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# MPX Quickstart Guide for LabVIEW

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# Contents

# 1. Overview

This guide will take you through the process of adding the MPX control to the LabVIEW development environment and creating a simple instrument to perform trapezoidal type moves.

This guide assumes the following:

- You have LabVIEW 5.0 or later installed
- You have an MPI compatible controller installed
- You have installed the version of the MPX library compatible with the installed MPI version of software and the installed controller firmware
- You have either:
  - Hooked up axis 0 to a physical system and tuned axis 0 with Motion Console
  - Or you have set up axis 0 to use stepper motor mode with step-loopback enabled. This will allow motion to be simulated without a physical system being connected to the controller.

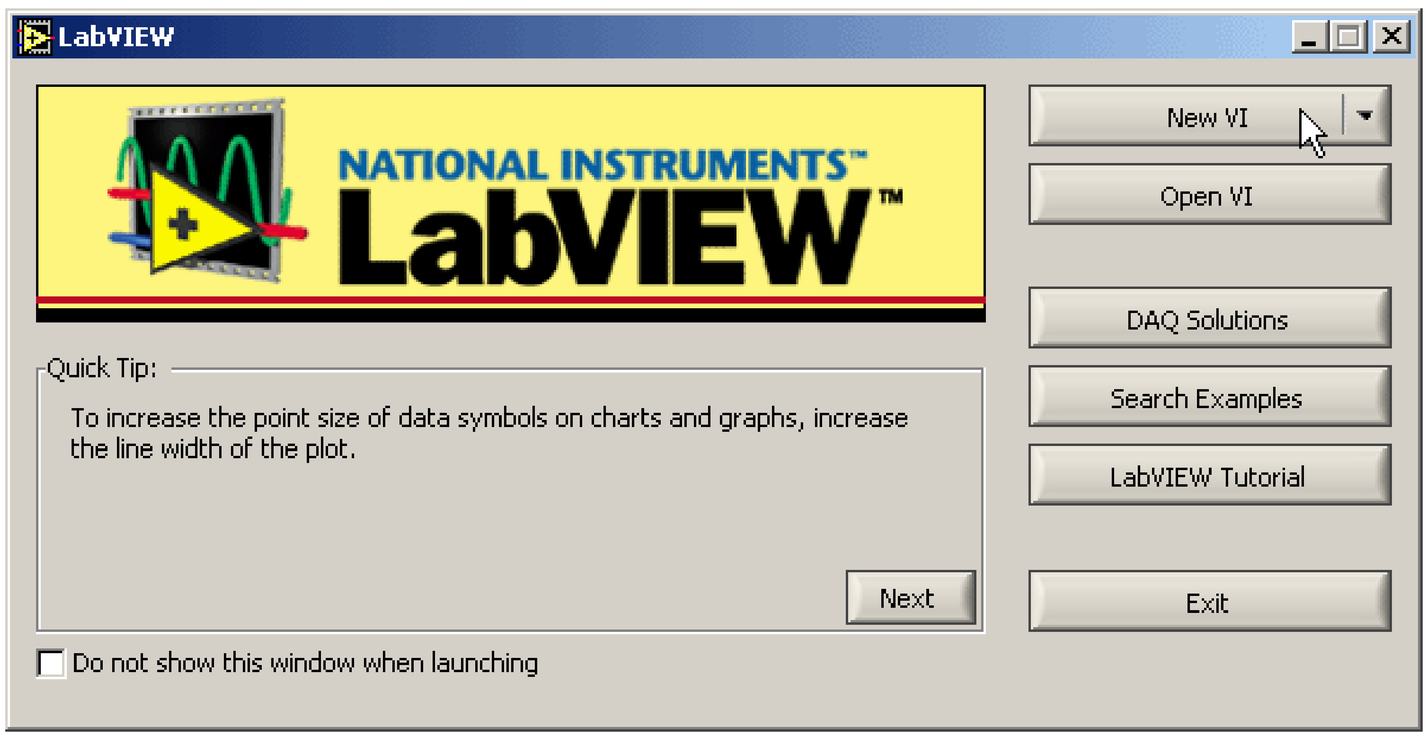
To enable step-loopback mode, please run the Visual Basic script Simulate.vbs, available from the Start Menu:

Start ? Programs ? Motion Engineering ? MPX ? Simulate

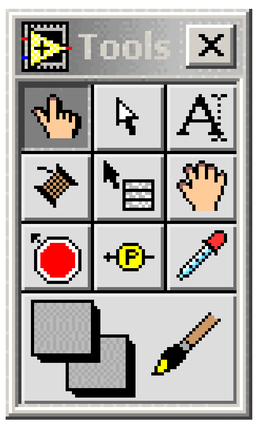
# 2. LabVIEW Example Instrument

This example assumes that you have set up axis 0 in Motion Console so that it is correctly tuned with the amplifier enabled an in an idle state, and is the only axis associated with motion 0.

Start LabVIEW. When the startup widow appears, press the **New VI** button.

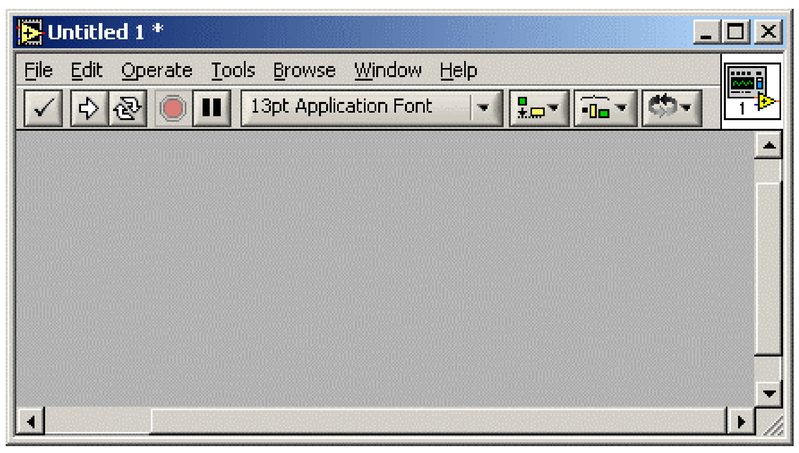


A blank instrument panel, blank diagram, a Controls panel, and a Tools panel will appear.

