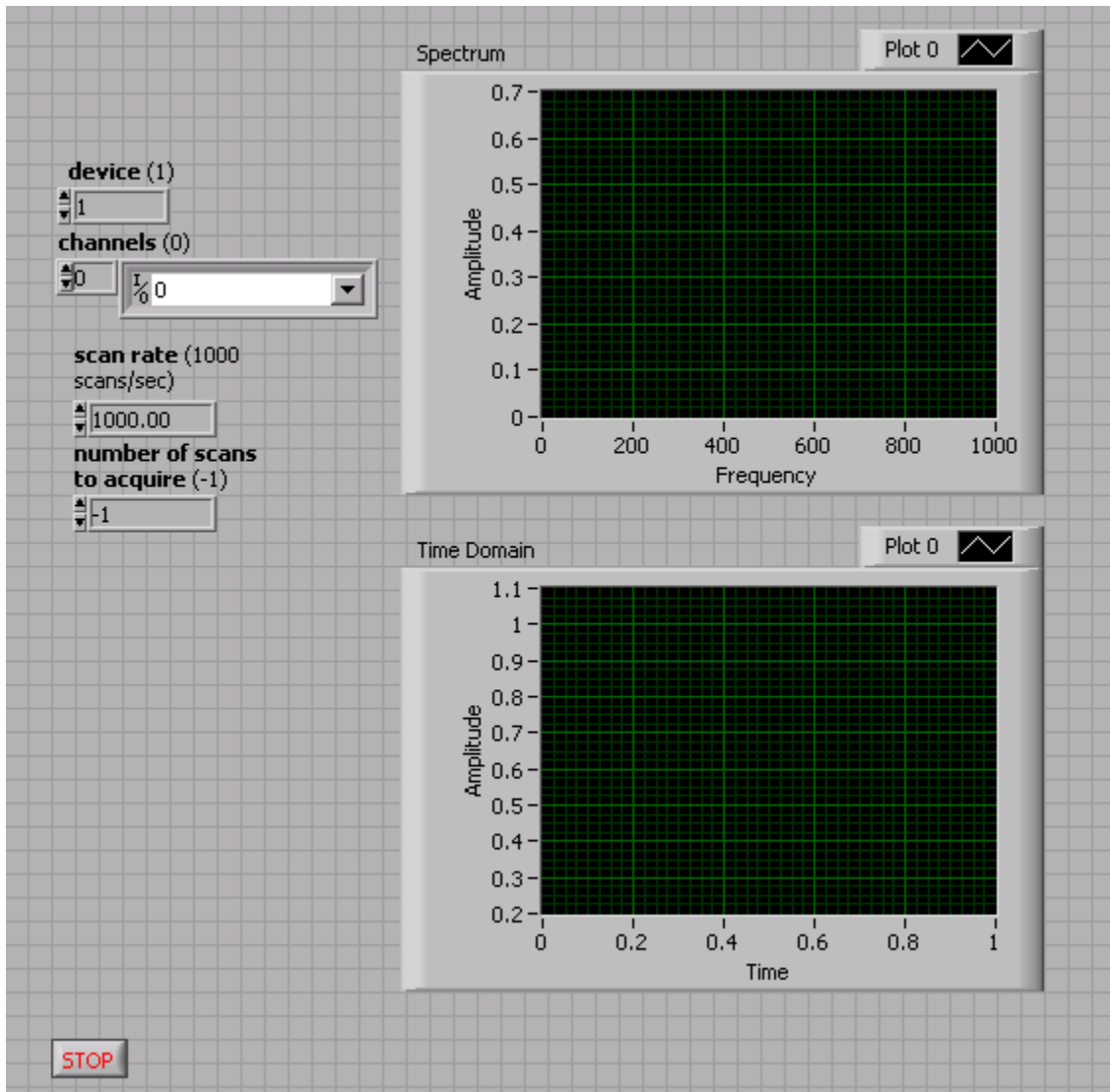


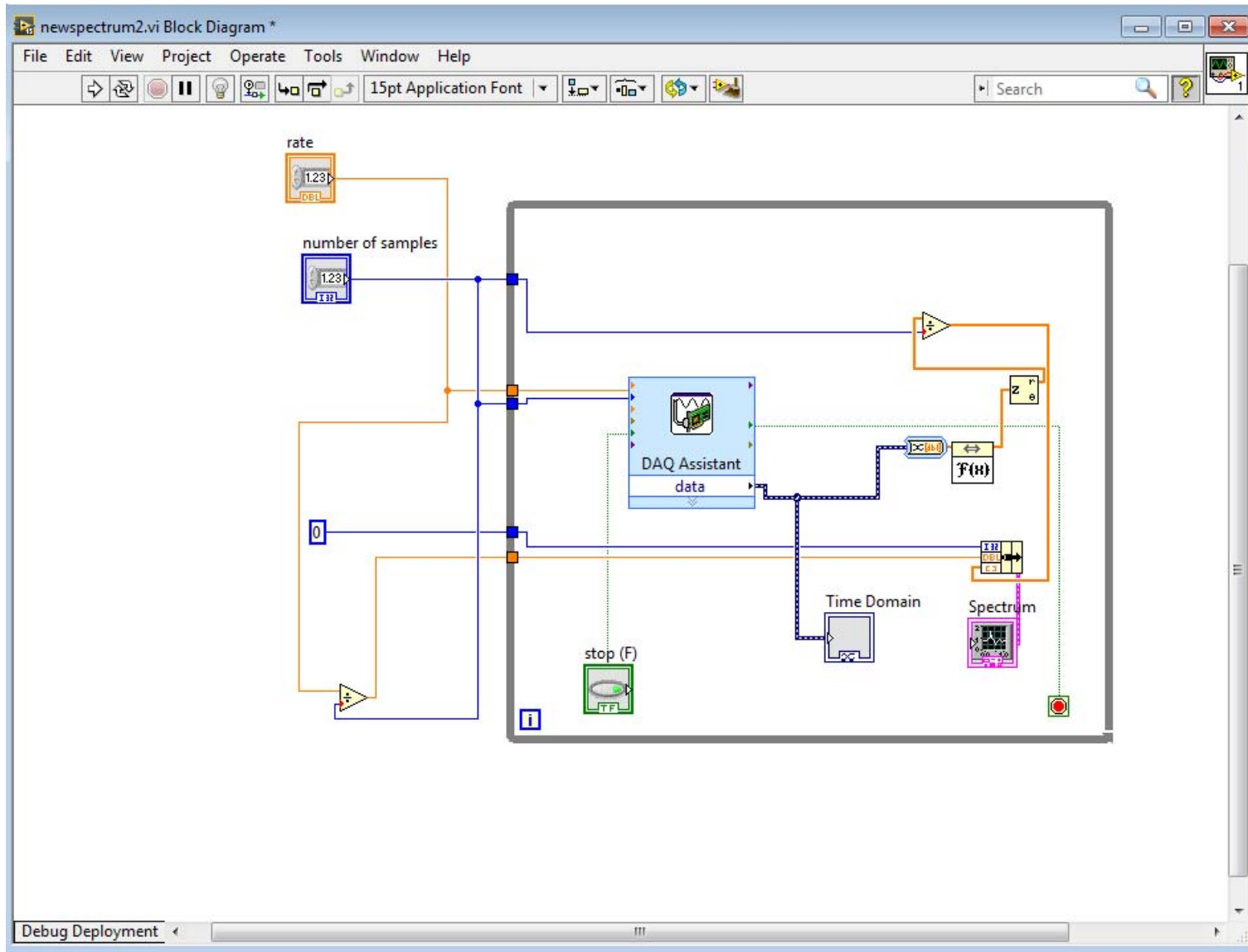
Connecting to the Real World

1. Using the VI you built from the last lab, modify it to add the D-to-A VIs to capture data on Device 1, Channel 0. This data will be displayed on the time domain waveform graph and frequency (spectrum) domain waveform graph used in the previous lab. The following front panel shown following is an example of how your Front Panel should appear.



