FactoryTalk® View Machine Edition and PanelView™ Plus – Introductory Lab

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WARNING

Identifies information about practices or circumstances
that can cause an explosion in a hazardous environment,
which may lead to personal injury or death, property damage, or economic loss.

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

ATTENTION

Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you:

- identify a hazard
- avoid a hazard
- recognize the consequence

SHOCK HAZARD

Labels may be located on or inside the drive to alert people that dangerous voltage may be present.

BURN HAZARD

Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

FactoryTalk® Machine Edition and PanelView™ Plus – Introductory Lab

Contents

Before you begin

About this lab

This lab teaches new or inexperienced users basic FactoryTalk® View Studio for Machine Edition skills needed to create FactoryTalk® View Machine Edition applications. The lab starts with an empty project and shows you how to add application content and configure communications to create a working system that can both read and write information from a Logix controller. Building on this foundation, students are next shown how to create reusable graphical displays and configure language switching.

Who should complete this lab

This lab is intended for new users or users with limited experience using FactoryTalk® View Machine Edition. The lab's content covers the basic operation of FactoryTalk® View Studio for Machine Edition. If you are an experienced FactoryTalk® View Studio for Machine Edition user or HMI designer, you may be dissatisfied with this lab. Consider trying our advanced labs if you are already experienced with FactoryTalk® View Machine Edition.

What you will accomplish in this lab

During this lab, you will accomplish the following major tasks:

- Create and execute a new FactoryTalk® View Machine Edition application on a PanelView™ Plus terminal
- Use 'live' information from a Logix controller in an HMI application
- Create and use Global Objects on an existing display
- Use parameters to create a reusable display
- Configure an application for language switching

How the lab is organized

The lab covers the basics for creating a FactoryTalk® View Machine Edition application, adding content, creating a runtime file, downloading and running the application on a PanelView™ Plus terminal. It further shows how Alarms are configured, how to use Global Objects and to perform Language switching:

- Create, test, and deploy a FactoryTalk® View Machine Edition application
- Work with alarms
- Work with Global Objects
- Import content from an existing application
- Use parameters to improve design efficiency
- Create a multi-lingual application with language switching

Tools & prerequisites

To complete this lab you must use the following hardware and software:

- A Microsoft Windows 7 64-bit computer
- PanelView™ Plus 7 Performance terminal
- Ethernet connection between computer and PanelView™ Plus terminal

- FactoryTalk® View Machine Edition Studio V8.00.00 (CPR9 SR7)
- FactoryTalk® Services Platform 2.71.00 (CPR9 SR7.1)
- RSLinx Enterprise v5.71.00 (CPR9 SR7.1)
- RSLinx Classic v3.70.00 (CPR9 SR7)
- Studio 5000 Logix Designer v21 (CPR9 SR5.1)
- SoftLogix 5800 v21 (CPR9 SR5.1)
- Microsoft Excel 2010 or newer

Document conventions

Throughout this workbook, we have used the following conventions to help guide you through the lab materials.

This style or symbol:	Indicates:
Words shown in bold italics (e.g., *RSLogix 5000* or *OK*)	Any item or button that you must select, click on, or a menu name from which you must choose an option or command. This will be an actual name of an item that you see on your screen or in an example.
Words shown in bold (e.g., **Communication Setup**)	This is the name of an item that you see on your screen or in an example.
Words shown underlined and enclosed in single quotes (e.g., ***'Controller1'***)	An entry that you must type in the specified field. This is information that you must supply based on your application (e.g., a variable). Note: When you type the text in the field, remember that you do not need to type the quotes; simply type the words that are contained within them (e.g., Controller1).
This is sample text.	Text that appears inside of a gray box is supplemental information regarding the lab materials or learning goals; the information is not required for you to complete the lab exercises. The supplemental text may provide you with helpful hints that can make it easier for you to use this product.

Note: If the mouse button is not specified in the text, you should click the left mouse button.

FactoryTalk® View Machine Edition

FactoryTalk® View Machine Edition (ME) is a machine-level HMI product that supports both open and dedicated operator interface solutions for monitoring and controlling individual machines or small processes. It provides a consistent operator interface across multiple platforms, including Microsoft Windows CE and 64-bit or 32-bit Microsoft Windows 7, XP, and Vista solutions.

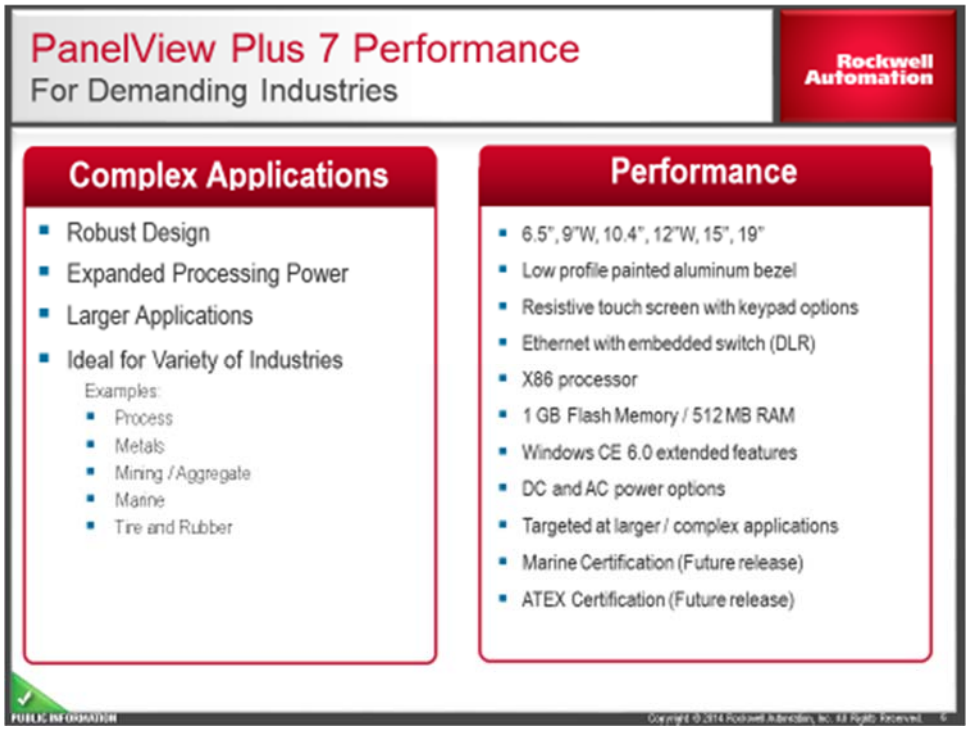
FactoryTalk® View Machine Edition contains two components:

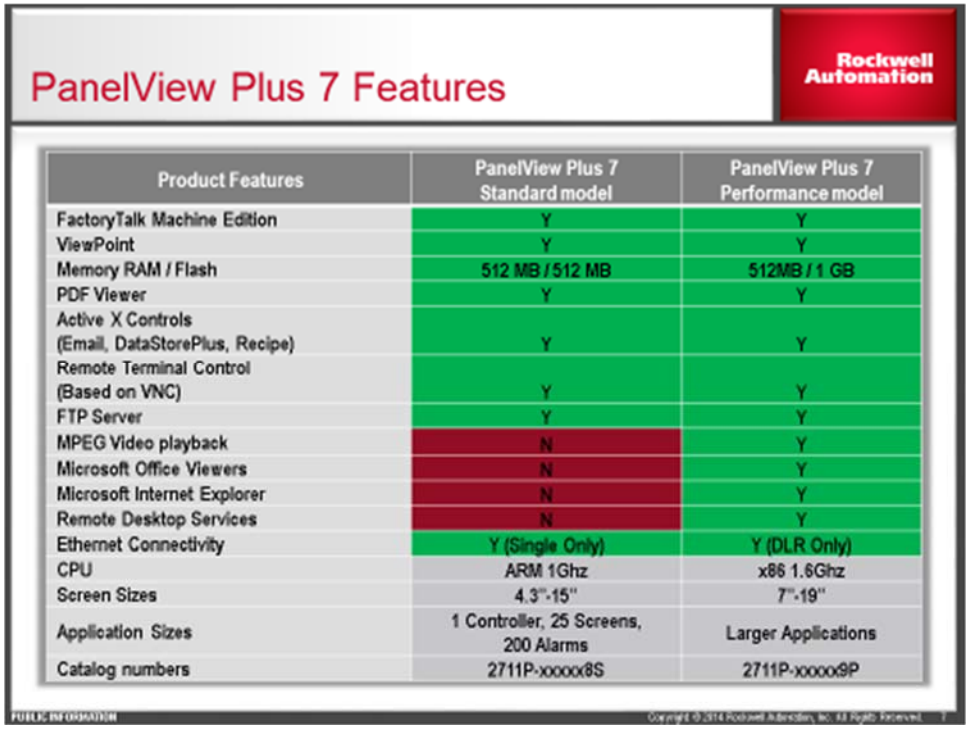
- FactoryTalk® View Studio – This is the development environment containing the tools you need for creating all aspects of a human-machine interface (HMI), including graphic displays, trends, alarm reporting and real-time animation. It also provides tools for testing individual displays and entire applications. When development is completed, a run-time (.MER) file is created to run on a PanelView™ Plus or personal computer.
- FactoryTalk® View Machine Edition Station – This is the run-time environment. FactoryTalk® View Machine Edition Station executes the run-time (.MER file) application. FactoryTalk® View Machine Edition Station is embedded in PanelView™ Plus terminals. Run-time applications may also be executed on a personal computer. Executing run-time applications on a personal computer requires additional software licenses.

PanelView™ Plus 7

The PanelView™ Plus are operator interface terminals designed to optimize system development, performance, and efficiency. The PanelView™ Plus 7 line of terminals is the latest addition to Rockwell Automation's versatile family of Allen-Bradley PanelView™ operator interface displays for machine level operator terminal applications in industrial environments.

The PanelView™ Plus 7 line extends the portfolio with increased display resolutions while still supporting a known design environment – FactoryTalk® View Machine Edition. Please reference the following tables for more information regarding the PanelView™ Plus 7 Performance and the entire PanelView™ Plus 7 family.





Product Features	PanelView Plus 7 Standard model	PanelView Plus 7 Performance model
FactoryTalk Machine Edition	Y	Y
ViewPoint	Y	Y
Memory RAM / Flash	512 MB / 512 MB	512MB / 1 GB
PDF Viewer	Y	Y
Active X Controls (Email, DataStorePlus, Recipe)	Y	Y
Remote Terminal Control (Based on VNC)	Y	Y
FTP Server	Y	Y
MPEG Video playback	N	Y
Microsoft Office Viewers	N	Y
Microsoft Internet Explorer	N	Y
Remote Desktop Services	N	Y
Ethernet Connectivity	Y (Single Only)	Y (DLR Only)
CPU	ARM 1Ghz	x86 1.6Ghz
Screen Sizes	4.3"-15"	7"-19"
Application Sizes	1 Controller, 25 Screens, 200 Alarms	Larger Applications
Catalog numbers	2711P-xxxxx8S	2711P-xxxxx9P

Creating a '*Hello World*' Application

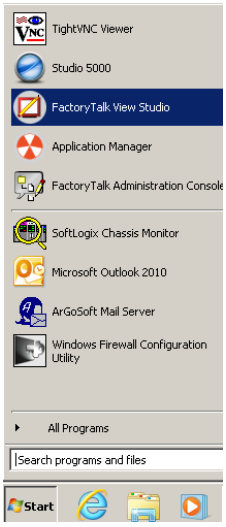
Completing this section requires approximately 20 minutes.

In this section, you will learn how to:

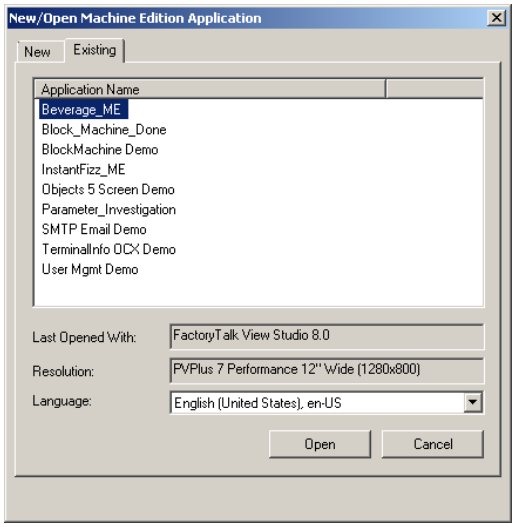
- Launch FactoryTalk® View Studio for Machine Edition
- Create a new project, configure project settings, and add content to the project
- Run the project on a PanelView™ Plus terminal.

Creating a FactoryTalk® Machine Edition Application

1. Select *FactoryTalk View Studio* from the **Start** menu.

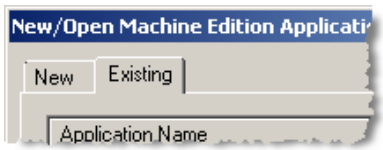


The New/Open Machine Edition Application window will now appear:

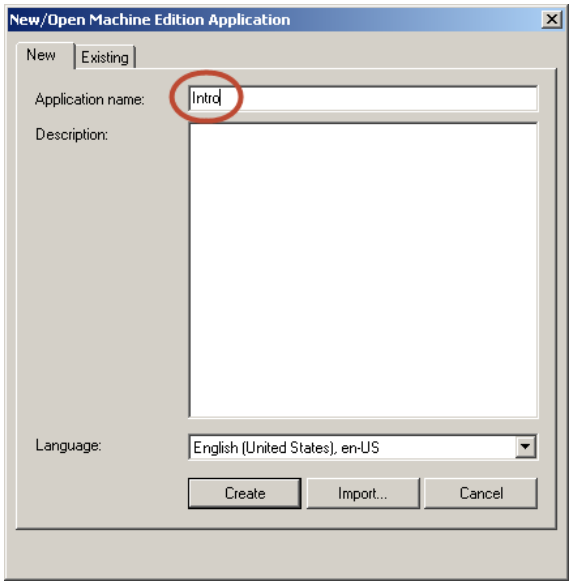


Note that the window may contain additional applications that are not shown in the above picture.

2. Click the *New* tab.

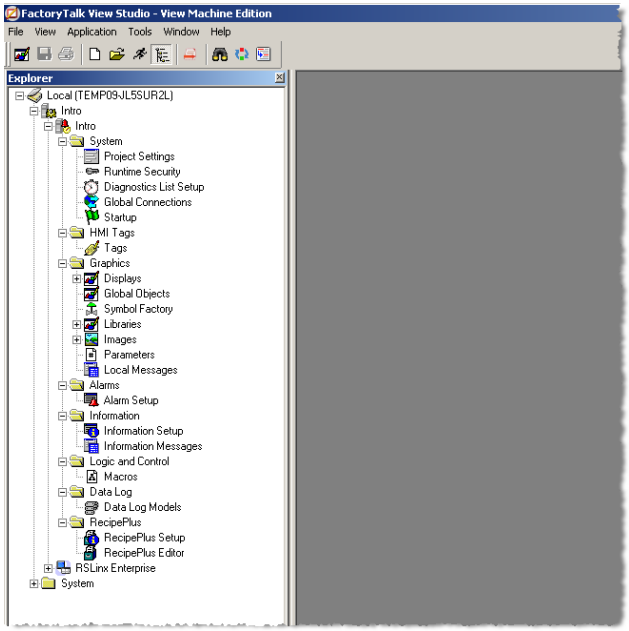


3. In the *Application name:* field, enter '***Intro***'



4. Next, click the *Create*  button.

After creating the application, FactoryTalk® View Studio for Machine Edition opens the application:



If you are unfamiliar with FactoryTalk® View Studio for Machine Edition, please review the information in the next few pages.

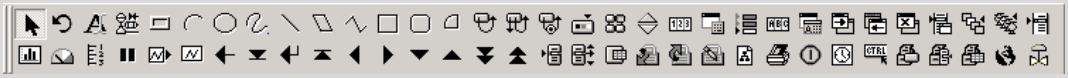
Exploring FactoryTalk® View Studio for Machine Edition Interface

The FactoryTalk® View Studio for Machine Edition Application Window is difided into several key elements.

Application Menu - Used to interact with the application; Open/Close/Create new applications, Import/Export information, etc., The manu will change context based on what project object is open in the Work Pane.

Graphics Toolbar – Provides easy access to tools that are used to manipulate objects on a display (e.g., rotate, group, ungroup, etc.).

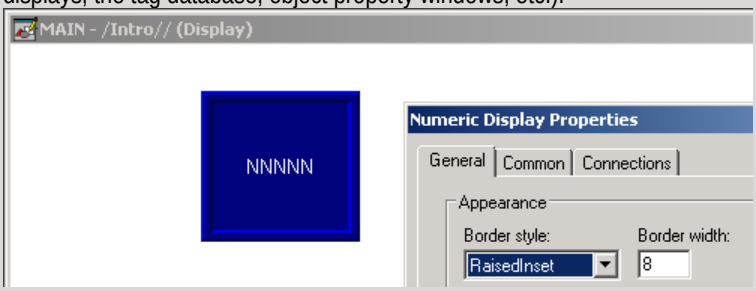
Objects Toolbar – Provides easy access to objects that are used on displays to create the user interface (e.g., Numeric Input, String Display, Momentary Push Button, etc.).



Explorer Pane – Contains all objects related to an application project. Application objects are then opened in the **Work Pane**. See more information regarding the portions of the Explorer Pan that will be used in this lab below.

Diagnostic List – Contains status and error messages related to the system application and project.

Work Pane – The work area where project objects are opened for manipulation and modification (e.g., displays, the tag database, object property windows, etc.).



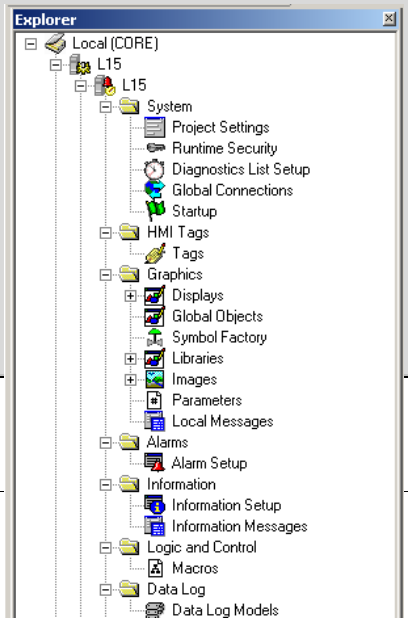
Explorer Pane Components

The following portions of the Explorer Pane will be utilized by this lab. Information regarding the remaining components of this pane can be found in the Help file.

System – Contains project scope settings such as resolution, Security settings, Startup graphic files, and Diagnostic information.

HMI Tags – Contains all tags resident in the memory of the HMI server that are therefore not found in the Logix Controller project.

Graphics – Contains all graphic related components in the application, including displays, images, and the parameter files that can be utilized to reuse displays.



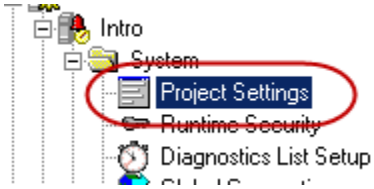
Alarms – Contains the application's alarm configuration including triggers and messages.

RSLinx Enterprise – Contains communication shortcuts used by the application.

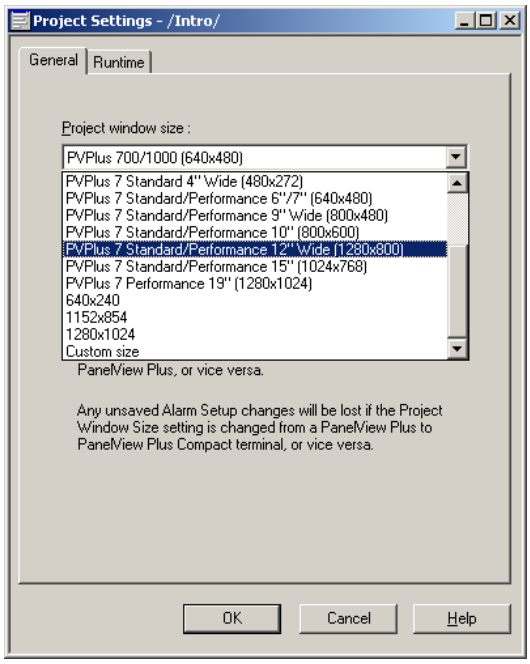
By default, new projects in FactoryTalk® view Studio for Machine Edition are configured for a PanelView™ Plus 700/1000 terminal with a 640x480 resolution. In this lab, the PanelView™ Plus 7 1200 W terminal will be used, therefore, the project window size must be changed to match the terminal.

5. If the window is not already maximized, use the ***maximize*** button  in the upper right-hand corner to do so.

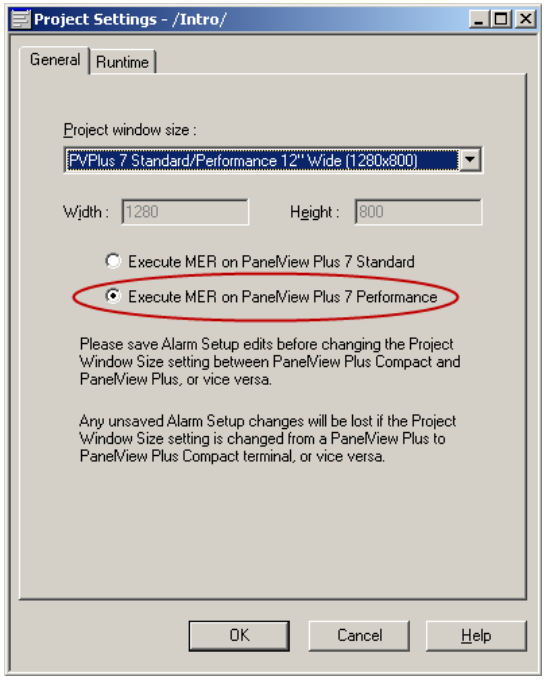
6. Double-click the ***Project Settings*** item located in the top System container to open its dialog box.



7. Use the drop down list to select *PVPlus 7 Standard/Performance 12” Wide (1280x800)*.

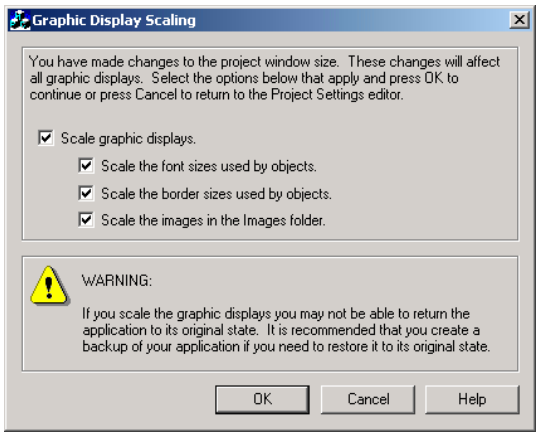


8. Select *Execute MER on PanelView Plus 7 Performance*.



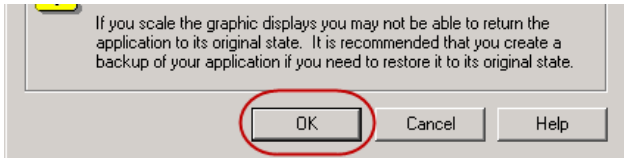
9. Click *OK* to accept the window size change.

   The Graphic Display Scaling window will appear:



This dialog gives the user the ability to determine which graphic components of the application will scale once the display size change has been accepted. Because this is a new project, leave the settings at default.

10. Click *OK* to continue the scaling process.



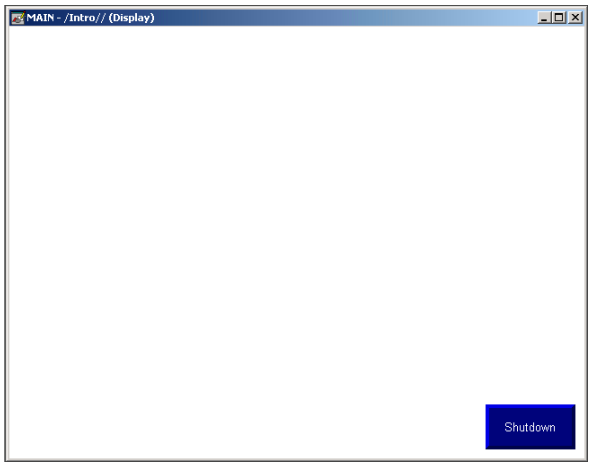
11. Click *Yes* to the following popup which warns that the aspect ratio will change.

12. To view existing displays, expand the ***Displays*** container by clicking the *expander* from the **Explorer Pane** window.

When a new project is created, FactoryTalk® View Machine Edition will automatically create four default displays, one of which is called MAIN, defined as the initial startup display. This display will be used for the following steps in the lab. When more displays are required, they can be added, as seen in a future section.

13. Double click on the *MAIN* display to open it.

The display will open in the **Work Pane** of FactoryTalk® View Studio for Machine Edition.

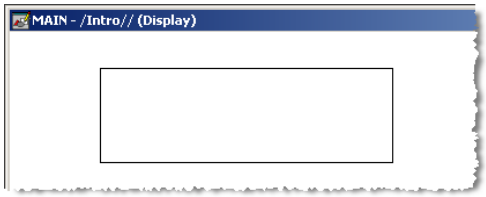


A shutdown button is automatically created with each application. This button is used to shut down the application on the runtime device. When the application is shut down, that runtime device will close FactoryTalk® View Machine Edition Station.

Adding Content to a Display

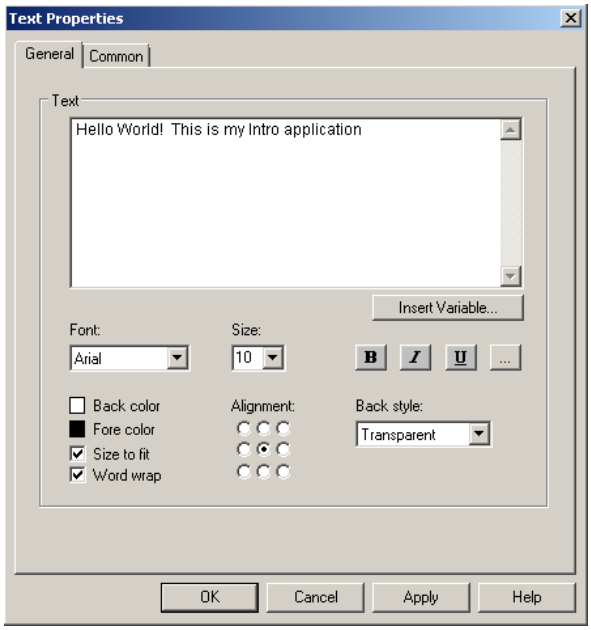
In this section, a simple Text object will be added to the screen.

1. Select the *Text* object, and add a text box to the display by clicking the left mouse button and dragging the cursor to the right and down.

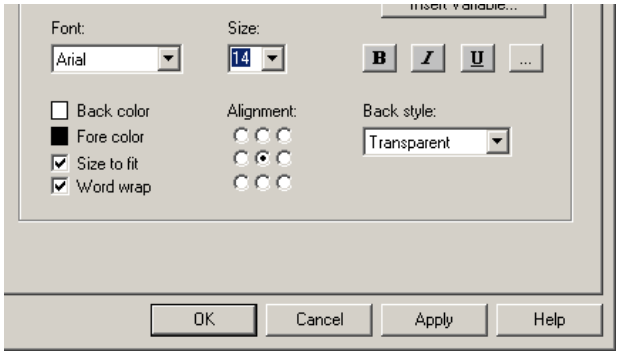


When you release the mouse button, the **Text Properties** dialog will open.

2. Click the *Text* field and enter ***'Hello World! This is my Intro application.'***

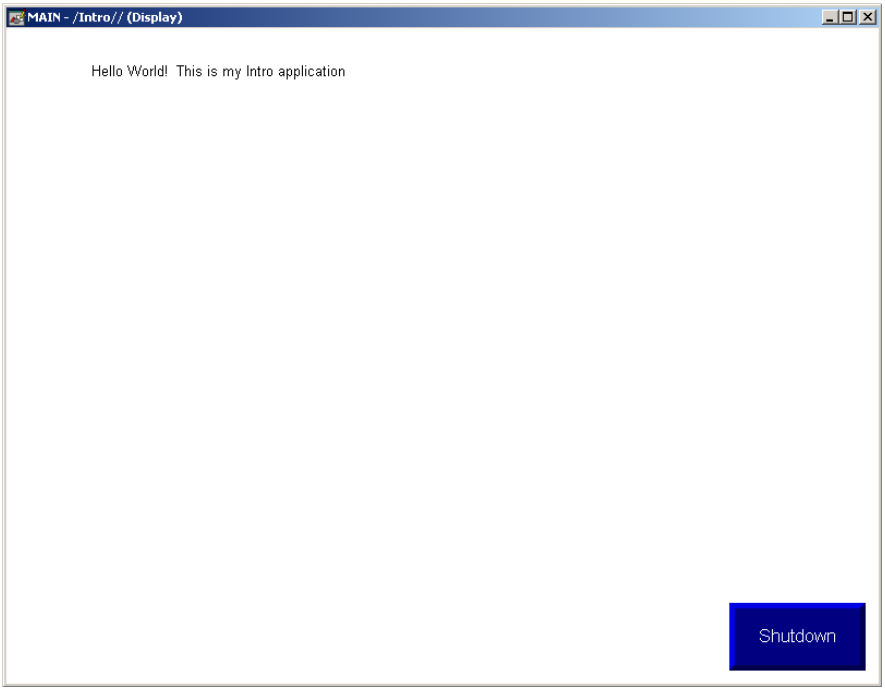


3. Select *14* from the **Size** drop down to increase the size of the text.



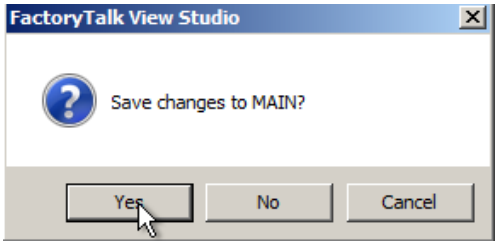
4. Click the *OK* button.

The display should now look similar to this:



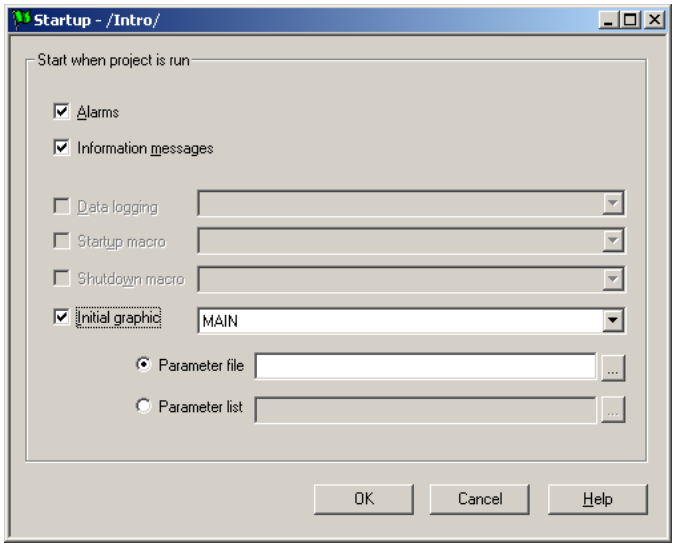
5. Close the display using the *File* > *Close* menu item.

6. When prompted to save MAIN, click the *Yes* button.



Now that an object has been added to the MAIN display, verify that it is configured as the application's **Startup** graphic.

7. To open the **Startup** dialog, double-click on the *Startup* item  in the **System** container.



Notice the components that can be configured to execute when the application starts. Items such as Alarms and Information messages can be turned on or off, macros can be executed upon startup, and any display that has been created can be specified as the initial graphic.

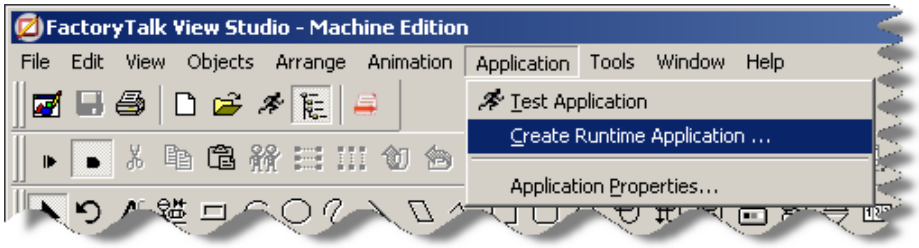
Because MAIN is the only display that has been created, it is selected as the initial graphic by default.

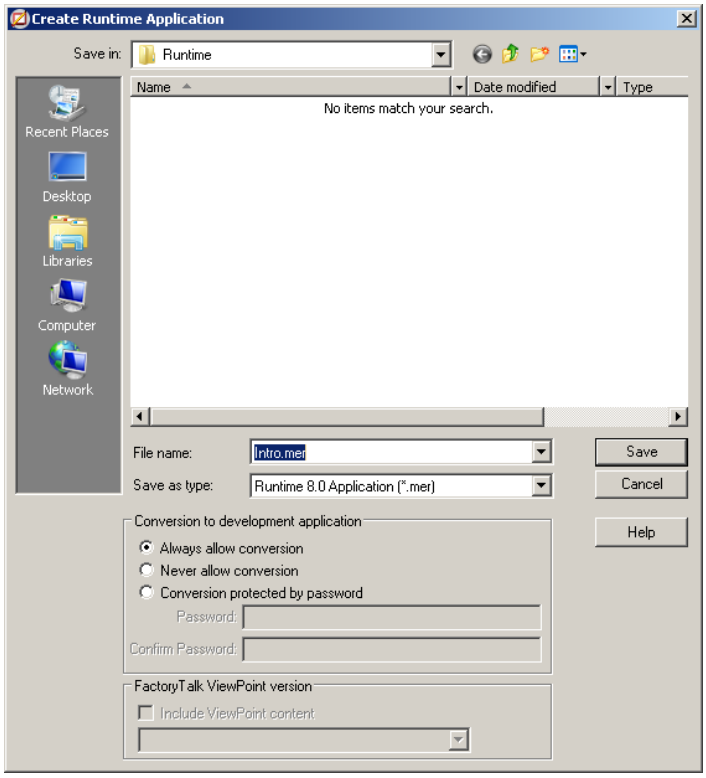
8. Click *OK* to close the dialog.

Creating the Runtime Application File

In order to transfer the application to a PanelView™ Plus terminal, it first must be compiled into a Runtime Application File (*.mer). Follow the steps below to create the runtime file.

1. Select the *Application>Create Runtime Application* menu item.





Additional Runtime Application Options

The options available in the *Conversion to development application* section allow later recovery of the design files from the runtime project using the Application Manager.