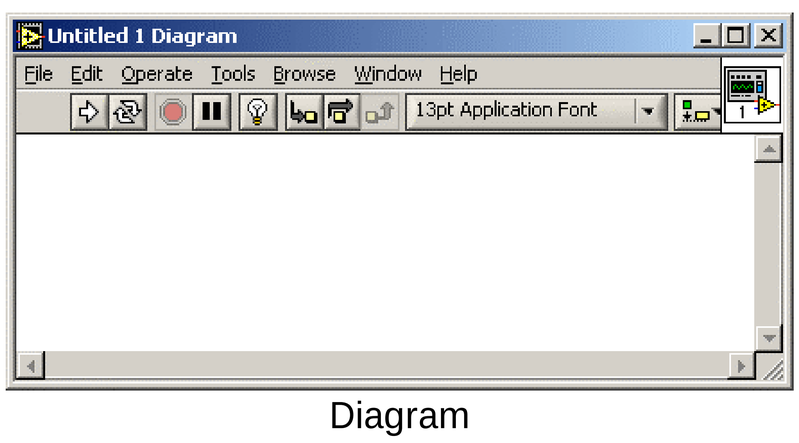



Tools Panel


Controls Panel

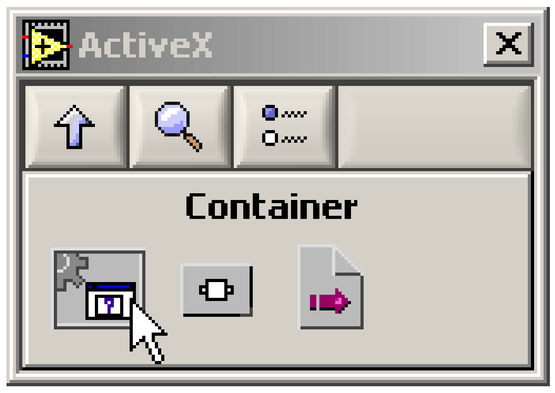



Instrument Panel

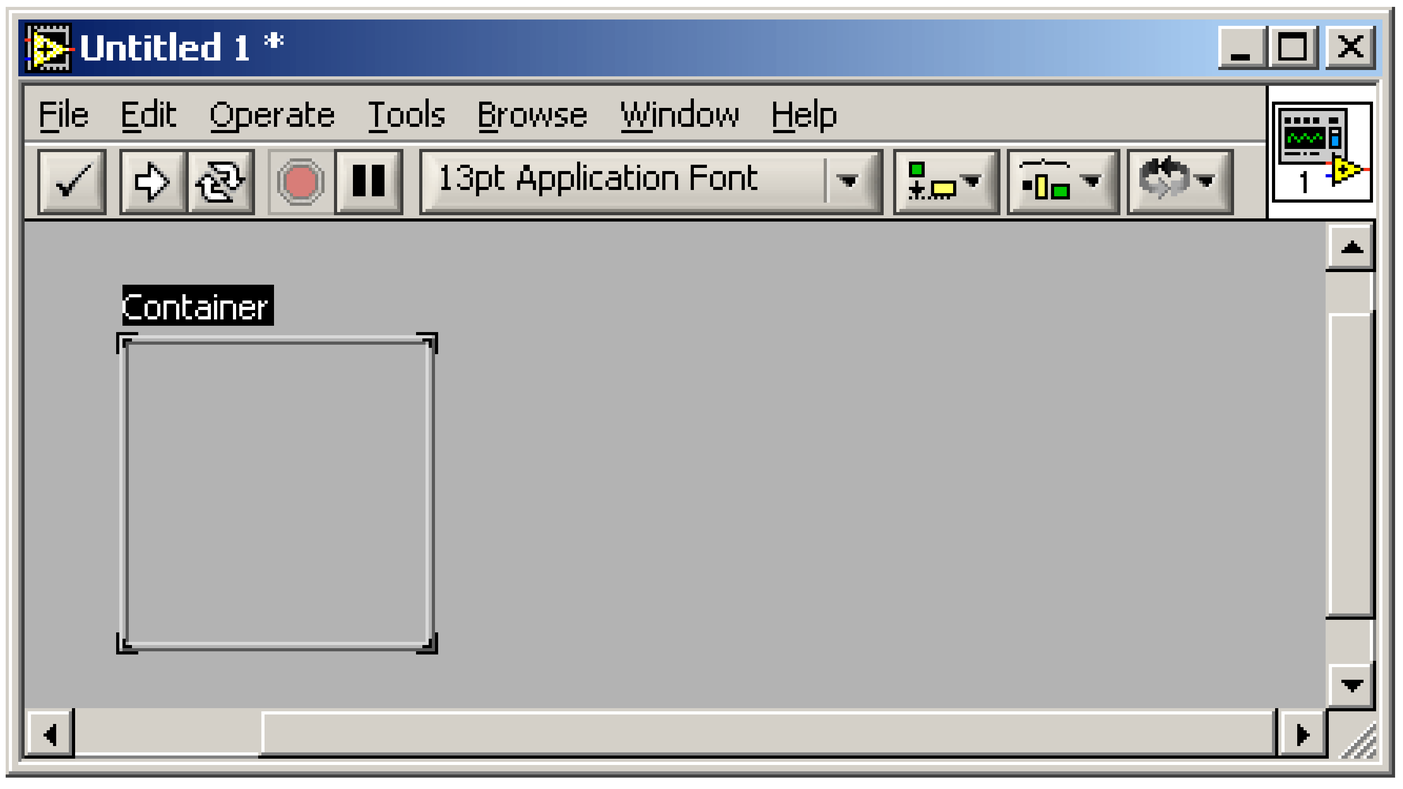



Diagram

From the Controls Panel, click on the **ActiveX** button. A new ActiveX controls panel will appear. From this dialog, click on the **Container** control.



