trigger wired to the PFI0 pin to begin the acquisition.

## End of Exercise

## Notes

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