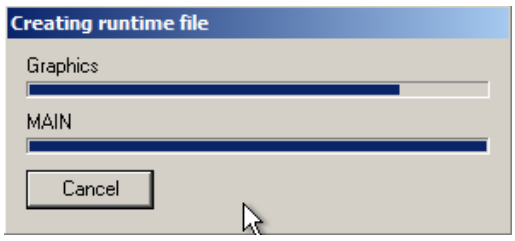
Always allow conversion [Default] – The design information is always included with the runtime, so that it may be restored from the MER. The resulting MER requires more terminal memory to store the file.

Never allow conversion – Design information cannot be recovered from an MER created with this option selected. The MER created requires the least amount of terminal memory.

Conversion protected by password – When using Application Manager to extract the design information from the runtime file, the user will be prompted for the configured password. The resulting MER requires more terminal memory to store the file.

2. Save the runtime project using the suggested name Intro.mer by clicking the *Save* button.

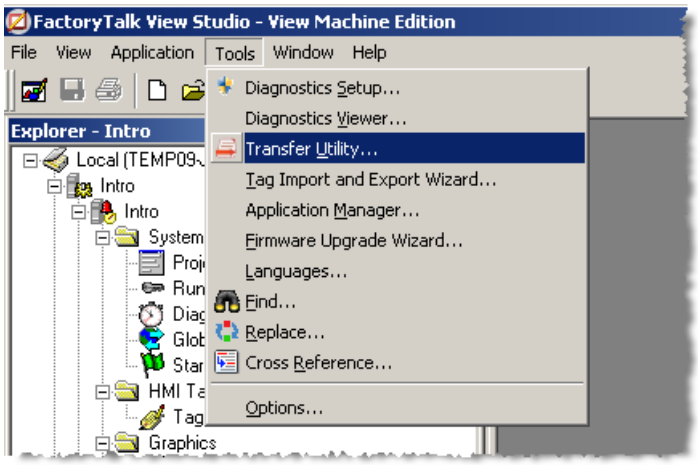
   While FactoryTalk® View Studio for Machine Edition is creating the runtime MER file, a progress dialog will appear:



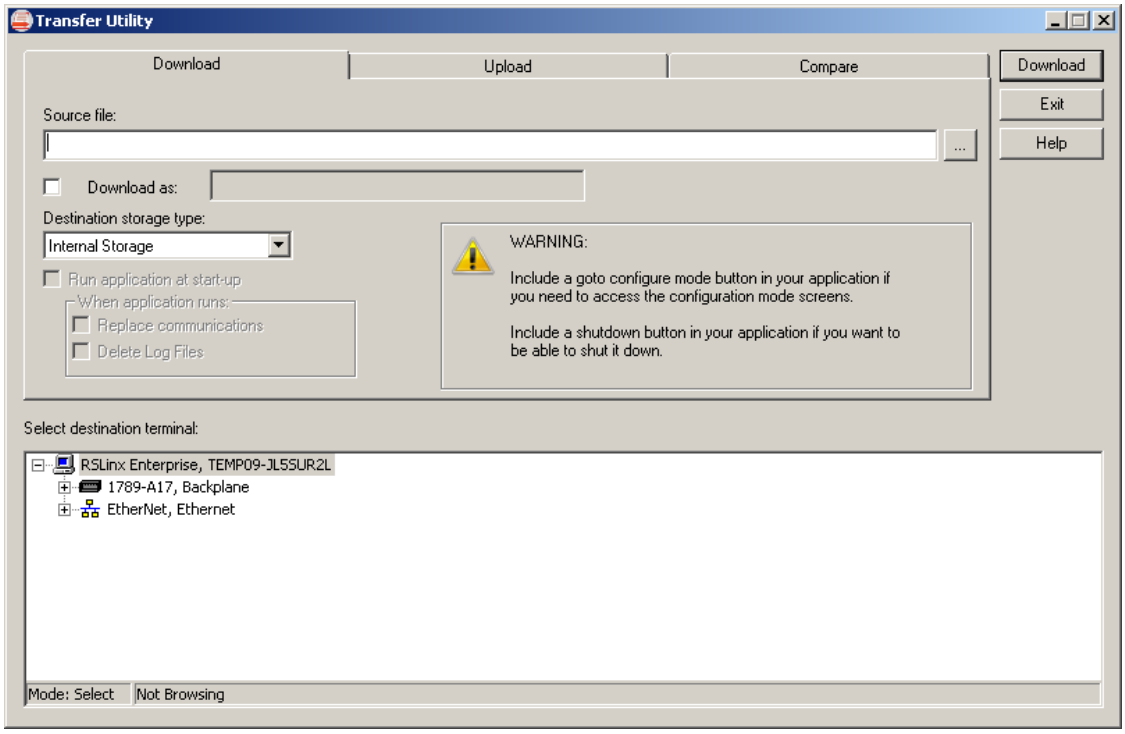
The runtime file has been created when the progress bar disappears.

Downloading a runtime MER to a PanelView™ Plus terminal

1. To download the runtime MER to the PanelView™ Plus terminal located at this workstation, first select the *Tools* > *Transfer Utility* menu item.

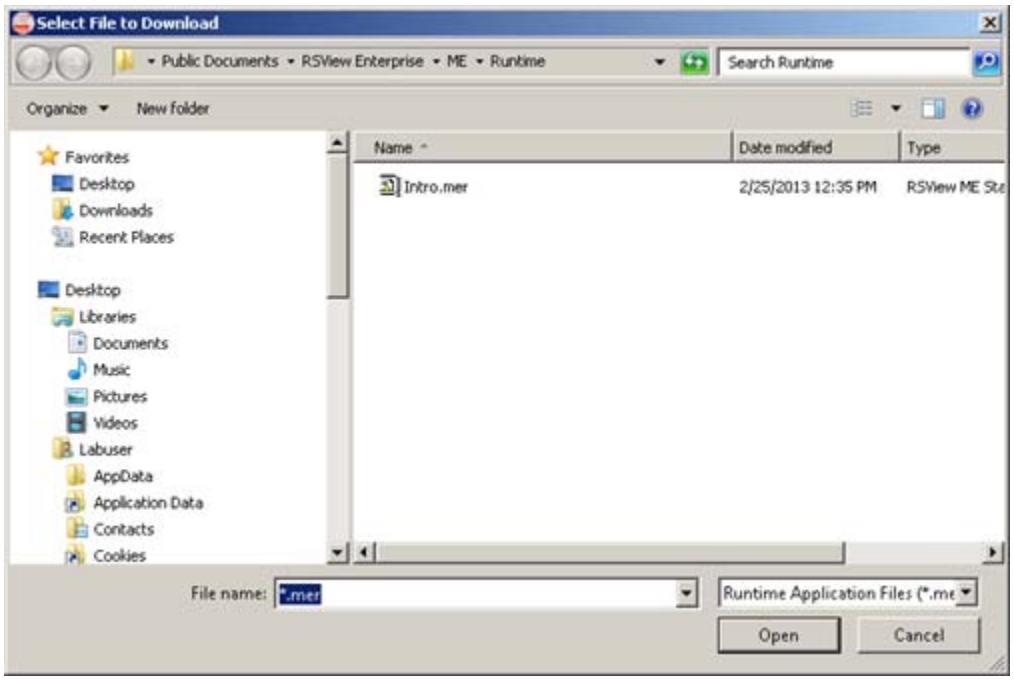


The **Transfer Utility** will open



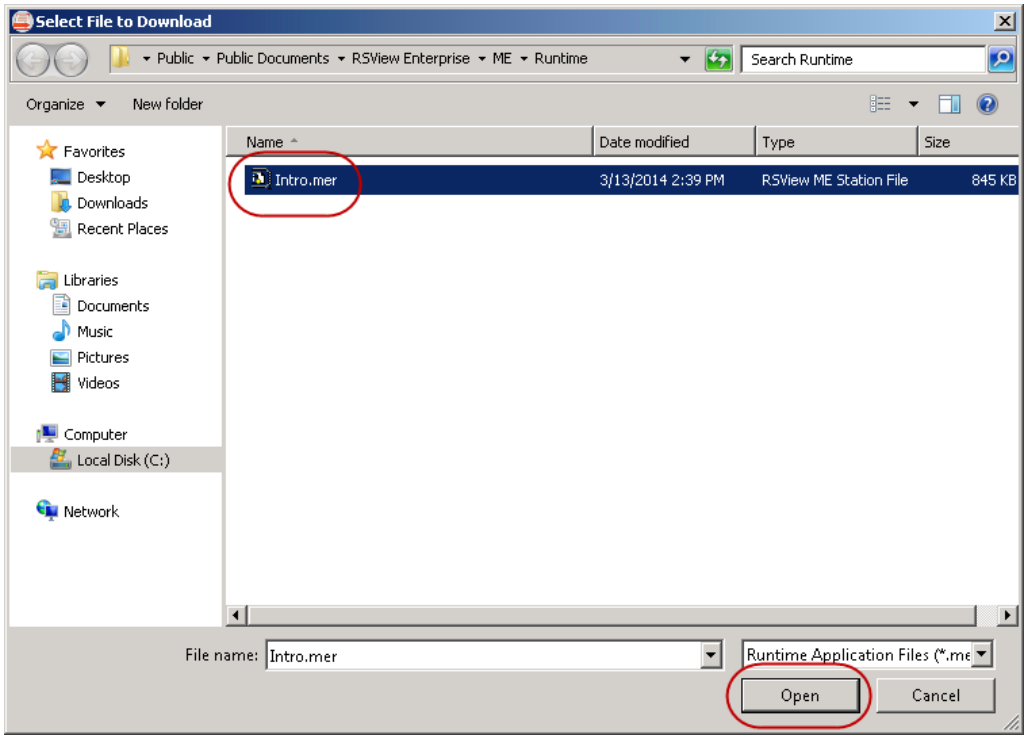
2. Click the *Source File Browse* button ... to select the runtime MER file to download.

This opens the **Select File to Download** dialog.

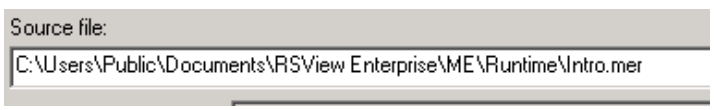


Note that the window may contain additional runtime files than those shown in the picture above.

3. Click on the *Intro.mer* file to select the project, then click *Open*.



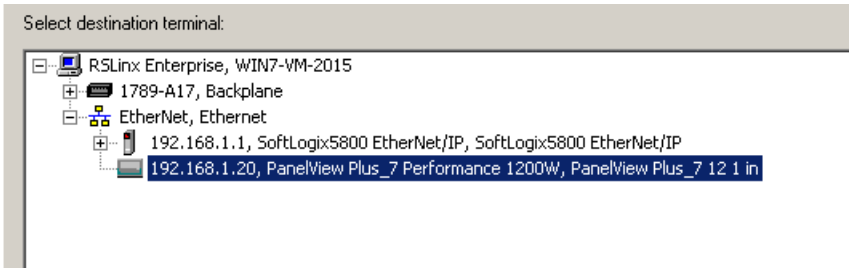
The Source file is now updated with the **Intro.mer** directory:



4. Double-click the *EtherNet, Ethernet* driver  to expand the item.

5. Select the *192.168.1.20, PanelView Plus_7 Performance 1200W* item by clicking on it once.

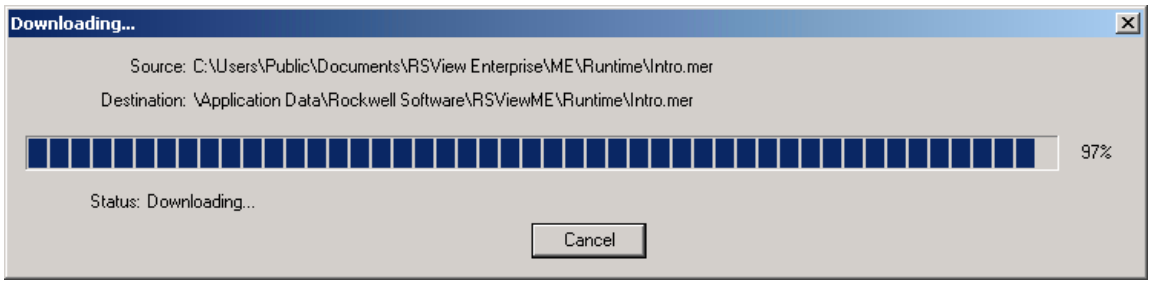
   Note that more devices may be shown in the list than shown in the picture below:



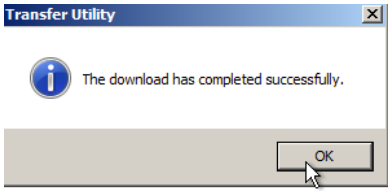
6. To initiate the download process, click the *Download* button.

7. If a message stating that the Intro application already exists on the terminal, click *Yes* to overwrite it.

   A progress dialog will then appear:

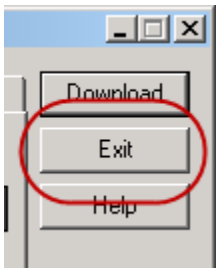


   When the download process completes, a confirmation dialog is shown.



8. Click the *OK* button to acknowledge the dialog.

9. Click the *Exit* button to close the Transfer Utility.



Running an Application on a PanelView™ Plus Terminal

Use the steps below to load and run the **Intro** application on the PanelView™ Plus located at this station.

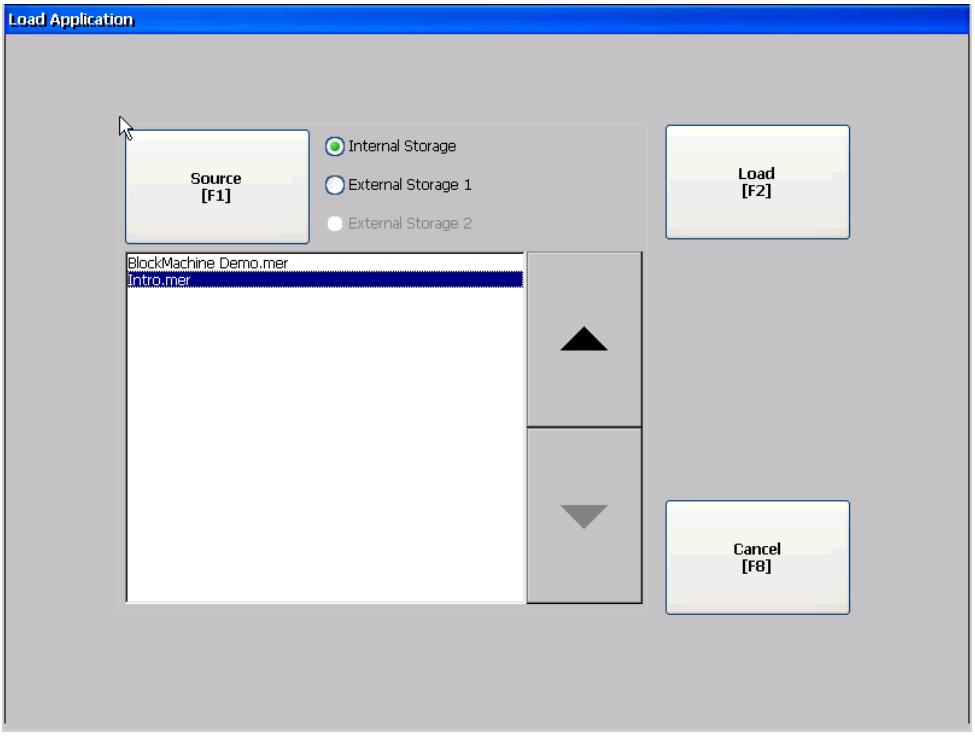
1. Tap on the PanelView™ Plus screen if the screensaver is active.

   The PanelView™ Plus 7 desktop is now visible.

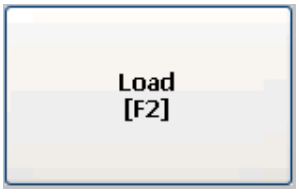
2. Locate the **FTView ME Station** icon on the desktop and double tap it to launch *FactoryTalk® View ME Station*.

3. Press the *Load Application [F1]* button.

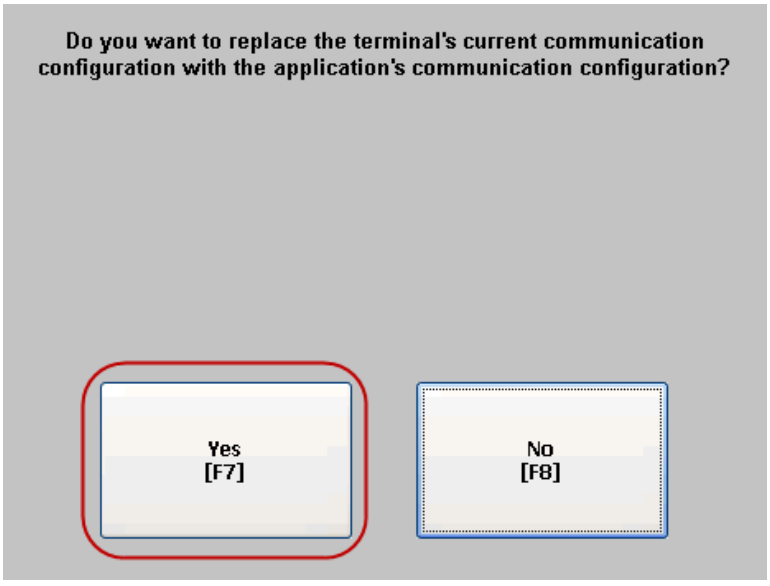
4. Select the *Intro.MER* file from those available from the terminal's Internal Storage.



5. Press *Load [F2]* to load the runtime file in to memory.

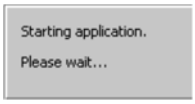


6. When prompted, press *Yes [F7]* to overwrite the terminal's current communication configuration with the configuration contained within the Intro.MER file.



7. Once successfully loaded, press the *Run Application [F2]* to start executing the runtime file.

While the terminal is starting the application, an update dialog is displayed.



After the start up process completes, you should see your application's startup display:

8. Click the *Shutdown* button to terminate the application.

Congratulations!

You have successfully created a FactoryTalk® View Studio for Machine Edition application, added application content, created a runtime file, downloaded the runtime file to a terminal and run the application on a PanelView™ Plus terminal.

Animating a Display with Control System Data

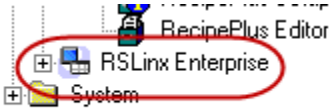
Completing this section requires approximately 30 minutes.

This section will cover:

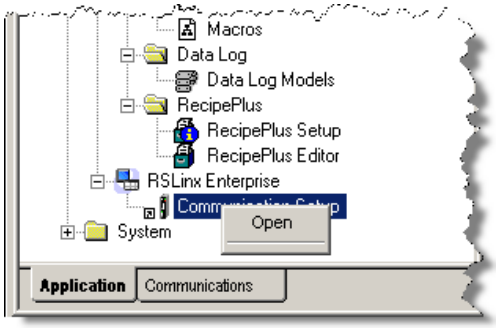
- Configuring RSLinx Enterprise Communications for an application
- Adding 'Live' objects to a display
- Testing an application using the Test Run Application functionality of FactoryTalk® View Studio

Configuring Communications

1. Return to the HMI project in FactoryTalk® View Studio and double click the *RSLinx Enterprise* item to expand.



2. Right-click on the *Communication Setup* item and select *Open*, or double click *Communication Setup* to launch the RSLinx Enterprise Configuration Wizard.



Note that this wizard can also be opened by double clicking *Communication Setup*.

The Configuration Wizard gives a user three options for configuring communications for the application:

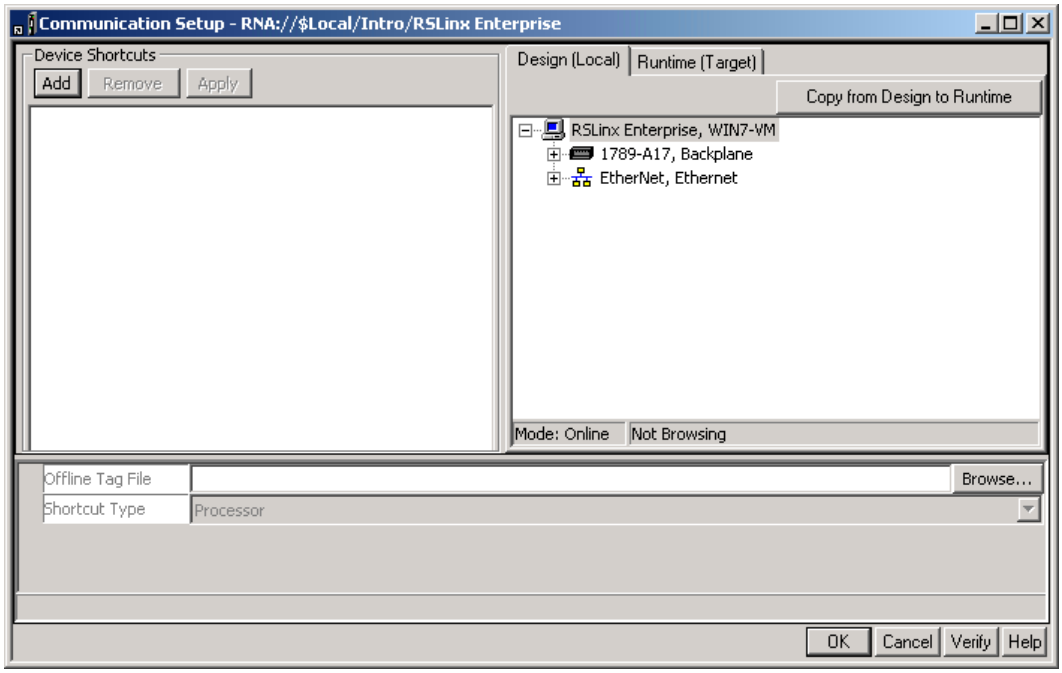
Create a new configuration – Generates an empty communication configuration scheme for the application. This selection is enabled by default.

Copy an existing configuration from a previously created project – Reuses a communication configuration from a different application file.

Copy the configuration that is currently running on this workstation – Copies the communication configuration from an application currently hosted by FactoryTalk® View Machine Edition Station located on the same workstation.

3. Select the default *Create a new configuration* option, and click *Finish*.

The Communication Setup dialog will now appear:



Note that the window can be resized or maximized if desired.

Exploring the Communication Setup dialog window

The Communication Setup dialog has three main areas:

Device Shortcuts – A list of shortcuts defined for this application

Network Path – Displays the network topology pat to the device associated with the selected shortcut, (e.g., ControlLogix processor, drive, etc.). This path is also used to define the network path for a selected shortcut.

Design (Local) – Configure the network and device path(s) for the development environment. This net configuration may be different than the production environment in which the application with ultimately run.

Runtime (Target) – Configure the network and device path(s) for the production environment.

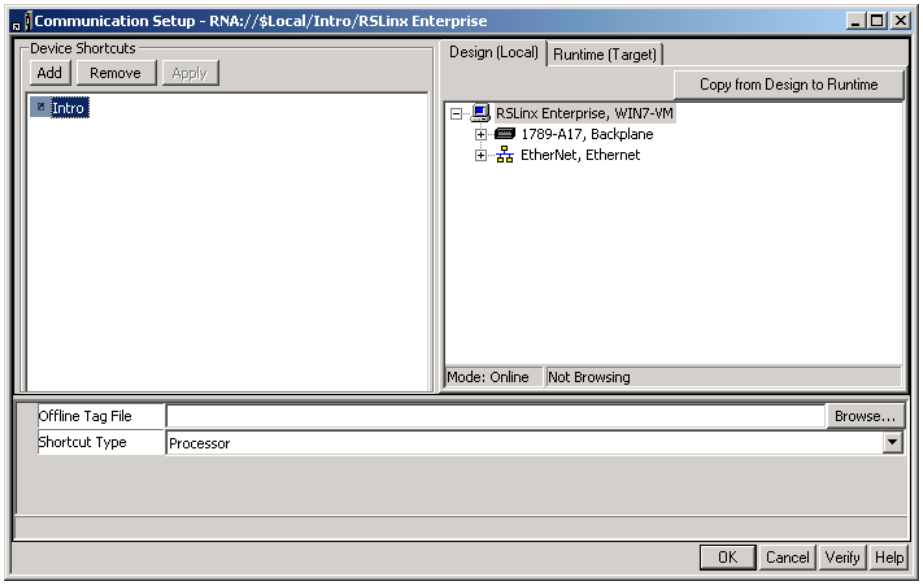
Copy from Design to Runtime button – Used when the Design and Runtime paths will be identical.

Offline Tag File – Displays the hard drive path to the ACD file associated with the selected shortcut. This file is used for tag browsing when disconnected from a network.

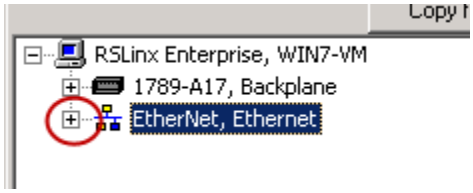
4. To create a new shortcut, click the *Add* button in the Device Shortcuts area.

5. Name the shortcut by typing ***'Intro'*** and then pressing the *Enter* key on the keyboard.

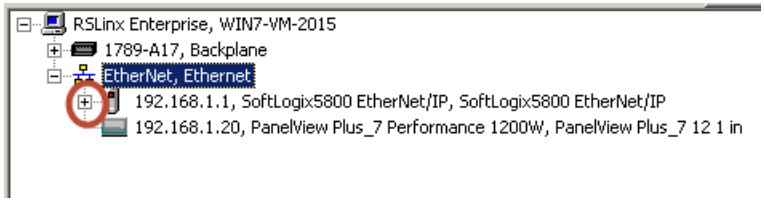
   The Communication Setup dialog should now look like this:



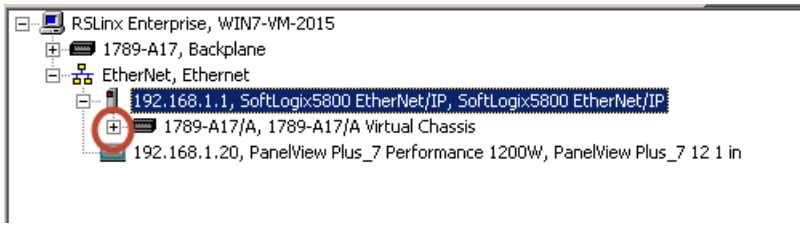
6. Expand the EtherNet, Ethernet driver by clicking the *expander* ⊞ once.



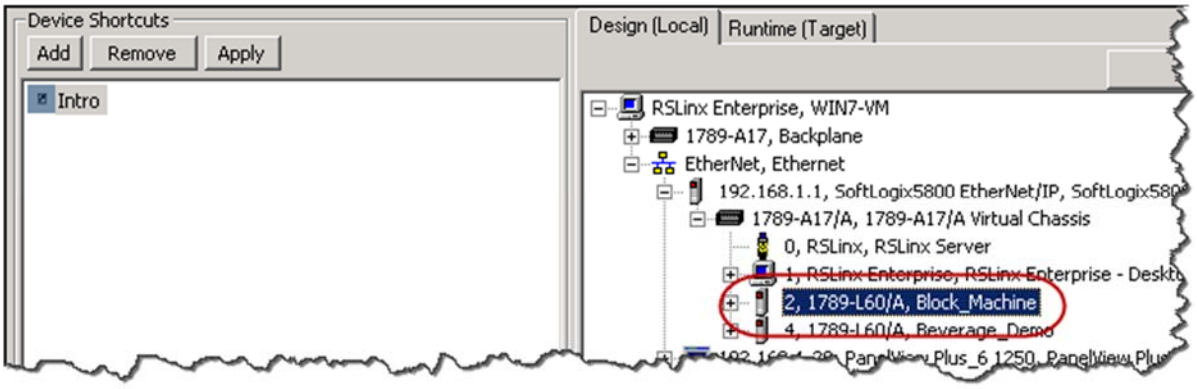
7. Click the *expander* ⊞ once to open the 192.168.1.1, SoftLogix 5800 EtherNet/IP, SoftLogix 5800 EtherNet/IP item.



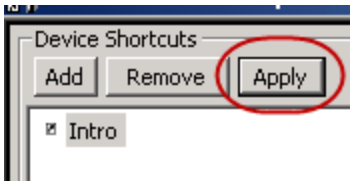
8. Click the *expander* ⊞ to open the 1789-A17/A, 1789-A17/A Virtual Chassis item.



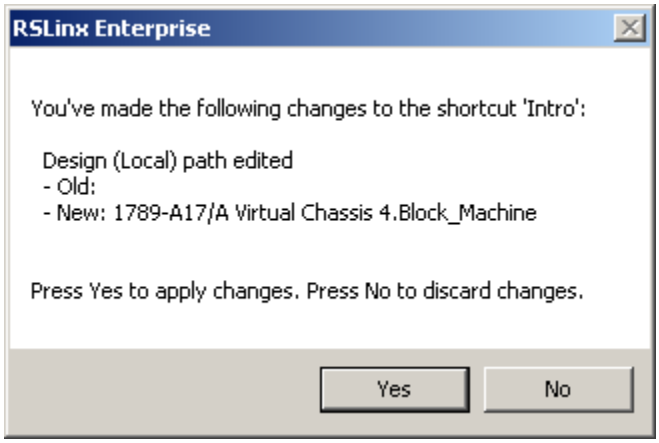
9. Select *2, 1789-L60/A, BlockMachine* by clicking on it once. The dialog should now look like this:



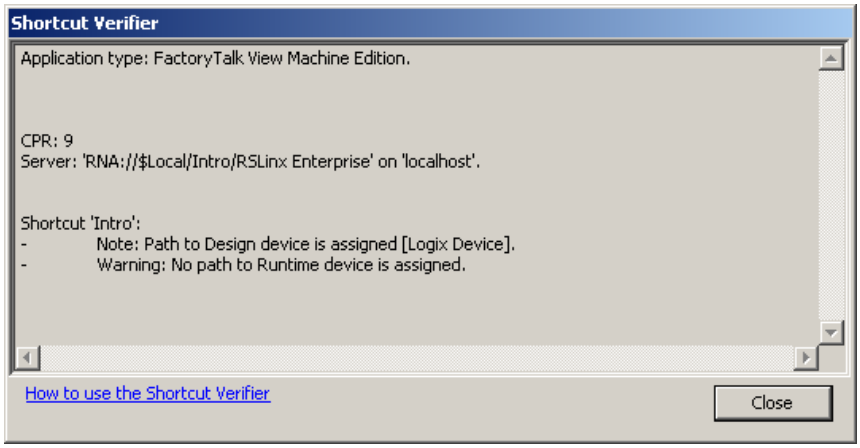
10. Click the *Apply* button above the Device Shortcuts pane to associate the SoftLogix 5800 Controller with the selected communication shortcut Intro.



11. Click the *Yes* button to confirm the association.



12. Click the *Close* button to confirm the association.



13. Close the **Shortcut Verifier** dialog by clicking the *Close* button.

Copying the Design Communication Configuration

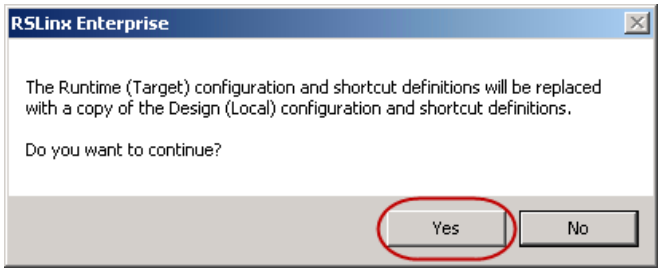
Typically, the Engineering Workstation on which the application is designed has a different path to the controller or device than the runtime terminal. When this is the case, the Runtime configuration will be different than the Design configuration.

In this lab, the design and production environments are identical. To proceed, the Design communication configuration will be copied to the Runtime tab. If you would like to manually configure the Runtime communication configuration, please go to Appendix A.

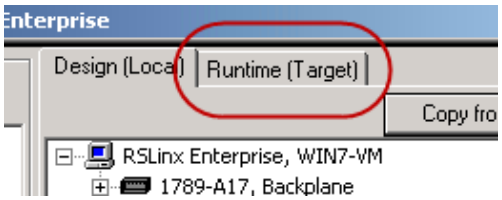
1. Click the *Copy from Design the Runtime* 

button to copy the communication configuration from the **Design (Local)** tab to the **Runtime (Target)** tab.

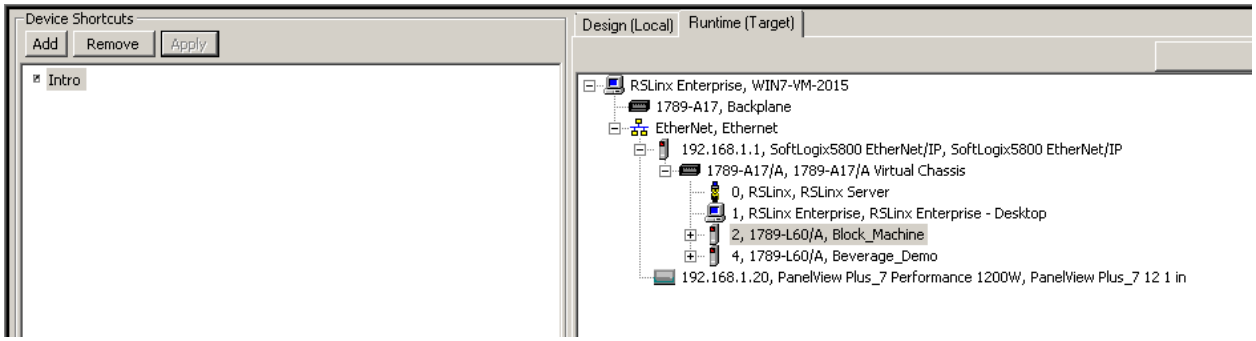
2. When prompted, click *Yes* to confirm the operation.



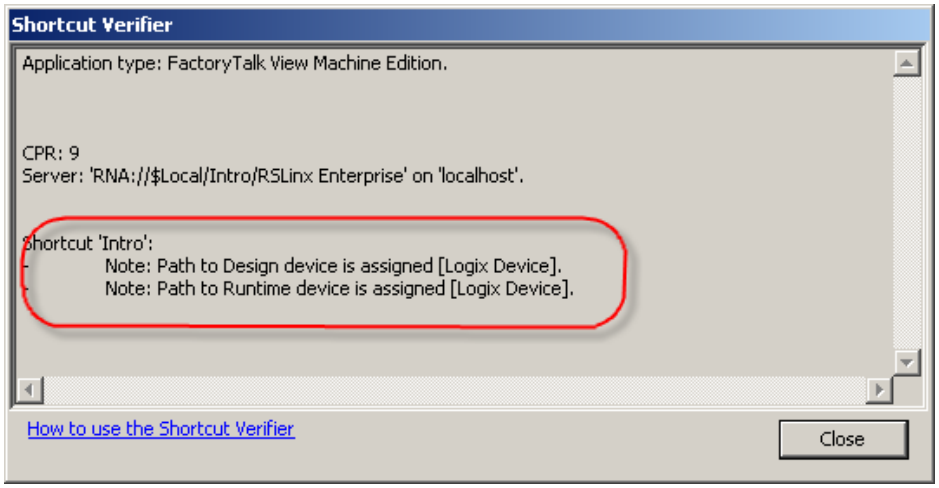
3. Click on the *Runtime (Target)* tab to select it.