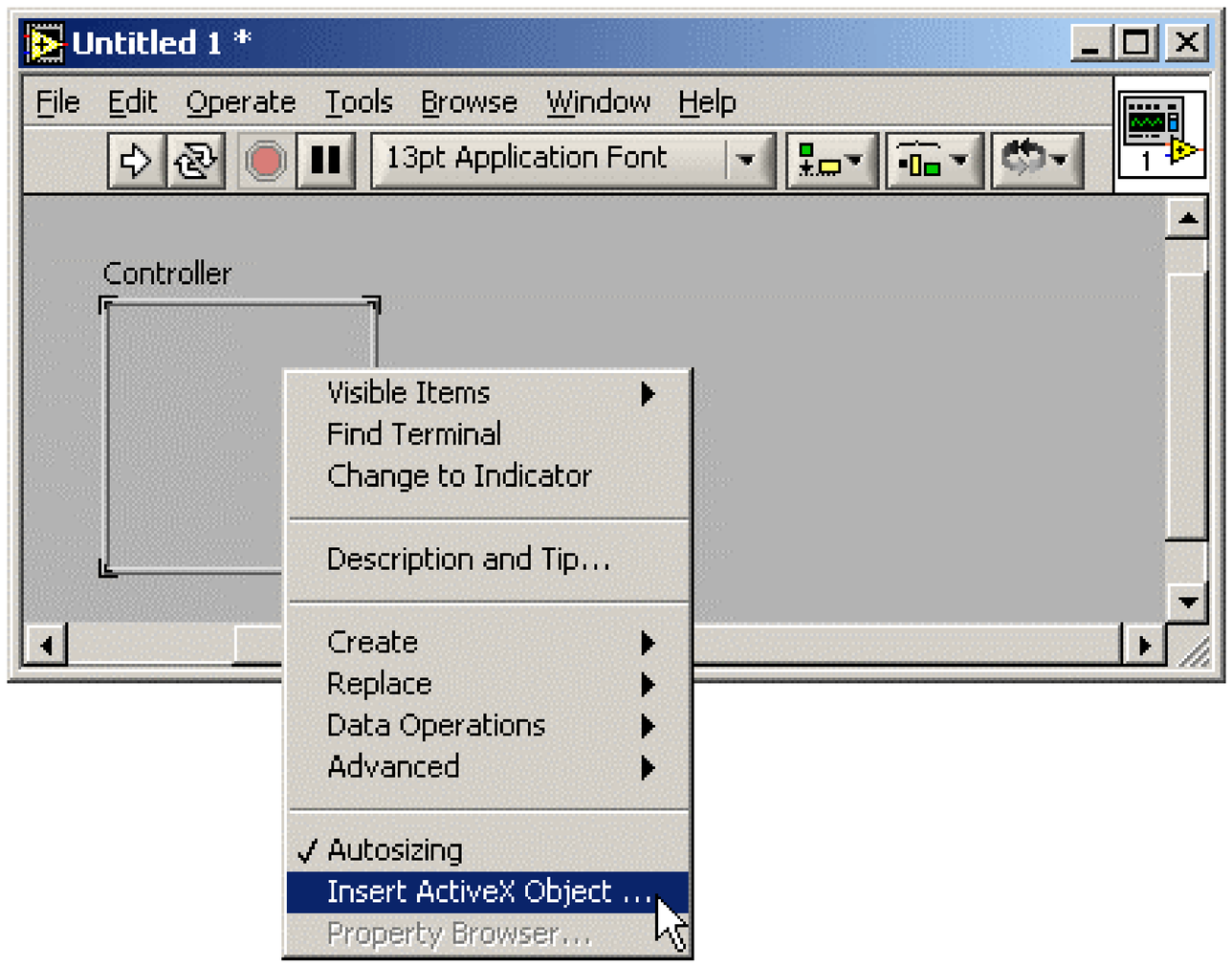

Now move the mouse to the instrument panel. You will be able to create an ActiveX container by clicking somewhere in the panel.




Once you create the control, the word “Container” will be highlighted. You can rename the container by typing in a new name. Rename the container “Controller” now.

Right click in the center of the container. A popup menu will appear.

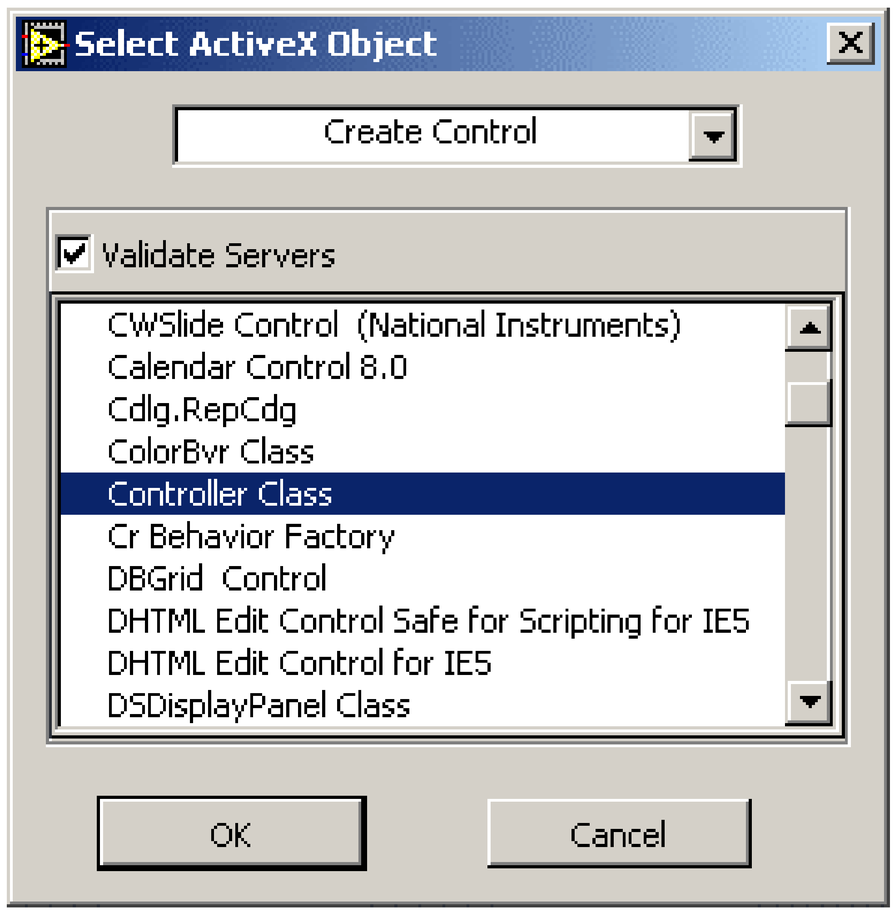
Select **Insert ActiveX Object**.



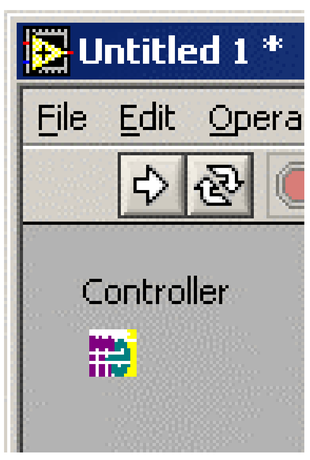

A dialog box will appear. Unlike Visual Basic or some other applications, LabVIEW displays a list of *objects*, not *type libraries*. You will not see the **MPX Library**, only the **Controller Class**.

The listing of controls is sorted by ASCII character values. In other words, capital letters will appear before lower case letters. For example, “apple” will appear after “Zebra” and “Controller” will appear after “CWSlide.”

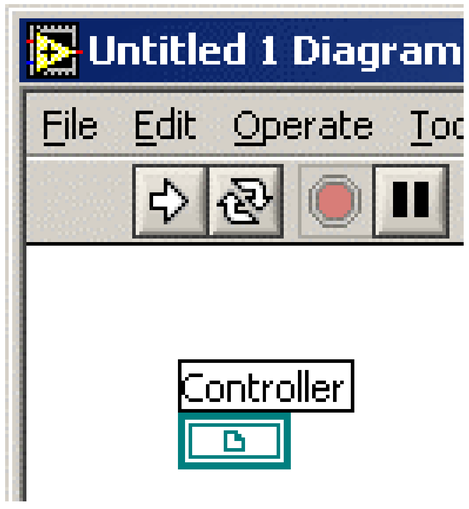
From the list of objects, select **Controller Class**.




An MEI logo will appear on the instrument panel. This icon represents the MEI ActiveX Controller object.



