# Exercise 2-2: Validating I/O (NI DAQ Device)

## Goal

To verify that the inputs and outputs of your DAQ device behaves correctly.

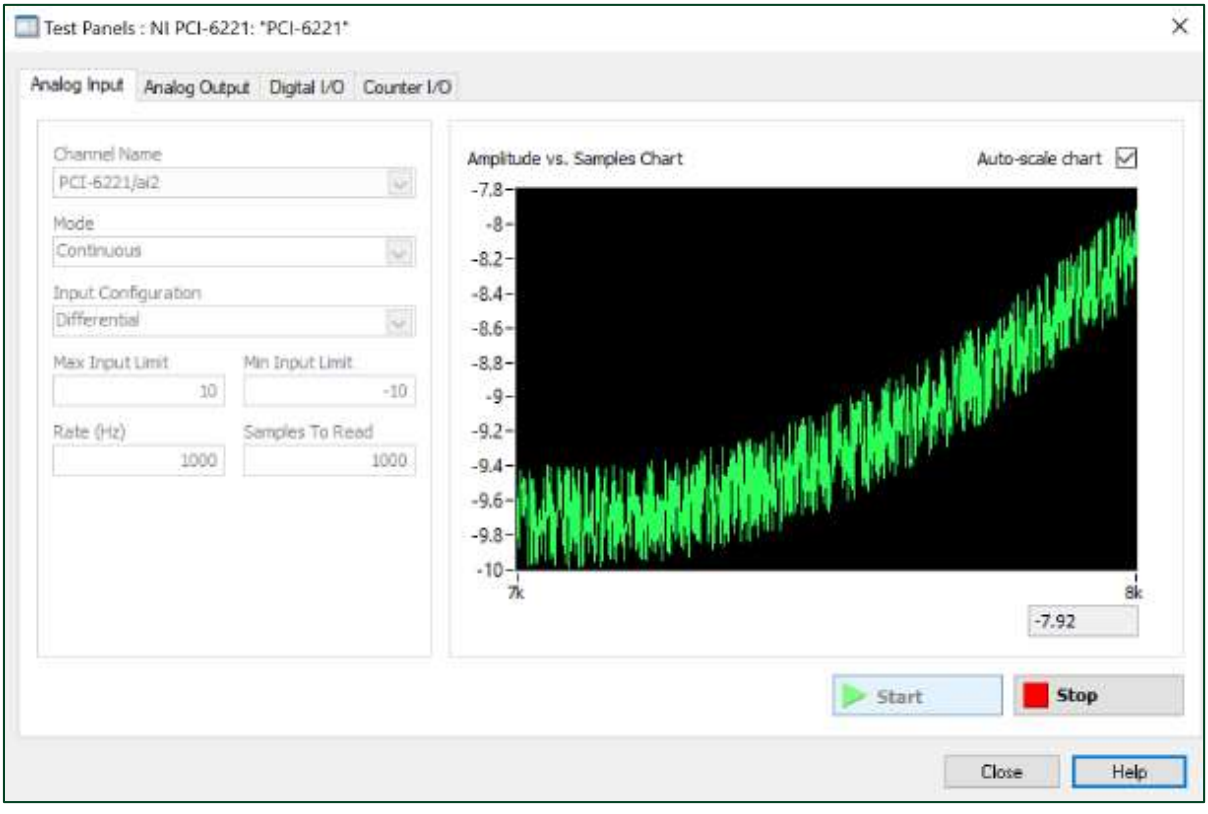
## Instructions

Examine the configuration of DAQ device:

1. Launch **NI MAX** from the Windows **Start** menu.
2. Expand **Devices and Interfaces** and select the **PCI-6221** or **USB-6212**.

   **Note** that **f**rom here till the end of the course choose the NI-DAQ device that you have connected to your PC, e.g. if you are using USB-6212, then select it each time you see **PCI-6221** is mentioned.
3. Right-click the **device** and select **Test Panels** from the shortcut menu.
4. Validate the analog input of your device.
   - Make sure that the **Analog Input** tab is selected in the Test Panels dialog box.
   - Select **PCI-6221/ai2** from the **Channel Name** control, which corresponds to the ai2 pin of the device.
   - Change **Mode** to **Continuous** enables the measurement-specific settings, e.g. **Rate (Hz),** and **Samples to Read.**
   - Click the **Start** button to start the acquisition.
   - Explore data on the chart, then click **Stop**.
   - Change **Samples To Read** to other values, e.g. 5000, 10000, etc.
   - Start the acquisition, and explore how it affects the acquired signal.




- Click the **Stop** button.
- You can disable the **Auto-scale chart** option, and change the scaling of the x-scale to adjust the graph by double-clicking the **maximum** and **minimum** values of the scale and typing the appropriate ones.

5. Validate the analog output of your device.
   - Switch to the **Analog Output** tab.
   - Set the Channel Name control, e.g. PCI-6221/ao0.
   - You can either change Mode to Voltage Sinewave Generation or leave Voltage DC.
   - Set **Output Value (V)** to the constant voltage you want to output.
   - Click the **Update** button to start the generation.
   - Click **Stop**.
6. Validate the digital I/O of your device.
   - Switch to the **Digital I/O** tab.
   - Select the **port** from the **Port Name** control. Port is a collection of lines, and each line can output a high or low voltage.
   - Select **All Output** in the Select **Direction section**.
   - Configure the output voltage in the **Select State** section by changing the line state.
   - Click **Start**.
   - Select **All Low** and click **Stop**.
   - Close the **Test Panels** dialog box.
   - Close NI MAX.

**End of Exercise 2-2**