If necessary, use the expanders to open the topology items (e.g. drivers and devices) to confirm that the Design (Local) configuration have been replicated.



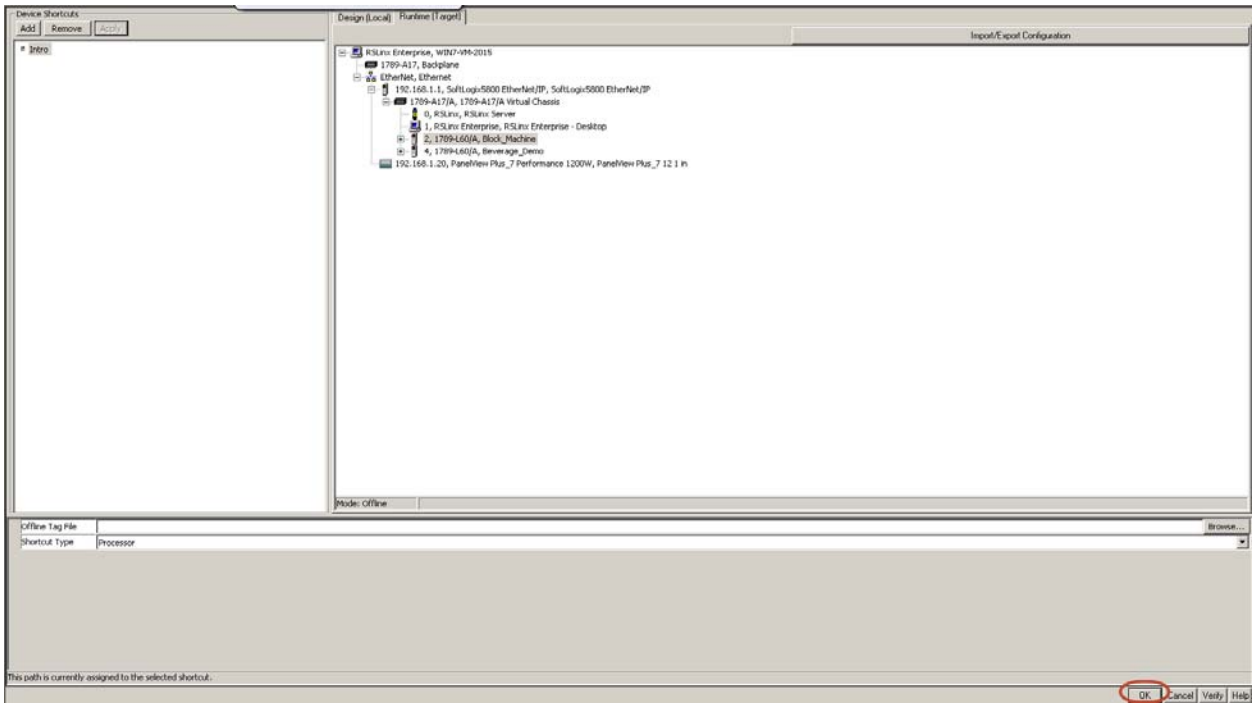
4. Click the *Verify* button to confirm the Design and Runtime associations.



Confirm both the Design and Runtime devices are assigned to shortcut Intro.

5. Close the Shortcut Verifier dialog by clicking the *Close* button.

6. Click the *OK* button to complete the communication setup and close the Communication Setup dialog.

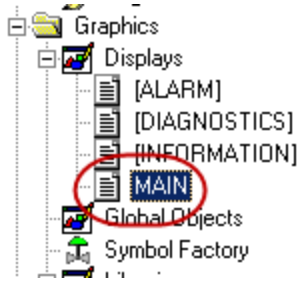


Be sure to use the OK button! If you close the dialog with the X, the communication setup with not be saved to the application.

Adding 'Live' Objects to a Display

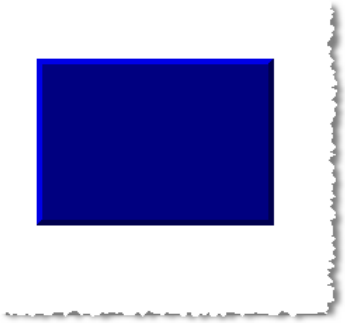
Now that a communication path to a controller is configured, objects (buttons, numeric displays, etc.) can be added to the display that will use information from the controller. The lab uses a variety of different buttons, data displays, and images to illustrate FactoryTalk® View Machine Edition functionality and application capabilities.

1. Double-click the *MAIN* display in the Explorer to open the display.

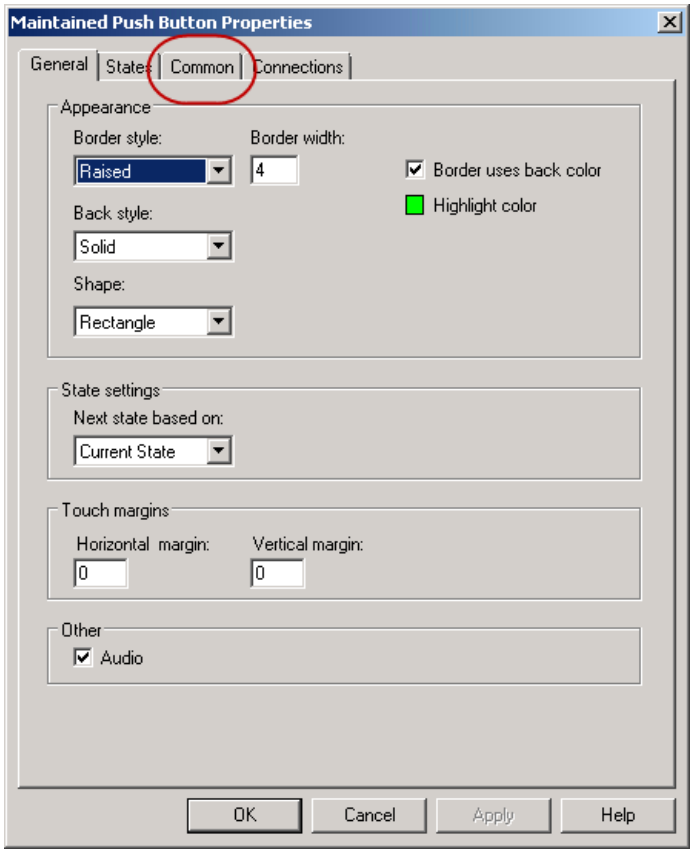


2. Select the *Maintained Pushbutton* tool  from the Objects toolbar, or select *Objects>Push Button>Maintained*.

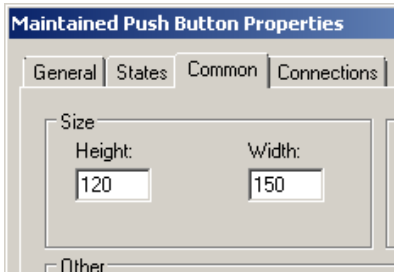
3. Click and hold the left mouse button, then drag down and to the right to create a Maintained Pushbutton object in the middle of the display.



4. In the **Properties** box that appears, click the *Common* tab.



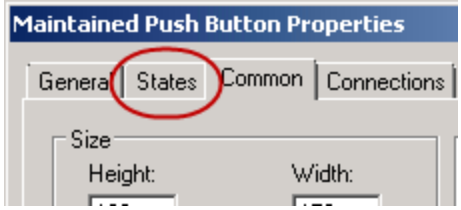
5. Change the **Height** and **Width** fields to size the **Maintained Pushbutton** exactly.
   - Height – 120
   - Width – 150

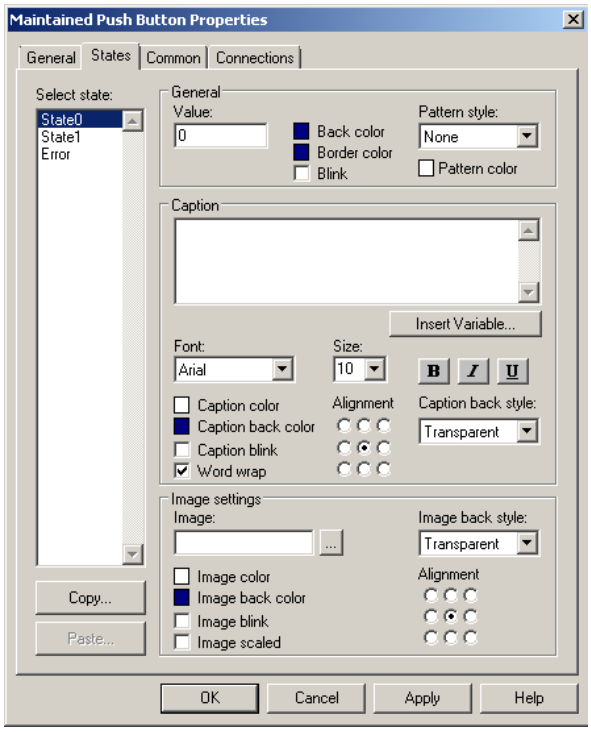


6. Click the *Apply*  button to commit these changes.

   The button should resize on the display to match these settings.

7. Click the *States* tab.



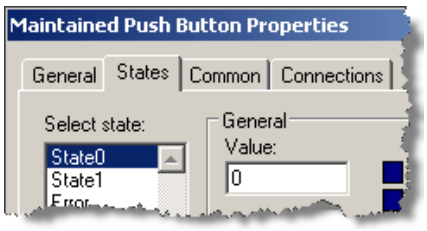


States are explicit events that occur when the value of the tag connected to the object equals the value defined for the state. If the tag value does not match any of those configured, the object will show the Error state.

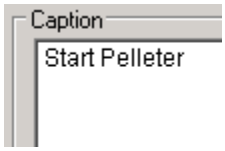
Simple pushbuttons have three states, each of which have default values, though these values can be changed by the user.

Two complex objects, the multistate pushbutton and multistate indicator, allow a user to configure multiple states for the objects.

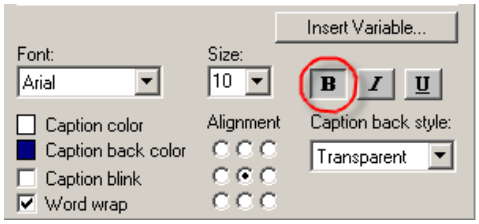
8. Select *State0* in the Select state: field.



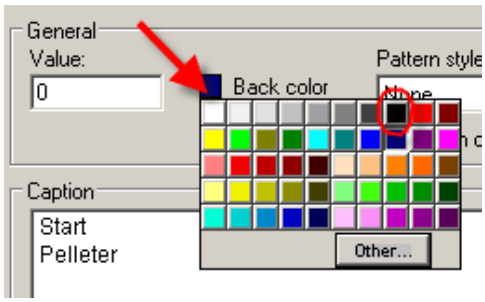
9. Enter ***'Start Pelleter'*** in the Caption field.



10. Click the *Bold* button.



11. Click the *Back color* square and select *Black*.

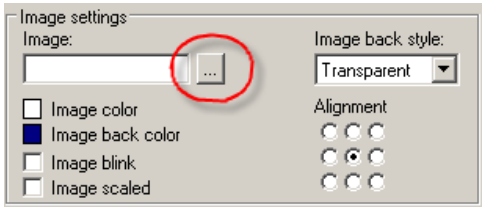


Adding Images from Symbol Factory

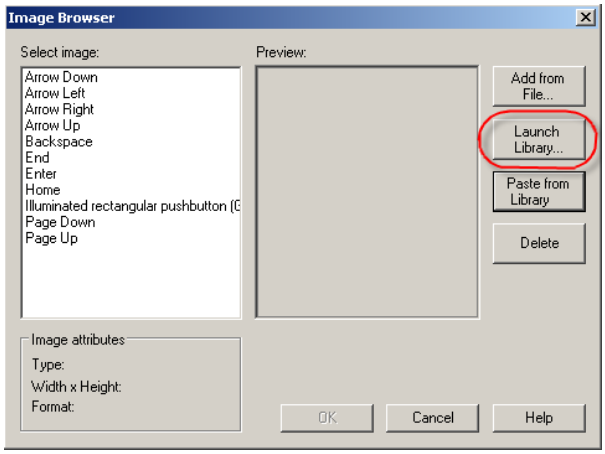
FactoryTalk® View Studio for Machine Edition version 6.0 and later includes Symbol Factory from Software Toolbox. This library contains over 5000 images, most of which are vector graphics. Vector graphics found in the library can be animated using any standard FactoryTalk® View Studio animation option. The remaining bitmap images can be used as pre-existing objects to enhance applications.

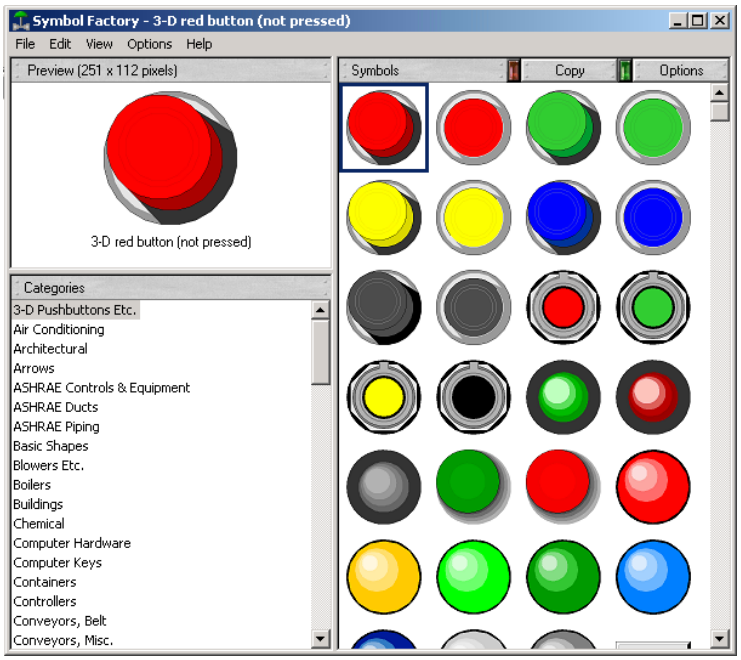
The following steps will walk through the addition of an image from Symbol Factory as the labels of both states of this object.

1. Click the *Image* browser.



2. Click the *Launch Library* button to bring up the Symbol Factory library.





There are three areas of the Library that will be used:

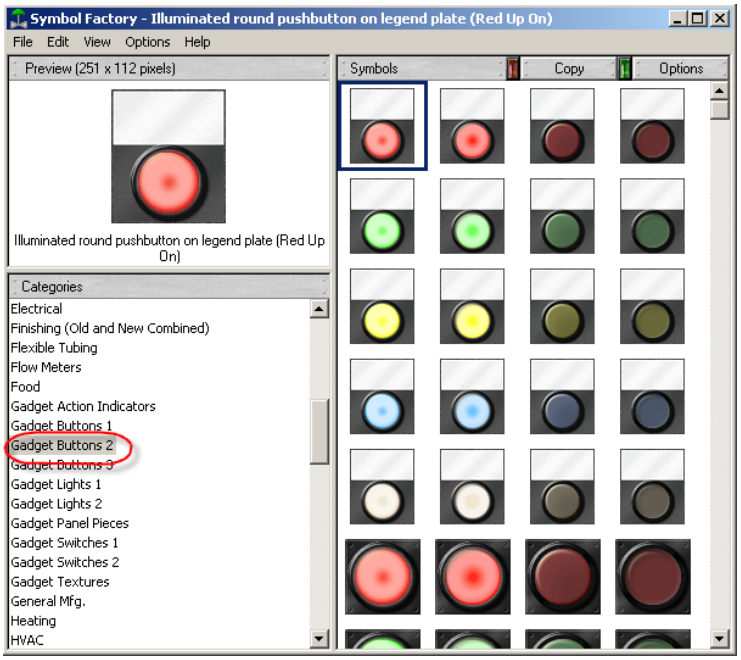
Preview – A window where a larger version of the selected image can be viewed

Categories – Images in the library are grouped in each of the categories in this list

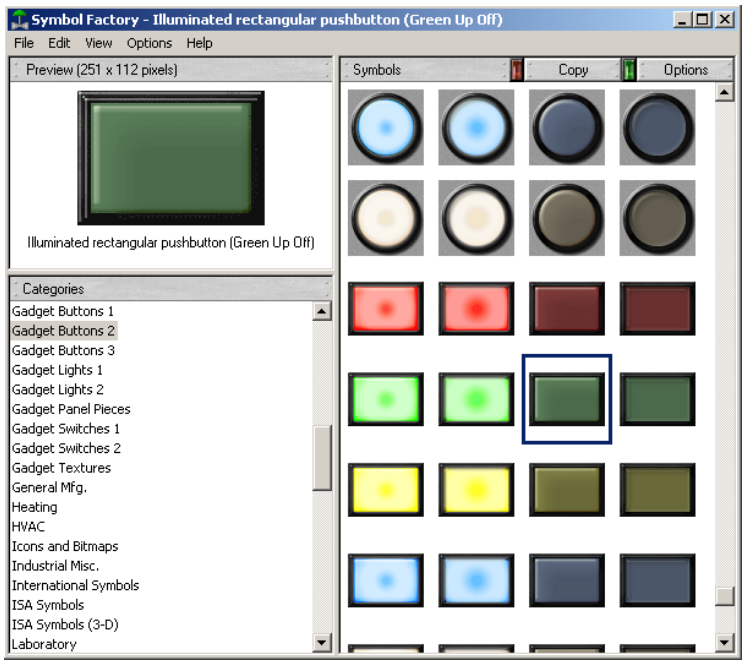
Symbols – Images that can be copied into the application

3. Select the *Gadget Buttons 2* category.

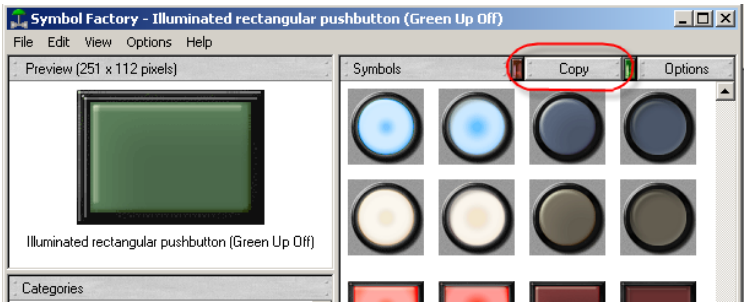
   Scroll down to find this category.



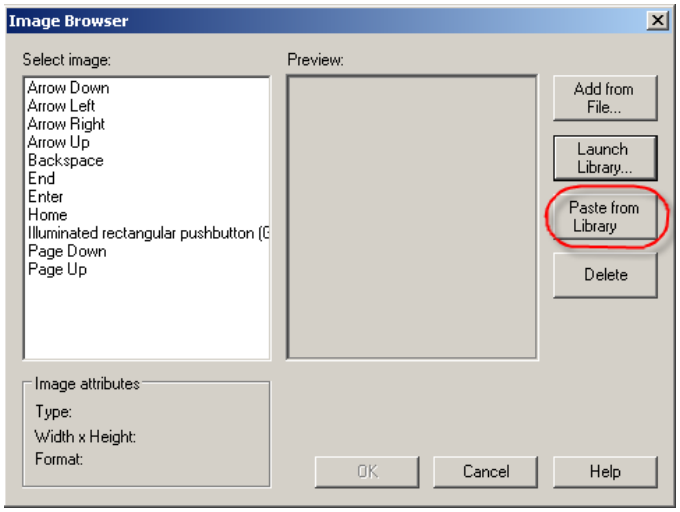
4. Scroll to the bottom of the Symbols window, and select the *Illuminated rectangular pushbutton (Green Up Off)* button image.



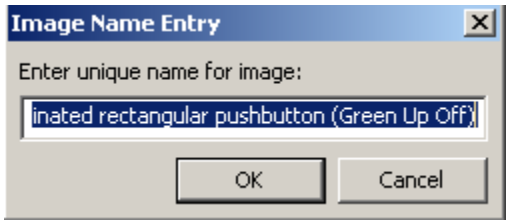
5. Click *Copy* to copy the image to the project image library.



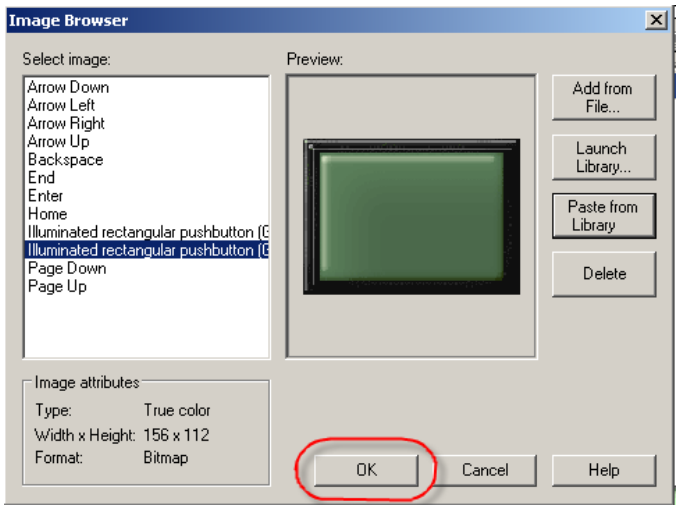
6. Click *Paste from Library* to add the image to the project library.



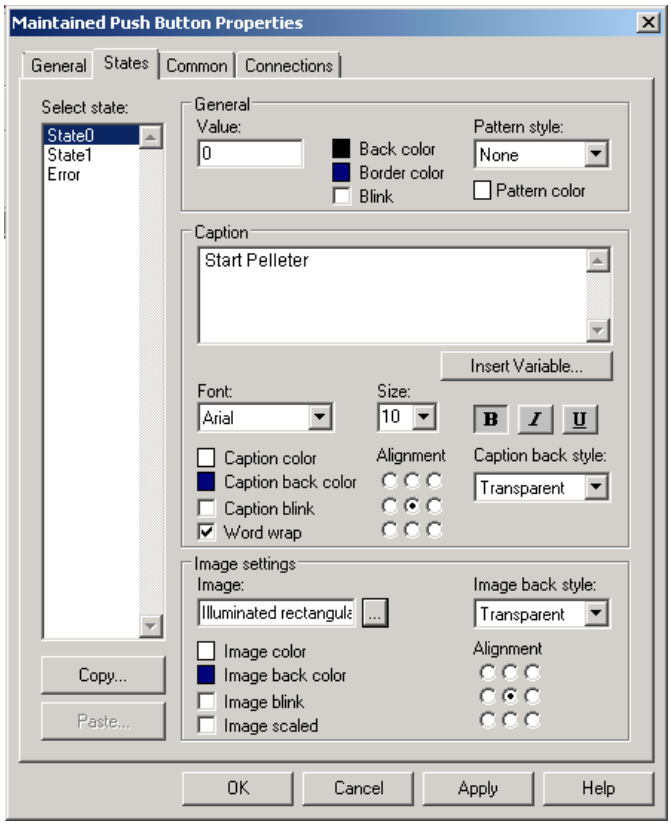
7. Leave the default name and click *OK*.



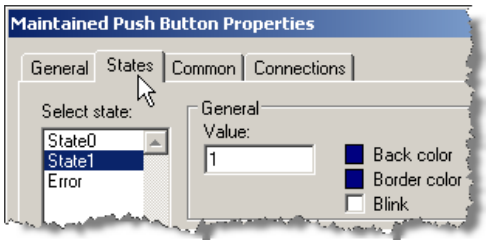
8. Click *OK* again to apply the image to State0.



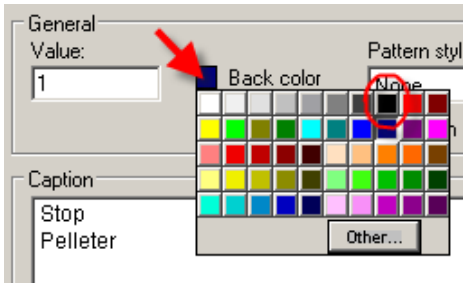
9. The State0 button properties should now look like this.



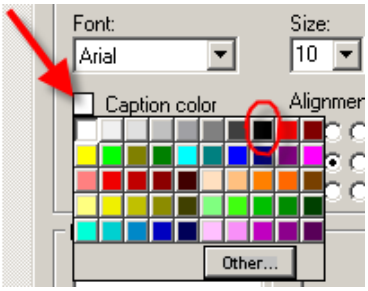
10. Select *State1* in the Select state: field.



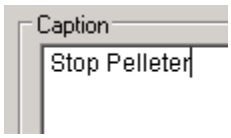
11. Click the *Back color* square and select *Black*.



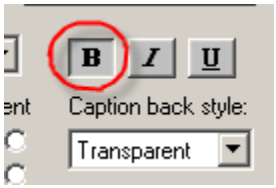
12. Click the *Caption color* square and select *Black*.



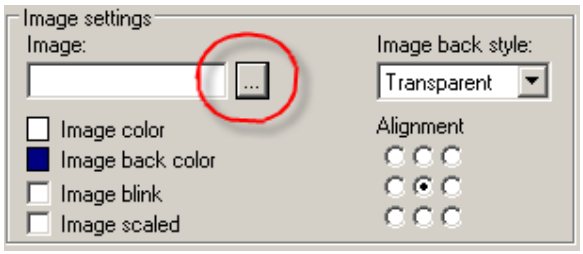
13. Enter *'Stop Pelleter'* in the Caption field.



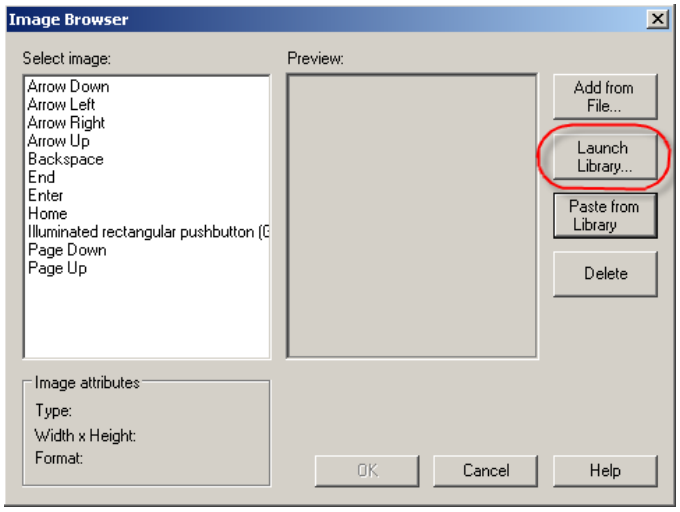
14. Click the *Bold* button.



15. Click the *Image* browser button.

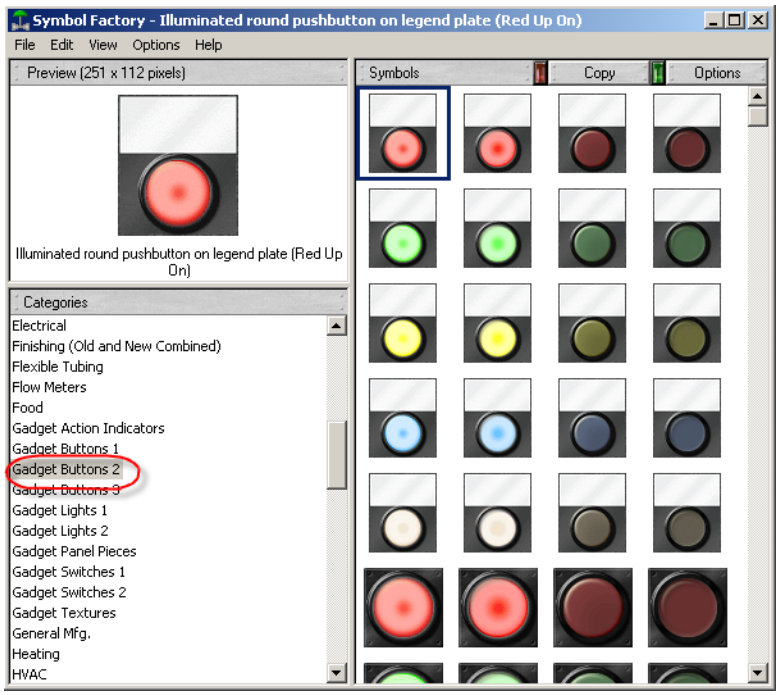


16. Click the *Launch Library* button to bring up the Symbol Factory library.

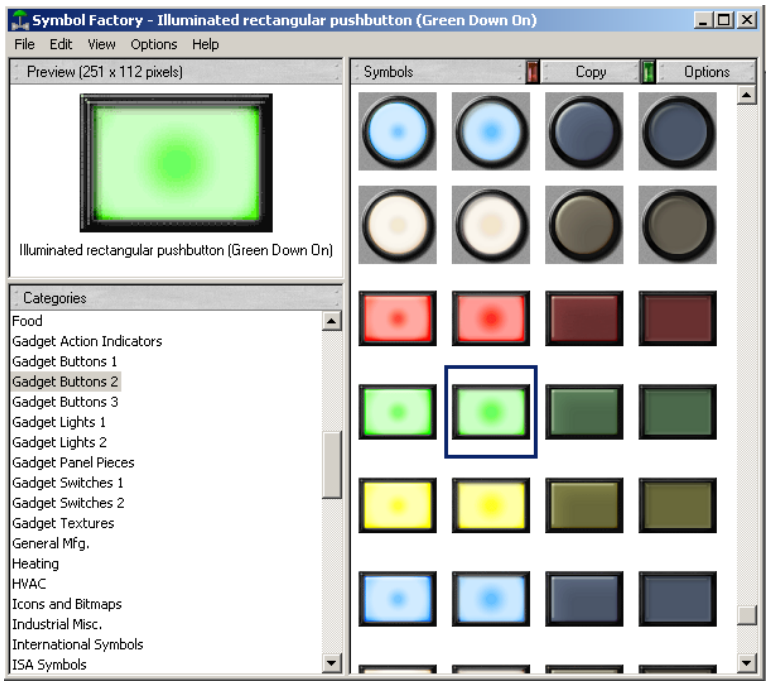


17. Select the *Gadget Buttons 2* category.

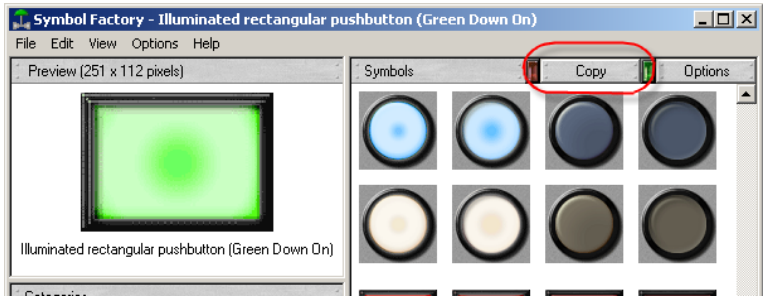
    The library should retain the previous category, so this step can be skipped.



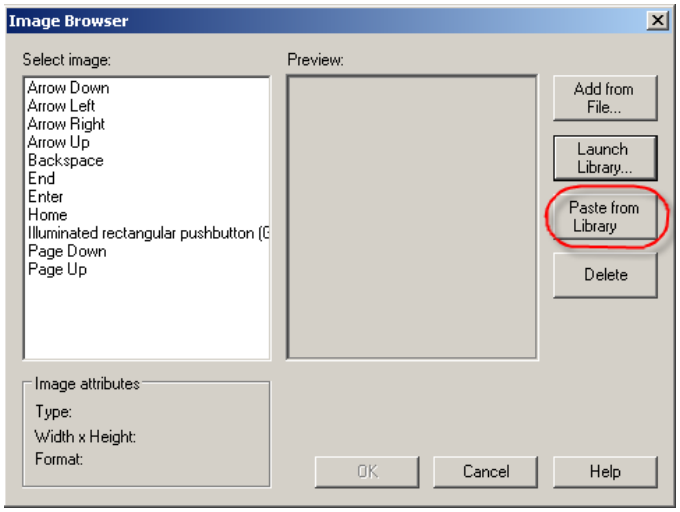
18. Select the *Illuminated rectangular pushbutton (Green Down On)* button image.



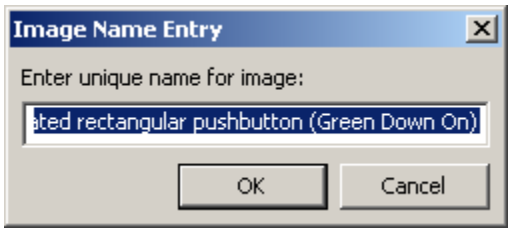
19. Click *Copy* to copy the image to the project image library.



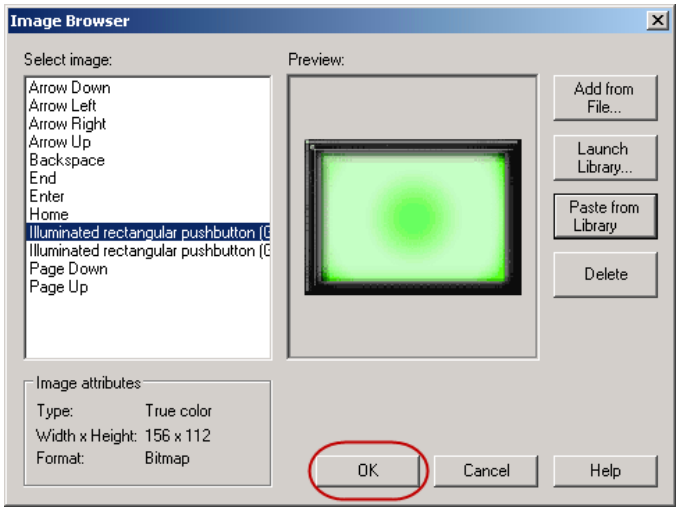
20. Click *Paste from Library* to add the image to the project library.



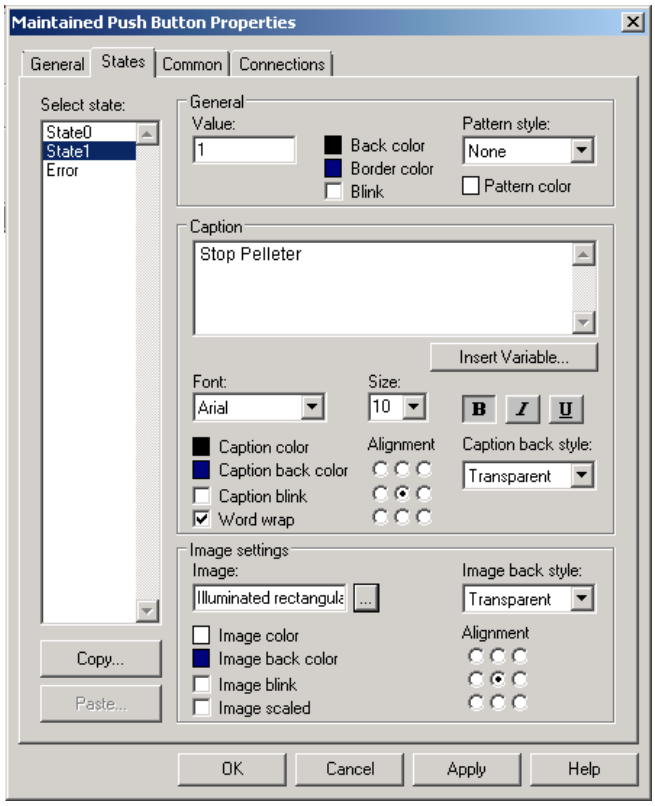
21. Leave the default name and click *OK*.