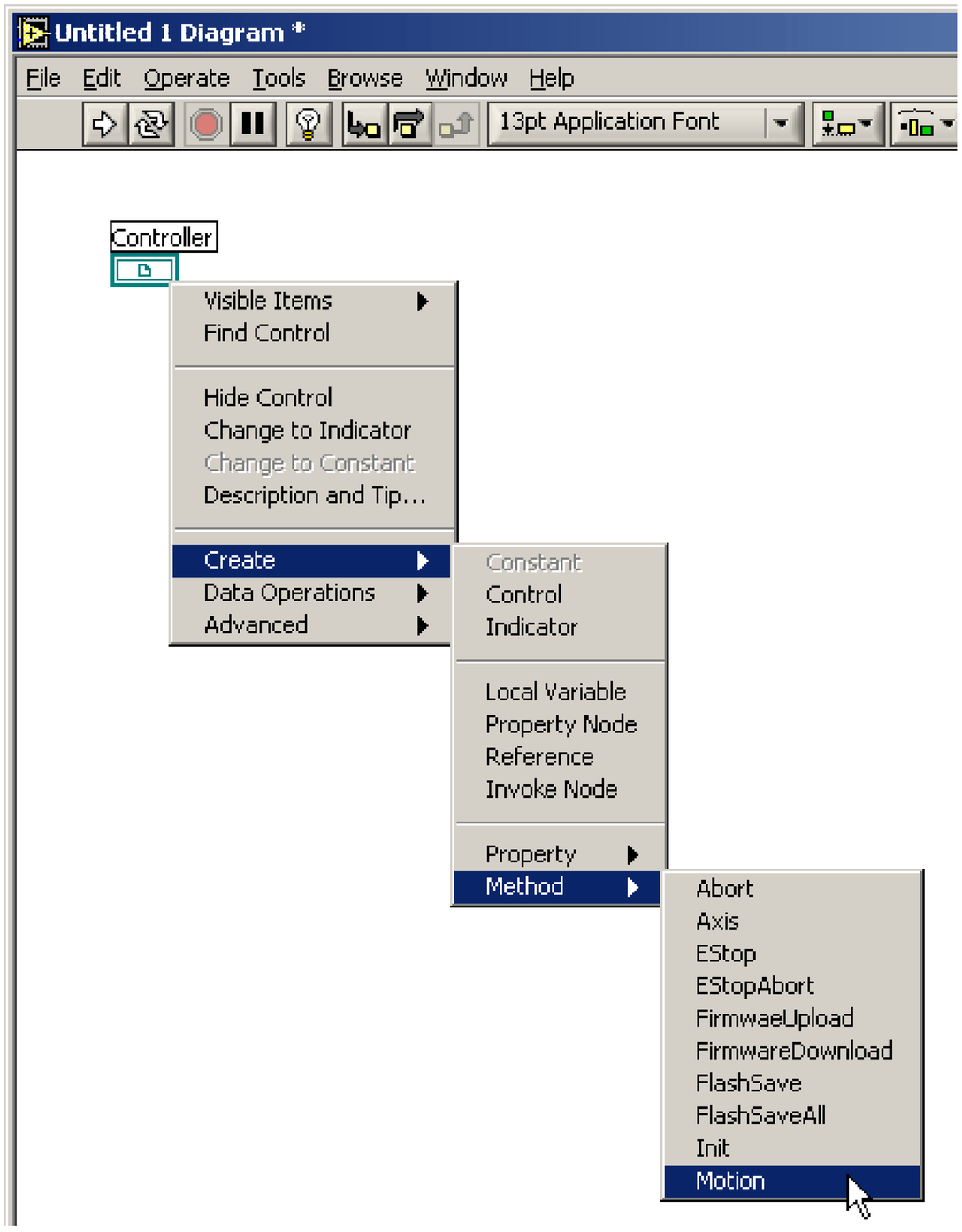
Now switch to the Diagram window. You will see node representing named "Controller." This is the Controller object node.




Right click on the Controller node. A popup menu will appear. Select the following options:

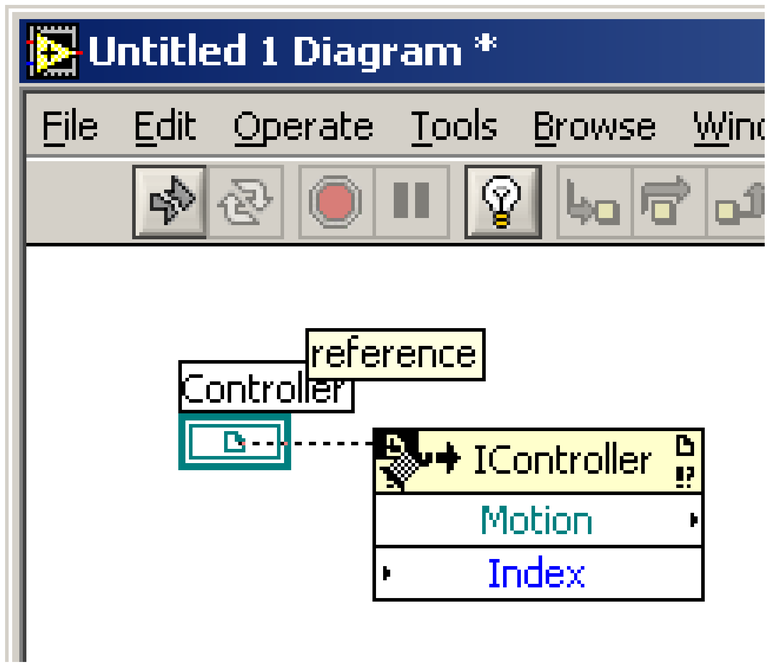
Create ? Method ? Motion

A node representing the Motion method of the Controller object will appear. Place this node to the right of the controller node.

