LAB 8 TEMPERATURE MEASUREMENT USING LABVIEW®

- **Instruction for building a LabVIEW VI**

Procedures

Step 1 Create a Blank VI.

There will be two new windows pop out, Front Panel and Block Diagram. Front Panel is the GUI (graphical user interface) and the Block Diagram is where we do the programming.

Step 2 Build the Front Panel

Put all the needed components into the Front Panel and change their names. If you do not know where to find the components, see the "Components List" section or "Search" them. Skip the "Stop" button; it will be created automatically later when we create a [While Loop] in the Block Diagram.

- Ask TA for changing component names and scales. (Properties or double click or shift + right click)
- Ask TA for searching components.

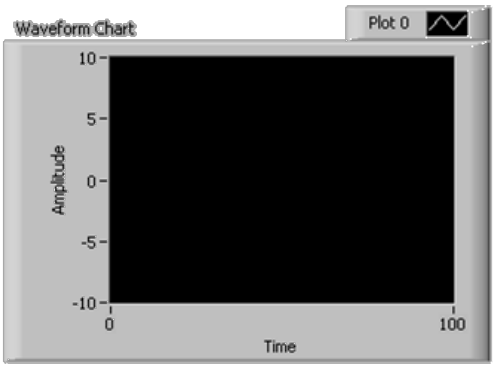
Step 3 Build the Block Diagram

After you added some components in the front panel, there should be already some corresponding icons in the window. Add more components, and connected them together. Add the [While Loop] last (recommended) or first; it makes the programming easier.

- Ask TA how to add new constants. (add icon from the category or right click icon → create → constant)
- Ask TA how to delete bad lines. (Ctrl + B)
- Ask TA for alignment of components and lines. (Ribbon buttons on the top, try "Clean Up")

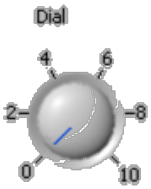
Components List

- **Front Panel** (Controls and Indicators)
  [Waveform Chart] PATH: Controls → Graph Indicators

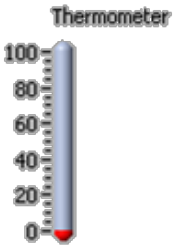


  - Notice: this component is totally different from [Waveform Graph], although their icons look similar.

[Dial] PATH: Controls → Numeric Controls



[Thermometer] PATH: Controls → Numeric Indicators



[String Indicator] PATH: Controls → Text Indicators

- Notice: in this lab, only “Elapsed time” is string indicator, the rests are [Numeric Indicator].

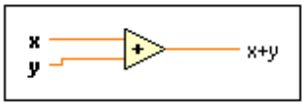
[Numeric Indicator] PATH: Controls → Numeric Indicators

- **Block Diagram**

[While Loop] PATH: Programming → Structures

- The while loop generates a STOP button in the Front Panel automatically.

[Add] [Subtract] [Multiply] [Divide] PATH: Programming → Numeric

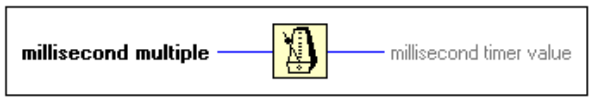


- The other three components have similar icons.

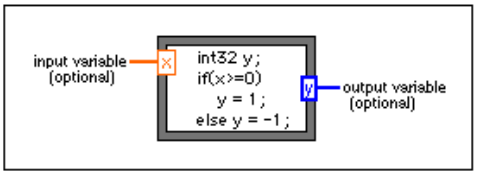
[Numeric Constant] PATH: Programming → Numeric

- If you have a component requires a constant as an input, you can create it by just right click the component, then select “create” and “constant”.

[Wait Until Next ms Multiple] PATH: Programming → Timing



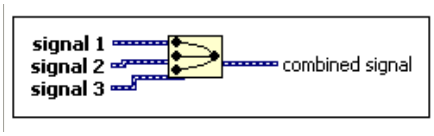
[Formula Node] PATH: Programming → Structures



- Right Click to Add Input and Add Output; put variable “C” in the input box and “F” in the output box. Then fill the blank with temperature converting formula.

[To Double Precision Float] PATH: Programming → Numeric → Conversion

[Merge Signals] PATH: (Search it)



[DAQ Assistant Express VI] PATH: Measurement I/O → NI-DAQmx

[Write To Measurement File Express VI] PATH: Programming → File I/O

[Elapsed Time Express VI] PATH: Programming → Timing

Comments / Labels

Fahrenheit

- This is not a function component. To use it, Shift + right click then select “A”.