22. Click *OK* again to apply the image to State1.



23. The State1 button properties should now look like this.

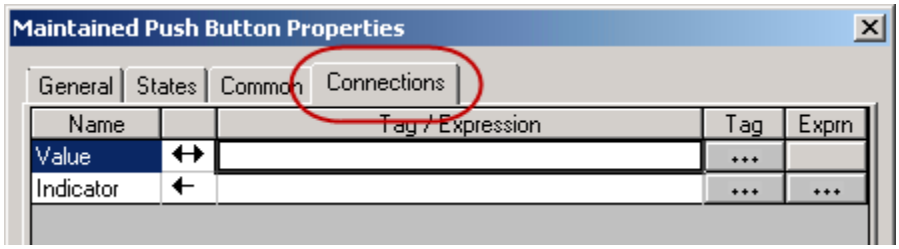


24. Click the *Apply*  button to commit these changes.

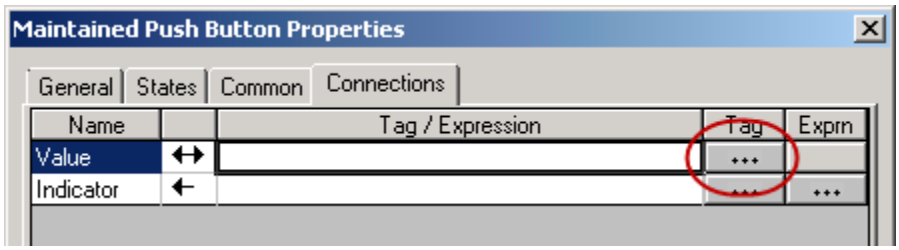
    Note that the button will now show the state that is currently selected.

25. Close Symbol Factory, by right clicking the icon in the task bar, and selecting *Close window*.

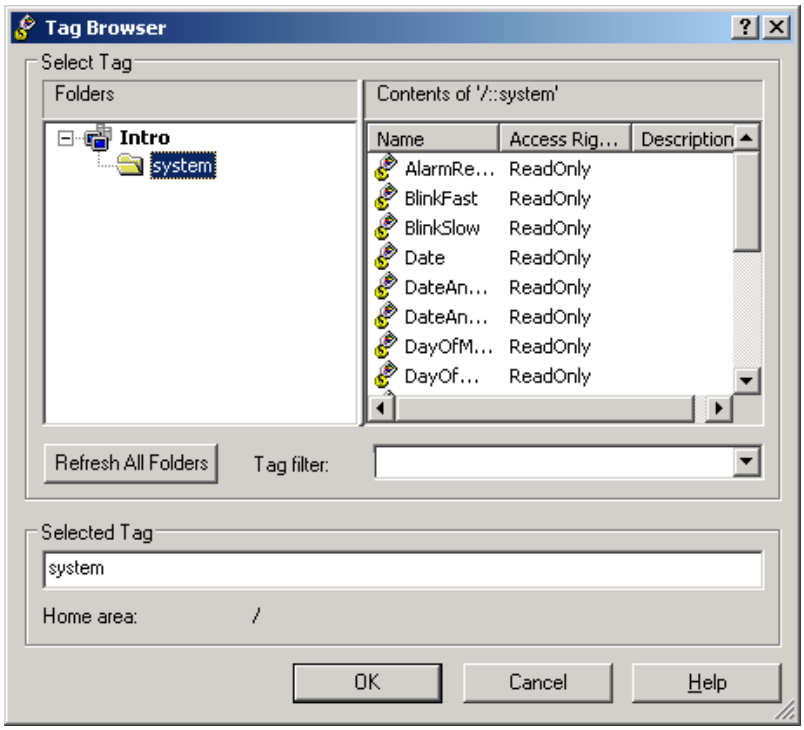
26. Click the *Connections* tab.



27. In the Value row, click on the *Browse*  button in the Tag column.



This action opens the Tag Browser.



The Tag Browser is used to view and select tags from the device selected in the RSLinx Enterprise setup earlier in the lab.

Sections of the Tag Browser

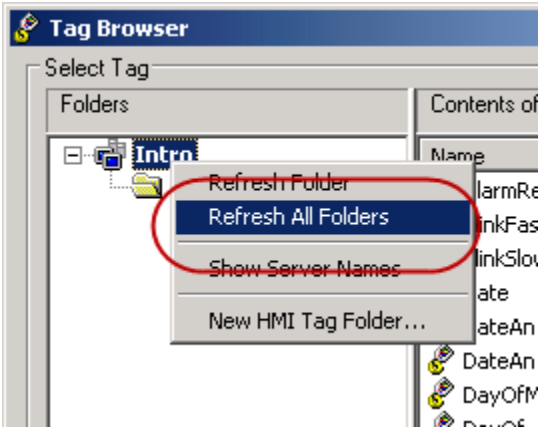
Three portions of the tag browser should be noted:

Folders – Used to browse a shortcut's Controller and Program tags, as well as User Defined Tags

Tags – Used to select a specific tag from the selected folder

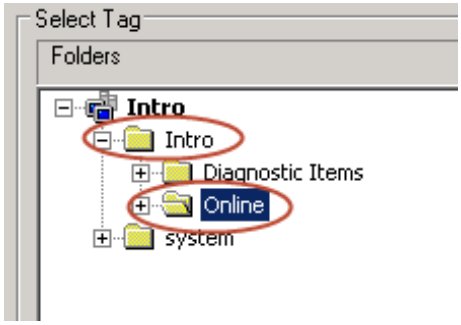
Tag Filter – Shows only those tags that start with the filter entered by the user. Pressing Enter will apply the filter to the tag area.

28. Right-click on the *Intro* item in the Folders list; select the *Refresh All Folders* item.

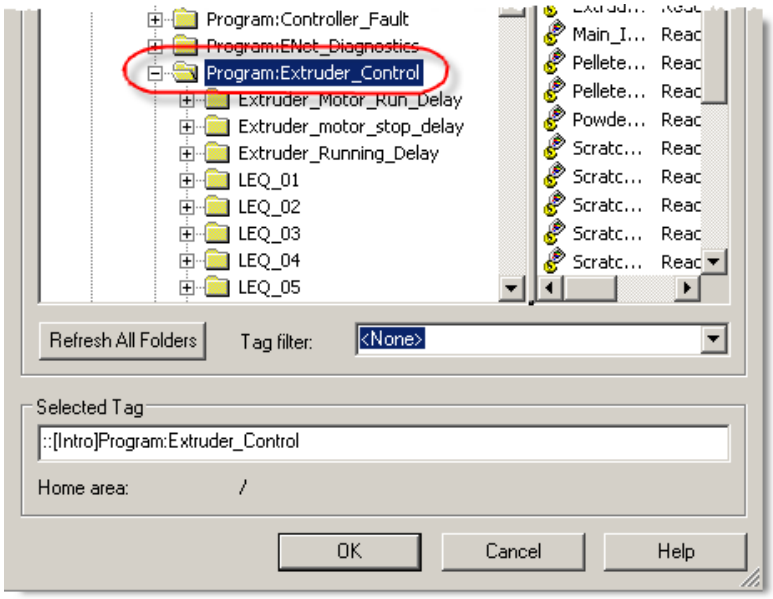


Alternatively, you can use the Refresh All Folders button, located near the bottom of the Tag Browser:

29. Double click the *Intro* folder, then double click the *Online* folders to expand them.

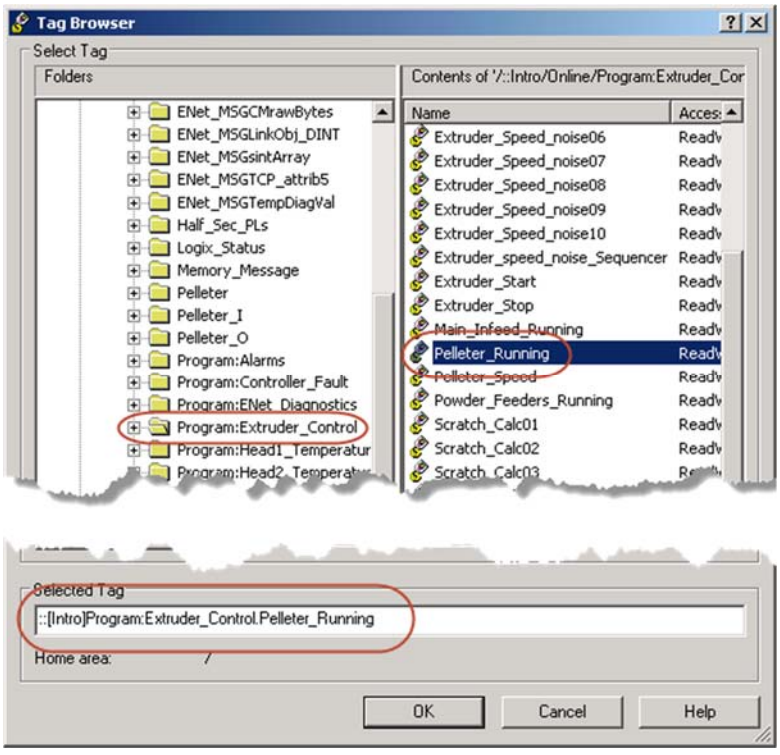


30. Scroll down, then select the *Program:Extruder_Control* item.



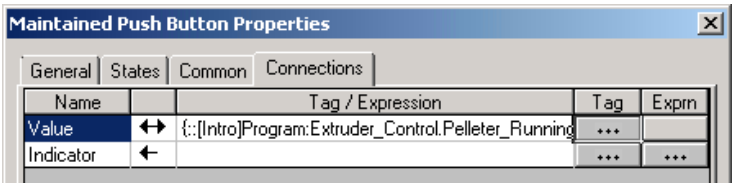
31. In the Tag Area, locate and select the tag *Pelleter_Running*.

    The Name column of the tags area may need to be resized in order to read the full tag name.



    Note that the Selected Tag text box reflects your selection.

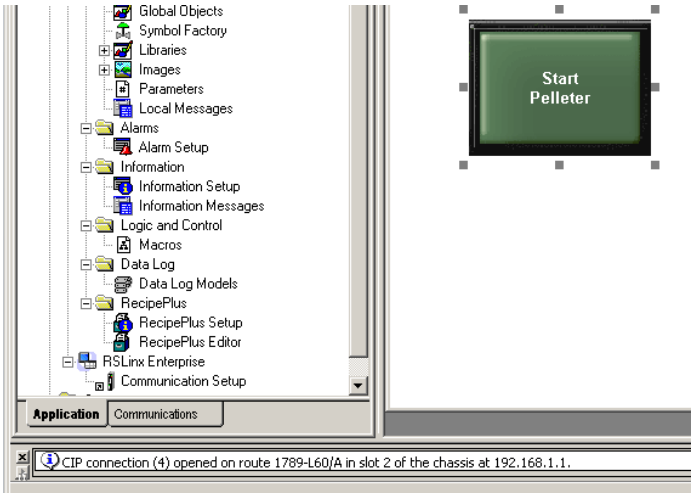
32. Click OK to complete the Connection configuration.



Notice the Value connection has been updated with the path to the tag specified using the tag browser.

33. Click OK again to close the property dialog.

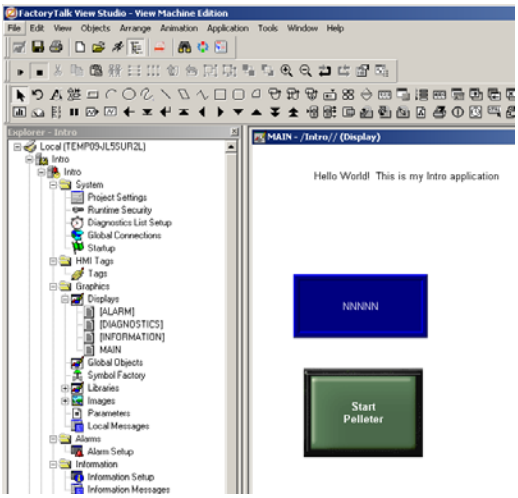
The button has now been updated with all the changes made in the property dialog.



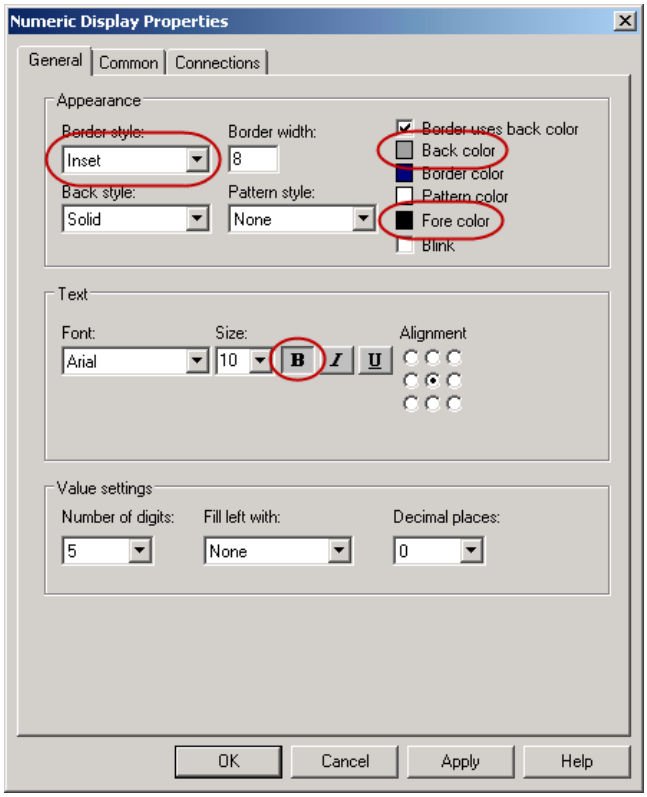
Note: The screen will display the last State selected in the Properties Dialog. Therefore, your MAIN scren may look different than the picture above.

34. Select the *Numeric Display* tool  from the Objects toolbar, or select *Objects>Numeric and String> Numeric Display*.

35. Draw the Numeric Display above the pushbutton by clicking and holding the left mouse button, then drag down and to the right to create the object:

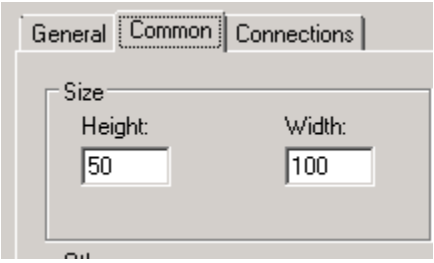

FactoryTalk View Studio - View Machine Edition
File Edit View Objects Arrange Animation Application Tools Window Help
Explorer - Intro
Local (TEMP09-JL5SUR2L)
Intro
Intro
System
Project Settings
Runtime Security
Diagnostics List Setup
Global Connections
Startup
HMI Tags
Tags
Graphics
Displays
[ALARM]
[DIAGNOSTICS]
[INFORMATION]
MAIN
Global Objects
Symbol Factory
Libraries
Images
Parameters
Local Messages
Alarms
Alarm Setup
Information
Information Setup
Information Messages
MAIN - /Intro// (Display)
Hello World! This is my Intro application
NNNNN
Start
Pelleter

36. Change the following properties:
    - Border Style – *Inset*
    - Text – *Bold*
    - Back color – *Light Gray* (click on the color square to open the color pallet)
    - Fore color – *Black* (click on the color square to open the color pallet)



37. Click the *Common* tab.

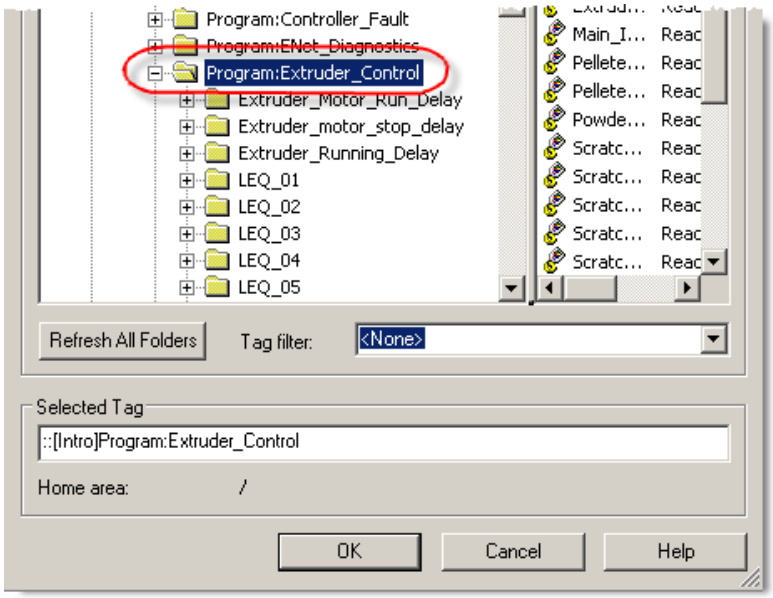
38. Change the **Height** and **Width** fields to size the Numeric Display exactly.
    - Height: 50
    - Width: 100



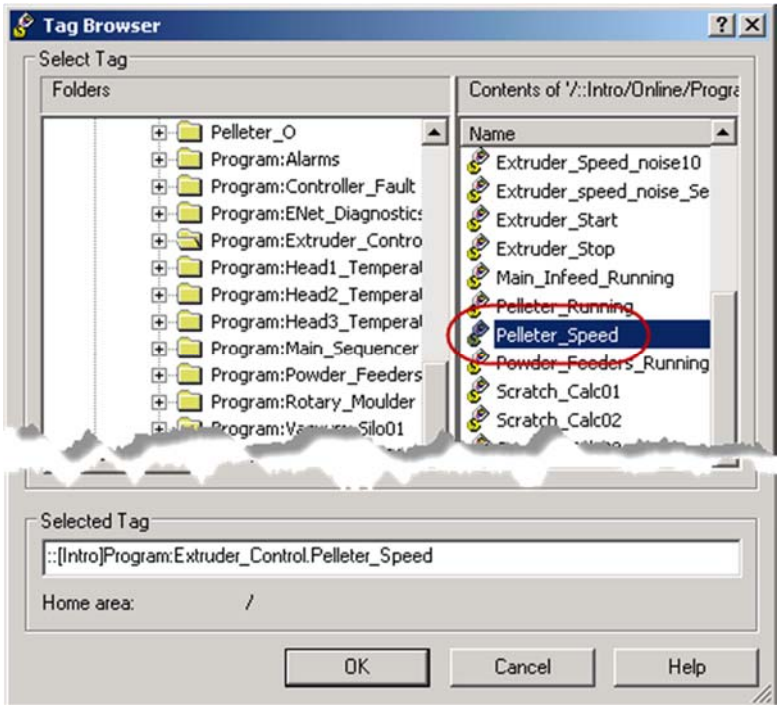
39. Click the *Connections* tab.

40. In the **Value** row, click the *Browse* button in the **Tag** column to open the **Tag Browser**.

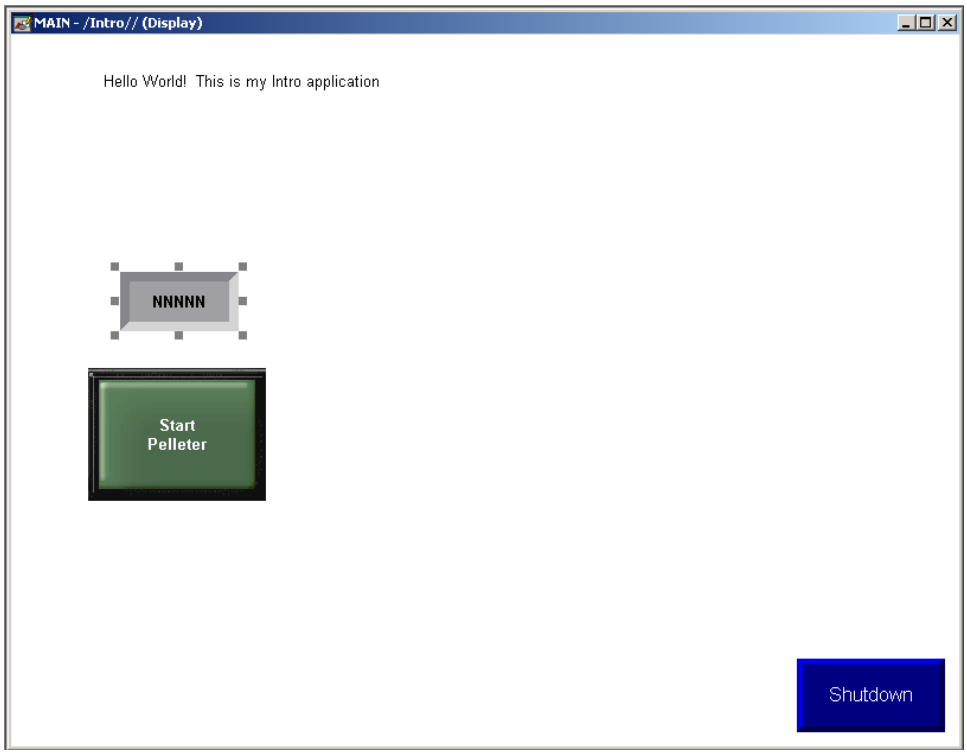
41. In the Folder pane, expand the path *Intro* > *Online* > *Program:Extruder_Control*.



42. Select *Peleter_Speed*.



43. Click *OK* to complete the connection configuration, and *OK* again to close the properties dialog for the Numeric Display.



44. Save the MAIN display using the *File>Save* menu item.

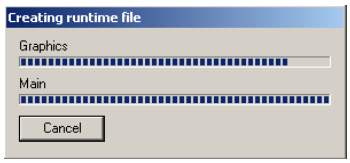
45. Close the MAIN display.

Testing an application on the Desktop

Testing an application can be performed by downloading and running it on a PanelView™ Plus terminal. However, to save time, it is possible to test the full application on the Desktop. This can be done using the emulation capability included in FactoryTalk® View Studio for Machine Edition. The following steps will walk through testing the application on the Desktop.

1. From the **Application** menu, select the *Test Application* item.

   The system will build the runtime MER.



   When the runtime MER file is built, the system loads the runtime MER into an emulation mode. The application will appear in the upper left-hand corner of the computer monitor.

2. To test the objects that have been created, click on the *Start Pelleter* 

button.

   The color is now an illuminated green, and the caption reads **Stop Pelleter**. The numeric display is showing a value other than 0.

3. Click the *Stop Pelleter* 

button to end the simulated process.

4. Click the *Shutdown* button to end the emulation.

   Congratulations!

   You have successfully modified your application by configuring communications with a controller, adding 'live' content, created a test application, and emulated the application on your desktop.

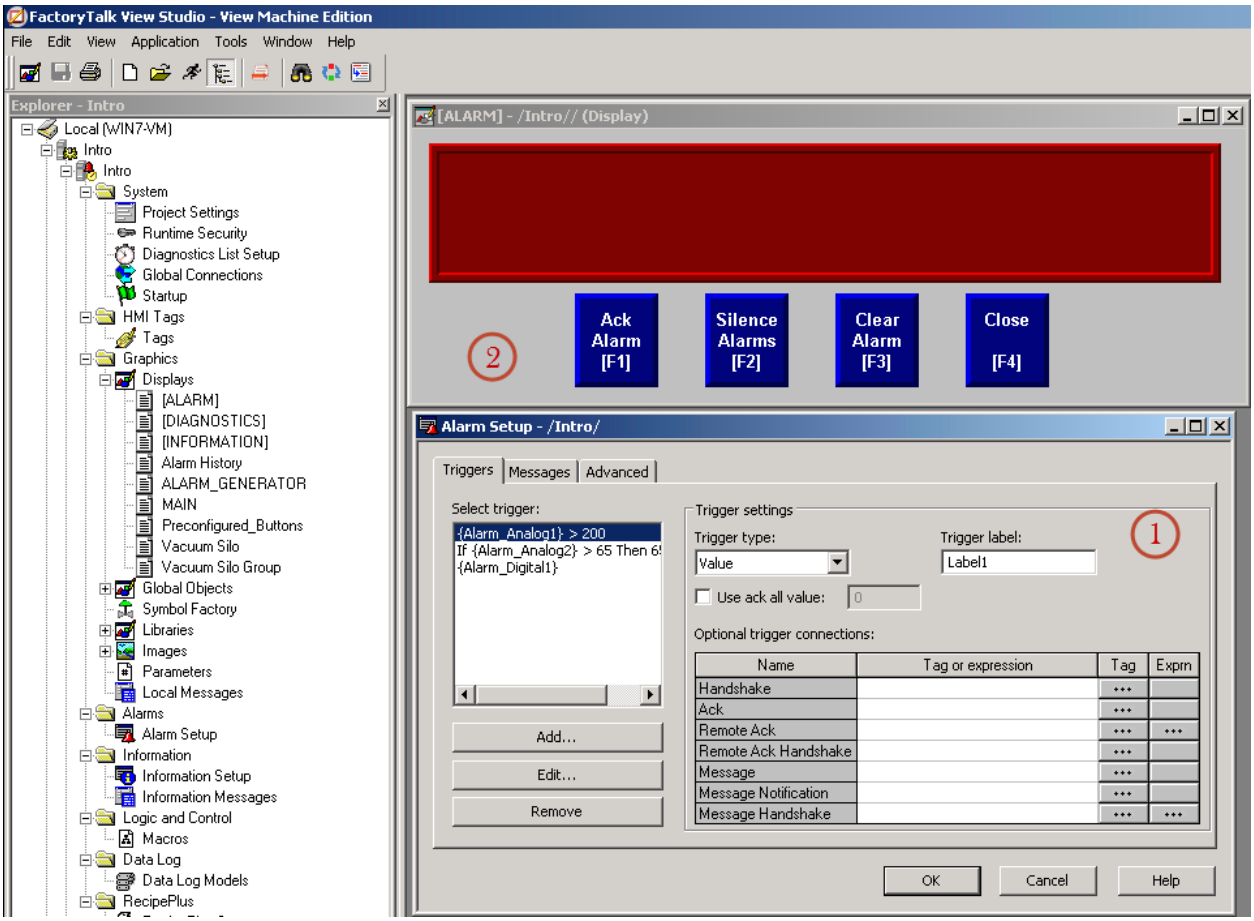
Adding Alarms to an Application

Completing this section requires approximately 20 minutes.

Making irregular system or process events visible to operators is a critical component of many HMI applications. FactoryTalk® View Machine Edition provides an intrinsic alarming function that can be used for this purpose. This section will cover:

- Alarm basics
- Configuring alarms for the Intro application

The following provides an overview of how alarms will be created in this lab section:

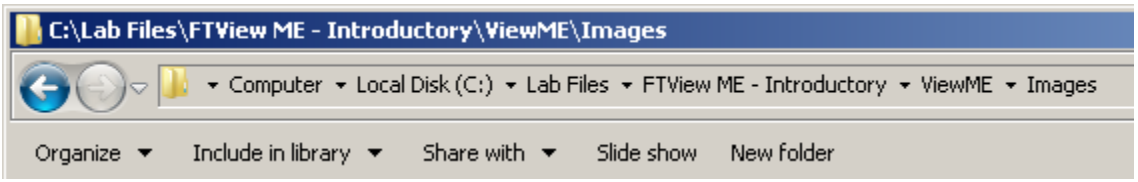


1	Create several alarms for the application.
2	Use the default **Alarm** display to announce and exercise the alarm function.

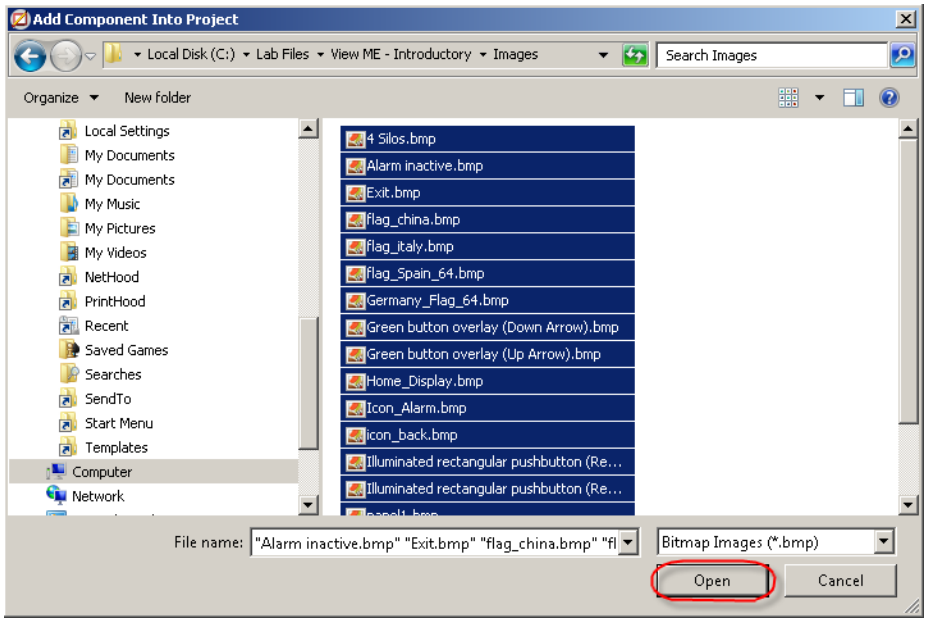
Start by adding some preconfigured components to the application. These components have been configured in advance in order to save time during this lab session, and include screens and images that will provide the ability to simulate Alarms during runtime.

1. In the Explorer pane, under Graphics, right click on *Images*, and select *Add Component Into Application...*

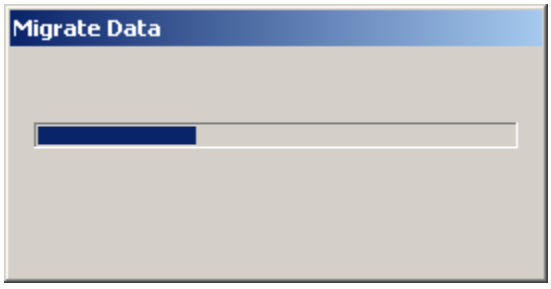
2. Browse to *C:\Lab Files\View ME – Introductory\ViewME\Images* folder.



3. Select all the images by pressing the *Ctrl* and *A* keys on your keyboard, and click *Open*.



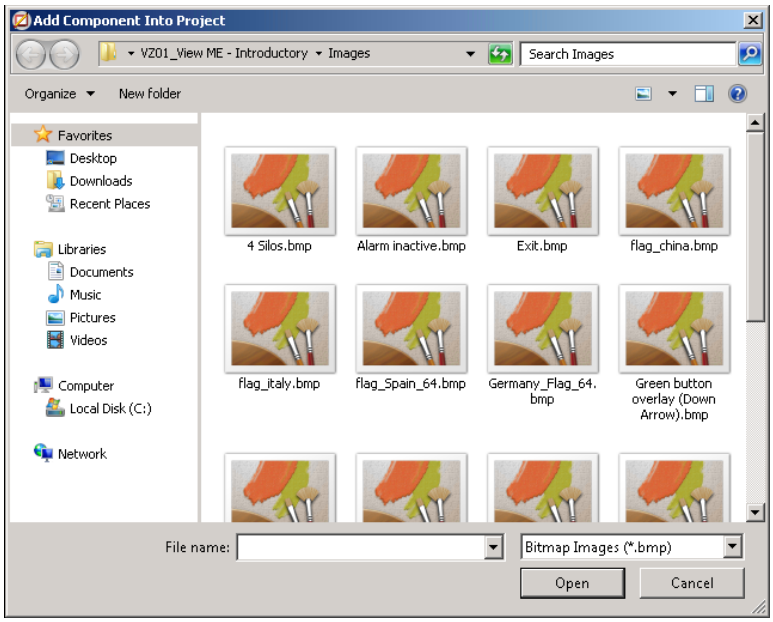
The images will be brought into the HMI project.



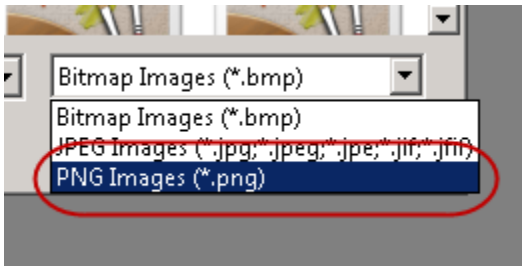
The images that have just been added to the application are of the Bitmap format. Now, add 5 PNG files that will be used later.

4. In the Explorer pane, under Graphics, right click on *Images*, and select *Add Component Into Application...*

Note that the browser window retains the previous location.

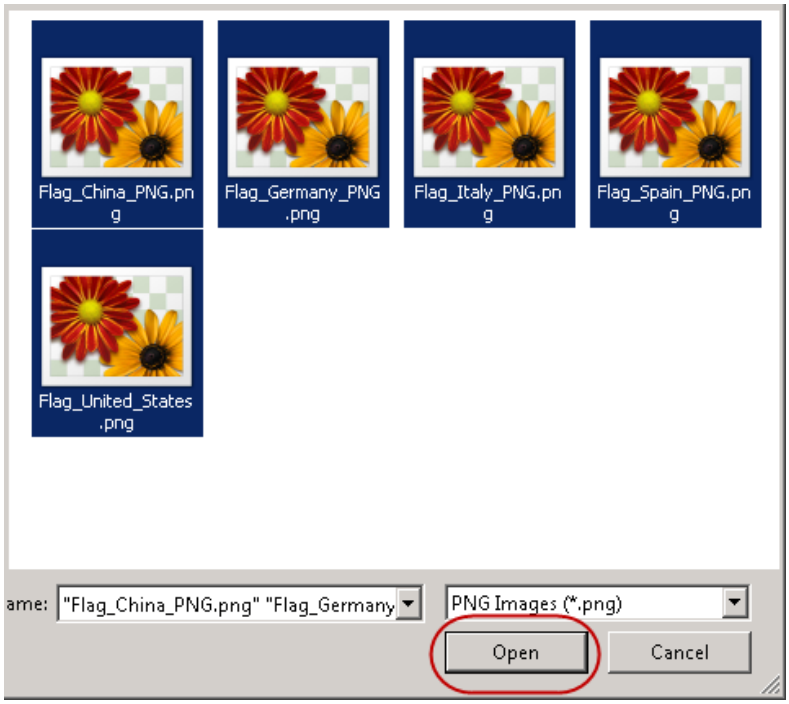


5. Use the drop down list to select *PNG Images (*.png)*.



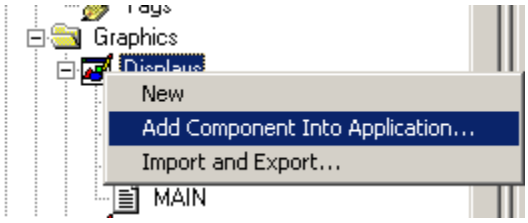
Using this filter makes the browser show the five png files found in this folder.