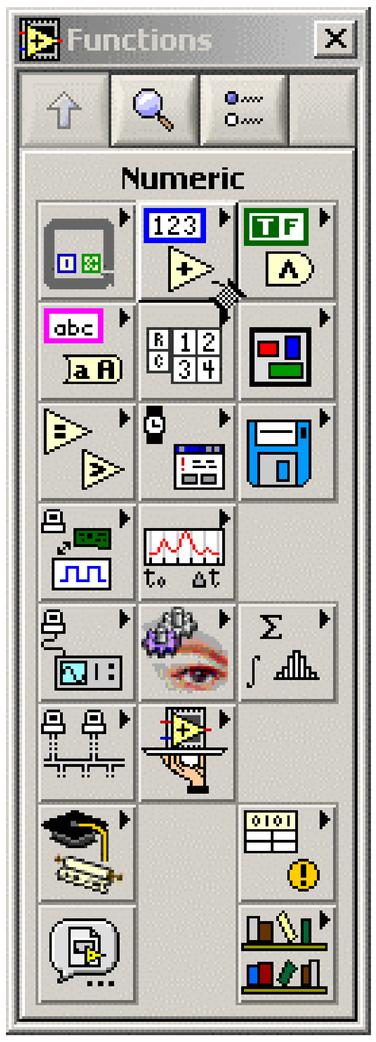


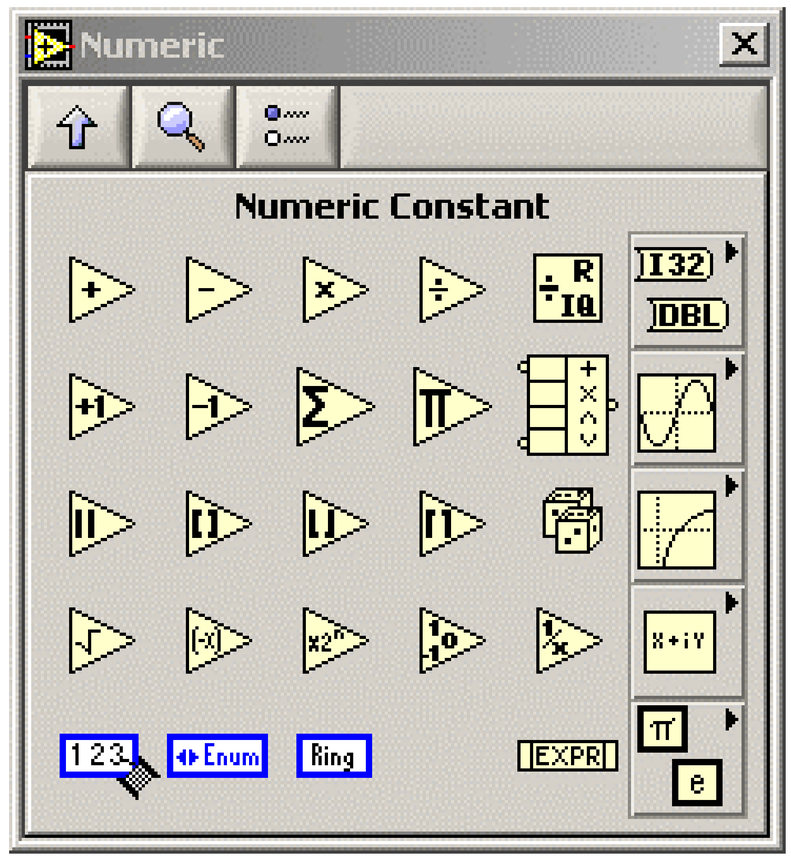

Go to the Tools panel and select the wiring tool. You can now connect the Controller node to the Motion method node.

Connect the two nodes as is shown to the right.

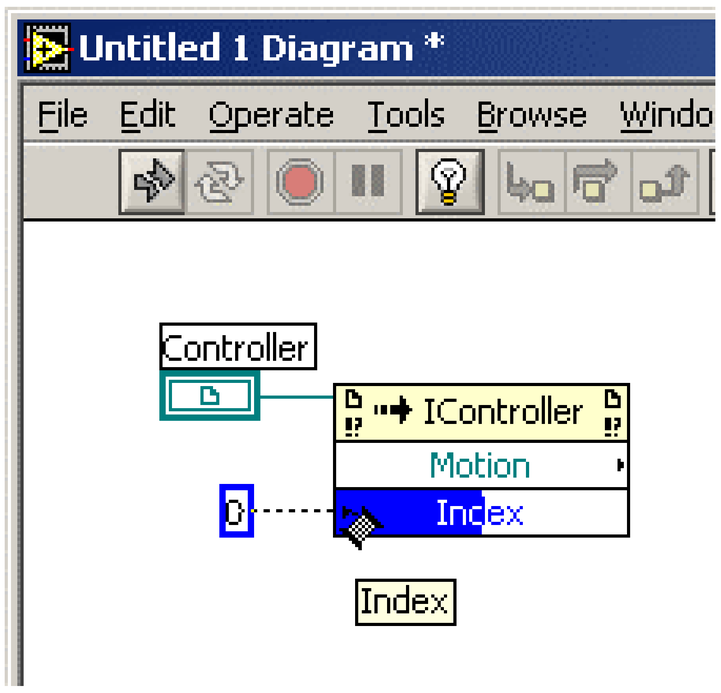



Go to the Functions panel and click on the **Numeric** functions button. A new Numeric panel will appear. Select the **Numeric Constant** icon.



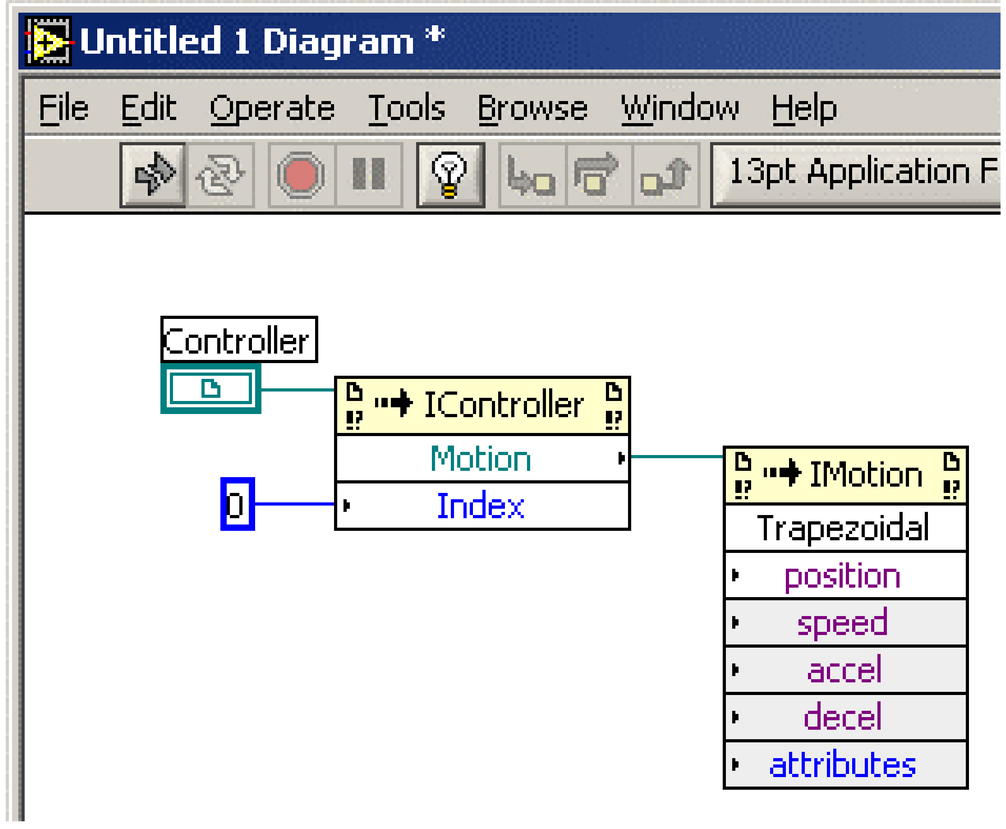

Place the constant in the diagram to the left of the Index input of the Motion node. Leave its value zero and wire the constant to the **Index** input.




