

Temperature Multiplot VI

Goal

Plot multiple data sets on a single waveform chart and customize the chart view.

Scenario

Modify an existing VI to plot both the current temperature and the running average on the same chart. In addition, allow the user to examine a portion of the plot while the data is being acquired.

Design

Figure 1 shows the front panel for the existing VI (Average Temperature VI) and Figure 2 shows the block diagram.

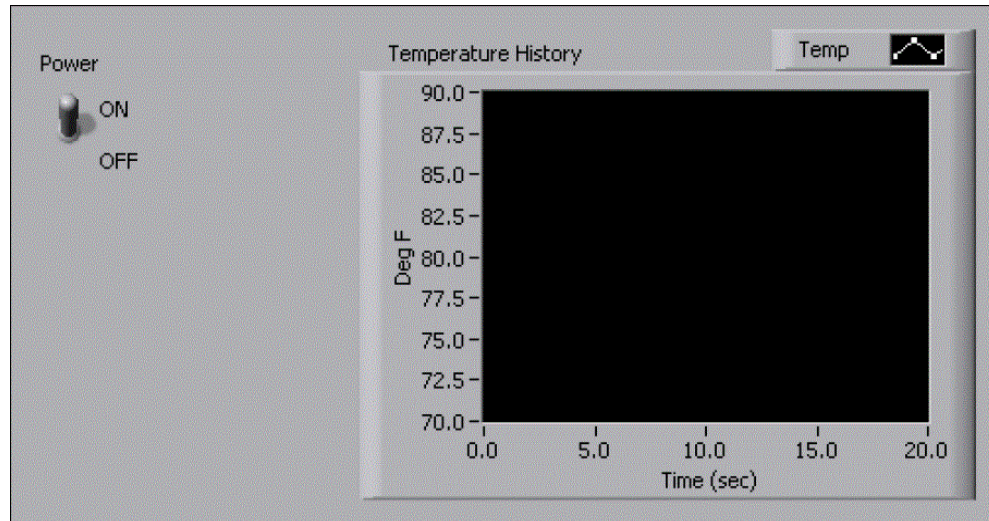


Figure 1. Average Temperature VI Front Panel

To allow the user to examine a portion of the plot while the data is being acquired, display the scale legend and the graph palette for the waveform chart. Also, expand the legend to show additional plots.

To modify the block diagram in Figure 2, you must modify the chart terminal to accept multiple pieces of data. Use a Bundle function to combine the average temperature and the current temperature into a cluster to pass to the Temperature History chart terminal.

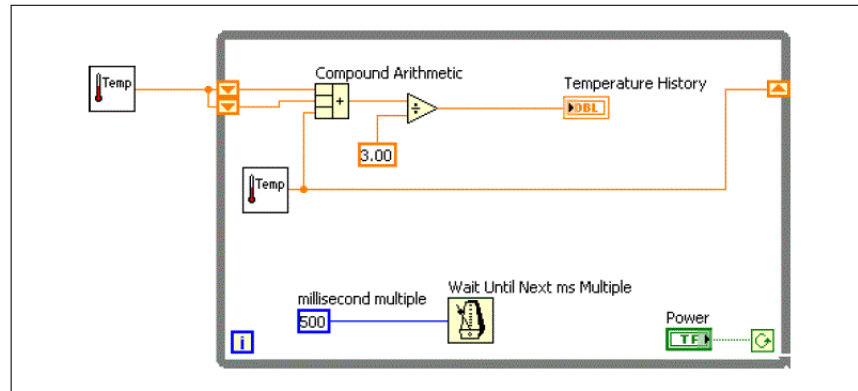


Figure 2. Average Temperature VI Block Diagram

Implementation

The files that you need to complete this exercise are here:

<NI eLearning>\LV Core 1\Plotting Data\Exercise.

1. Open the Average Temperature VI.

- ☐ Open Average Temperature.vi in the <Exercise> directory.
- ☐ Select **File>Save As** and rename the VI Temperature Multiplot.vi in the <Exercise> directory.



Tip Select the **Substitute Copy for Original** option to close the Average Temperature VI and work in the Temperature Multiplot VI. You can create the directory if it does not exist.