6. Select all of the png files using *Ctrl* and *A* on the keyboard, and select *Open*.

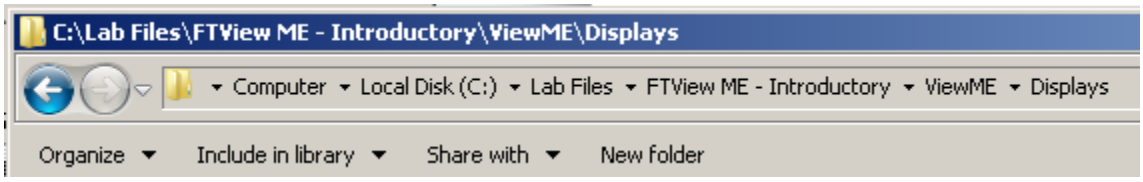


These five images will now import into the application.

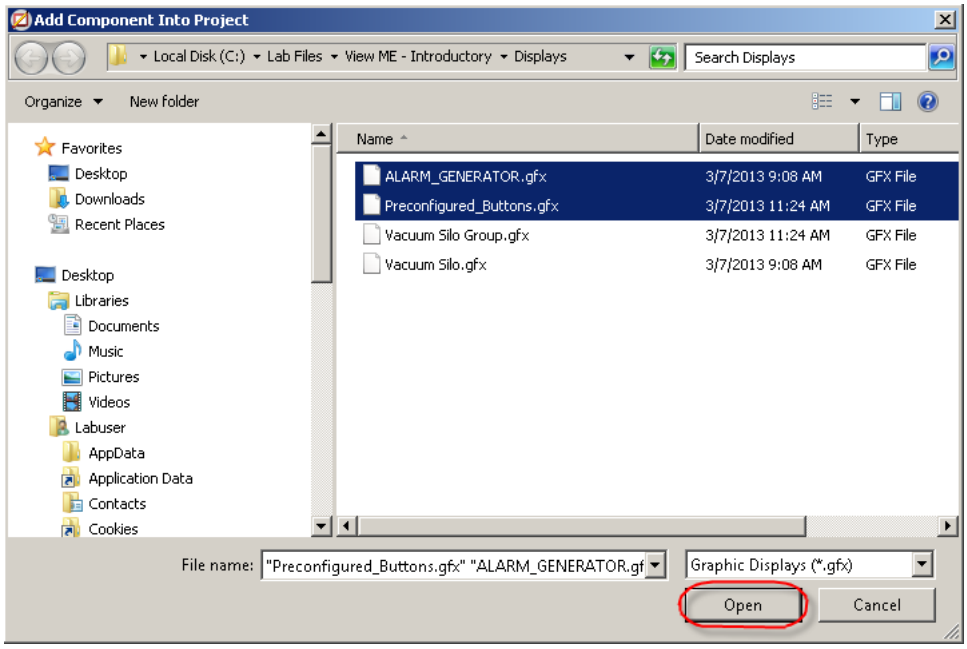
7. Right click on *Displays* and select *Add Component Into Application*.



8. Browse to *C:\Lab Files\View ME – Introductory\ViewME\Displays* folder.



9. Select the *ALARM_GENERATOR.gfx* and *Preconfigured_Buttons.gfx* files and click *Open*.

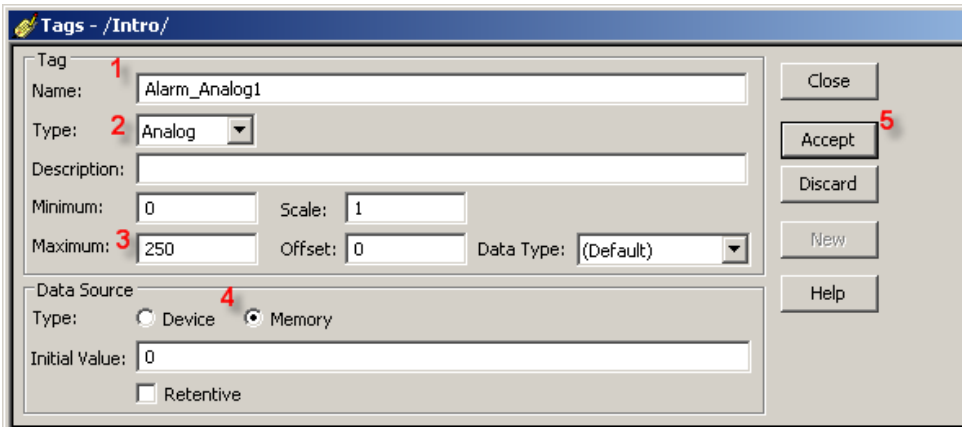


Creating HMI Tags

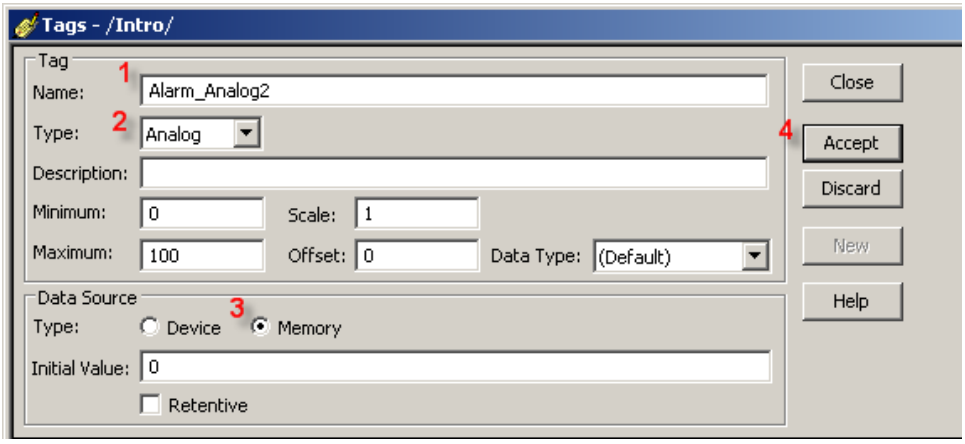
HMI tags are created within the FactoryTalk® View Studio environment, and are not contained within the device specified in the RSLinx Enterprise Communication setup. These tags, during runtime, are stored on the Machine Edition Station terminal or computer. This section will cover creating and using HMI tags to simulate alarm functionality.

1. Right click on *Tags* and select *Open* to open the HMI tag database.

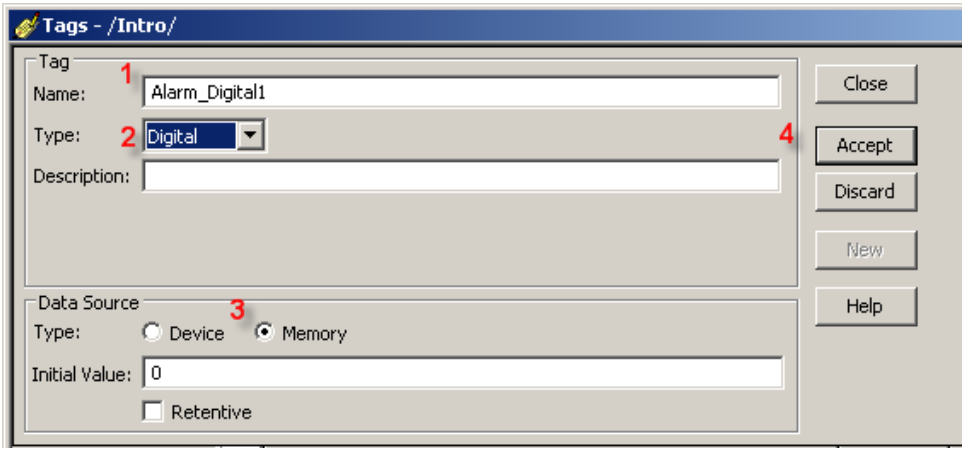
2. Enter the following (items 1-5) to create the first tag, Alarm_Analog1, and click *Accept*.



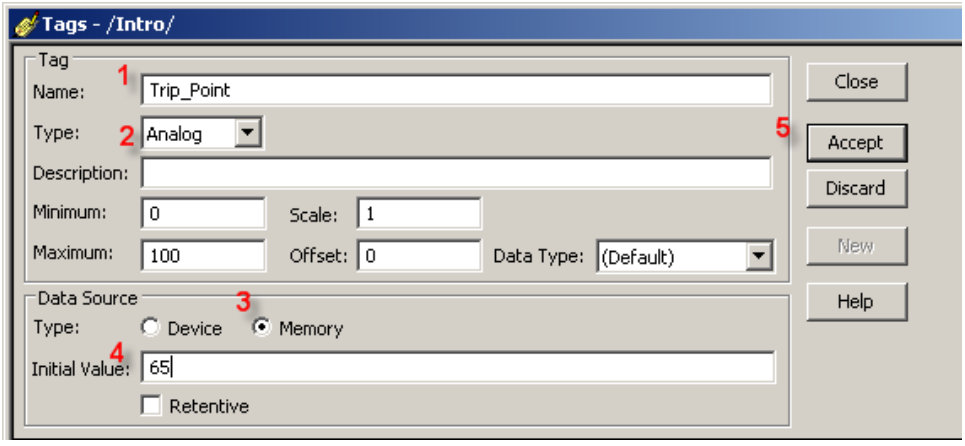
3. Click *Next*, and enter the following to create the second tag Alarm_Analog2. Click *Accept*.



4. Click *Next* and enter the following to create a digital tag, Alarm_Digital1. Click *Accept*.



5. Click *Next* and enter the following to create the final tag, Trip_Point. Click *Accept*.



Note the Initial Value of 65 – this value will appear later in the Alarm section.

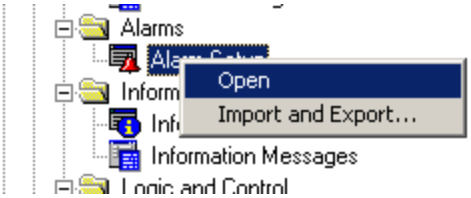
The HMI database should look similar to the picture below:

	Tag Name	Type
1	Alarm_Analog1	Analog
2	Alarm_Analog2	Analog
3	Alarm_Digital1	Digital
4	Trip_Point	Analog
5		

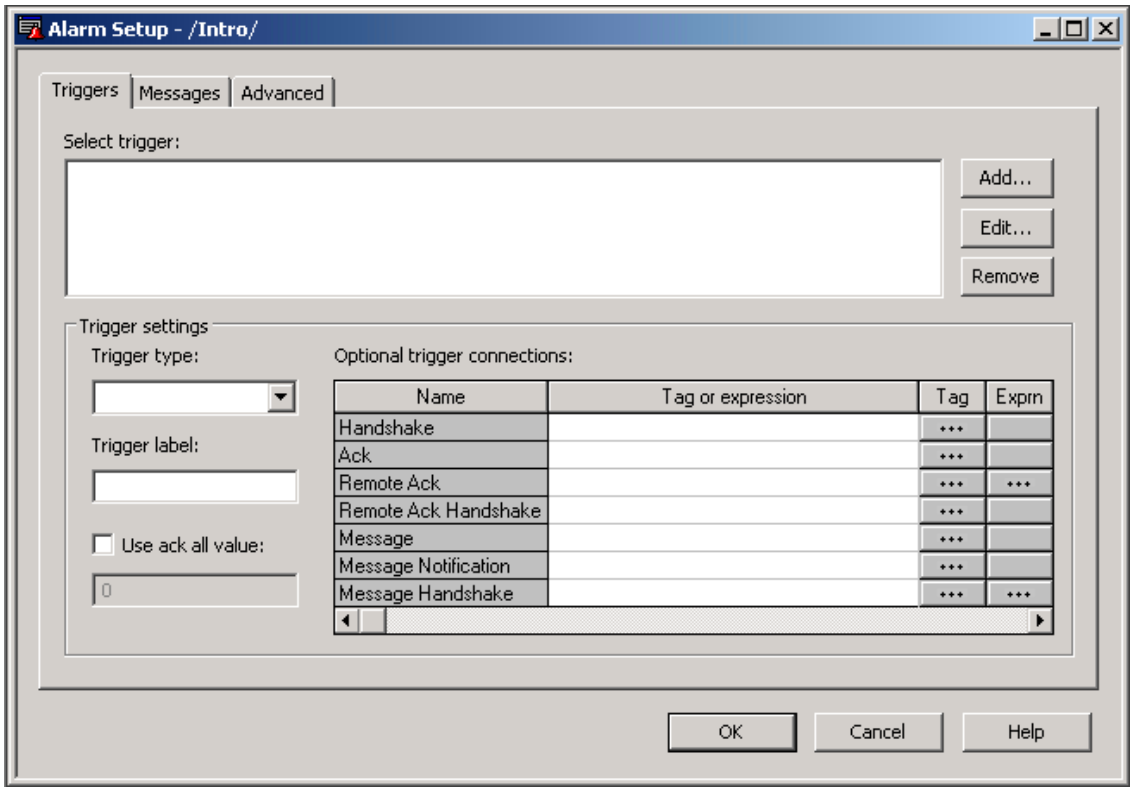
6. Close the HMI tag database editor.

Configuring Alarms using the Alarm Setup

1. Right click on *Alarm Setup* and select *Open*.



Alternatively, the Alarm Setup dialog can be opened by double clicking *Alarm Setup*.

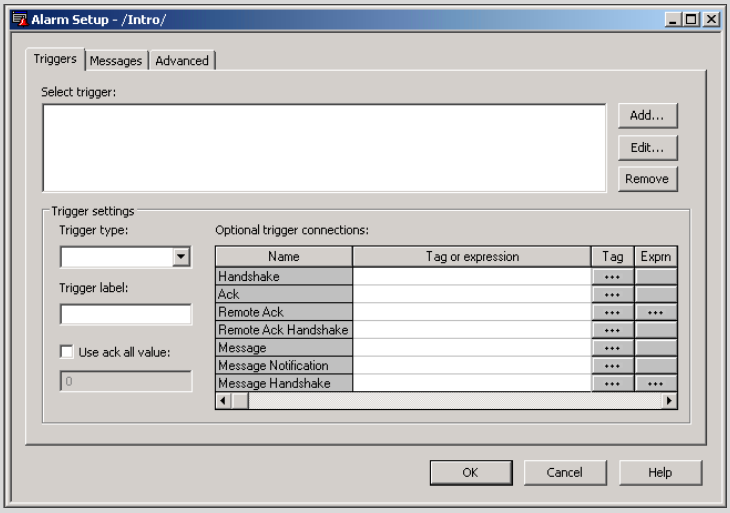


Understanding Alarm Setup

The native Alarm system within FactoryTalk® View Machine Edition is a powerful tool available to every application. This system allows the operator to react and respond to irregular application events (e.g., motor overload, high level conditions, etc.). The alarm system can be configured to be entirely self-contained to the application at runtime, or it can be configured to coordinate and communicate with the control system.

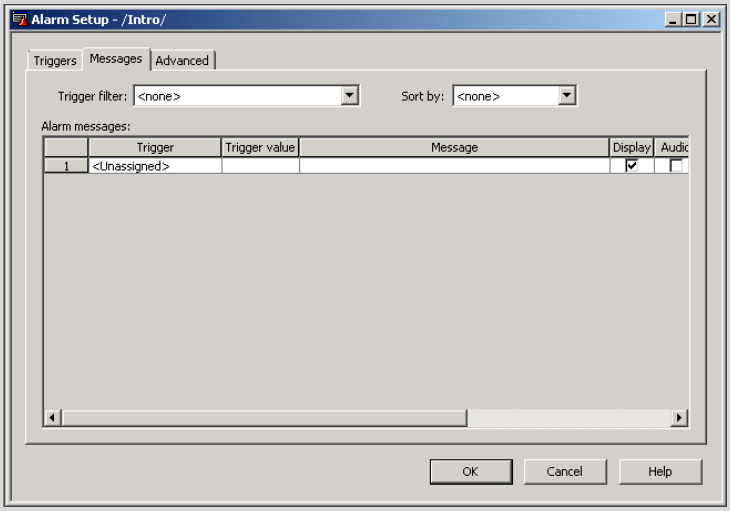
Triggers

A designer will use this tab to define and manage the events that trigger an alarm to occur.



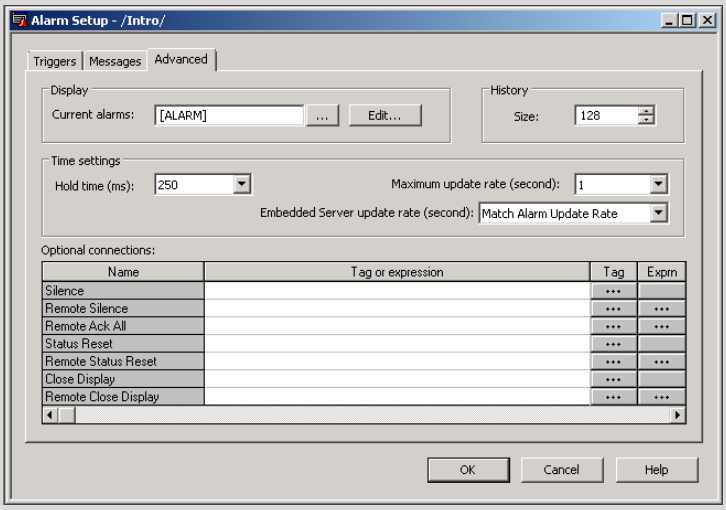
Messages

For each defined alarm event, the designer can configure the message that corresponds to that alarm – the text of the message, as well as the look of the message.

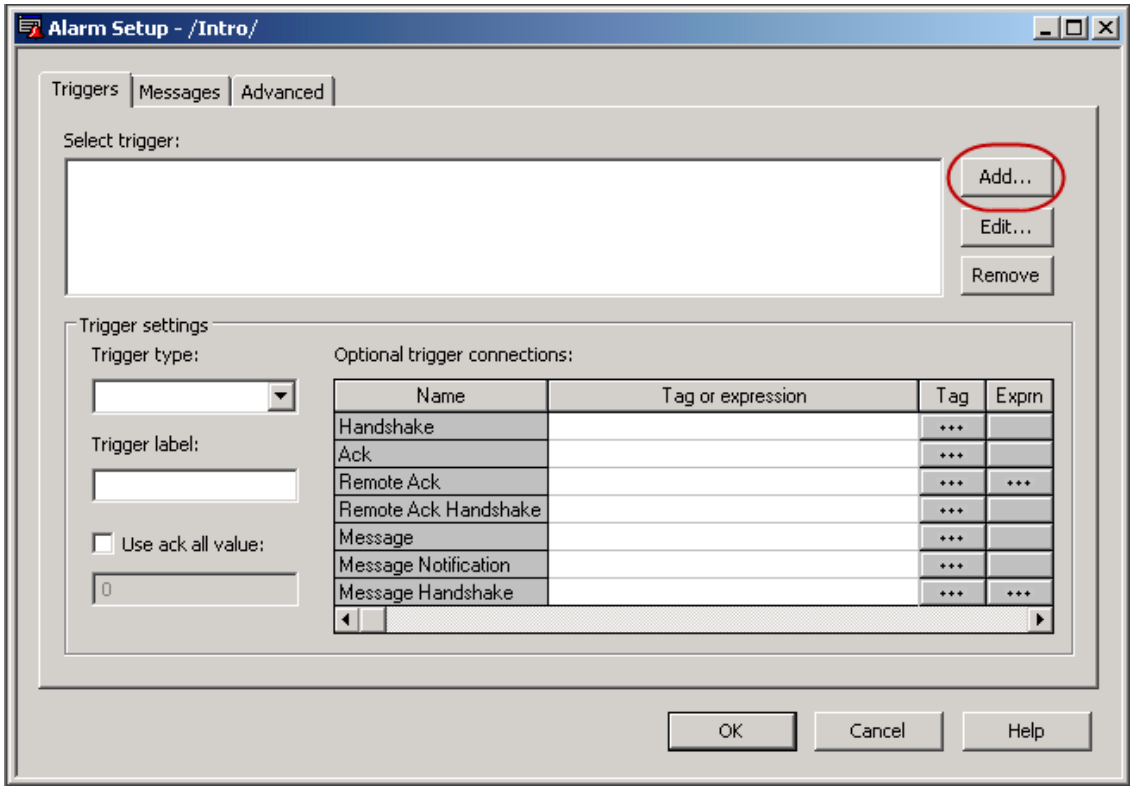


Advanced

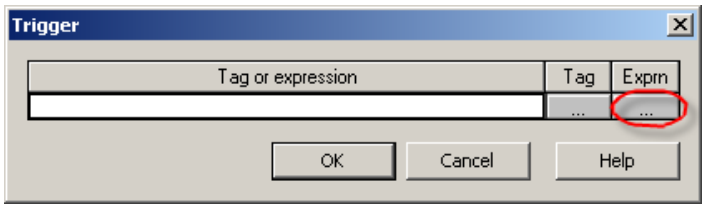
The HMI designer can specify the display used when an alarm is triggered, as well as other advanced settings, such as the size of the alarm log and any optional tag connections needed.



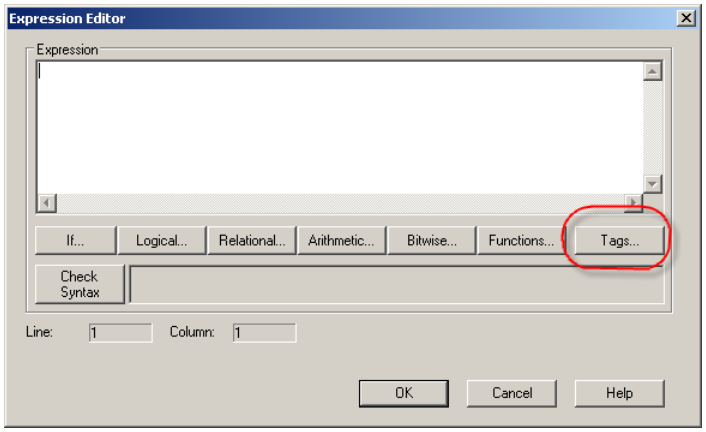
2. Click *Add...* to assign Alarm Triggers.



3. Click the *Exprn* button to open the Expression editor – the first trigger will use a short expression.



4. Click the *Tags...* button.

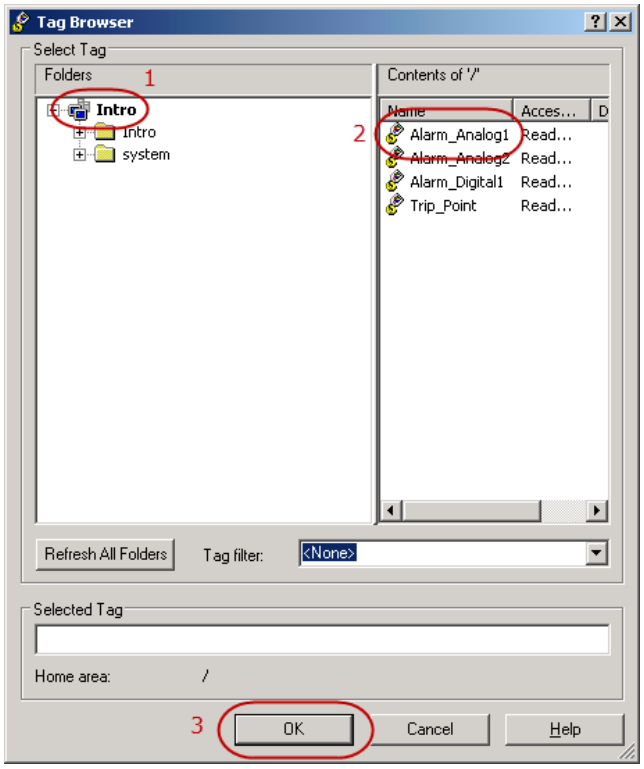


5. Select the appropriate tag using the steps below:

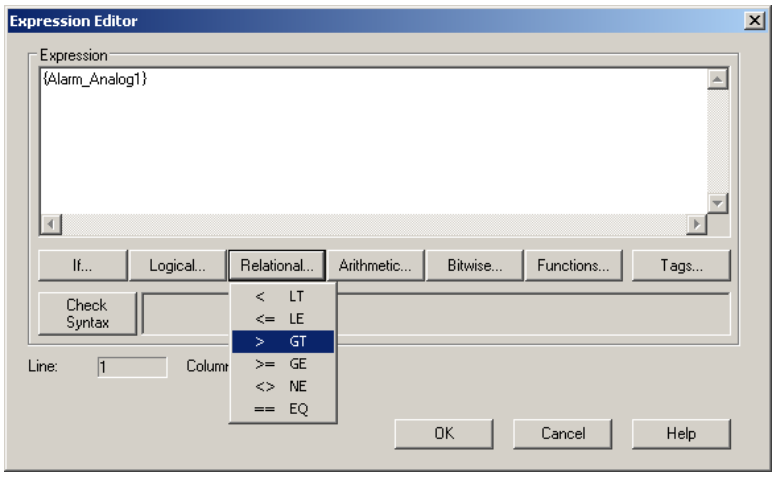
   1) Click the *Intro* root

   2) Select *Alarm_Analog1*

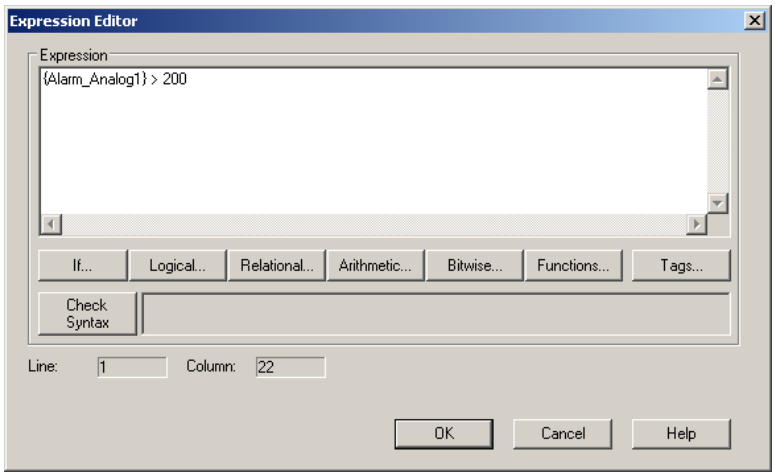
   3) Click *OK*



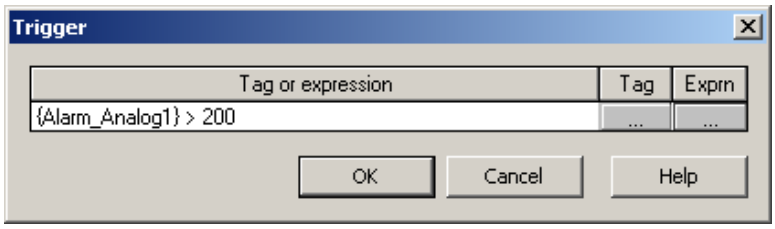
6. Click *Relational…* and select the *Greater Than* symbol.



7. Type *'200'* after the > symbol and click *OK*.

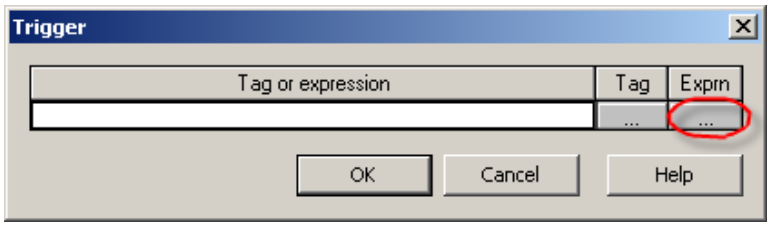


8. Click *OK* again to assign the expression to the Alarm Triggers list.



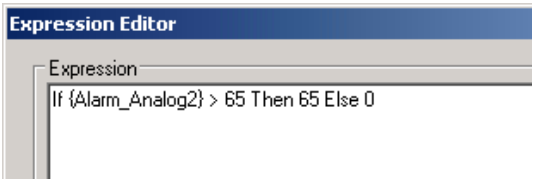
9. Click *Add…* to create another Alarm trigger.

10. Click the *Exprn* button to launch the expression editor.



11. Copy and Paste the following expression into the expression editor.

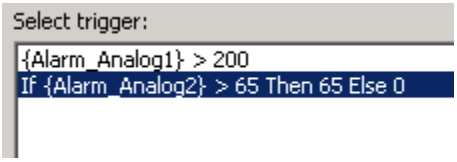
    If {Alarm_Analog2} > 65 Then 65 Else 0



    Fell free to use the **Check Syntax** button to verify that the expression has been entered correctly.

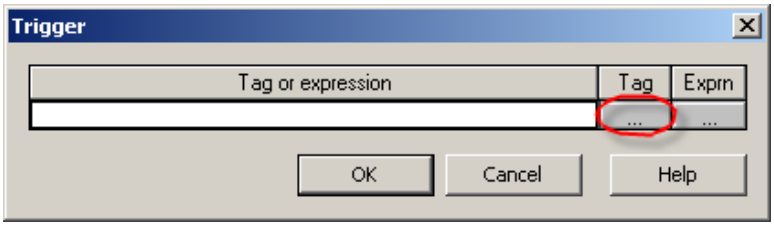
12. Click *OK* twice to assign the expression to the Alarm Triggers list.

    The alarm is now in the trigger list.

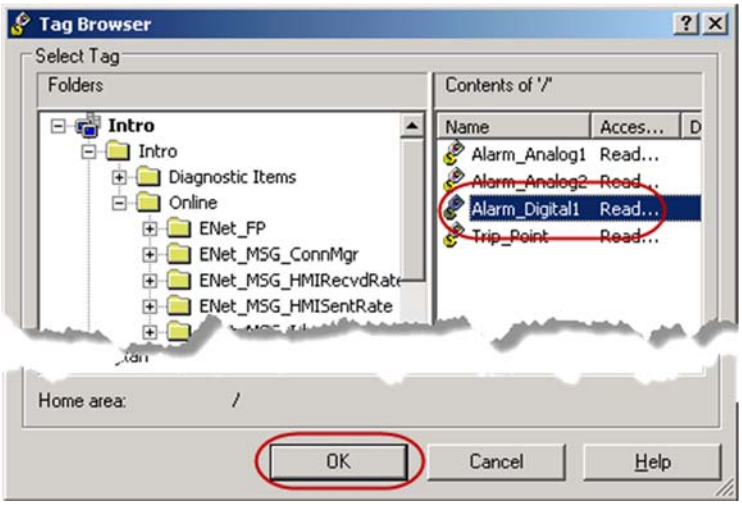


13. Click *Add...* to create the last Alarm Trigger.

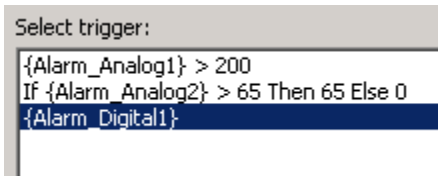
14. This time, click the *Tag* browser button.



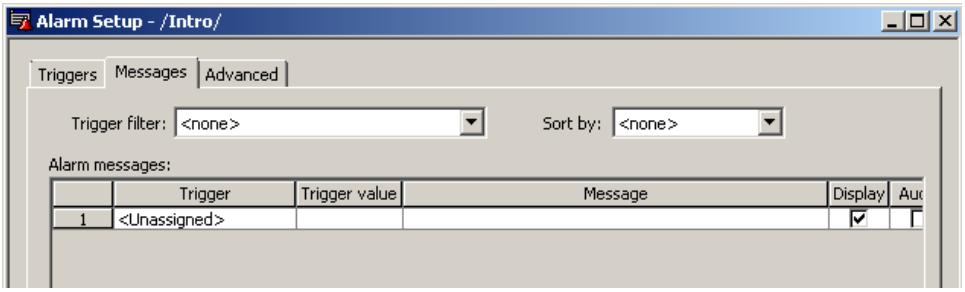
15. Select *Alarm_Digital1*, and click *OK* twice to select the tag and assign it to the trigger.



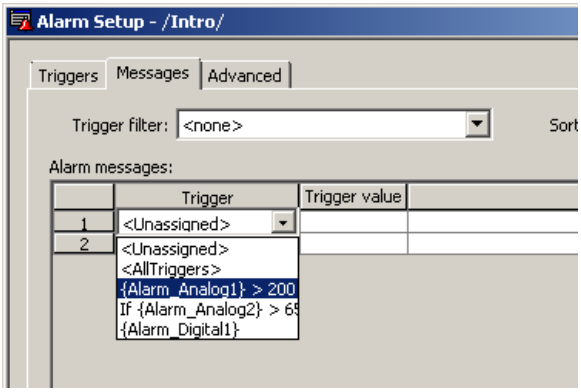
The Select trigger list should look like the following:



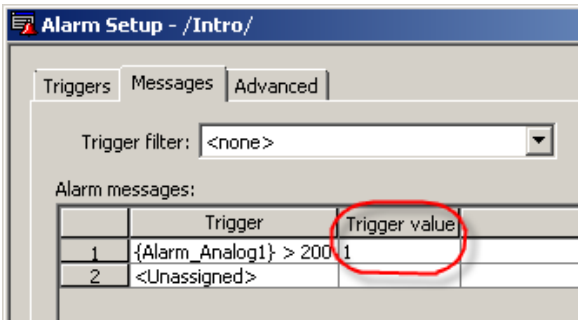
16. Click the *Messages* tab to assign trigger values and messages to the alarm triggers you created.



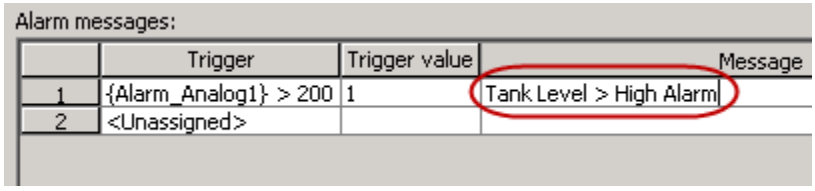
17. Click the Trigger drop down list, and select *{Alarm_Analog1} > 200* to assign the first trigger.



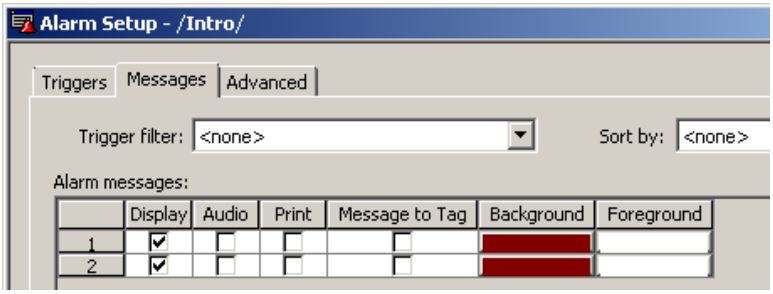
18. Enter *'1'* in the Trigger value field.