Now, right click on the Motion output. A popup menu will appear. Select the following options:

Create ? Method ? Trapezoidal

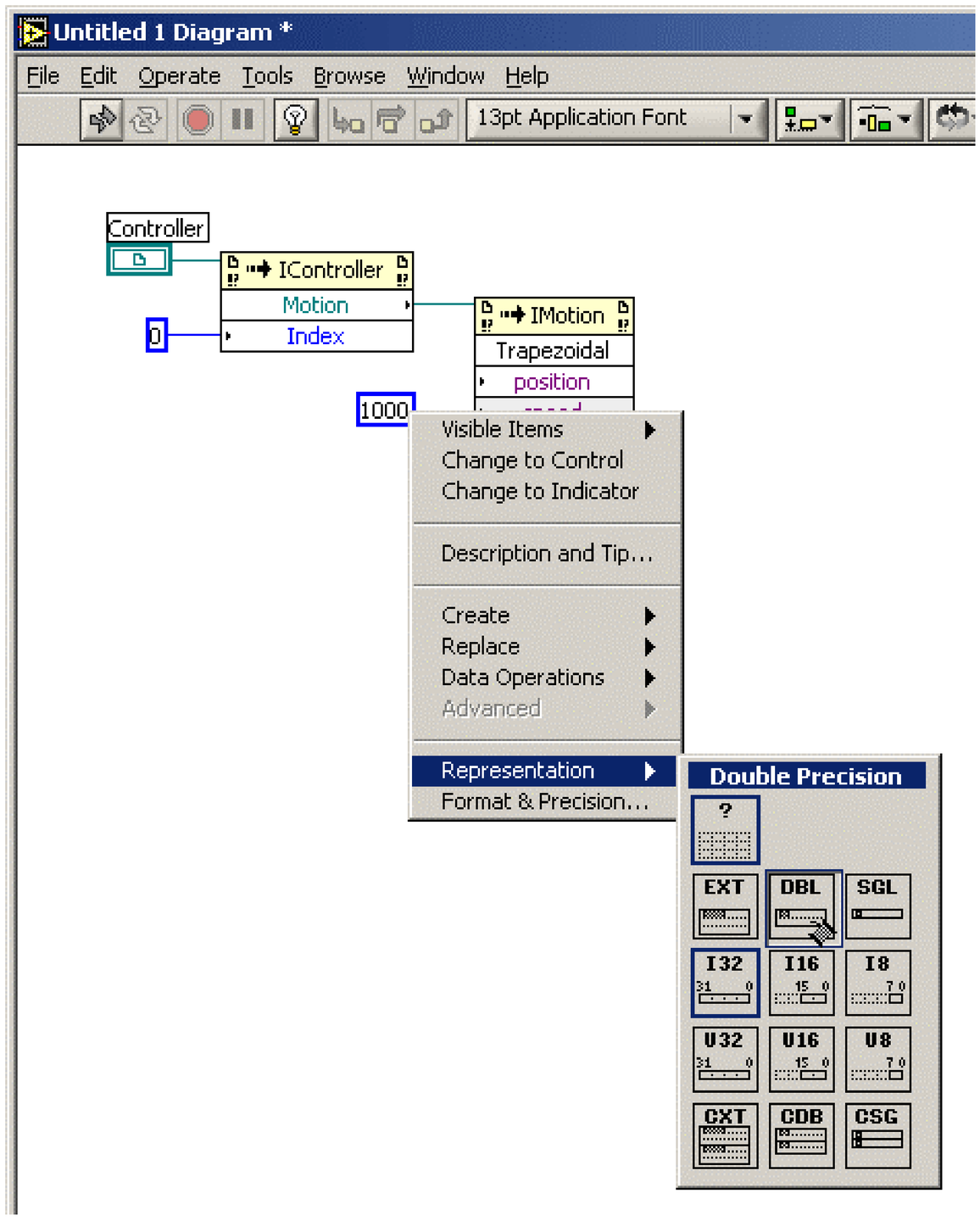
Place the new node to the right of the Motion output. Wire the **Motion** output of the Motion node to the **reference** input of the Trapezoidal node.



Select another numeric constant from the Numeric palette and place it to the left of the speed input. Change the value of the constant to 1000. Right click on the constant. From the popup menu, select:

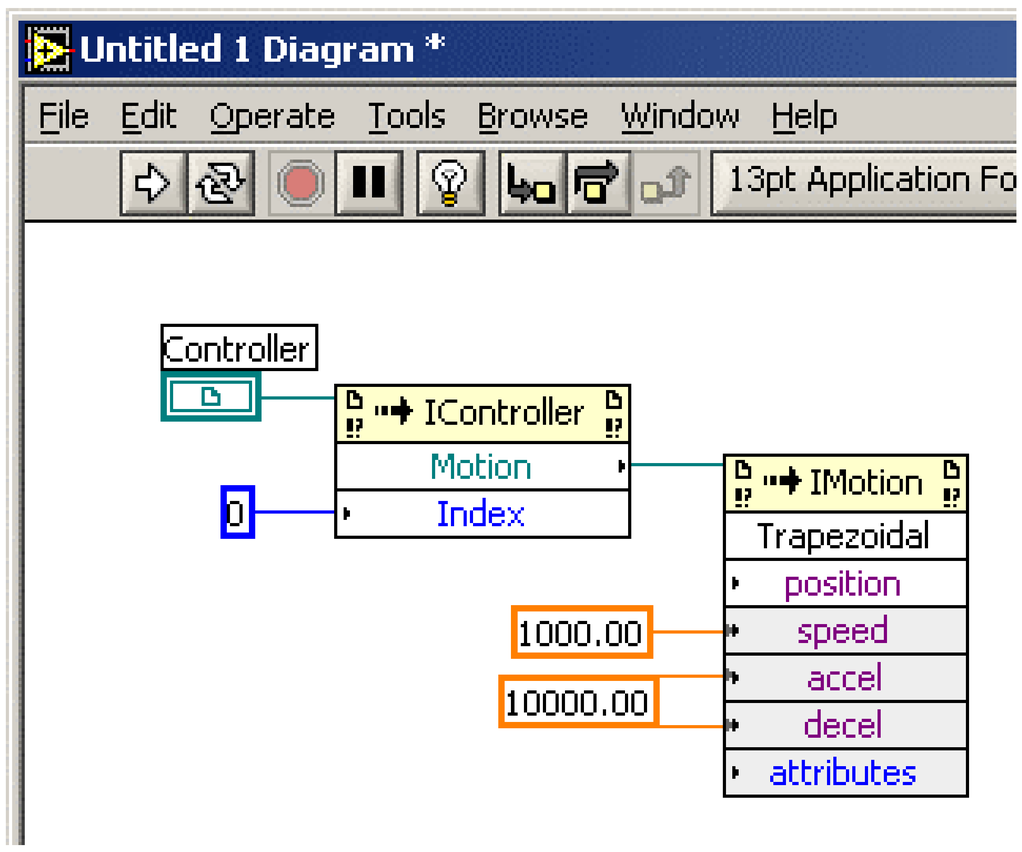
Representation ? DBL

This will change the representation of the constant to a double precision floating point number.

