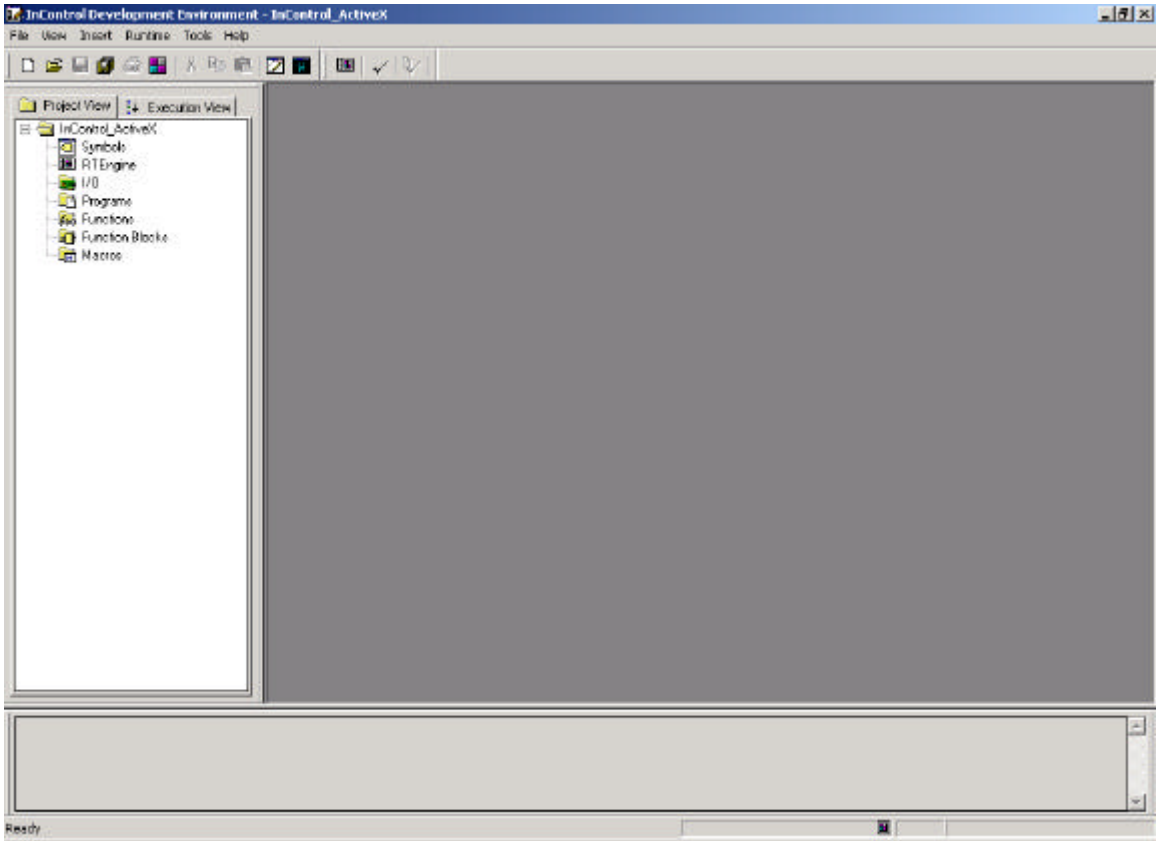
WonderWare InControl and SeaIO ActiveX

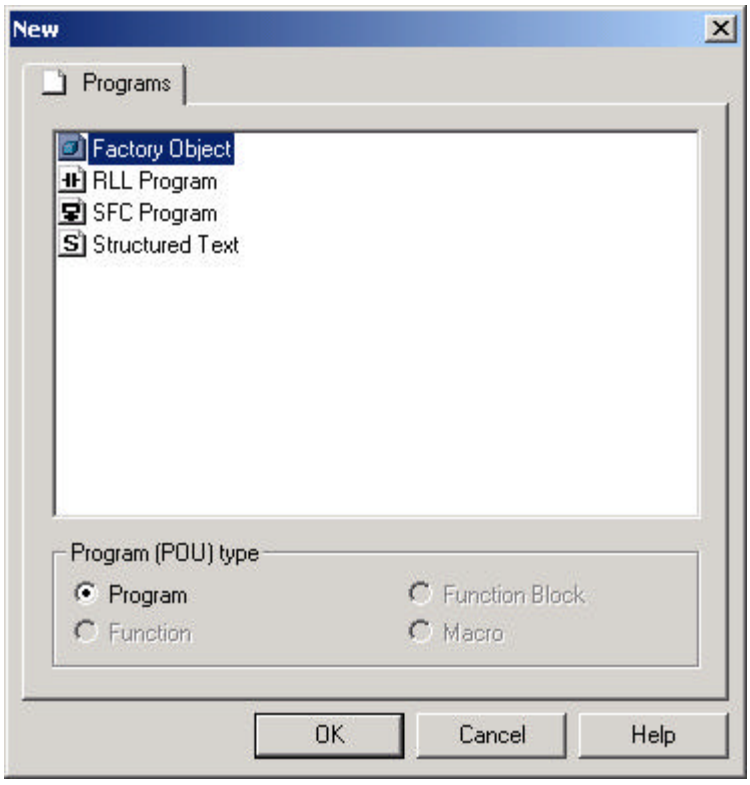
The purpose of this White Paper is to document how to configure WonderWare InControl to use Sealevel Systems SeaIO ActiveX control.

Sealevel Systems SeaIO ActiveX control is implemented as an ActiveX DLL. This means the SeaIO ActiveX control will be loaded into the process space of the ActiveX container application. Since the SeaIO ActiveX control will reside in the process space of the container application, there is no need for Marshaling the data between the container application and the SeaIO ActiveX object. This reduces overhead and increases performance over an ActiveX EXE implementation. Another advantage is the ability to be used by any OLE automation client, such as Microsoft Office applications.

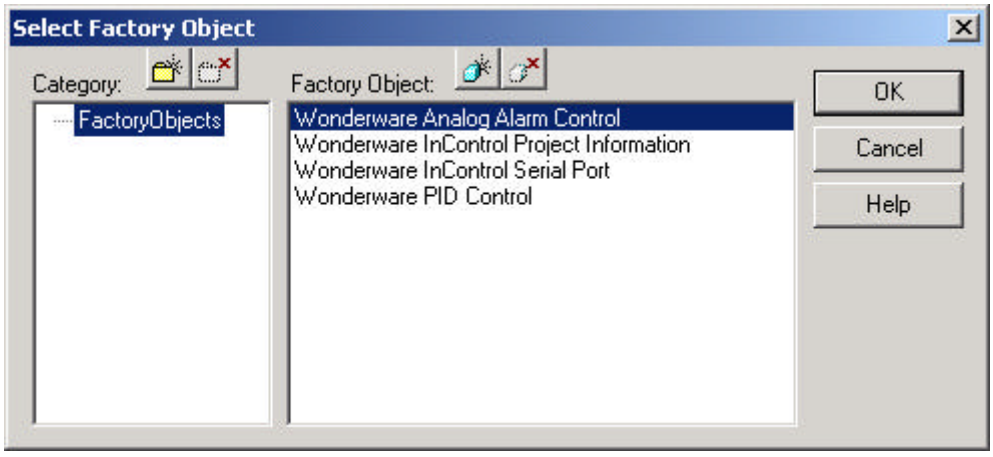
This paper assumes that WonderWare InControl is already installed on your system. It also assumes that SeaIO is already installed on your system and that all installed SeaIO cards are functioning properly. Begin by starting a new project. The main screen should appear as follows:

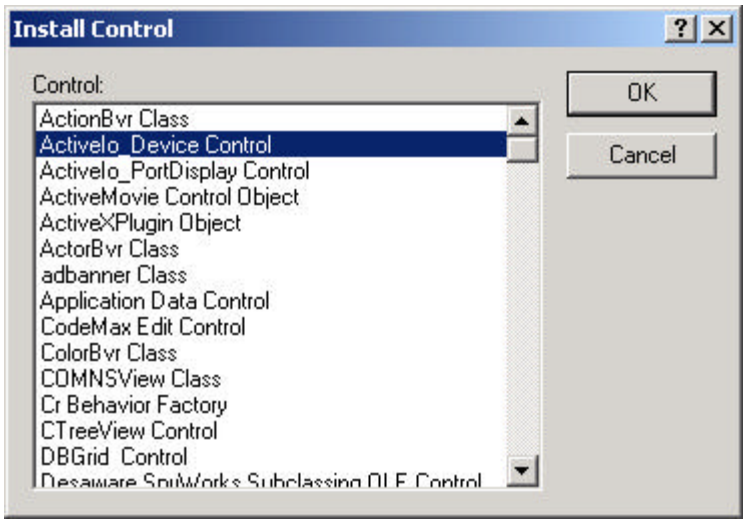


The first step is to add the Sealevel ActiveIO Control to your new project. Right click "Programs" on the left side of the main screen and select "New Program …" from the pop-up dialog. The following dialog should now appear. Highlight "Factory Object" and click "OK".

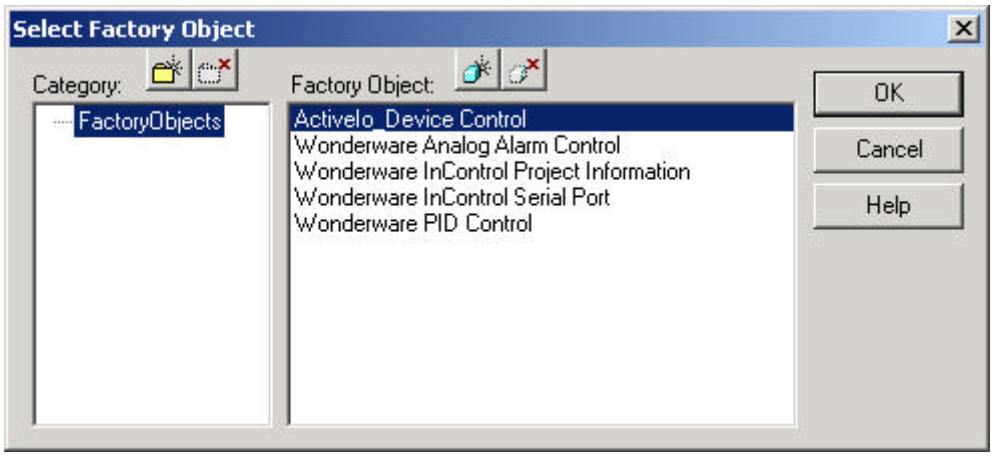


The dialog below now appears. Select the “Install Control” tool button (Blue) and the next dialog appears.