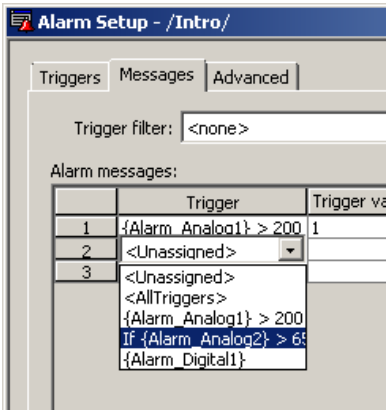
19. Type *'Tank Level > High Alarm'* in the Message field.



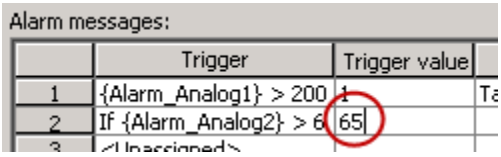
20. Leave the rest of the settings at their default values.



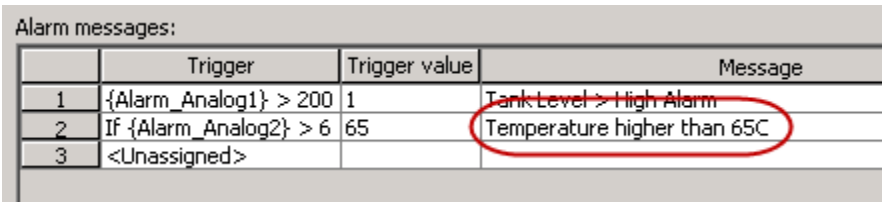
21. Use the **Trigger** menu to select the *If {Alarm_Analog2} > 65* trigger.



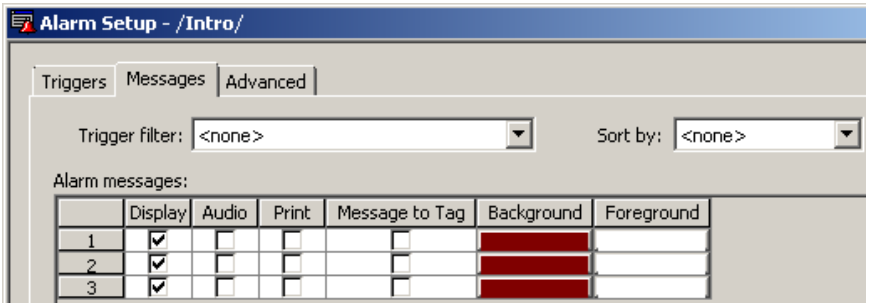
22. Enter *'65'* in the **Trigger value** field.



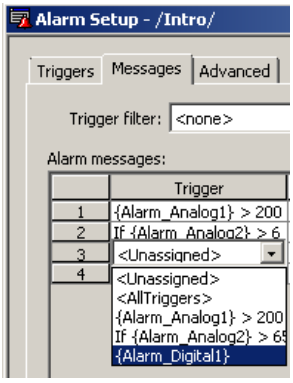
23. Type *'Temperature higher than 65C'* in the **Message** field.



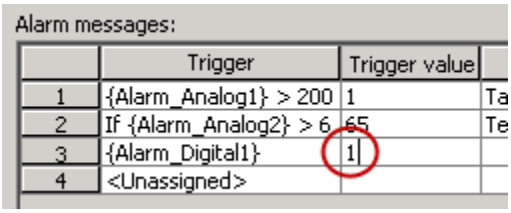
24. Again, leave the rest of the settings at the default values.



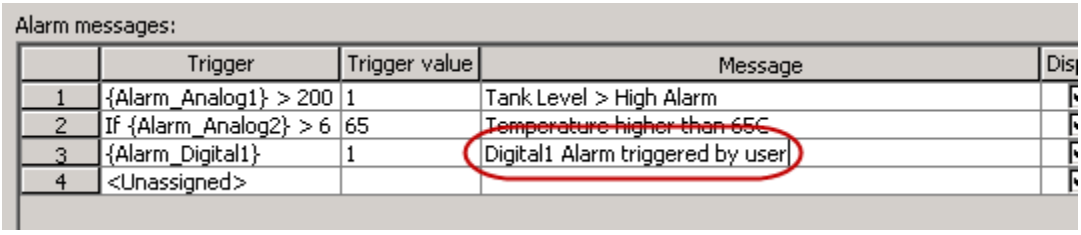
25. Use the **Trigger** menu to select the *Alarm_Digital1* trigger.



26. Enter *'1'* in the **Trigger value** field.



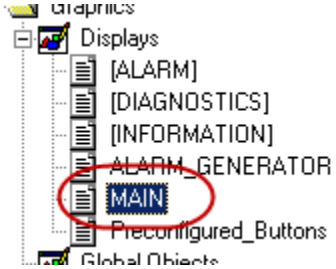
27. Type *'Digital1 Alarm triggered by user'* in the **Message** field.



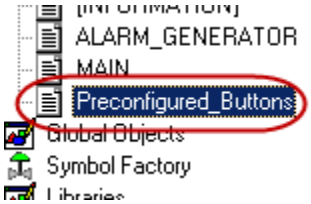
28. Again, leave the remaining settings at their default values.

29. Click *OK* to apply the **Alarm Setup** settings.

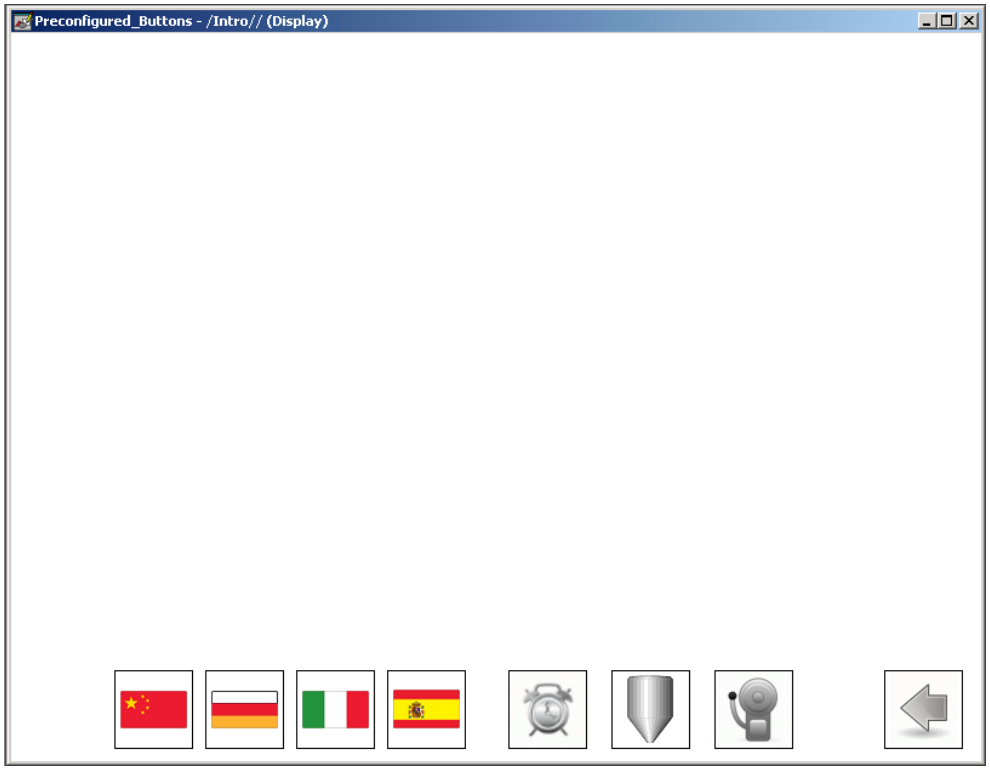
30. Double click the *MAIN* display to open it.



31. Double click the *Preconfigured_Buttons* display to open it.



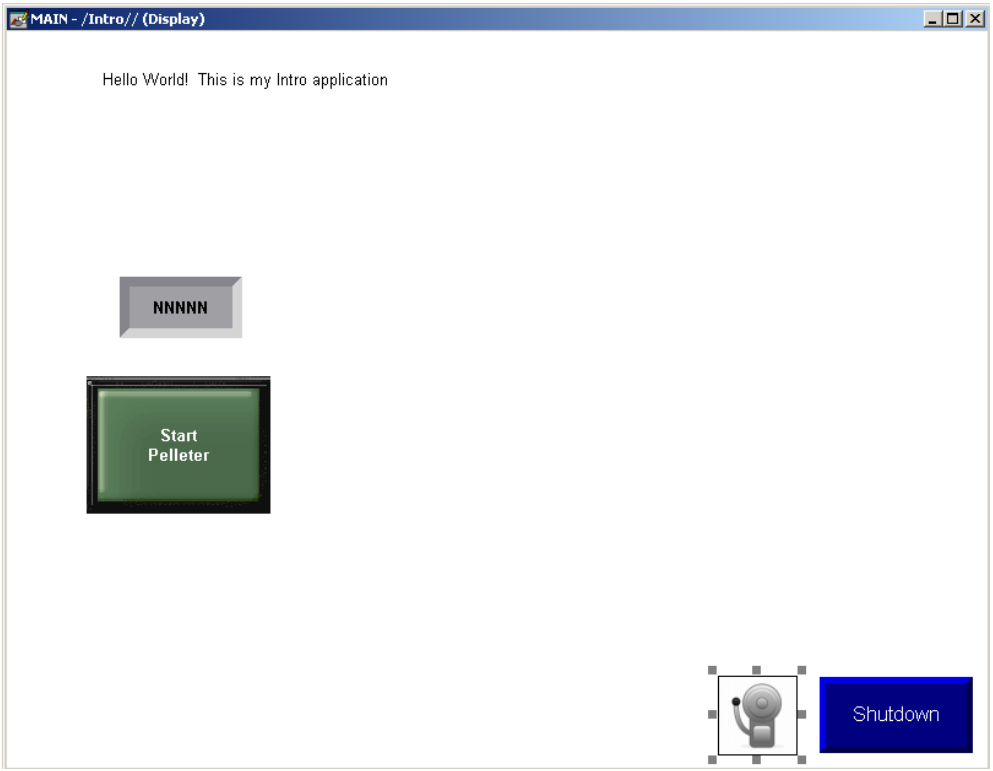
The Preconfigured_Buttons display contains several buttons that have already been configured for you. The buttons, when pasted into other displays, will paste to the same location as they appear on the Preconfigured_Buttons display, since their size and location properties are retained.



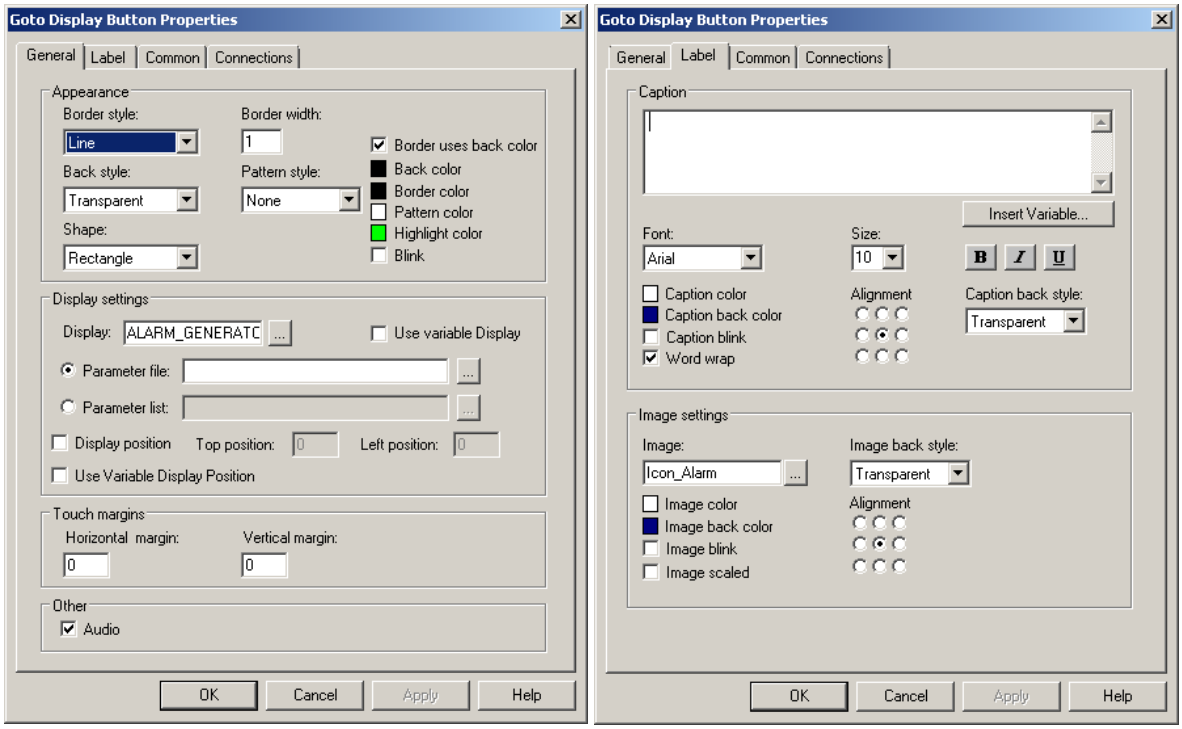
32. Select the *Alarm Generator*  button and copy it by right clicking and selecting *Copy* or use *Crtl+C* on your keyboard.

33. Minimize the *Preconfigured_Buttons* display, and paste the button onto the *MAIN* display by pressing *Ctrl+V* on your keybarod.

Your MAIN display should now look similar.



The button you pasted is a Goto Display pushbutton that is configured to open the ALARM_GENERATOR display that has a bitmap image assigned to it (Icon-Alarm).



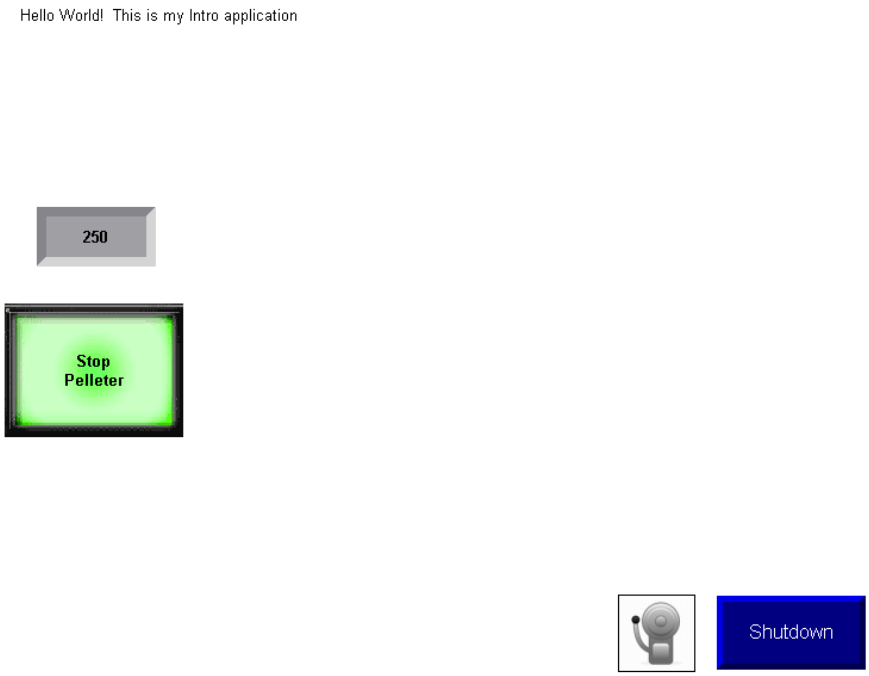
34. Close the *MAIN* display and save the changes when prompted.

35. Close the *Preconfigured_Buttons* display and click *No* when prompted to save changes.

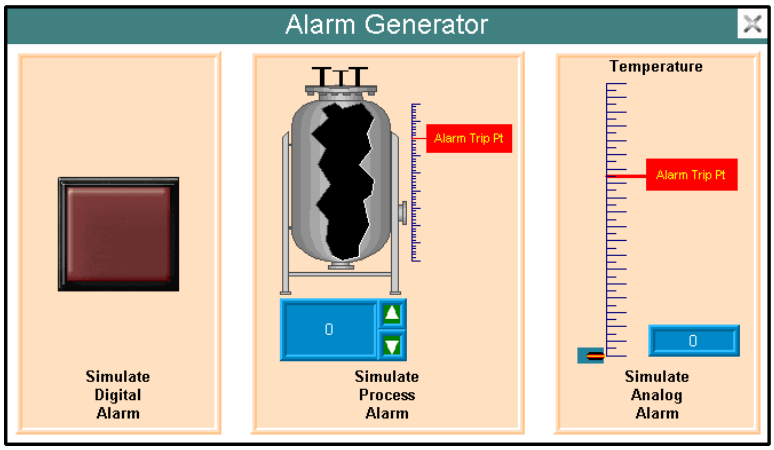
Testing the Alarms

1. Test the application on the Desktop by selecting the Running man  icon in the toolbar.

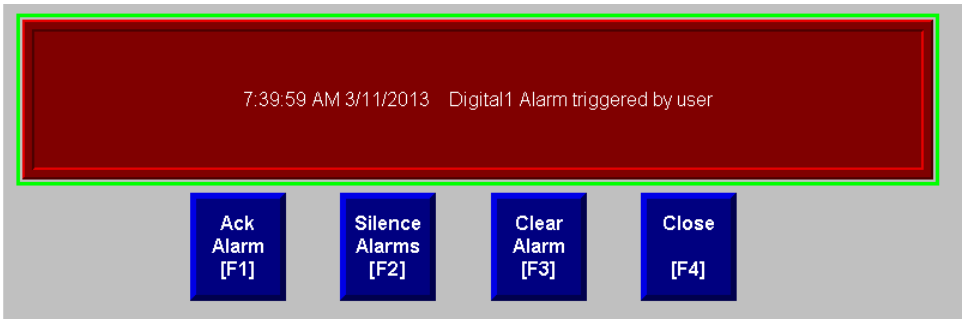
   Note that screen that opens may not match exactly the picture below.



2. Click the *Alarm Generator* button  to open the Alarm Generator display.



3. Click the *Red*  pushbutton to simulate a digital alarm. Notice that the Alarm banner opens.



This example is using the digital alarm that was configured previously. When the momentary button is pushed, the Alarm_Digital1 tag value changes from 0 to 1 which causes the alarm to trigger.

4. Click the 

button to close the Alarm banner.

5. Click the *Red* pushbutton to reset the alarm.

6. Click the *Up* arrow repeatedly until a value greater than 200 is displayed (approximately 9 times).

   Each press of the Ramp button increments the value by 25.

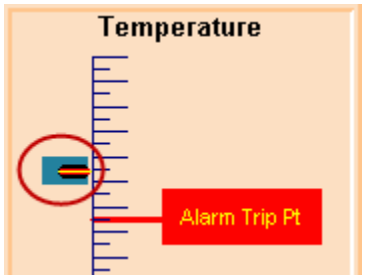
The example uses an expression for the alarm trigger. When the tag reaches a value greater than 200, the expression is evaluated as true, and its value is 1.

7. Click the 

button to close the Alarm banner.

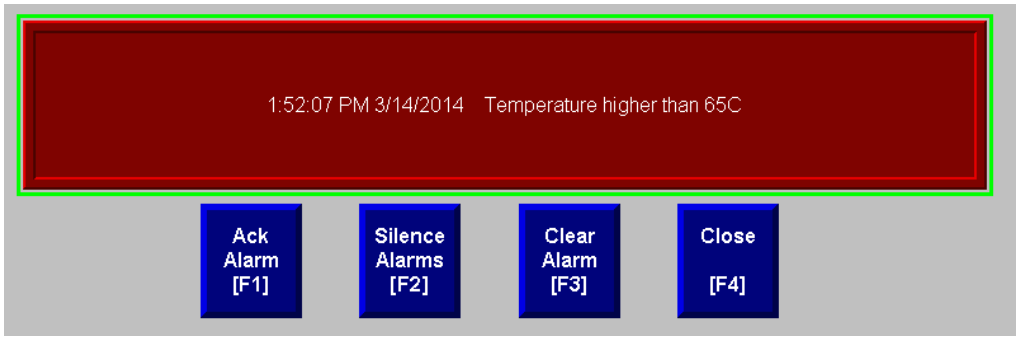
8. Click the *Down* arrow repeatedly until a value below 200 is reached.

9. Click your mouse onto the slider and leave it clicked while you move the slider up past the Alarm Trip Point.



Make sure to move the slider above the **Alarm Trip Pt** on the screen.

This alarm also uses an expression – once the value of the tag is greater than 65, the alarm will trigger, and the Alarm Banner will open.



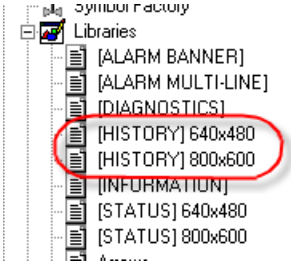
10. Click the 

button to close the Alarm Banner, and move the slider down below the **Alarm Trip Point**.

11. Push the X key on your keyboard to shut down the application.

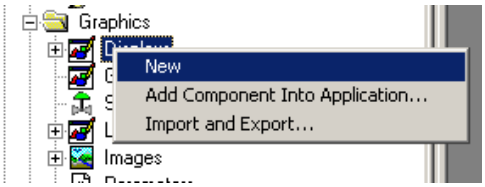
Alarm History Display

The previous section explored how Alarms are set up, as well as how the Alarm Banner can alert a user when these alarms occur. It is also possible to maintain and display a history of alarms. FactoryTalk® View Studio for Machine Edition includes completed Alarm History graphic displays that can be added to an HMI project. These graphic displays can be found under the Libraries container in the Project Explorer pane.

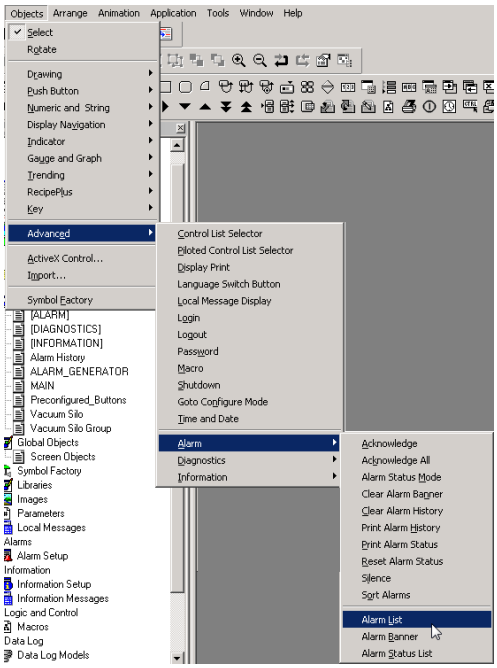


For this application, a new display with an Alarm List will be created.

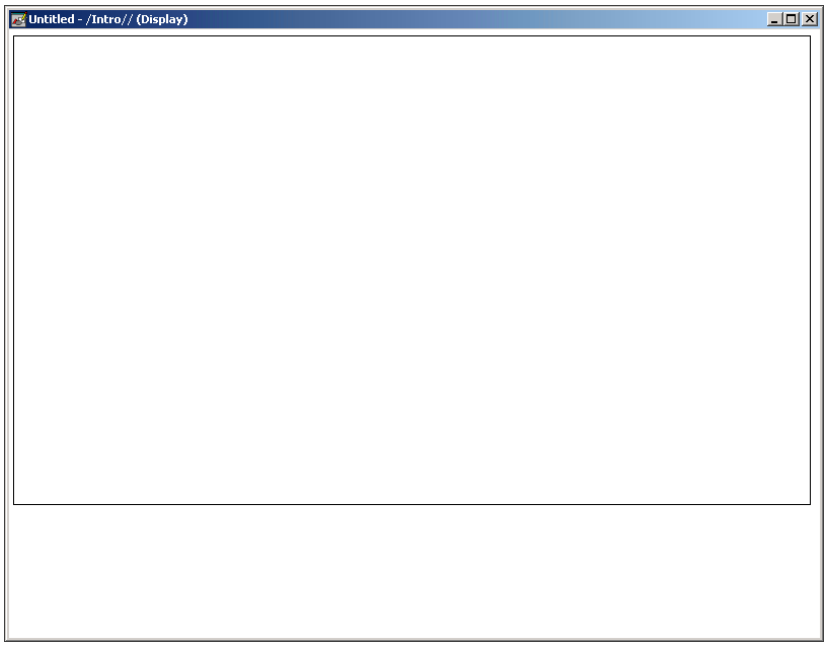
1. Right click on *Displays* and select *New*.



2. Now, select *Objects* > *Advanced* > *Alarm* > *Alarm List*.

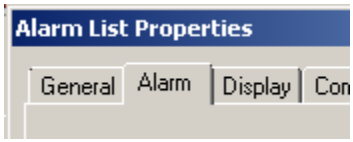


3. Using the left click button, draw a rectangle on the new display, starting in the upper left corner, and extending about three-quarters of the way down.

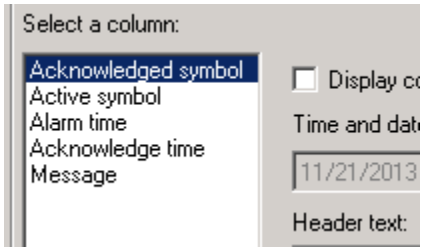


The **Alarm List Properties** configuration dialog will open automatically.

4. Select the *Alarm* tab.



5. Uncheck the *Display column* for the following items by selecting each one, then clicking the *Display Column* box:
   - Acknowledged symbol
   - Active symbol
   - Acknowledge time

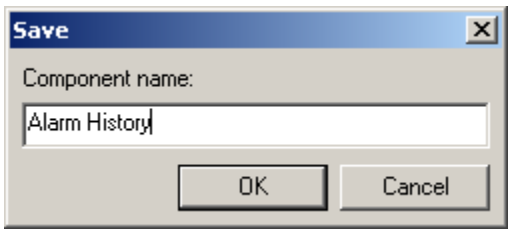


For this application, we only want to display the **Alarm time** and **Message** on the Alarm List.

6. Click *OK* to apply the changes and close the properties dialog.

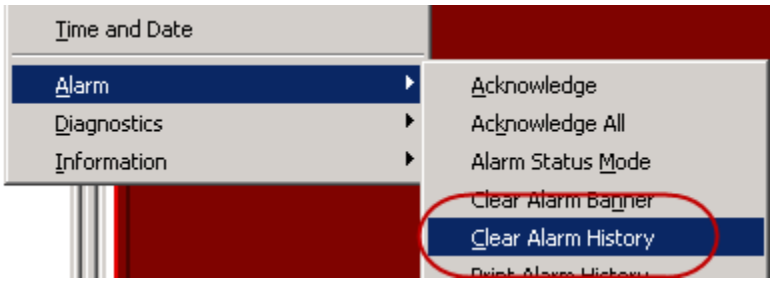
7. Save the display by clicking the  icon on the toolbar.

8. Enter *'Alarm History'* for the display name, and click *OK*.

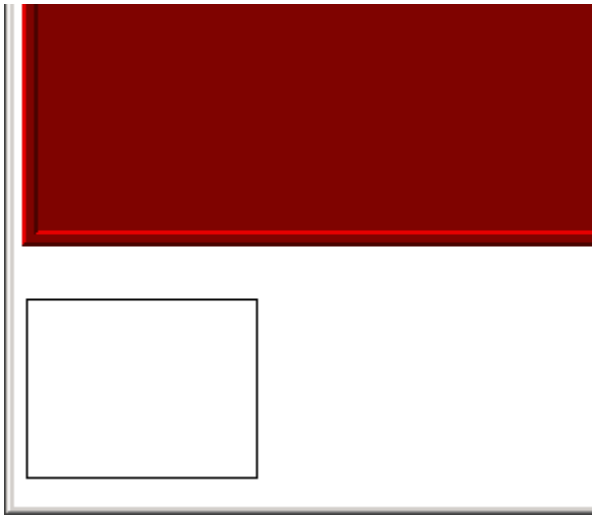


Next, buttons that will be used to navigate to and select alarms, as well as navigate to other displays, will be added to this screen.

9. Go to *Objects*, then select *Advanced* > *Alarm* > *Clear Alarm History*.



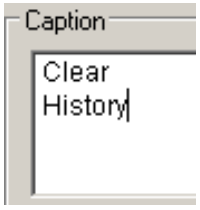
10. Using the left click button, draw a rectangle in the lower left corner of the display.



The Clear Alarm History button properties configuration dialog pops up.

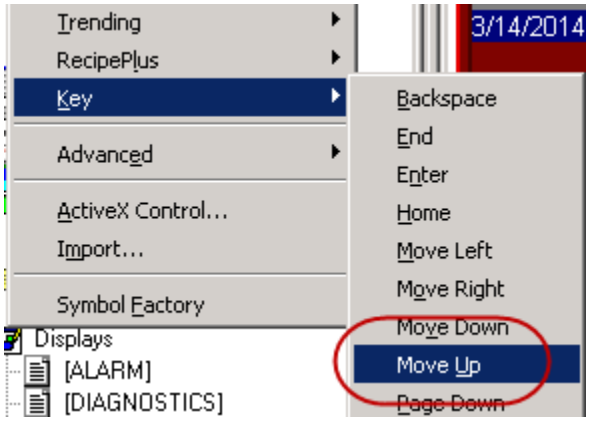
11. Select the *Label* tab.

12. Enter the caption shown below, then click *OK*.

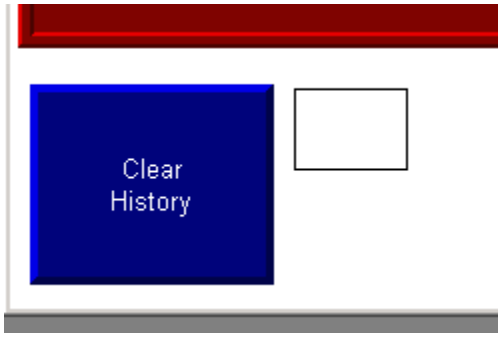


The button should look similar to what is showing.

13. Go to *Objects* and select *Key > Move Up*.

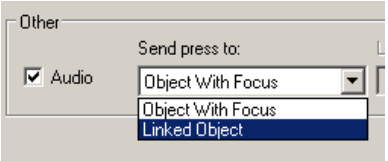


14. Using the left click button, draw a small square next to the Clear History button.

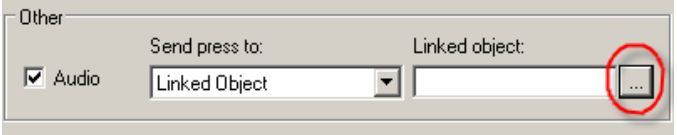


The Move Up button properties configuration dialog will open.

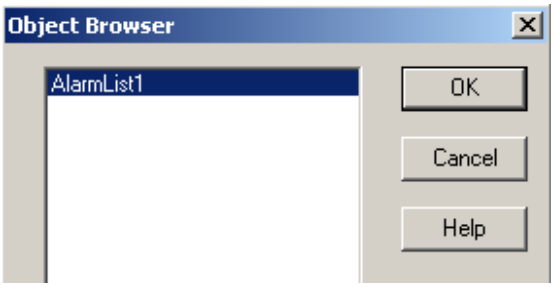
15. On the **General** tab, use the **Send press to:** drop down menu to select ***Linked Object***.



16. Click the ***browser*** button for **Linked object** to bring up a list of objects to assign the button press to.



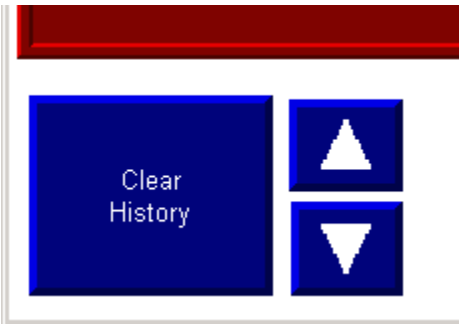
17. Select ***AlarmList1*** and click ***OK***.



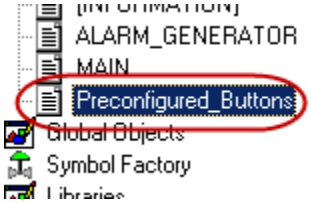
18. Click ***OK*** again to apply the changes to the **Move up** button.

19. Perform steps 13-18 to add a **Move Down** button to the display.

    The buttons should now look similar to the following:



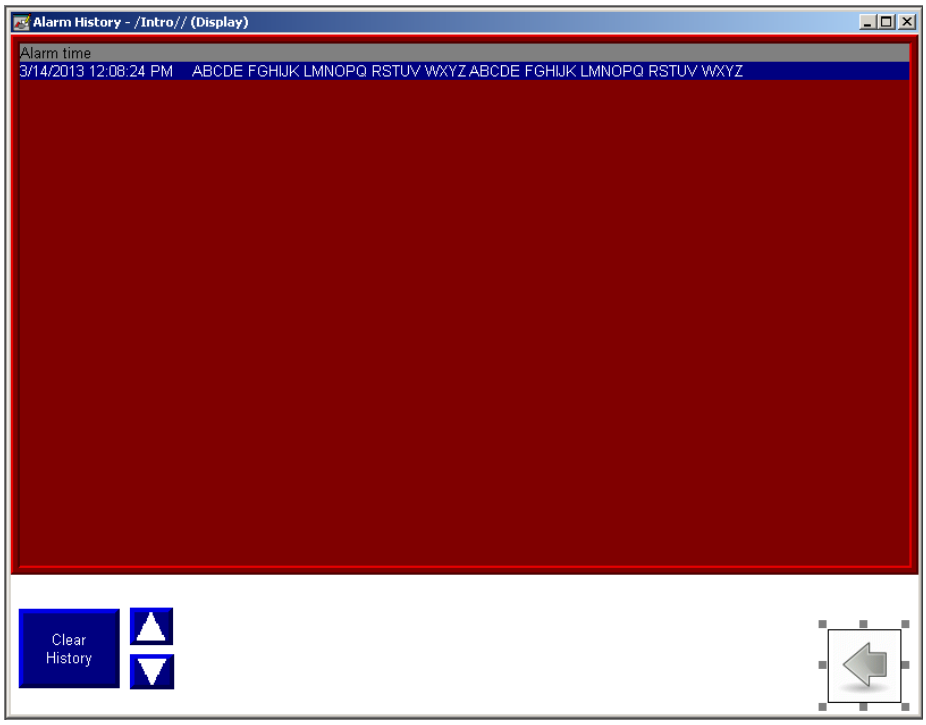
20. Double click the ***Preconfigured Buttons*** display to open it.



