Monitoring and Alarming: Step by Step Procedure

Before starting this procedure, you need to complete the exercises and use the solutions in the Taking a Measurement, Using Counters and Digital I/O, and Integrating Text-Based Programming modules. You can also create a numeric control to simulate the data acquisition input.

1. Add the Mask and Limit Testing Express VI to the block diagram
   a. Right-click on the block diagram and select Express >> Signal Analysis >> Mask and Limit Testing
   b. Place the Mask and Limit Testing Express VI to the right of the DAQ Assistant, within the While Loop

2. Configure the Mask and Limit Testing Express VI
   a. Select **Upper Limit**
   b. Select **Upper Constant**
   c. Enter the appropriate value for the **Upper limit constant** value to trigger the alarm when the limit has been exceeded

3. Disconnect the input to the data graph indicator, and wire this to the **Signals** input of the Mask and Limit Testing Express VI

4. Wire the **Tested Signals** output to the input of the data graph indicator to display the original signal as well as the testing limits on the same graph

5. Invert the output of the **Passed** output terminal of the Mask and Limit Testing Express VI to illuminate the LED indicator if the threshold has been passed
   a. By default, the output of this function is true if the input is within the limits
   b. Right-click the **Passed** output terminal and select **Boolean Palette >> Not**
   c. Place the Not function to the right of the **Passed** output terminal
   d. Wire the output from the **Passed** terminal to the input of the Not function
   e. Right-click the output of the Not function and select **Create >> Indicator**
   f. Resize the Passed LED indicator on the front panel to the desired size

**Note:** Controlling an external light requires an NI relay device or an external relay that can be driven by a 5 V, 8 mA digital output signal and that can complete the circuit to an external power supply that drives the light.

You can convert your DAQ Assistant Express VIs into low-level NI-DAQmx functions by right-clicking the DAQ Assistant and selecting **Generate NI-DAQmx Code**. The low-level NI-DAQmx API exposes more functionality and customization options for programming.