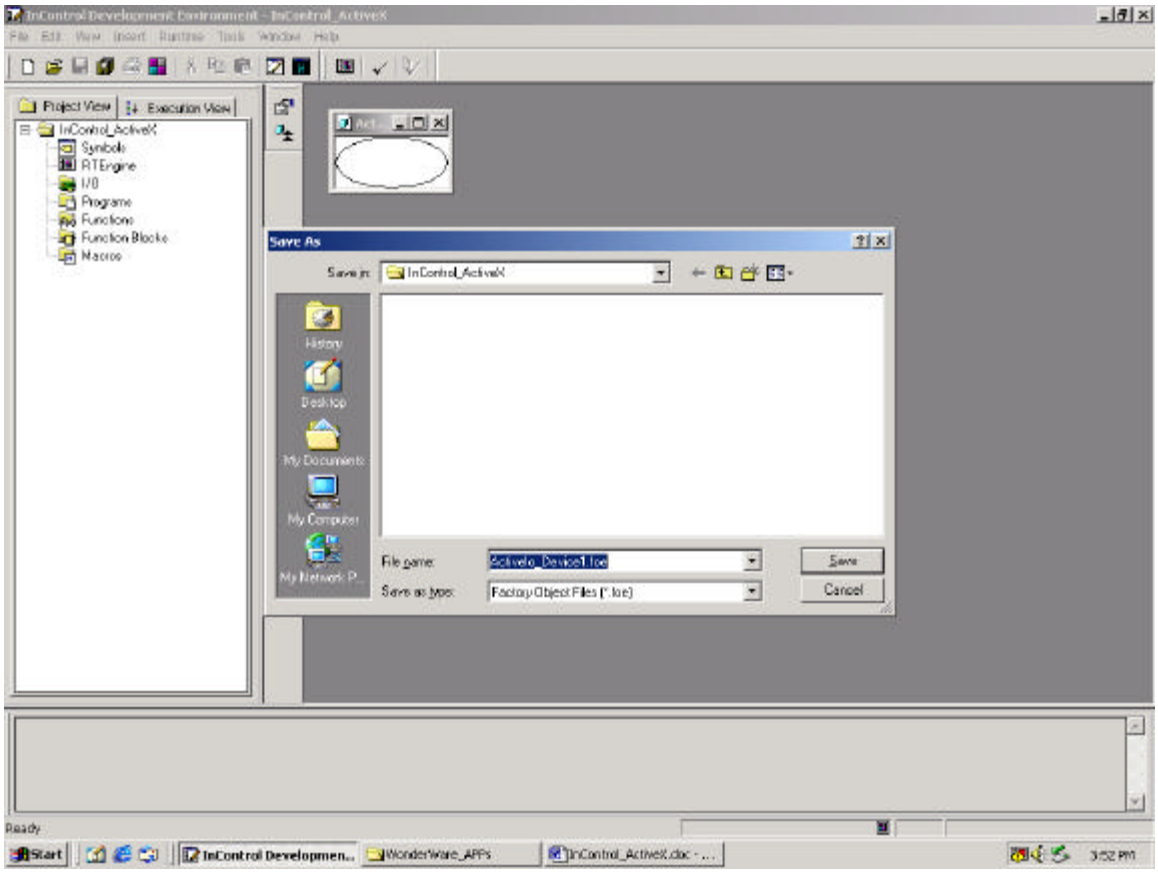




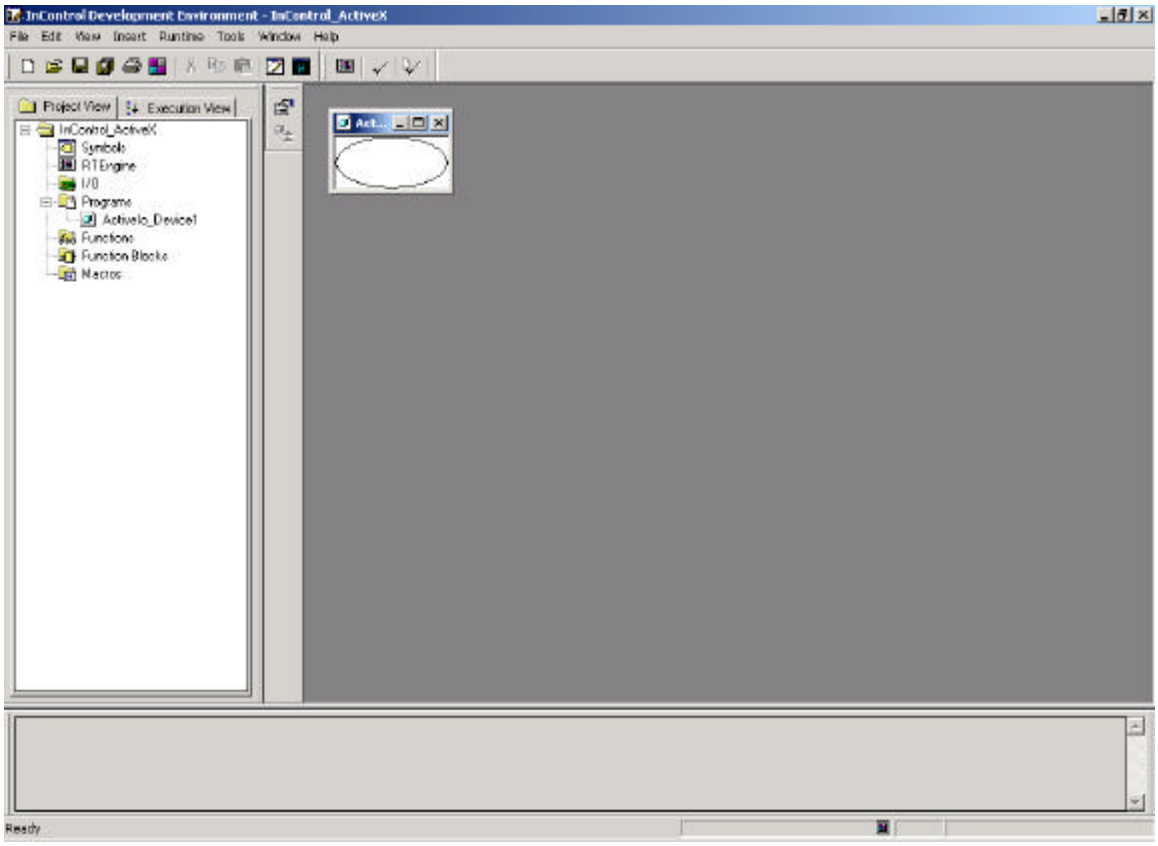
Since Sealevels' SeaIO software is already installed, highlight "ActiveIo_Device Control" and click "OK". You are now returned to the earlier dialog which should now appear as follows:



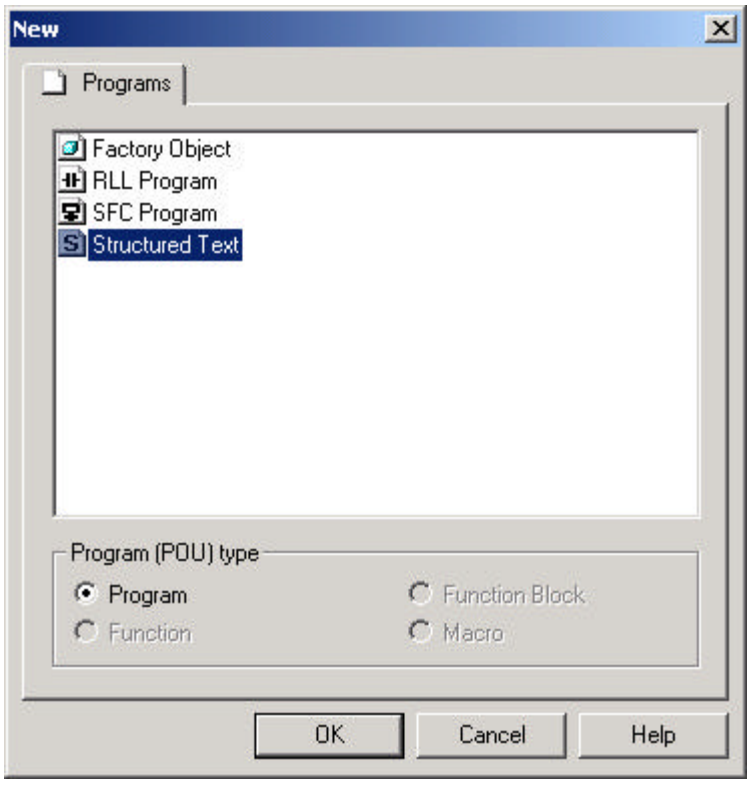
With the ActiveIo Control highlighted, click "OK" and the main project screen should now appears as follows:



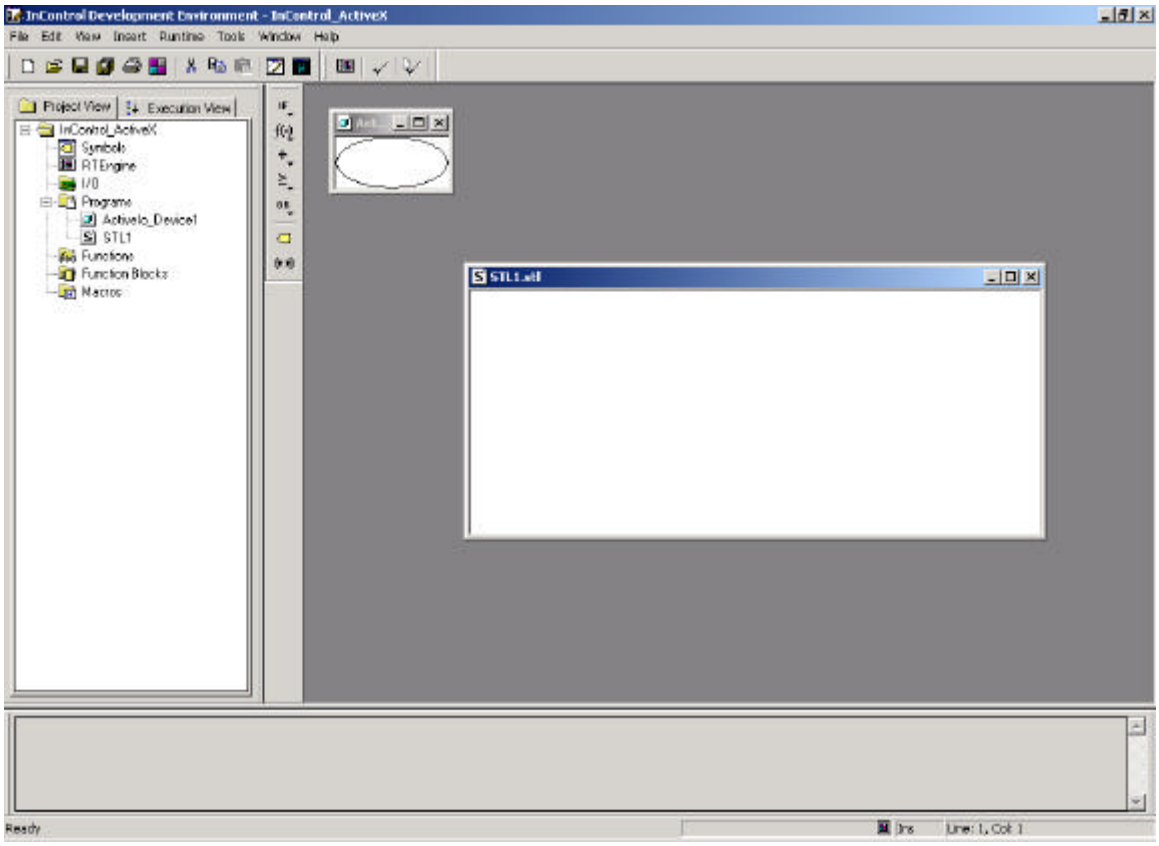
Click “Save” and the main project screen will be updated to show the added ActiveX control.