21. Copy the *Return*  button by selecting it, then pressing *Ctrl* and *C* on the keyboard.

22. Minimize the *Preconfigured Buttons* display and paste the button onto the *Alarm History* display.

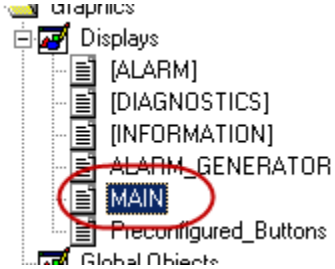
    Your display should look similar to what is shown below:



23. Close the *Alarm History* display and save your changes when prompted.

    Next, a button will be added to the MAIN display to navigate to the **Alarm History** display.

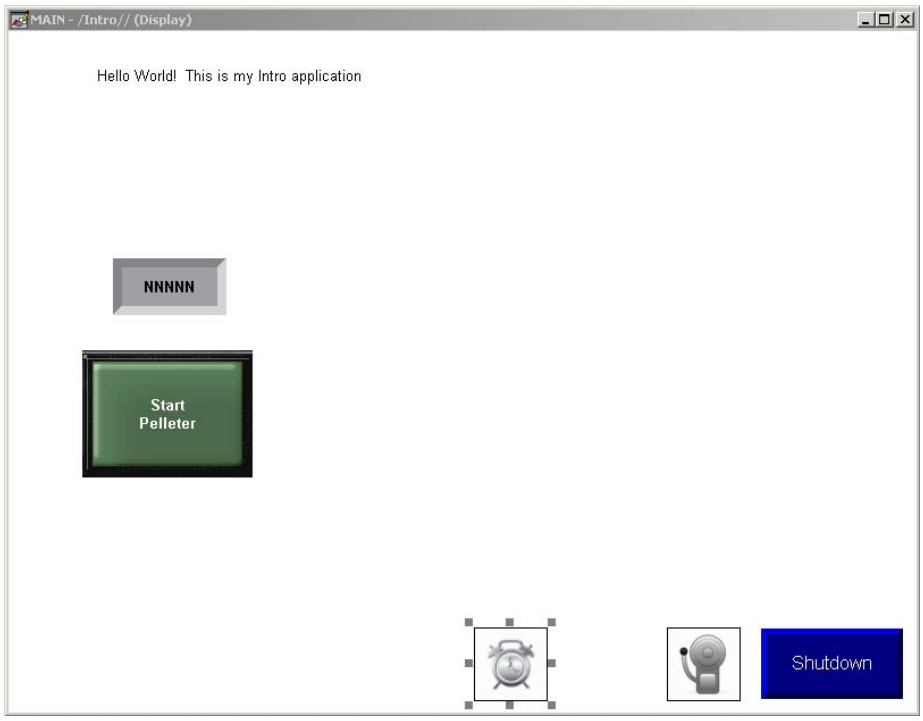
24. Double click the *MAIN* display in the Project Explorer pane to open it.



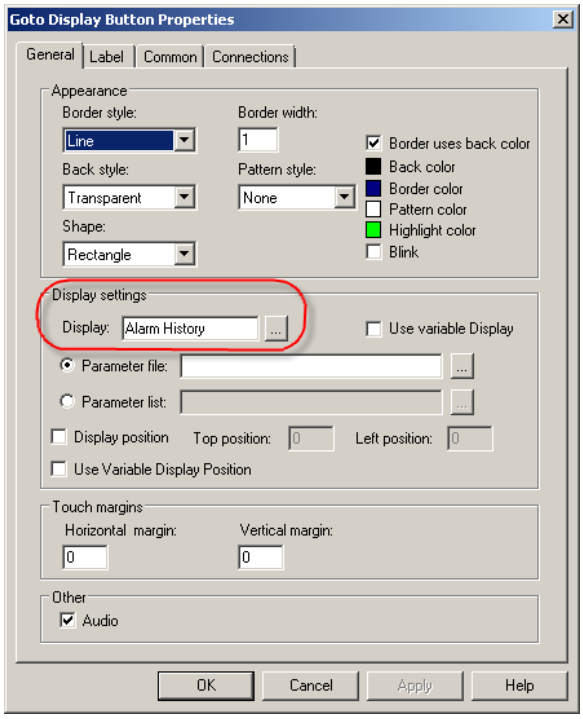
25. Restore the *Preconfigured Buttons* display and copy the *Alarm History*  button.

26. Close the *Preconfigured Buttons* display (do not save any changes) and paste the *Alarm History* button onto the MAIN display.

    The MAIN display should now look similar to what is shown below:



    The Goto display button just added is assigned to the Alarm History display.



27. Close the *MAIN* display and save the changes when prompted.

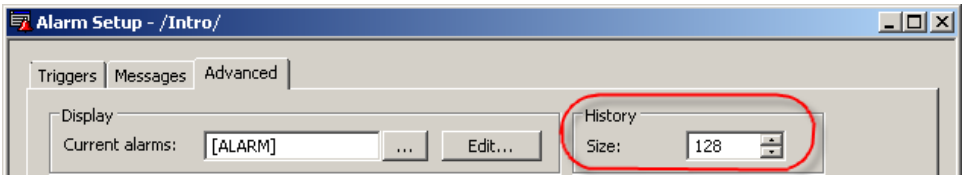
Testing the Alarm History Screen

1. Test the application on the Desktop by selecting the *Running man*  icon on the toolbar.

2. Generate some alarms, then navigate to the Alarm History screen by clicking the *Alarm History Goto Display*  button.

   Refer to the previous section for instructions regarding generating the alarms.

   Notice how the alarms appear in the list. The Alarms that are in the Alarm List object are also saved to an alarm log (also called the alarm history). This log can store up to 10,000 alarms. The alarm history size is defined in the Alarm Setup under the Advanced tab. The default log size is 128 messages.



   Pressing the Clear History button will clear all alarms stored in the alarm log file.

3. Shut down the test application by pressing the letter X on your keyboard.

   Congratulations! You have successfully configured alarms for a FactoryTalk® View Studio for Machine Edition application.

Using Global Objects to Make Application Design Convenient and Quick

This section of the lab will describe and demonstrate FactoryTalk® View Machine Edition functionality that allows the reuse of objects as well as graphic displays. Specifically, this section will cover the following:

- Global Objects
  - Base Object
  - Reference Objects
- Tag Placeholders
- Global Object Parameters

What is a Global Object?

Global Objects are a component of FactoryTalk® View Machine Edition that can be created and configured once, then reused across the application. Any change made to the original, base object will be reflected in the reference objects (copies of the base global object). However, it is possible to break the link between the base object and reference objects for specific properties.

What are Placeholders and Parameters?

Placeholders provide a way to use one graphic display or global object to represent a number of similar operations. In this lab, there will be multiple silos containing different material. However, each of these silos should show similar types of information (level in the silo, temperature, etc.). Instead of creating two unique sets of objects, a global object will be used with tag placeholders.

A placeholder is a crosshatch character (#) followed by a number (from 1 to 500). At runtime, this placeholder is replaced by all or part of a tag string.

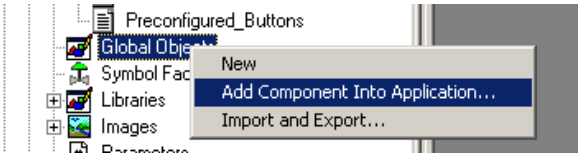
Parameter files or parameter lists are components within the application that specify what tag should replace each tag placeholder at runtime.

In the section below, you will use one global object that will represent information from 4 silos. Additionally, you will specify the placeholder and parameter information used for each reference object.

Creating Base Global Objects

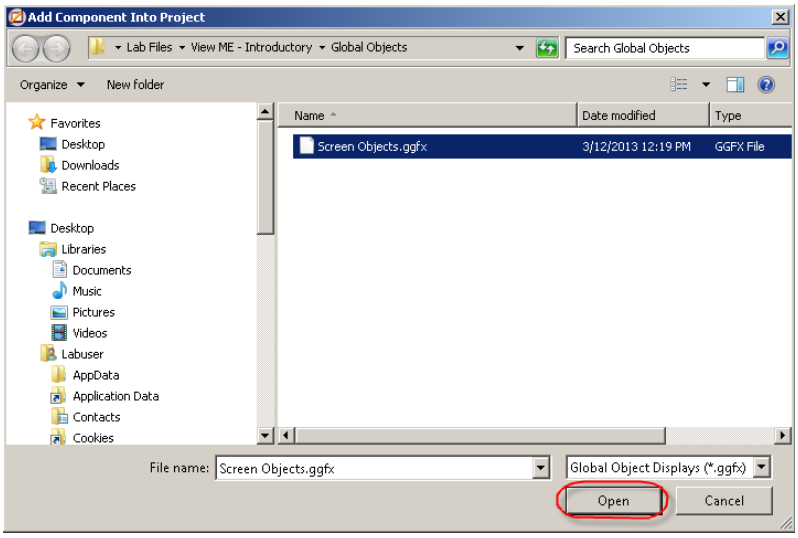
This lab will use a base object that has already been developed to save time.

1. Right click the *Global Objects* folder in the Project Explorer and select *Add Component Into Application…*

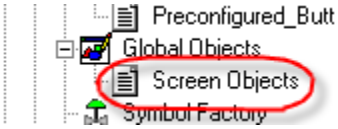


2. Browse to *C:\Lab Files\View ME – Introductory\ViewME\Global Objects*.

3. Select *Screen Objects.ggfx* and click *Open*.

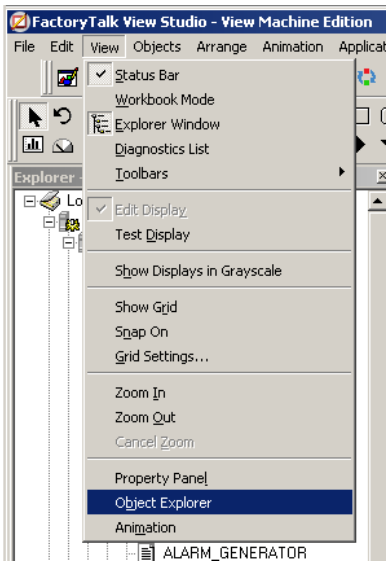


4. Open the *Screen Objects* display that was just added under Global Objects.



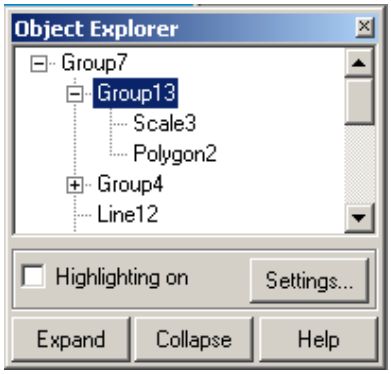
Explore this object to determine where tag placeholders are being used.

5. Click *View* in the toolbar, then select *Object Explorer*.

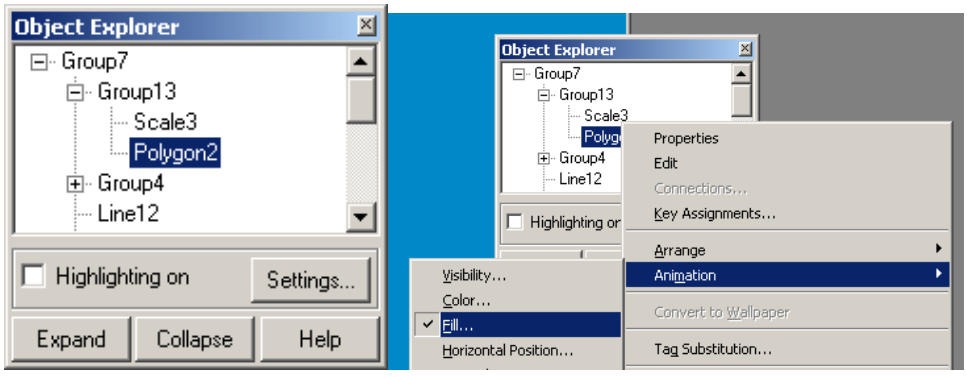


The object on the Screen Objects global display is created of many grouped elements. Using the Object Explorer will provide an easy way to select the individual components that make up the full global object.

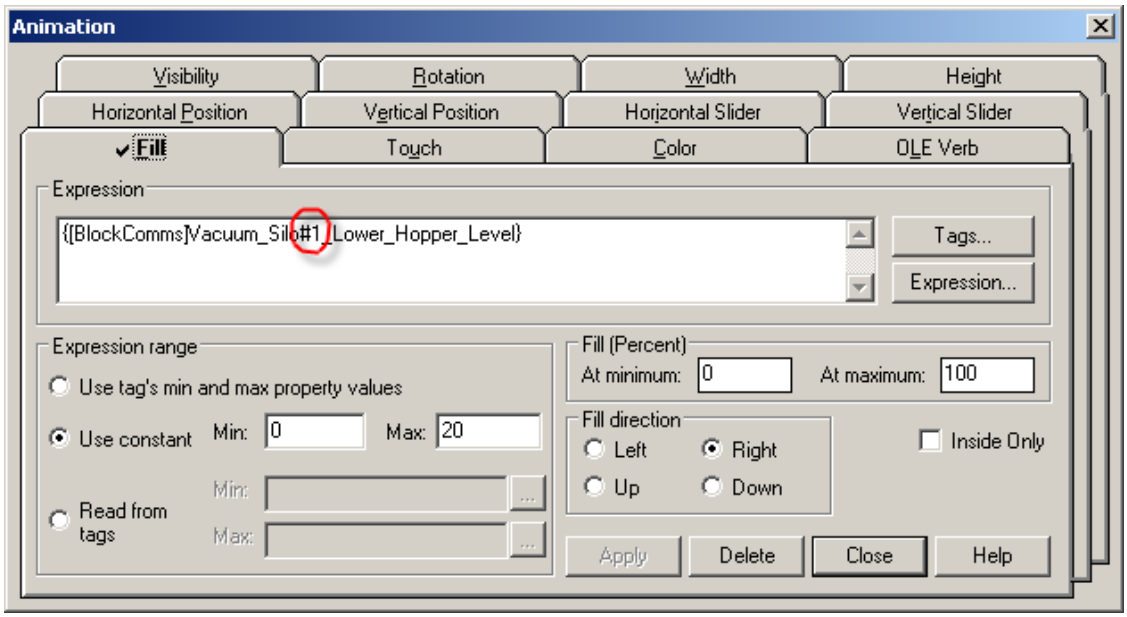
6. Expand *Group7* and then *Group13* by clicking the +.



7. Right click on *Polygon2* and select *Animation*, then *Fill...*



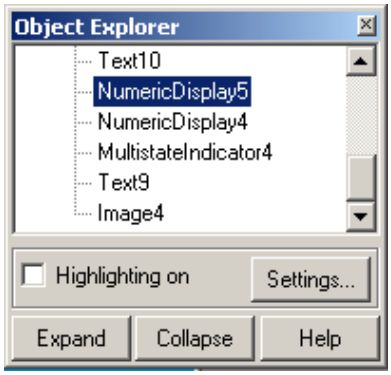
Notice the #1 within the tag string:



This is a tag placeholder that has been assigned to this setting in the global object. The placeholder will be replaced with the appropriate Silo number at runtime.

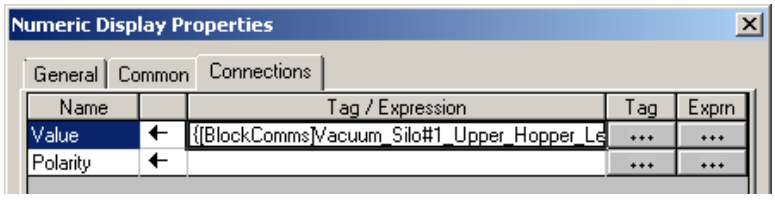
8. Close the *Animation* configuration dialog.

9. Using the **Object Explorer**, double click *NumericDisplay5*.



10. Click the *Connections* tab.

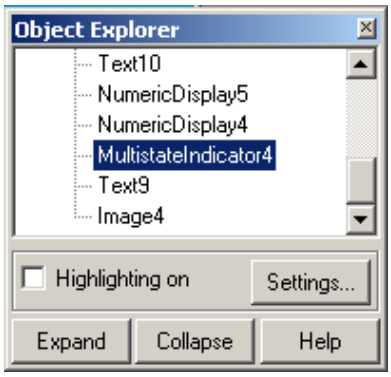
Notice that #1 is used in place of the silo number once again.



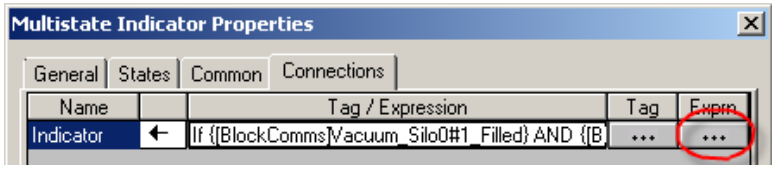
The numeric display will show the value of the Lower Hopper Level at runtime for the appropriate silo.

11. Close the *Numeric Display Properties* configuration dialog.

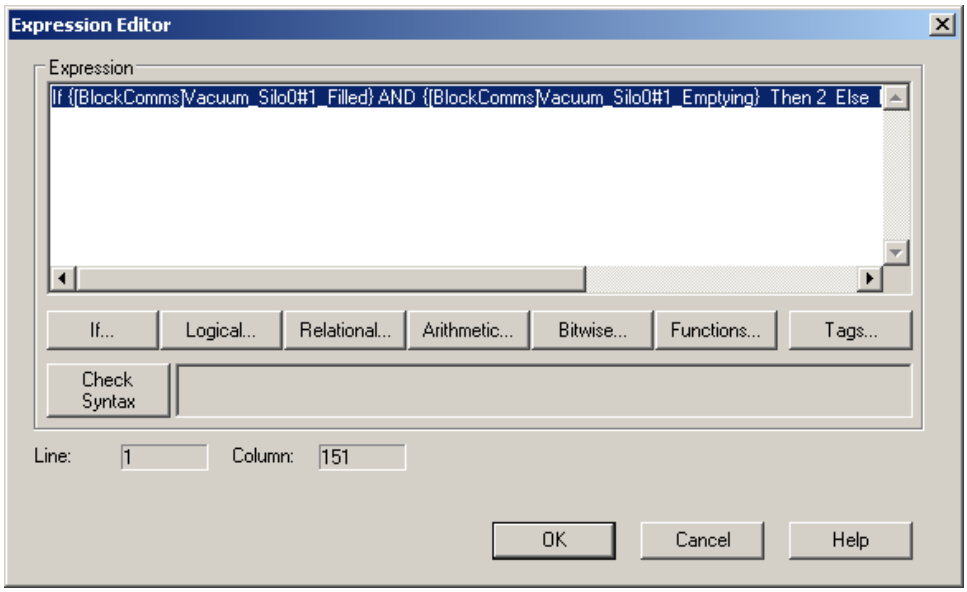
12. Using the **Object Explorer**, double click *MultistateIndicator4*.



13. Click the *Connections* tab, then click the *Expression* browser button.



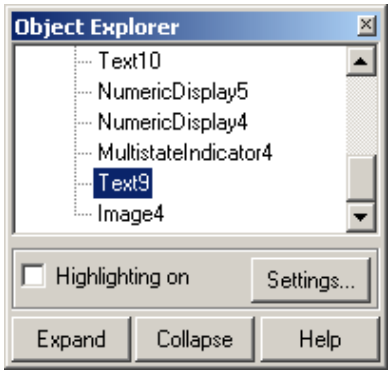
The #1 is again being used in place of the silo number.



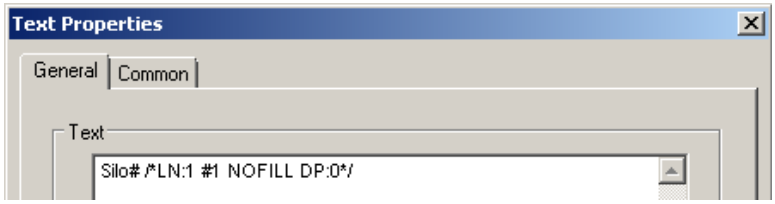
This expression sets the state value of the multistate indicator. Three states have been configured that will be used to indicate the present state of the silo: **Filling**, **Filled**, and **Emptying**.

14. Close the *Expression Editor* and the *Multistate Indicator Properties* configuration dialog.

15. Using the **Object Explorer**, open *Text9*.



Notice the #1 in the Text field.

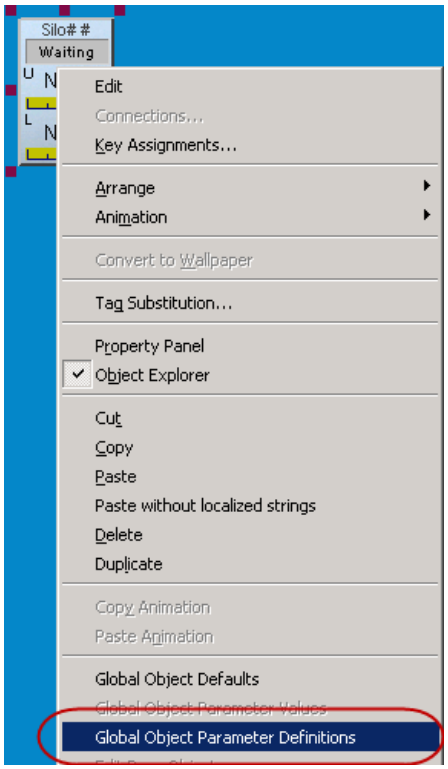


This placeholder will be replaced by the Silo number at runtime.

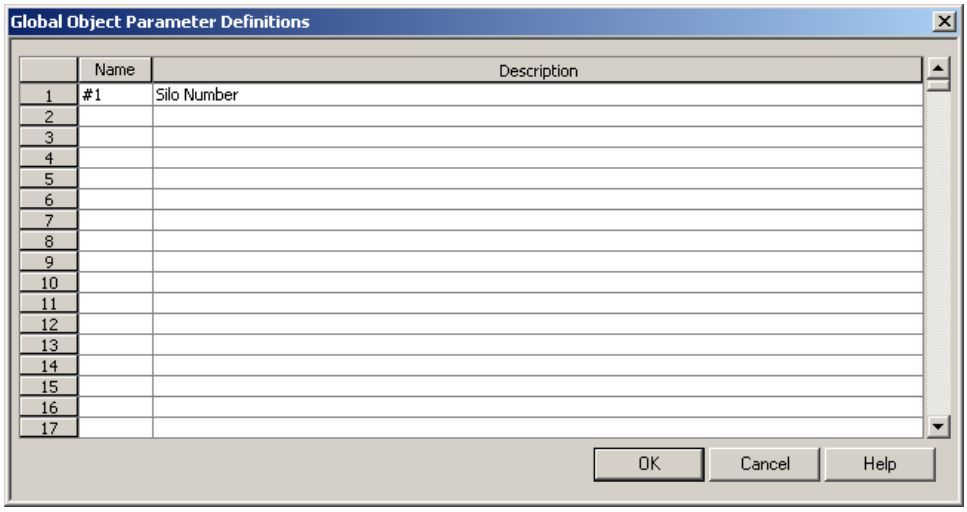
16. Close the *Text Properties* configuration dialog and the *Object Explorer*.

Now, let's assign the parameter definition for the Global Object.

17. Right click on the global object, and select *Global Object Parameter Definitions*.



18. Enter *'#1'* and *'Silo Number'* as shown below, and click *OK*.



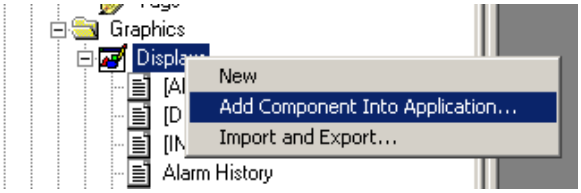
This placeholder will be used for the full global object. Now, when the global object is used on a display, its parameter can be specified. In the next section, this functionality will be explored.

19. Close the *Screen Objects* display, and save the changes when prompted to do so.

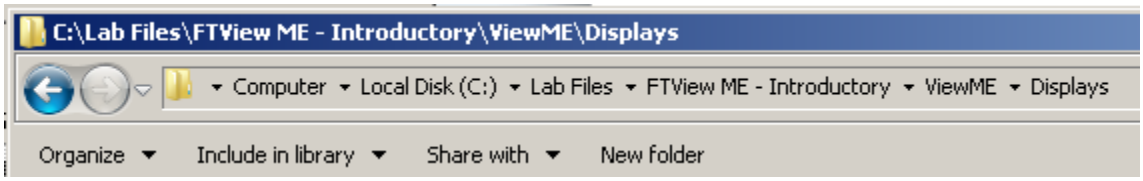
Using Reference Objects and Parameters

Two screens on which the global object will be used have been created in advance, and must be added to this application.

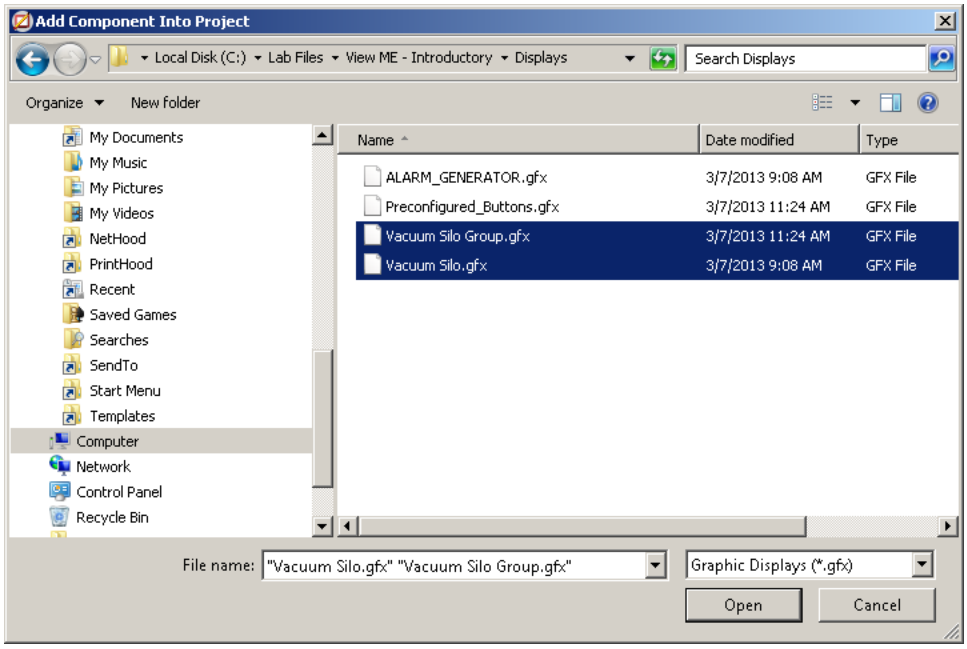
1. Right click on *Displays* and select *Add Component Into Application...*



2. Browse to *C:\LabFiles\View ME – Introductory\ViewME\Displays* folder

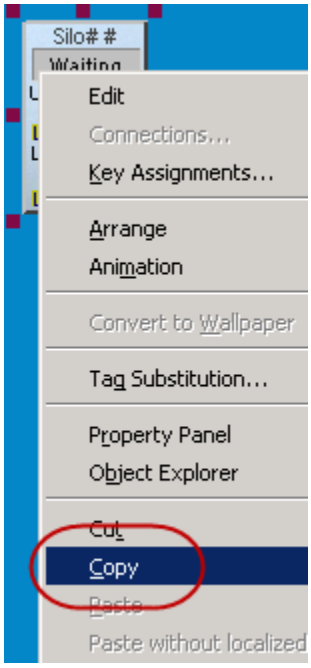


3. Select the *Vacuum Silo Group.gfx* and *Vacuum Silo.gfx* files, and click *Open*.

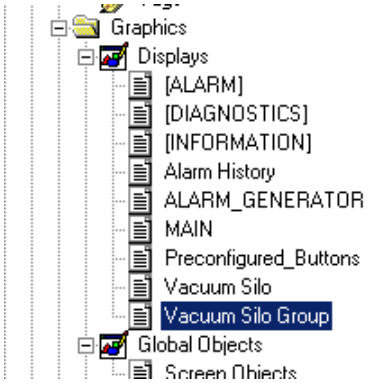


4. Open the *Screen Objects* Global Display,

5. Copy the **Silo** global object by right-clicking the object and selecting *Copy*.

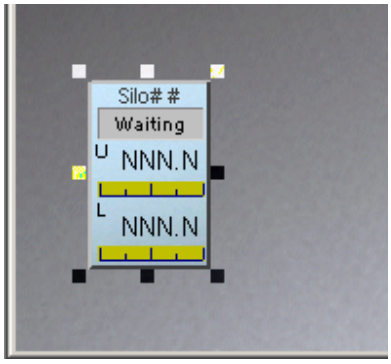


6. Open the *Vacuum Silo Group* display.

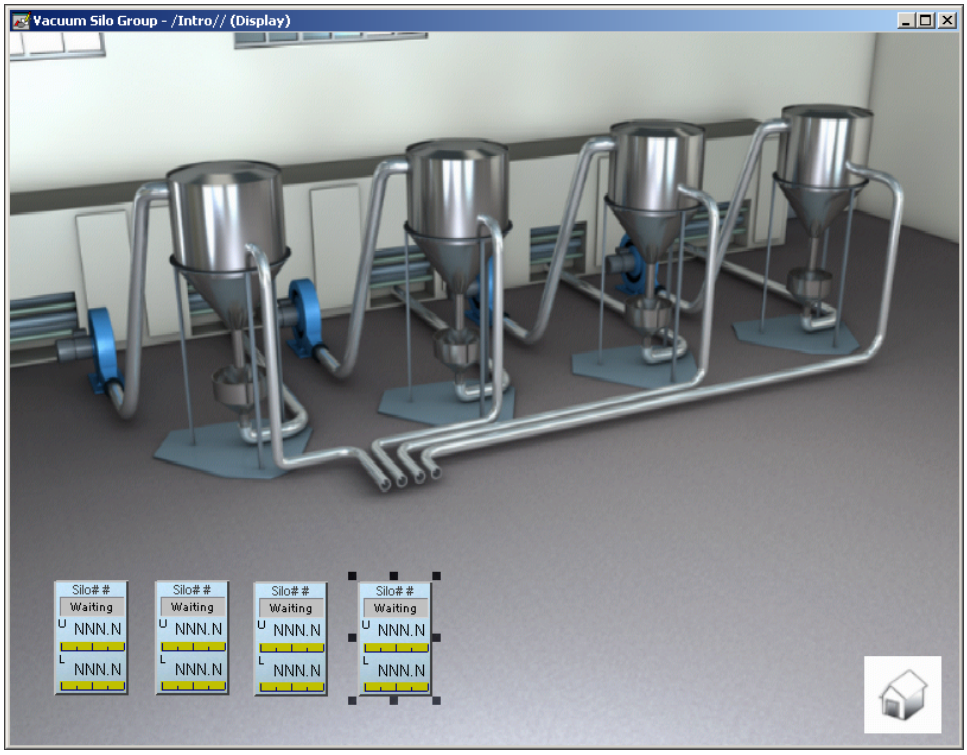


7. Right click anywhere on the display, and select *Paste*.

8. Click and drag the new object to the lower left area of the screen.

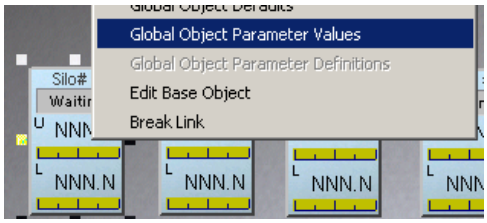


9. Copy and paste the **Silo** object three more times, until there are 4 copies of it on the display.

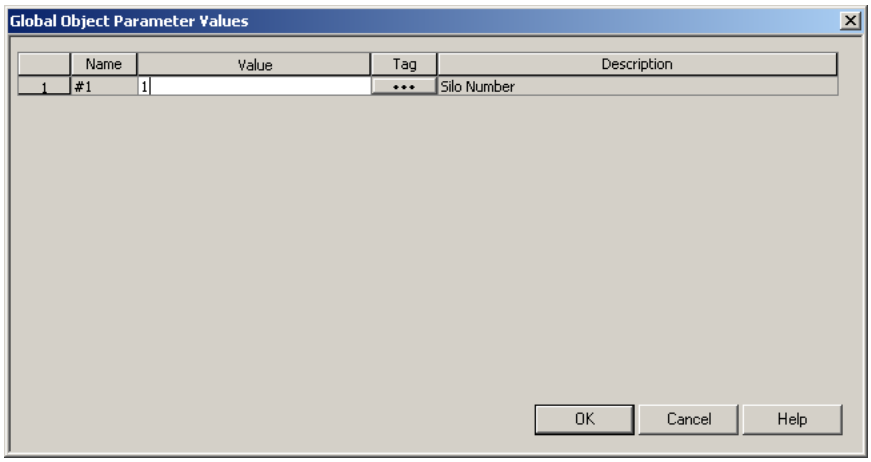


Now the parameter value for the #1 place holder will be assigned.

10. Right click the first global object, and select *Global Object Parameter Values*.



11. Enter *'1'* for the **Value** property, and click *OK*.



Remember the #1 placeholder that was configured in the global object. At runtime, the placeholder will be replaced with the number 1.

Use the steps below to assign the parameter values for the remaining objects.

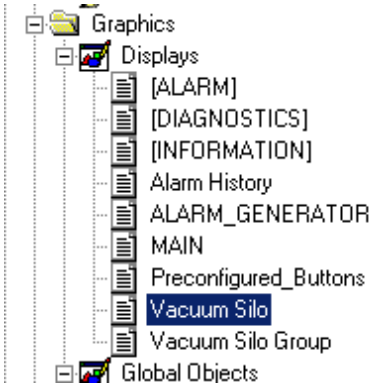
12. Repeat steps 10 and 11 for the remaining objects, entering *'2'*, *'3'* and *'4'* respectively.

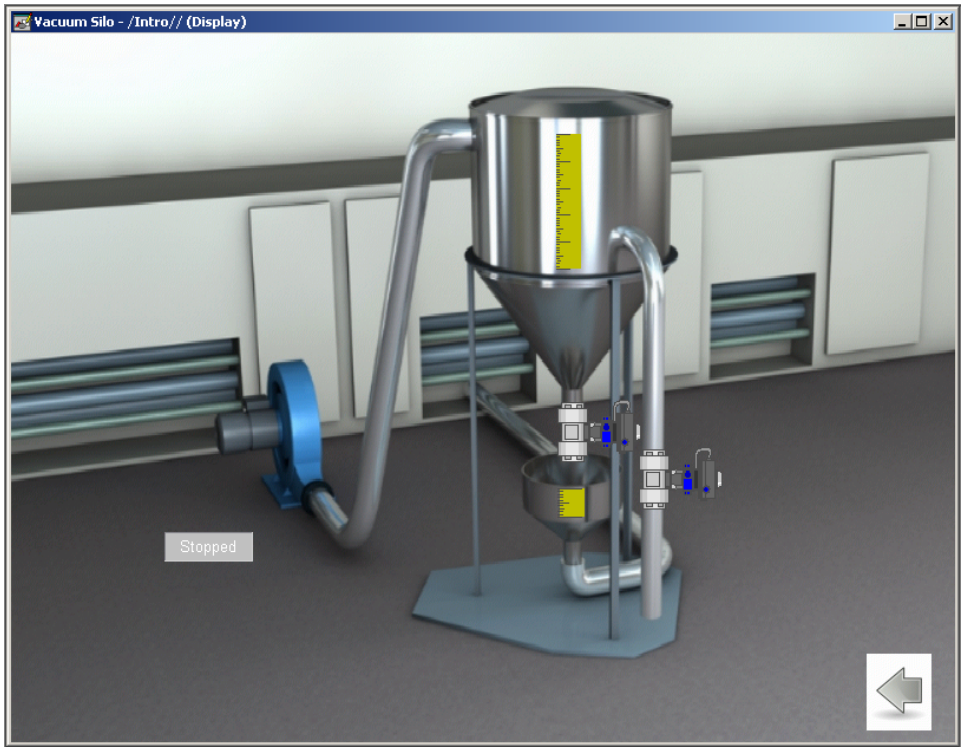
    Each of the reference objects will now use values 1, 2, 3, and 4 to replace the placeholder #1 at runtime.