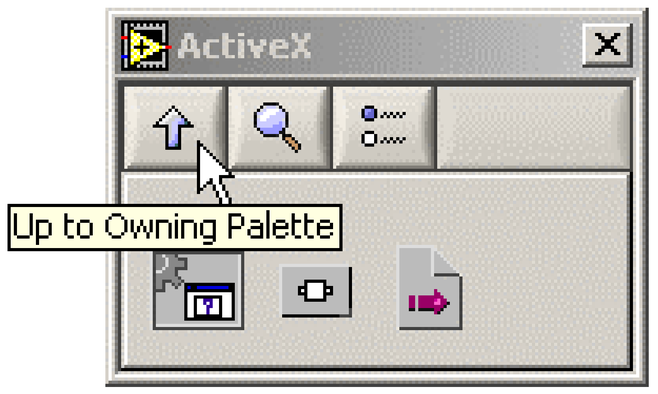



Now, wire the constant to the **speed** input.

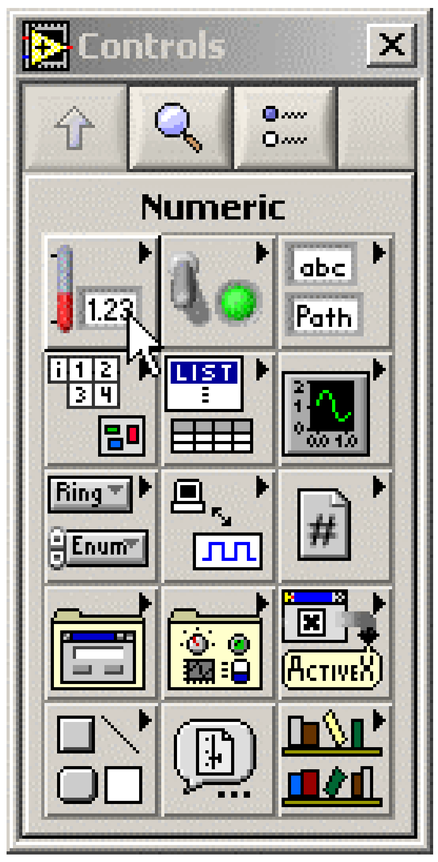
Create another double precision numeric constant with the value 10000 and wire the constant to both the **accel** and **decel** inputs of the Trapezoidal node.

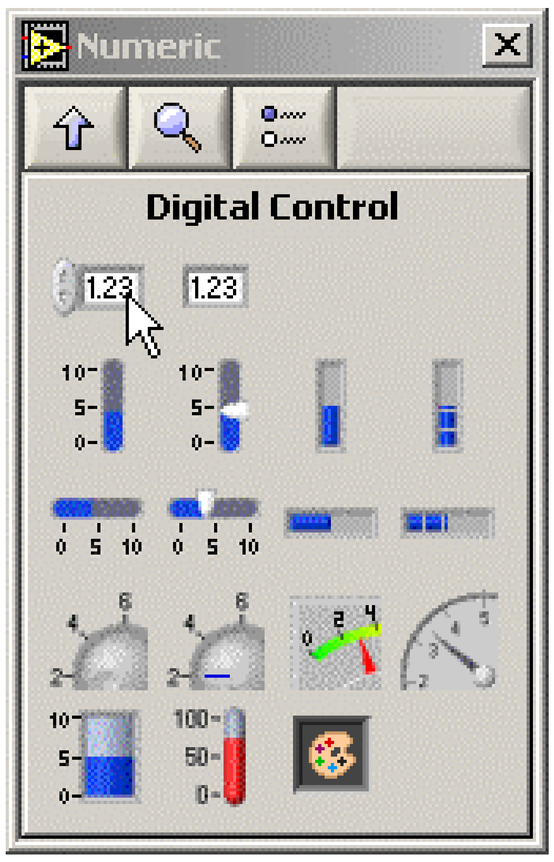


Click anywhere in the Instrument Panel. This will bring back the ActiveX controls panel. Click on the button with the arrow pointing up. This will bring back the Controls panel.

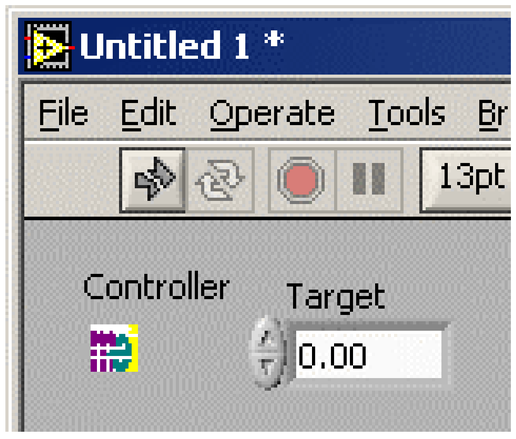



Click on the **Numeric** controls button. From the new Numeric panel, select the **Digital Control** icon.

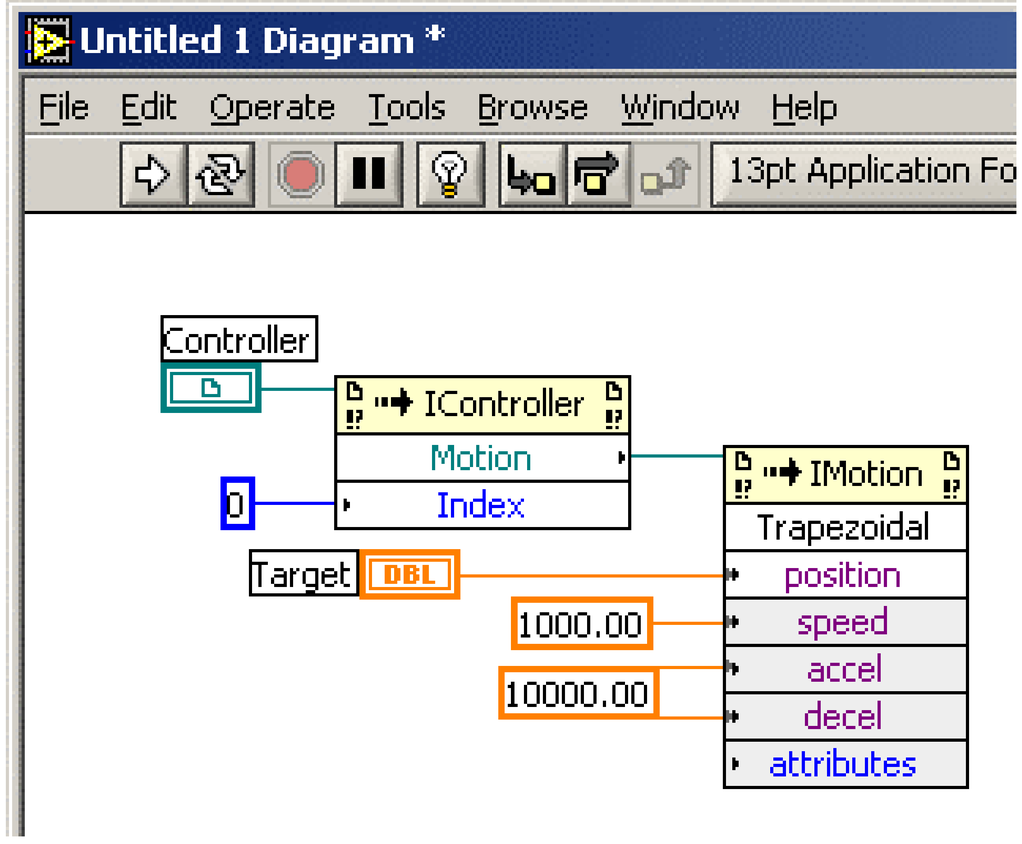



Place the digital control on the Instrument Panel, next to the MEI controller icon and name the control “Target”.

