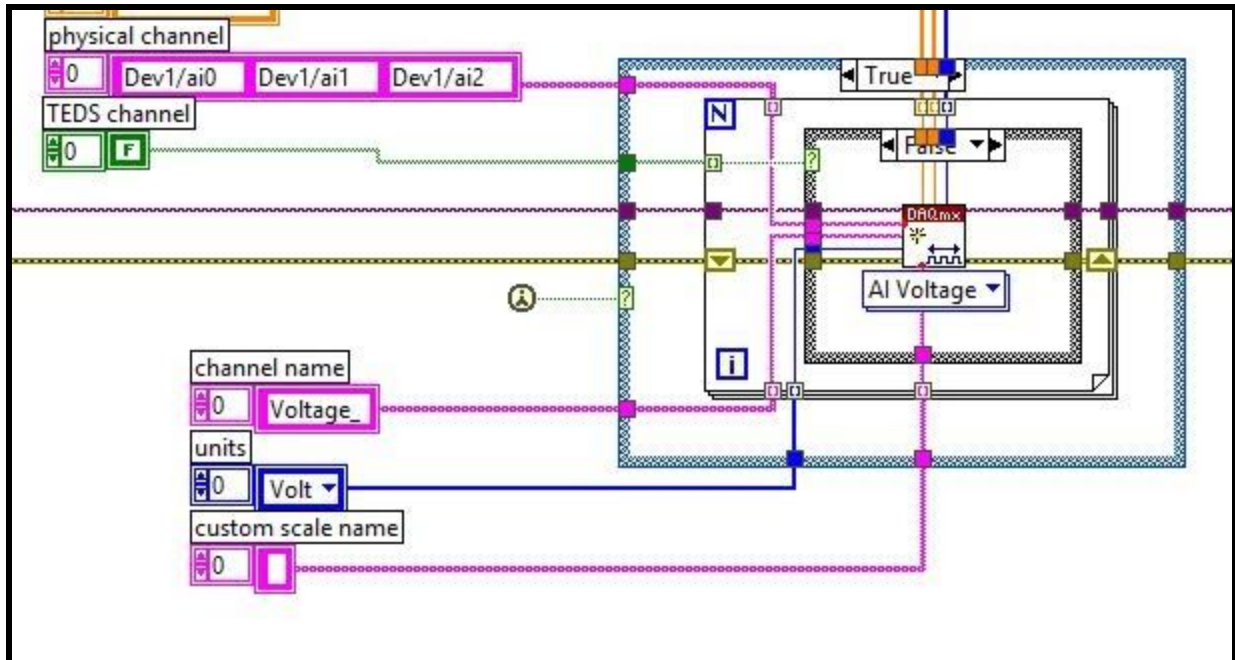# Single Phase

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       The purpose of this document is to help you set up a simulated signal using a CRIO. The document starts by setting up the CRIO in the software for a single phase. To create a three phase simulated signal, you must repeat much of the process, which is discussed more so below.

1. Open NIMAX →
    Devices and Interfaces →
    Create New… →
    Simulated NI-DAQmx Device… →
    Search USB-6009 →
    OK
2. Click on your simulated device, then
    Create Task →
    Acquire Signals →
    Analog Input →
    Voltage →
    Any AI port →
     Enter some name →
     Finish
3. You'll find your new task under Data Neighborhood → NI-DAQmx Tasks → Your simulated signal. In the bottom panel, under Timing Settings, set "Acquisition Mode" to "1 Sample (On Demand)". Under "Signal Input Range", change the Min and Max settings to something unconventional, like 3 and -7. It will be easier to see that your simulated signal is working on the Front Panel of 00 Main (single phase) with an odd Min and Max values.
4. Open up the Block Diagram to 00 Main (single phase). Open 10 DAQ Config (PFI0), and get to the Block Diagram. Add a DAQmx Task Name (shown below). Connect it to the DAQmx Create Task.vi to the Task to Copy input. Select your simulated task.
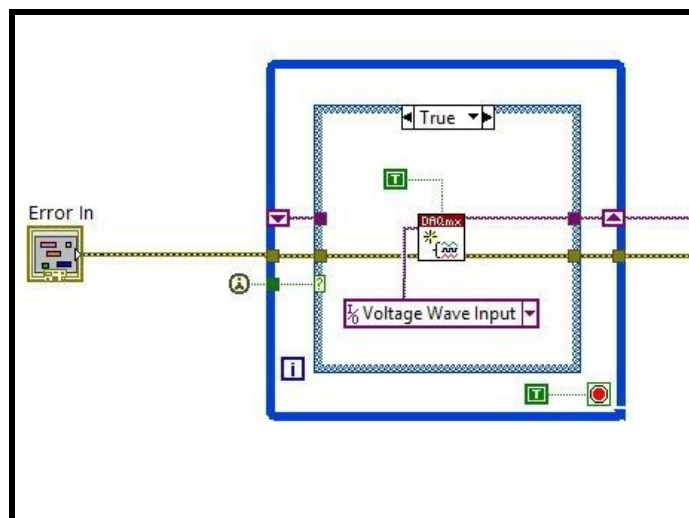
5. Verify that the physical channel values start at the same aiX channel you defined. (If you forgot which channel you chose, open MAX and navigate to your simulated signal. In the bottom panel, get to the Configuration option, under Channel Settings, click Details, the double chevron.) Be careful when changing the physical channel string boxes. If you get any errors after changing the string like "Dev1/ai0" expand the size of the box to see if there are any added or missing characters.

6. Change the action input for DAQmx Control Task.vi (farthest right case structure) from "commit" to "verify."
7. SAVE the changes you made and close 10 DAQ Config (PFI0).
8. Run and Save the MAX window.
9. Run 00 Main (single phase). You should see on both the Voltage Waveform and the RAQ DAQ Output a different waveform, that with the modified Max and Min values. You now have a simulated signal.

Three Phase

When creating a simulated signal for 00 Main (three phase) there are a few differences you must do to run the code
1. Complete steps 1-3 as above for the single phase VI.
2. Open your created task under Data neighborhood → NI-DAQmx Tasks → Your task. At the top, click Add Channels → Voltage. Select a physical channel, preferably 1 larger

than your previous channel. Repeat this twice for a total of 3 Voltage Channels. Remember to change the Min and Max values for each to distinguish each signal.

3. Complete 4 as above.
4. Find the "physical channel" and "channel name" string inputs. For both, expand each to see the three string inputs. Change the "physical channel" Dev ports to those that you selected. Change the "channel names" to unique names. If you use a copy of a name, such as "Voltage_1" even on another channel, an error will be returned.
5. Complete steps 6-9 as above.