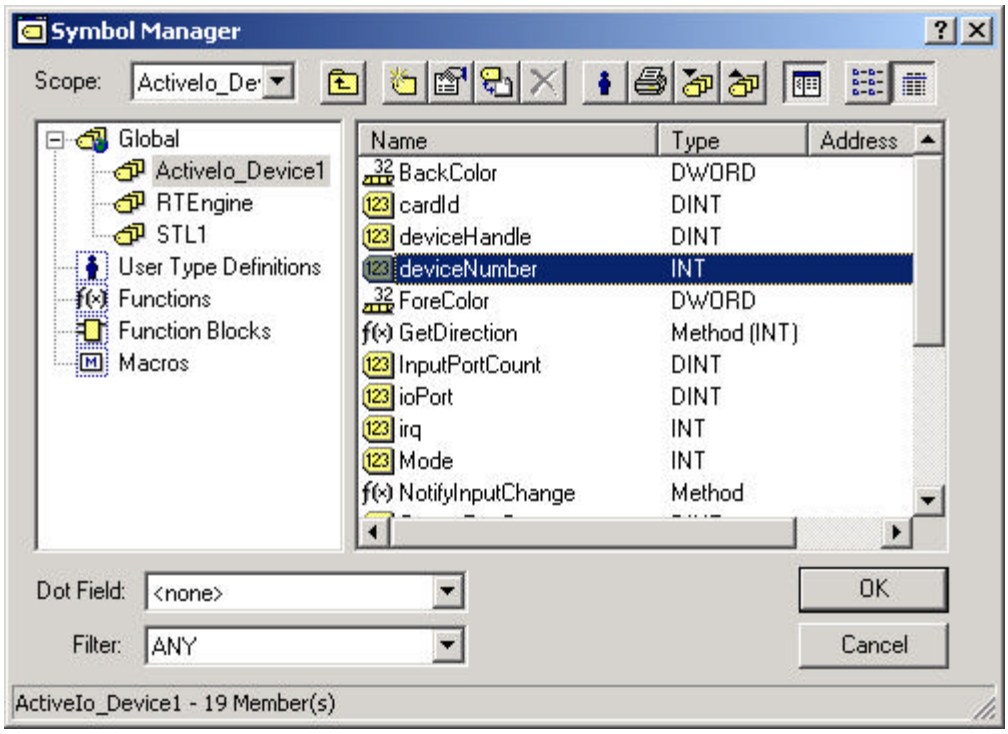
Right click “Programs” again and select “New Program …” to bring up the following dialog. Highlight “Structured Text” and click “OK”.



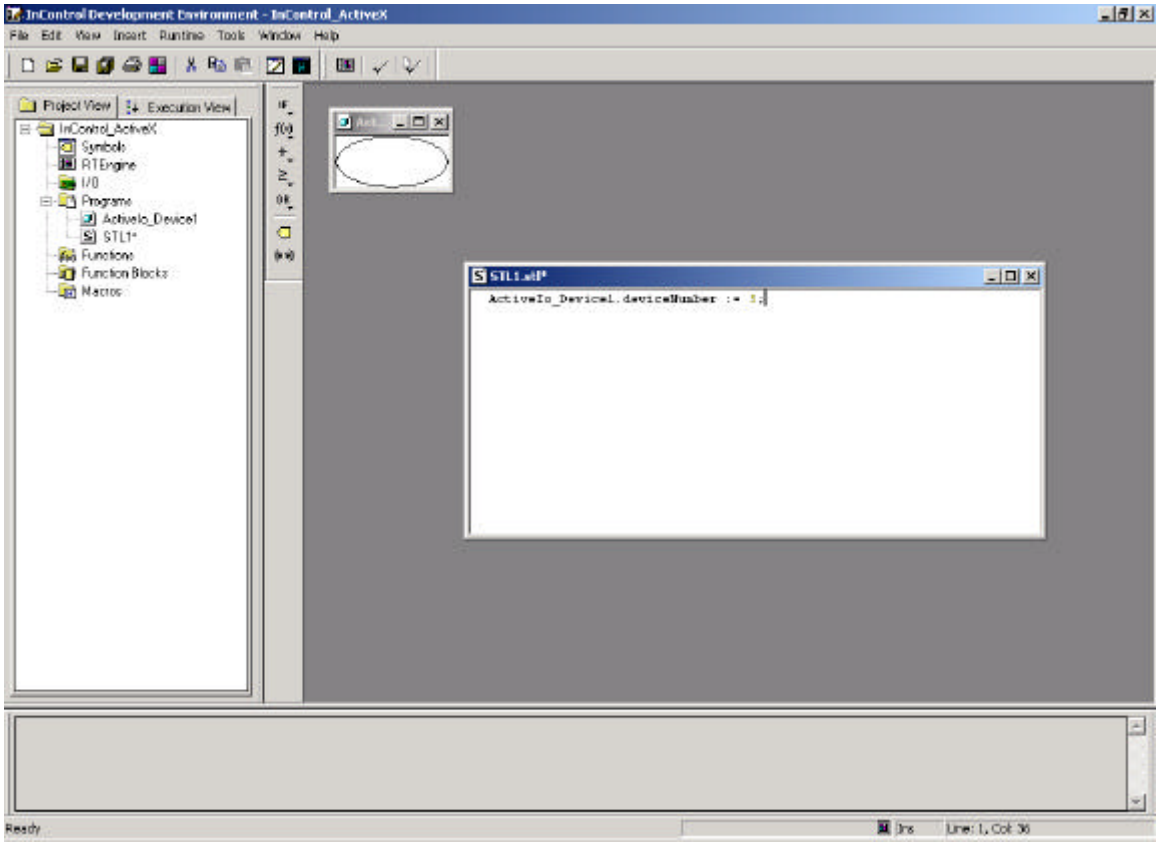
When the next dialog appears, name your structured text language program and click “Save”. The main screen should now look something like this:



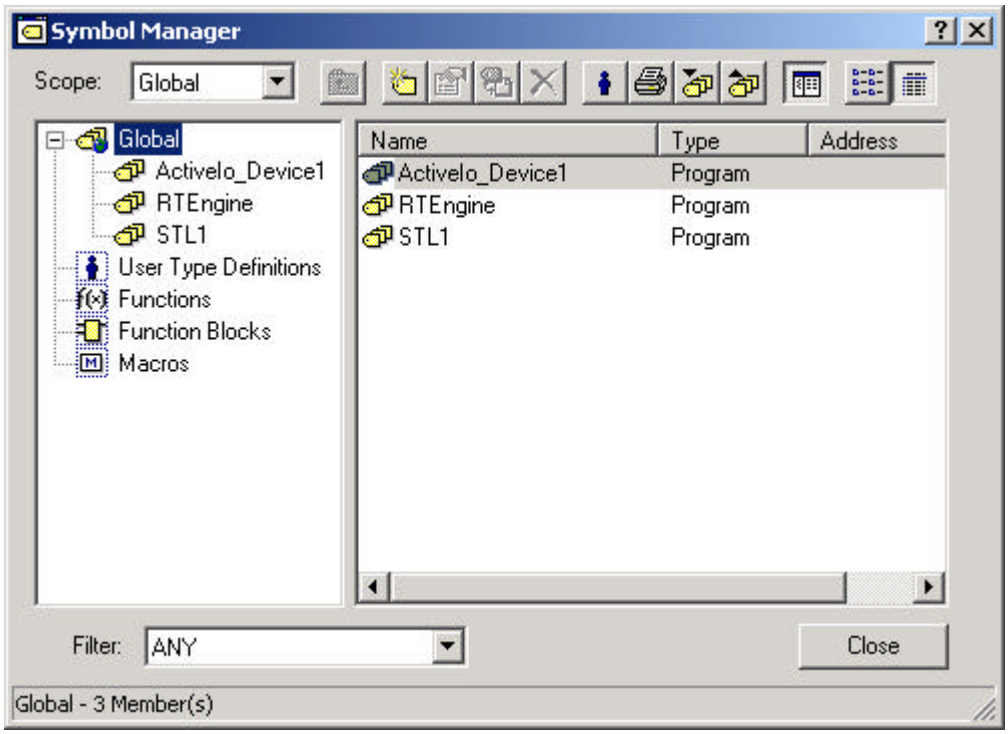
Next click the “Insert” menu and choose “Symbol”. The following dialog should appear. After selecting “ActiveIo_Device1” the items on the right should appear. Select “deviceNumber” and click “OK” to continue.



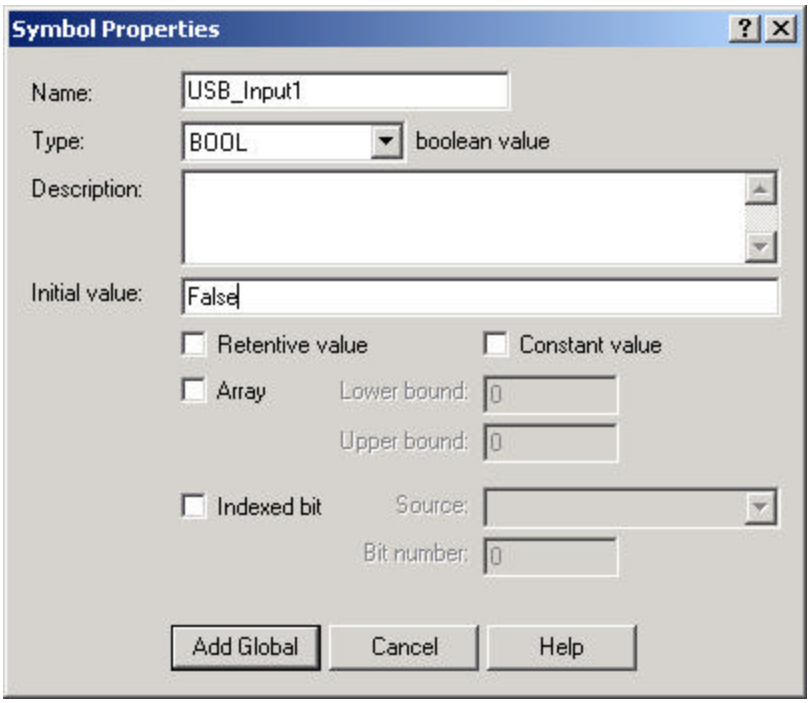
This will insert the ActiveIO “deviceNumber” command into your STL program. To complete this instruction you must assign your SeaIO device number to this command. After doing so the main screen should now look like this:



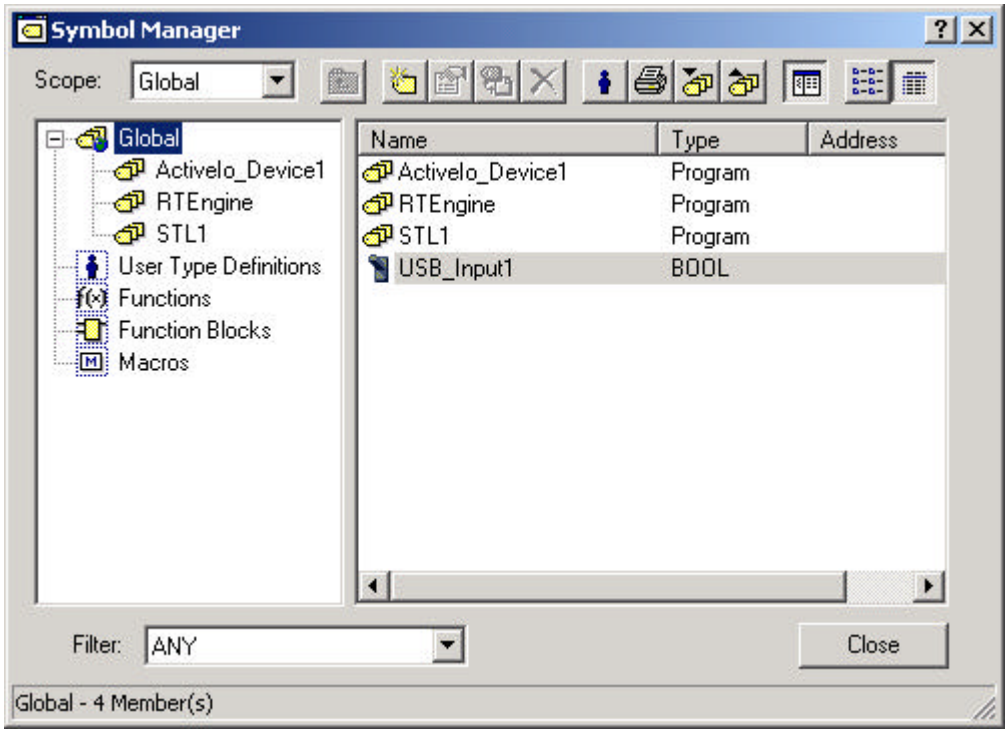
This command is used to open the card for access. In this example our SeaIO device number is 5. Your device number can be determined by using Device Manager to look at the installed SeaIO Devices. This will be shown in parenthesis as a card number (Card X). The next step is to create a Global symbol that can be used to return the status of one input bit. Start by clicking the "Tools" menu and selecting "Symbol Manager". The following dialog should now be active:



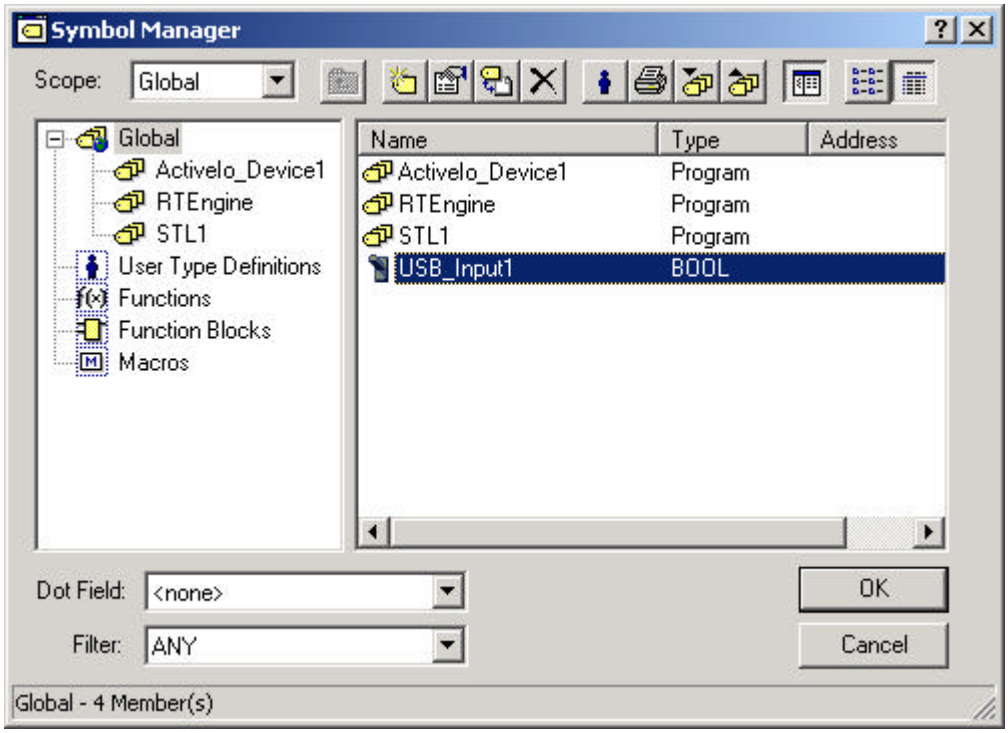
Make sure the "Global" category is selected and click the "New" symbol button. The following dialog will now appear. Enter the information as it is shown.



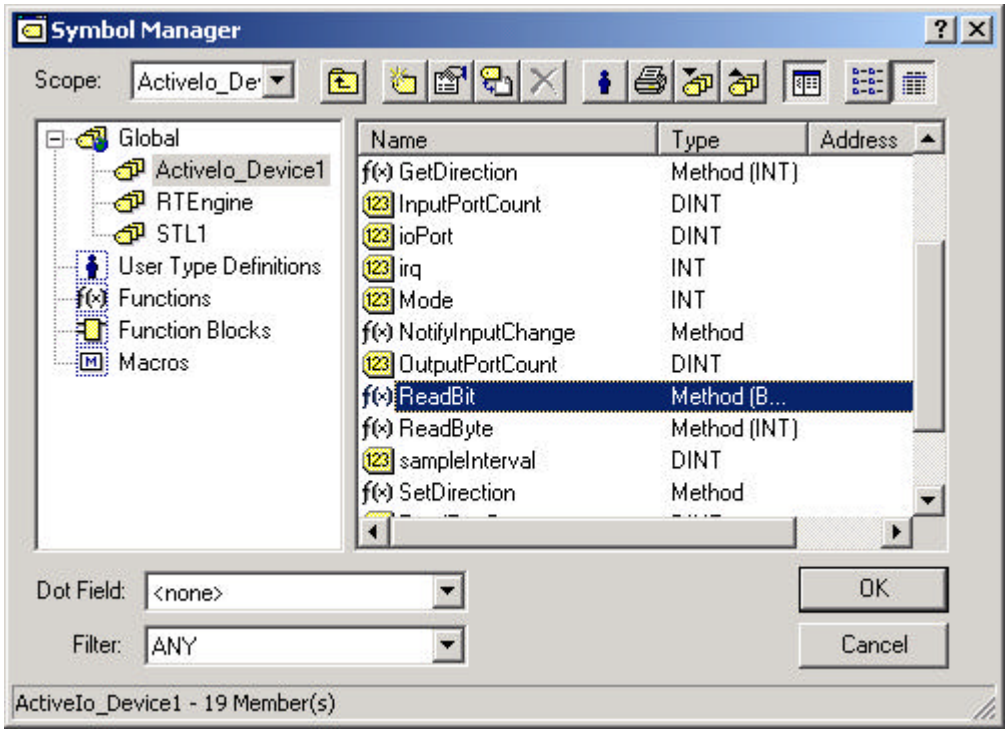
Click the “Add Global” button and you are returned to the previous dialog which now looks like this:



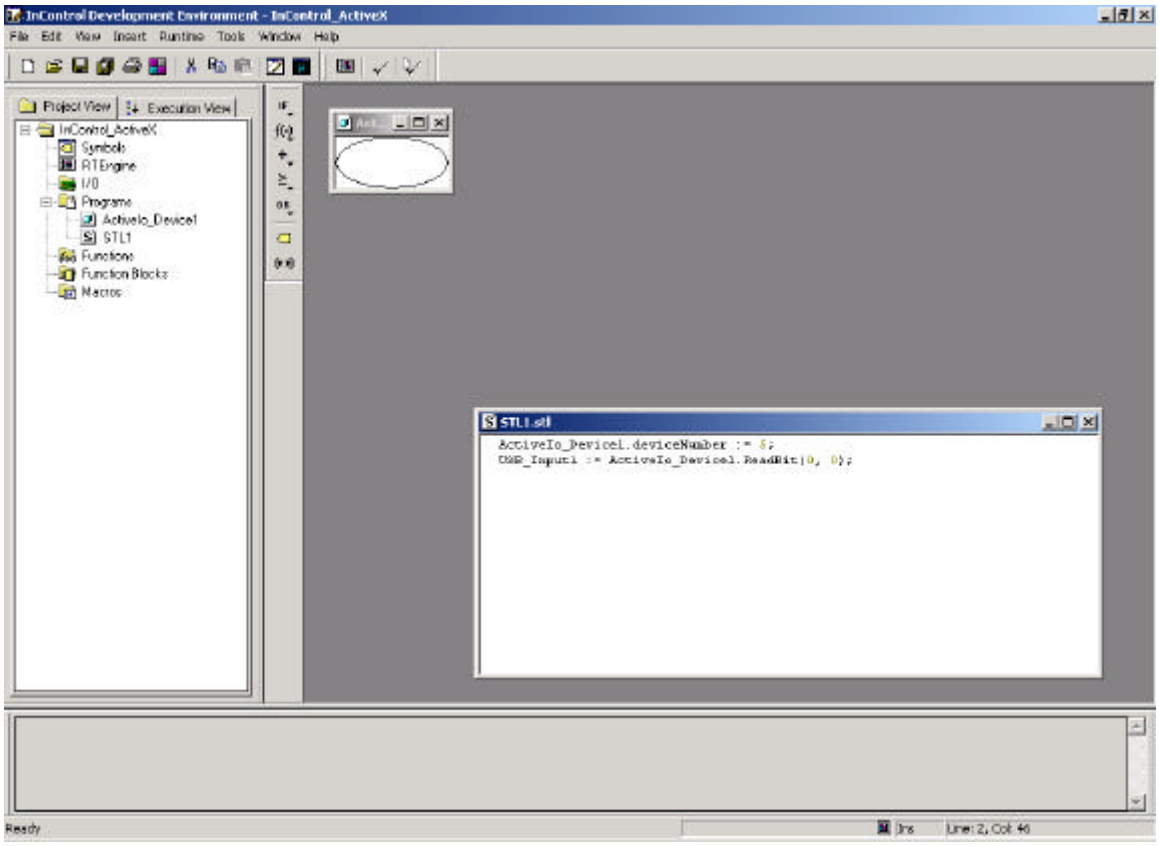
Click the “Close” button to complete adding this symbol. We will now use this symbol in conjunction with our ActiveIO “ReadBit” command to read the status of one input. The symbol and command must be inserted into the STL program. Click the “Insert” menu and select “Symbol” and a familiar dialog now appears:



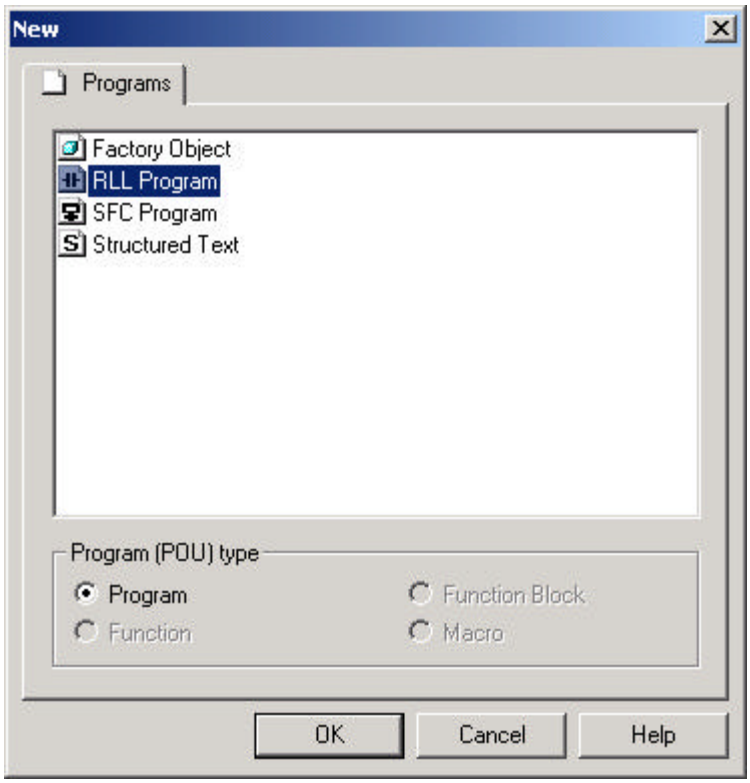
Select “Global” and “USB_Input1” then click “OK” to continue. This process must be repeated to insert the “ReadBit” command. Once again select the “Insert” menu and choose “Symbol”. Be sure to select “ActiveIo_Device1” and “ReadBit”. The dialog should appear as below:



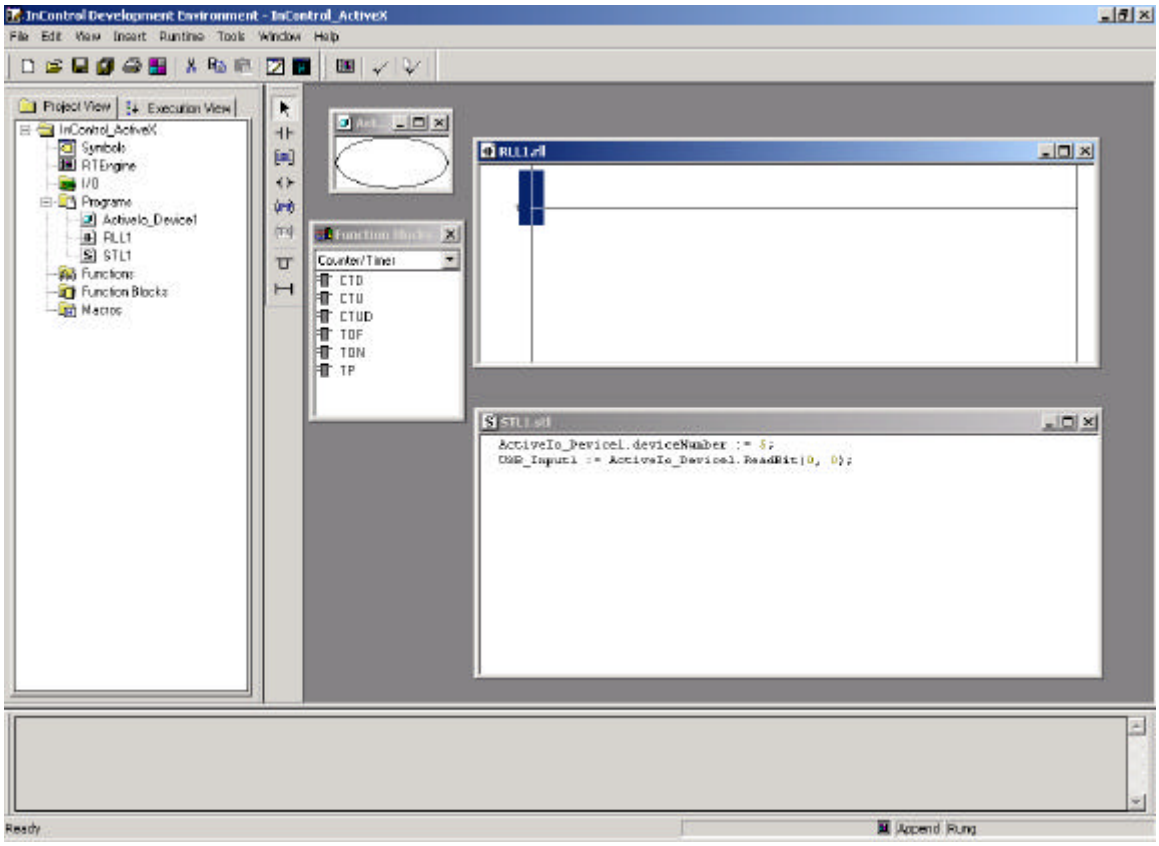
The main screen should now appear as below. Please note the parameters associated with the ReadBit command have already been entered. The first parameter specifies the bit to be read and the second parameter specifies the addressing mode, absolute or relative. In this example we are reading the first bit, which is zero based, and the addressing mode is relative. For more information consult SeaIO Help which was installed during the setup of SeaIO.