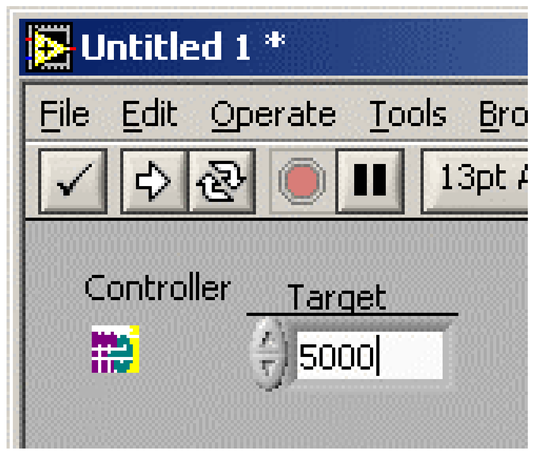


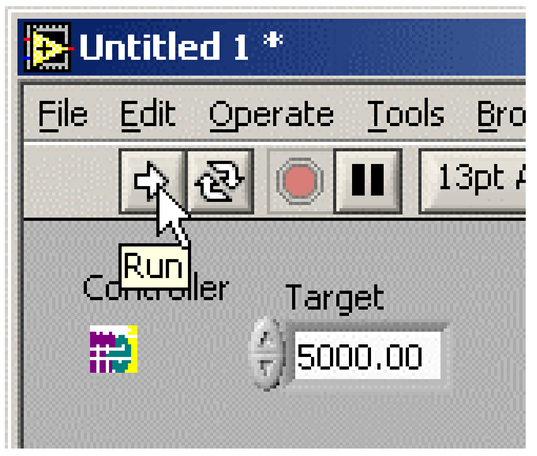

Return to the Diagram window. Move the Target node below the Motion node. Wire the Target node to the **position** input of the Trapezoidal node.



Go back to the Instrument Panel, and enter 5000 into the Target control.

Now, execute the VI by clicking on the Run button




The motor connected to Axis 0 will now move to a position of 5000. You may watch the actual and command positions of the axis change in Motion Console.

Congratulations, you have completed and run your first virtual instrument with the MPX control. Experiment with this VI by changing the target position into the text box and pressing the Run button.

If you want to learn a little bit about error handling and events, please continue on to the next section.

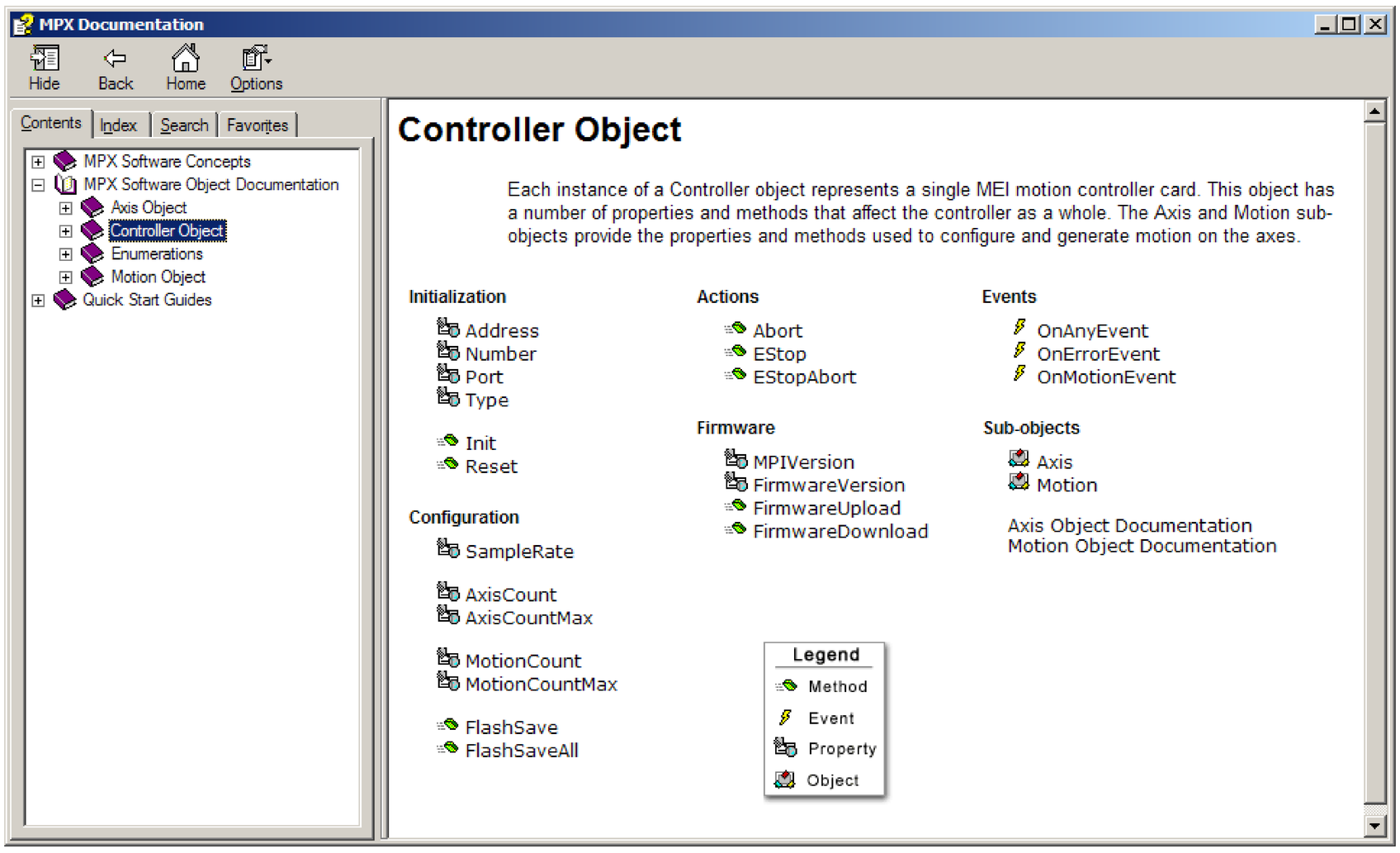
## 3. Error and Event Handling

To be completed….

# 4. Where to Get Help

A help file is provided with the MPX control. It can be accessed via the Start Menu:

Start → Program Files → Motion Engineering → MPX → MPX Documentation




Also available is our online help system. It can be accessed at http://support.motioneng.com