In the following steps, you modify the block diagram so that it resembles Figure 3. Modify the block diagram first, then modify the front panel.

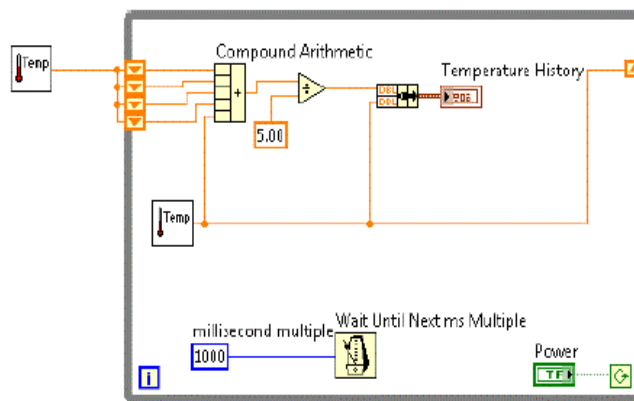


Figure 3. Temperature Multipilot VI Block Diagram

2. Open the block diagram.
3. Pass the current temperature and the average temperature to the Temperature History chart terminal.
 - ☐ Delete the wire connecting the Divide function to the Temperature History chart terminal.
 - ☐ Add a Bundle function between the Divide function and the Temperature History chart indicator. If necessary, enlarge the While Loop to make space.
 - ☐ Wire the output of the Divide function to the top input of the Bundle function.
 - ☐ Wire the current temperature to the bottom input of the Bundle function. The current temperature is the output of the Thermometer subVI inside the While Loop.
 - ☐ Wire the output of the Bundle function to the Temperature History chart indicator.

In the following steps, modify the front panel similar to the one shown in Figure 4.

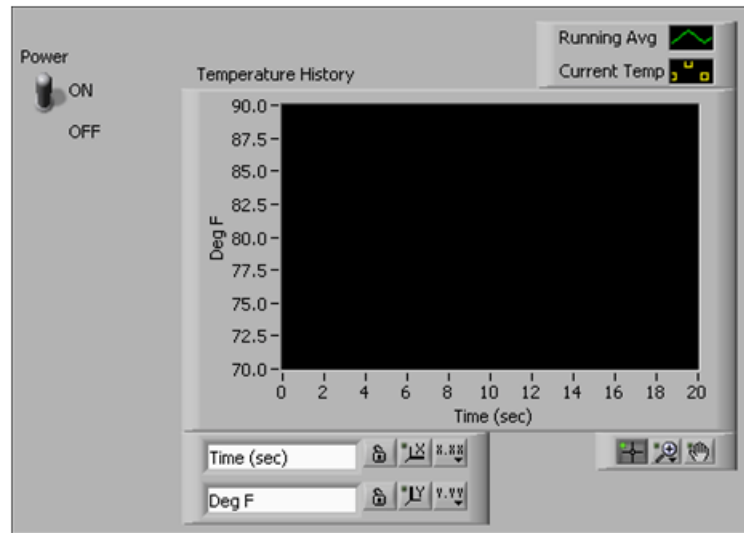


Figure 4. Temperature Multipilot VI Front Panel

4. Open the front panel.
5. Show both plots in the plot legend of the waveform chart.
 - ☐ Use the Positioning tool to resize the plot legend to two objects, using the top middle resizing node.
 - ☐ Rename the top plot `Running Avg`.
 - ☐ Rename the bottom plot `Current Temp`.
 - ☐ Change the plot type of `Current Temp`. Use the Operating tool to select the plot in the plot legend and choose the plots you want.



Tip The order of the plots listed in the plot legend is the same as the order of the items wired to the Bundle function on the block diagram.

6. Show the scale legend and graph palette of the waveform chart.
 - ☐ Right-click the **Temperature History** waveform chart and select **Visible Items»Scale Legend** from the shortcut menu.
 - ☐ Right-click the **Temperature History** waveform chart and select **Visible Items»Graph Palette** from the shortcut menu.
7. Save the VI.

Test

1. Run the VI. Use the tools in the scale legend and the graph palette to examine the data as it generates.
2. Change the **Power** switch to the **Off** position to stop the VI.
3. Close the VI when you are finished.

End of Exercise

Notes