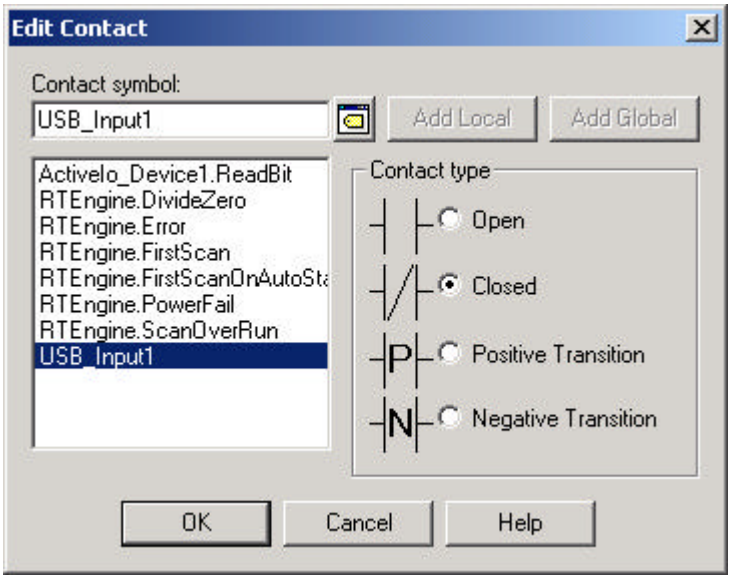
Now we will add to the project a means to verify that the input is changing state. Right click “Programs” and select “New Program …”.



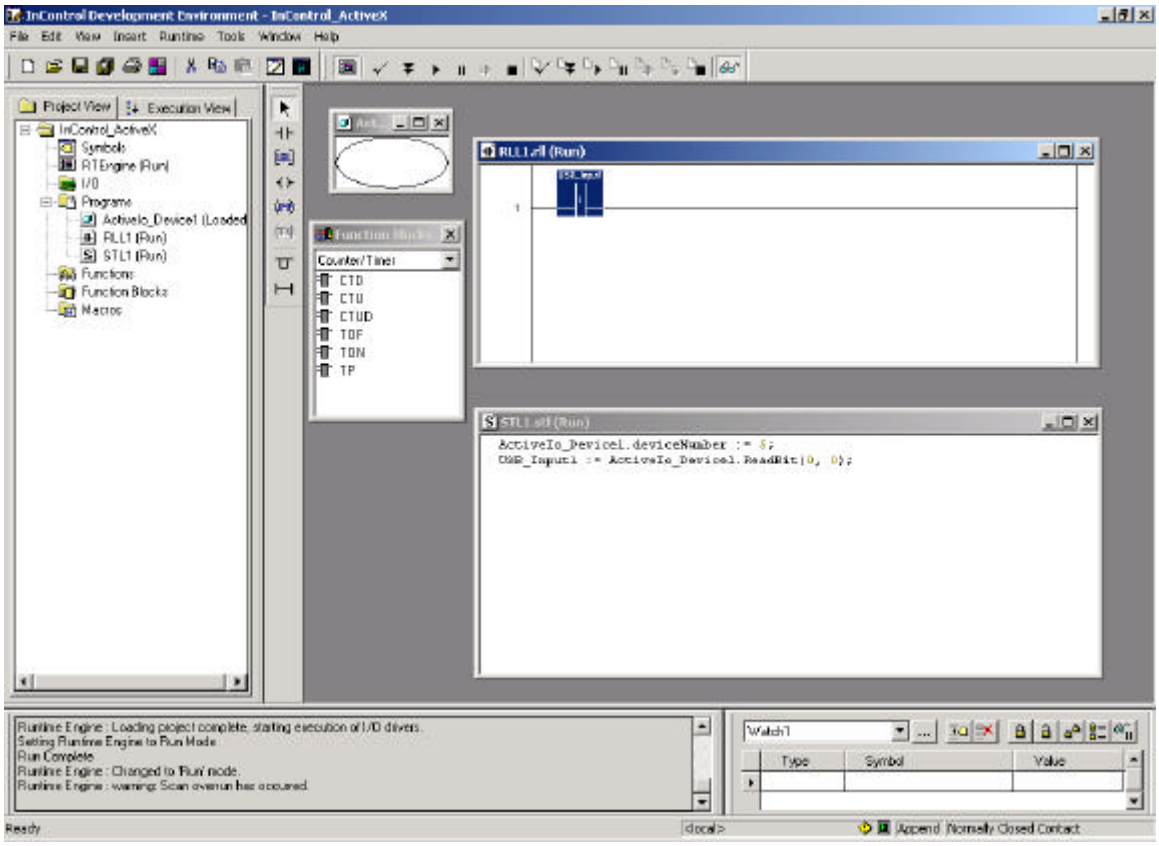
Select “RLL Program” and click “OK”. When the pop-up dialog appears, name your RLL program and click “Save”. The main screen should now look something like this:



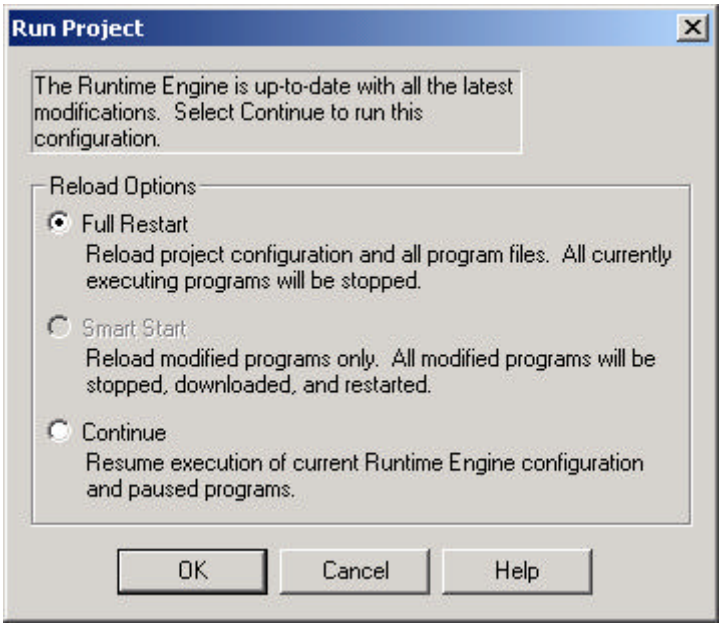
Now we will add a Contact to this rung by using the “Contact Tool” button. Click the “Contact Tool” button and drop the contact on the rung. The following dialog now pops up:



Select “USB_Input1” and be sure the contact type is “Closed”. In our example we are using a closed contact because the example is done with one of our USB TTL digital I/O cards. With no input connected, the pull-up resistor on the input biases the input to a logical 1. When the input is connected, it is actually switched to ground. The closed contact is used as a means of inverting the input. Click “OK” to continue. The main screen should now appear as below:



You are now ready to run your project. To change the state of the input, we are using one of our Test Adapters, Part No. TA01, which connects to the digital I/O card thru an industry standard 50 pin ribbon cable. This test adapter has dip switches to simulate inputs and LED's to simulate outputs. Though this is a very basic example, it provides the necessary concepts to use our ActiveX control for more complex control applications. To run your project, select the "Runtime" menu and choose "Run Project". The following dialog should appear:



Be sure “Full Restart” is selected and click “OK”. After the project loads, change the state of the input and watch the contact in the RLL program. When the input is true the contact should be green.