2. Connect Channel 0 on the D-to-A card to the signal generator and display a 60 Hz sine wave to make sure that your VI is operating properly. That is, you will see the 60 Hz waveform on the time domain display while a single spike will appear on the spectrum.
3. Once this is working, now change the frequencies to see that the spectrum following the frequency changes.

4. Collect several example of the sine for various frequencies. Include example of oversampling and undersampling.
5. Change the signal generator to display square waves and repeat item 4.
6. Connect an ECG simulator to the differential amplifier and then connect the amplifier to Channel 0. Observe and collect various displays for the ECG signal. What frequencies dominate the ECG signal?
7. Special question: Measure the parameters (height and time duration) of the P, Q, R, S, and T waves. Use these parameters for your special project and compare the output from this Labview experiment with the results of your special project. Are there any differences? Why? Discuss?



Select the measurement type for the task.

A **task** is a collection of one or more virtual channels with timing, triggering, and other properties.

To have **multiple measurement types** within a single task, you must first create the task with one measurement type. After you create the task, click the **Add Channels** button to add a new measurement type to the task.

Acquire Signals

Generate Signals

< Back

Next >

Finish

Cancel

Select the measurement type for the task.

A **task** is a collection of one or more virtual channels with timing, triggering, and other properties.

To have **multiple measurement types** within a single task, you must first create the task with one measurement type. After you create the task, click the **Add Channels** button to add a new measurement type to the task.

[-] Acquire Signals

[...] Analog Input

- Voltage
- Temperature
- Strain
- Current
- Resistance
- Frequency
- Position
- Sound Pressure
- Acceleration
- Velocity (IEPE)
- Force

< Back

Next >

Finish

Cancel

**Select the physical channel(s)
to add to the task.**

If you have previously configured [global virtual channels](#) of the same measurement type as the task, click the **Virtual** tab to add or copy global virtual channels to the task. When you copy the global virtual channel to the task, it becomes a local virtual channel. When you add a global virtual channel to the task, the task uses the actual global virtual channel, and any changes to that global virtual channel are reflected in the task.

If you have TEDS configured, click the **TEDS** tab to add TEDS channels to the task.

For hardware that supports [multiple channels](#) in a task, you can select multiple channels to

Physical

Supported Physical Channels

- [-] Dev1 (PCI-6024E)
 - ai0
 - ai1
 - ai2
 - ai3
 - ai4
 - ai5
 - ai6
 - ai7
 - ai8
 - ai9
 - ai10
 - ai11
 - ai12
 - ai13

<Ctrl> or <Shift> click to select multiple channels.

< Back

Next >

Finish

Cancel

Undo Redo Run Add Channels Remove Channels Hide Help

Express Task Connection Diagram

Amplitude

1
500m
0
-500m
-1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200

Time

Graph Display Type AutoScale Y-Axis

Configuration Triggering Advanced Timing Logging

Channel Settings

+ X Details

Voltage

Click the Add Channels button (+) to add more channels to the task.

Voltage Input Setup

Settings Calibration

Signal Input Range

Max 5 Scaled Units
Min -5 Volts

Terminal Configuration

RSE

Custom Scaling

<No Scale>

Timing Settings

Acquisition Mode

Continuous Samples

Samples to Read

1000

Rate (Hz)

1k

Measuring Voltage

Most measurement devices are designed for measuring, or reading, voltage. Two common [voltage measurements](#) are DC and AC.

DC voltages are useful for measuring phenomena that change slowly with time, such as temperature, pressure, or strain.

AC voltages, on the other hand, are waveforms that constantly increase, decrease, and reverse polarity. Most powerlines deliver AC voltage.

Terminal Configuration specifies the grounding mode used for the virtual channel:

- Differential**— Depending on your specific hardware, the positive and negative inputs for the physical channel are either unreferenced or are connected to measurement system ground through equal impedances. Refer to your hardware.

OK Cancel

Confirm Auto Loop Creation



You have configured this task with a mode that typically requires you to place the DAQ Assistant Express VI in a loop. Would you like to automatically create the loop now? You will not be prompted again for this VI.

Yes

No