Reusing Displays with Parameters

Global Objects, placeholders and parameters are a way to reuse objects across screens in an application. The following steps will explore how to reuse screens in an application using parameters.

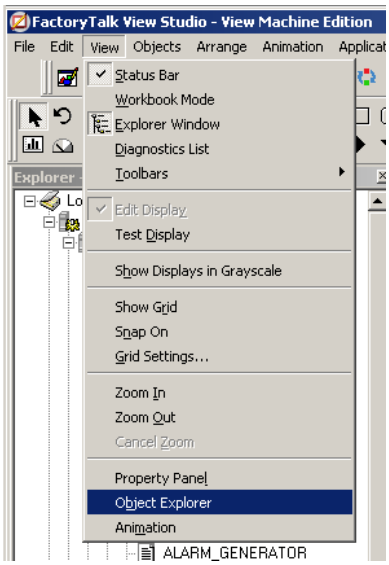
1. Open the *Vacuum Silo* display.



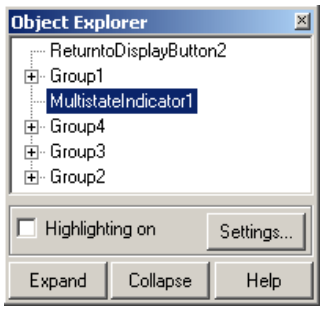


This display will be reused to show data for each of the silos. In this case, the placeholder #1 is used to represent the Silo number. However, the value for this placeholder is provided using the parameter list.

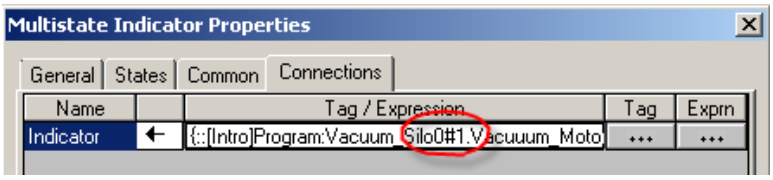
2. Click *View* in the toolbar, then select *Object Explorer*.



3. Using the Object Explorer, open *MultistateIndicator1*.



4. Click on the *Connections* tab.



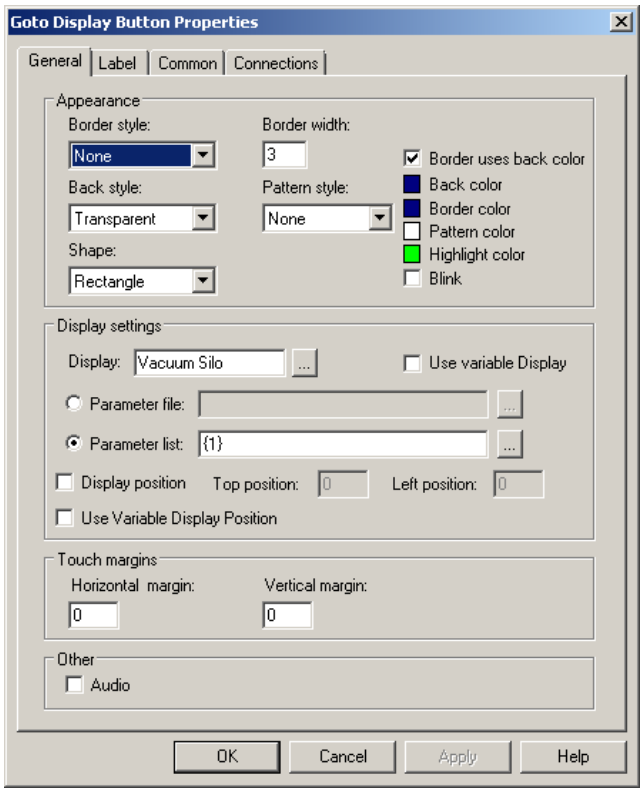
Notice that #1 is in place of the Silo number. This placeholder will be replaced by the silo number at runtime.

5. Close the *Multistate Indicator Properties* configuration dialog and the *Object Explorer*.

6. Close the *Vacuum Silo* display. Do not save any changes.

7. On the *Vacuum Silo Group* display, double click one of the Silos in the middle of the tank.

The properties dialog for a Goto Display button will open.



In this example, the first Silo was double clicked. Notice that the Display called is the **Vacuum Silo** display. The **Parameter list** has also been configured, sending the value of 1 to the placeholder used within the Vacuum Silo display. If more than one placeholder had been used on the **Vacuum Silo** display, replacement values should be configured in the Parameter list, separated by commas, in order. For example, if the parameter list is {X}, {Y}, and {Z}, X is sent to #1, Y to #2, and Z to #3.

8. Close the *Goto Display Button Properties* window.

9. Close the *Vacuum Silo Group* display, and save the changes when prompted.

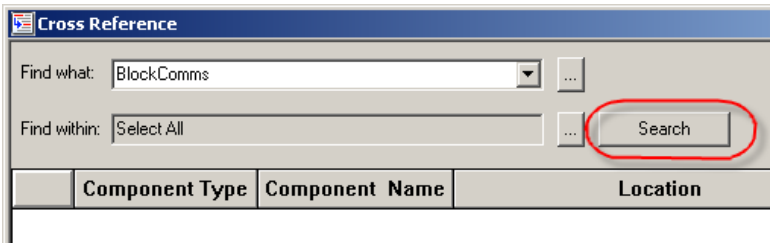
10. Close the *Screen Objects* Global Display. Do not save any changes if prompted.

Using Cross Reference and Search and Replace Functionality

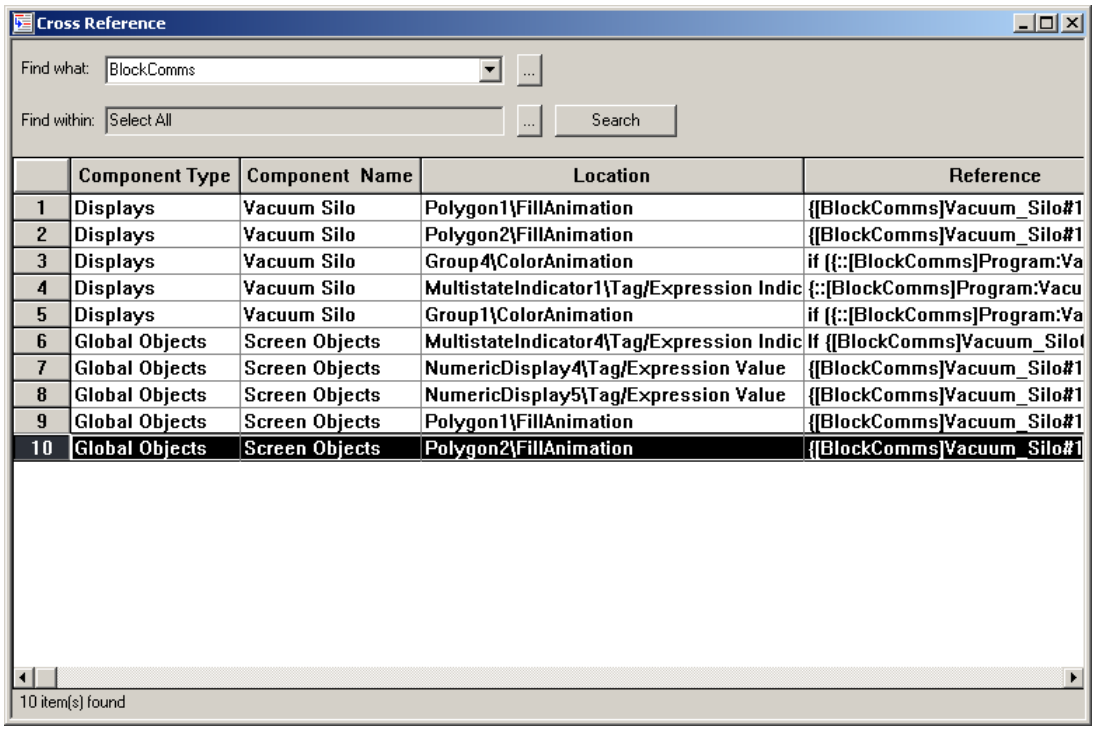
Sometimes preconfigured displays that are added to an application contain references to shortcuts that are not being used in the application. This section will explore how often the old shortcut name, BlockComms, is being used, and will then replace that shortcut with the one being used in this application.

1. Click on the *Cross Reference* icon in the toolbar.

2. Type *'BlockComms'* in the **Find what:** box, then click *Search*.



When the Cross Reference is complete, the window will update with the number of components that contain **BlockComms**. It is now possible to find out exactly where a specific tag or shortcut is used in an application.



	Component Type	Component Name	Location	Reference
1	Displays	Vacuum Silo	Polygon1\FillAnimation	{[BlockComms]Vacuum_Silo#1
2	Displays	Vacuum Silo	Polygon2\FillAnimation	{[BlockComms]Vacuum_Silo#1
3	Displays	Vacuum Silo	Group4\ColorAnimation	if ({::[BlockComms]Program:Va
4	Displays	Vacuum Silo	MultistateIndicator1\Tag/Expression Indic	{::[BlockComms]Program:Vacu
5	Displays	Vacuum Silo	Group1\ColorAnimation	if ({::[BlockComms]Program:Va
6	Global Objects	Screen Objects	MultistateIndicator4\Tag/Expression Indic	If {[BlockComms]Vacuum_Silo
7	Global Objects	Screen Objects	NumericDisplay4\Tag/Expression Value	{[BlockComms]Vacuum_Silo#1
8	Global Objects	Screen Objects	NumericDisplay5\Tag/Expression Value	{[BlockComms]Vacuum_Silo#1
9	Global Objects	Screen Objects	Polygon1\FillAnimation	{[BlockComms]Vacuum_Silo#1
10	Global Objects	Screen Objects	Polygon2\FillAnimation	{[BlockComms]Vacuum_Silo#1

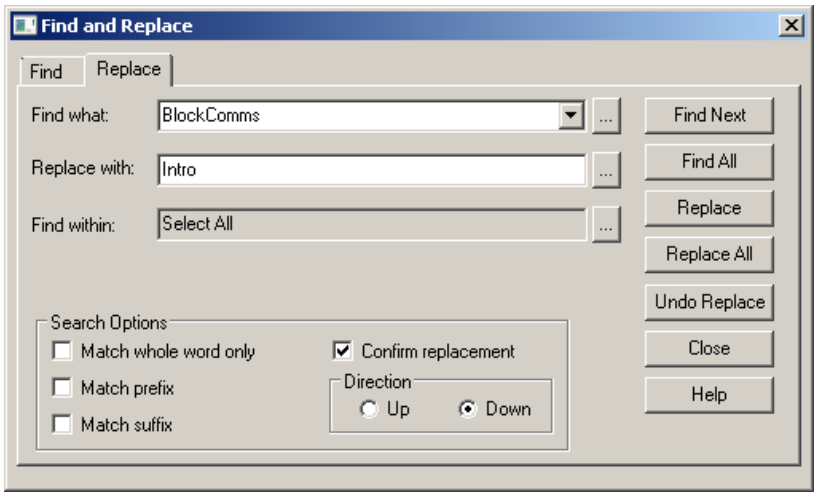
In this example, 10 components were found. Double clicking any of these items will take the user to the specific component. It is now possible to access that tag and manually change the tag name. However, some of the components use expressions, in which the term **BlockComms** is used multiple times.

Use the **Search and Replace** functionality to make these changes.

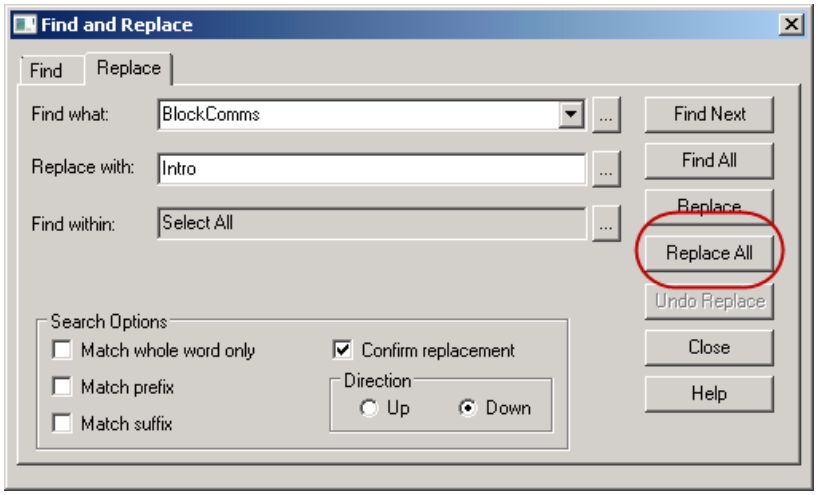
3. Close the *Cross Reference* dialog.

4. Click on the *Replace* icon.

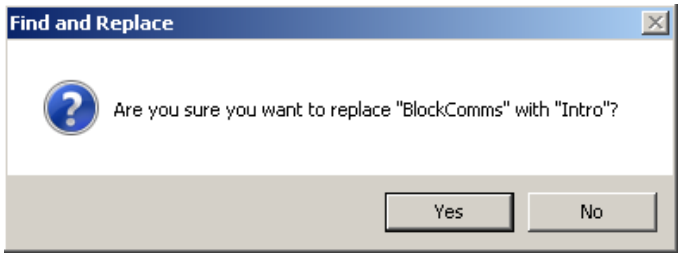
5. Enter *'BlockComms'* into the **Find what:** box, and *'Intro'* into the **Replace with:** box.



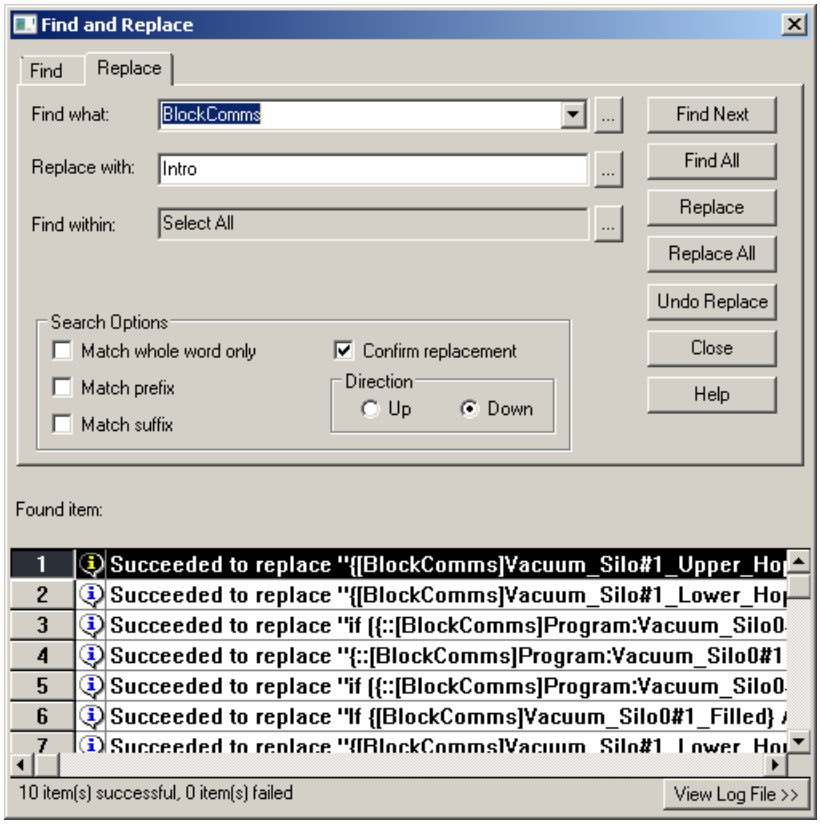
6. Click the *Replace All* button.



7. Click *Yes* to confirm the replacement.



When the process is complete, a list of successful or failed attempts will be shown.



8. Close the *Find and Replace* dialog.

   Now a Goto display button must be added to the Main screen in order to navigate to the **Vacuum Silo Group** display.

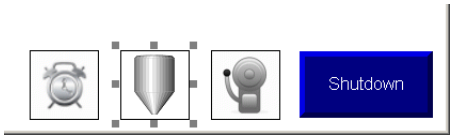
9. Open the *MAIN* display.

10. Open the *Preconfigured Buttons* display.

11. Copy the *Vacuum Silo*  button.

12. Close the *Preconfigured Buttons* display and paste the *Vacuum Silo* button onto the MAIN display.

    Remember, the button will paste into the desired location on the screen.



13. Close the *MAIN* display and save the changes when prompted.

Testing Global Objects and Parameters

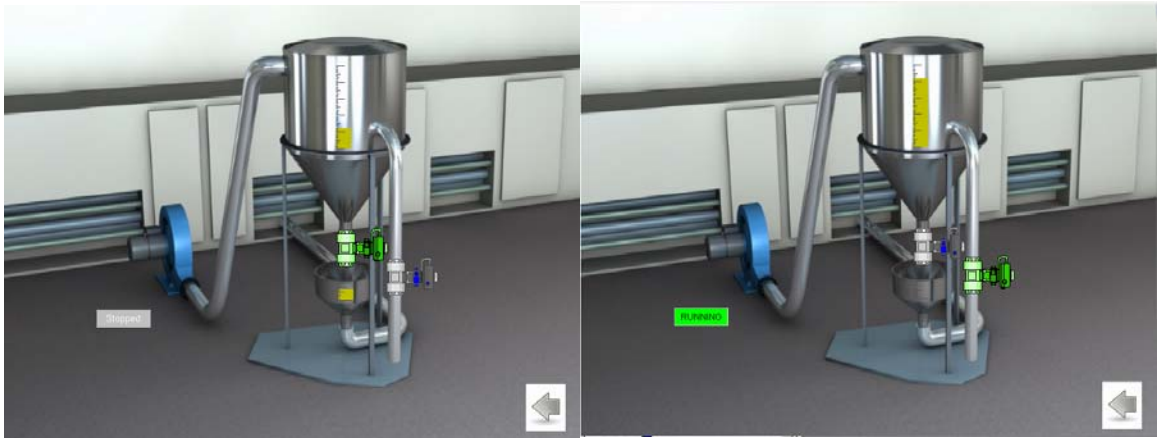
1. Test the application on the Desktop by selecting the *Test Application*  icon on the toolbar.

2. Click the *Vacuum Silo*  button.

   The data and states of the 4 silos are shown using one global object. Notice the mustard yellow color when the state of the Silo is **Filling**.

3. Click on the center of all 4 silo tanks  to navigate to the **Vacuum Silo** display, using the *Return*  button to navigate back.

   Notice how the Vacuum Silo display changes the values/colors shown depending on the tank that was selected.

4. Click the *X* key on your keyboard to shut down the test application.

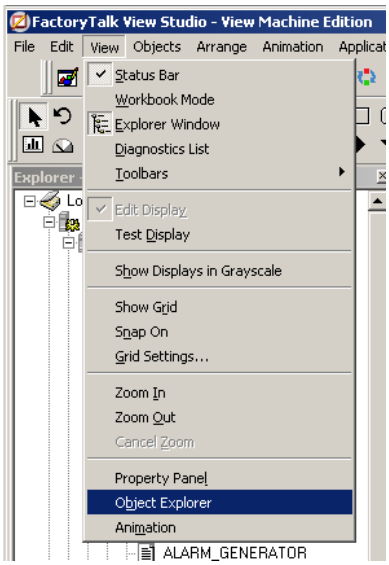
Explore the Link between Base and Reference Global Objects

Now, let's change the background color of the multistate indicator for all 4 silo data objects.

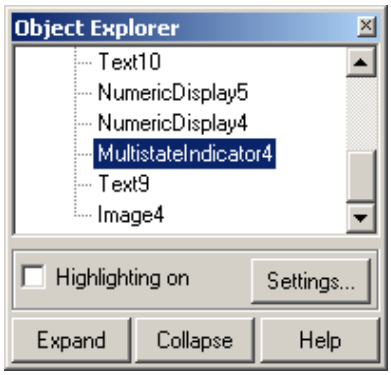
1. Open the *Screen Objects* global objects display.

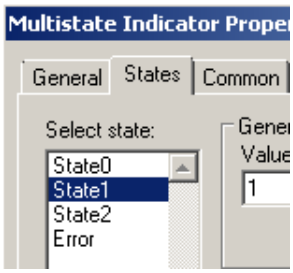
2. Click *View* in the toolbar, and select *Object Explorer*.



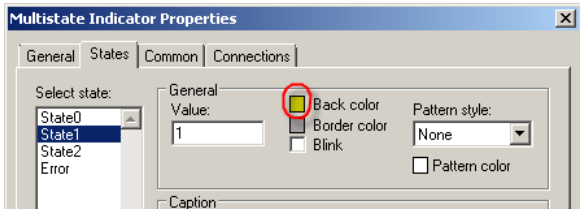
3. Using the Object Explorer, open *MultistateIndicator4*.



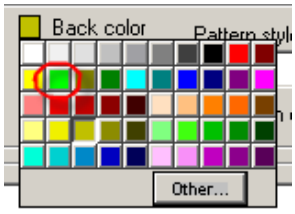
4. Click the *States* tab, and select *State1*.



5. Click the square next to *Back color* to bring up the color palette.



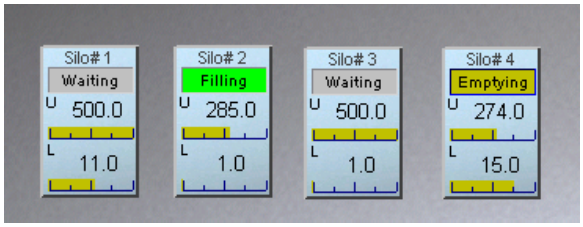
6. Select a shade of light green, and click *OK* to apply the change and close the Properties dialog.



7. Close the *Screen Objects* display, and save the changes when prompted.

8. Test the application on the Desktop by selecting the *Running Man*  icon on the toolbar.

9. Click the *Vacuum Silo*  button.



Notice that the background color of the **Filling** state of all 4 Silos is now a light green color. A few minutes may need to pass for all 4 silos to enter the **Filling** state at least once – they do not go into a specific state at the same time.

10. Click *X* on your keyboard to shut down the test application.

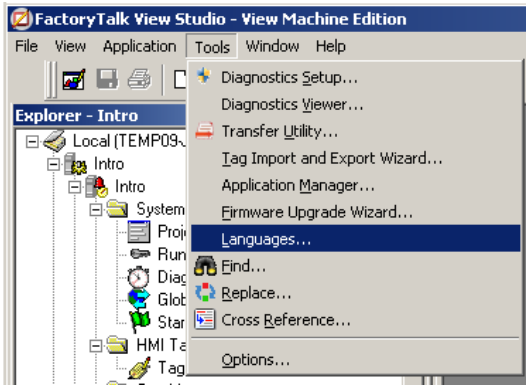
You have now learned about Global Objects, placeholders, parameters, and reusing screens, and how each of these things can reduce the time to design your application.

Language Switching

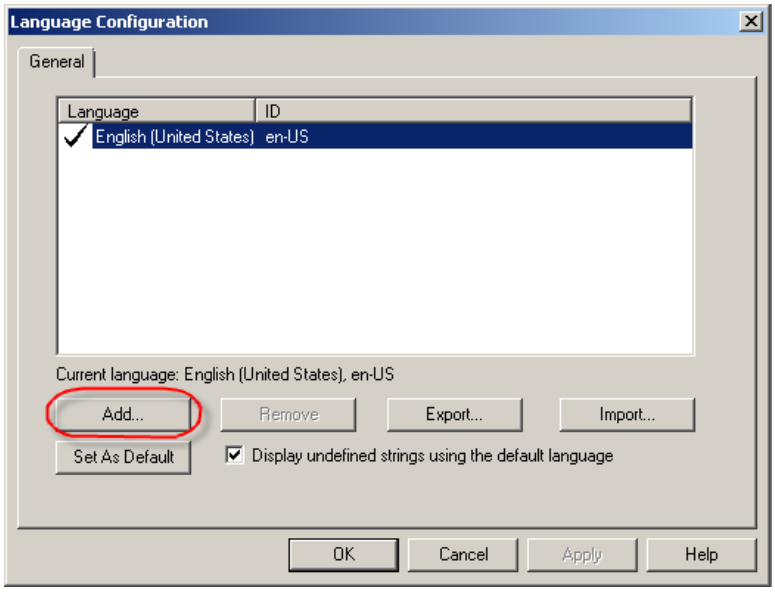
The FactoryTalk® View Machine Edition Language Switching functionality makes it possible to create a single application that can be used in multiple locations. For the lab, this application will be modified so that it can be used in China, Germany, Italy and Spain, as well as the United States.

Adding Languages and Translating Strings

1. Select *Tools* > *Languages...* from the toolbar.



2. Click *Add...* to open the list of languages that can be added to the application.

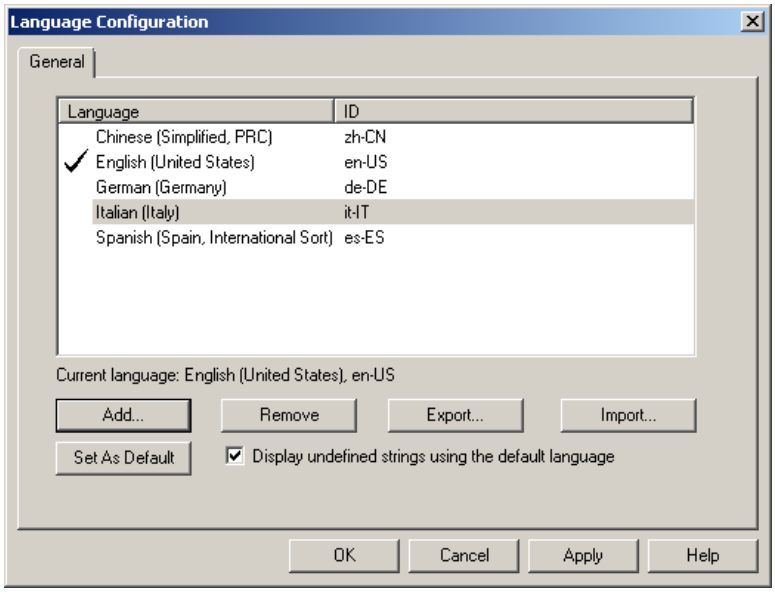


3. Add the following languages to the application, by selecting the language, then clicking *OK*.

   Note that each language must be added one at a time.

Chinese (Simplified, PRC)	zh-CN
German (Germany)	de-DE
Italian (Italy)	it-IT
Spanish (Spain, International Sort)	es-ES

The Language Configuration dialog should appear as shown:

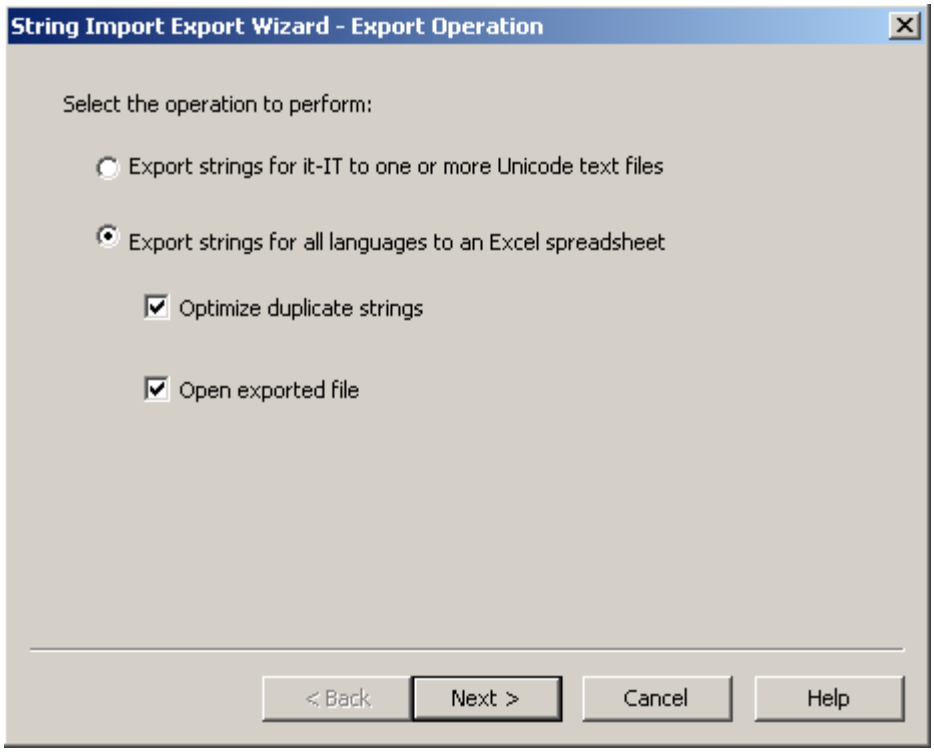


4. Click the *Apply* button to add the languages to the application.

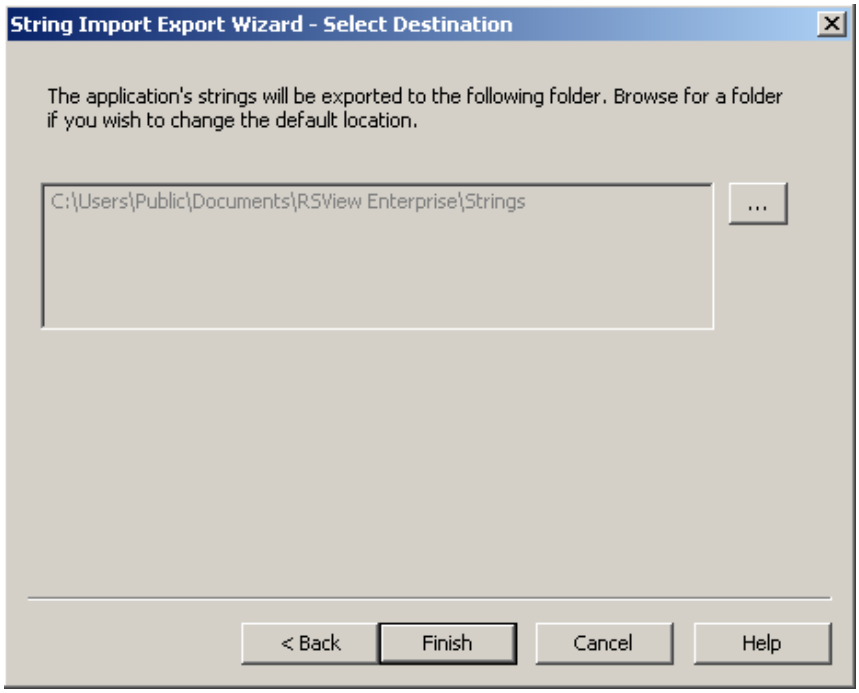
5. Ensure English is checked and that Display undefined strings using the default language is checked. Click the *Export* button.

Now, all of the strings in the application will be exported in order to ease the translation process.

6. Ensure the settings are selected as shown below, and click *Next*.



7. Click *Finish* to begin the export process.



8. If the Excel window does not open automatically, click on the *Microsoft Excel* icon in the Windows taskbar.

Notice the column headings and how the languages are shown. Any text that is not translated is shown as **UNDEFINED**.

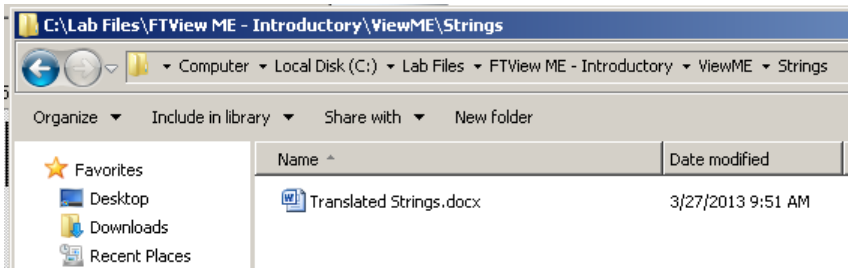
	H	I	J	K
	de-DE	**REF**	**es-ES**	**REF**

	A	B	C	D	E	F
1	**Server**	**Component Type**	**Component Name**	**Description**	**REF**	**en-US**
2	/Intro:Intro	Global Objects Display	Screen Objects	MultistateIndicator4.0.St_Caption		Waiting
3	/Intro:Intro	Global Objects Display	Screen Objects	MultistateIndicator4.1.St_Caption		Filling
4	/Intro:Intro	Global Objects Display	Screen Objects	MultistateIndicator4.2.St_Caption		Emptying
5	/Intro:Intro	Global Objects Display	Screen Objects	MultistateIndicator4.E.St_Caption	REF:1	Error
6	/Intro:Intro	Global Objects Display	Screen Objects	Text10.Caption	REF:2	U
7	/Intro:Intro	Global Objects Display	Screen Objects	Text11.Caption	REF:3	L
8	/Intro:Intro	Global Objects Display	Screen Objects	Text9.Caption	REF:4	Silo# /*LN:1 #1 NOFILL DP:0*/

New strings for each language can be translated manually. Alternatively, the FactoryTalk® View Translation Utility can be used. This utility uses Microsoft's Bing Translator. In this lab, the strings for two objects on the MAIN display will be translated manually.

9. Open Windows Explorer by clicking the *folder*  in the Task Bar.

10. Browse to *C:\Lab Files\View ME – Introductory\ViewME\Strings*.



11. Double click *Translated Strings.docx*.

12. Copy the text for each language that was added from the Word document into the appropriate cell of the exported Microsoft Excel file, replacing the **UNDEFINED** text.

Translated Strings

English, US

Hello World! This is my Intro application

Shutdown

Chinese, Simplified

世界您好！这是我介绍的应用程序

关机

German, Germany

Hallo Welt! Dies ist mein Intro-Anwendung

Herunterfahren

Italian, Italy

Salve, mondo! Questa è la mia domanda Intro

Arresto

Spanish, Spain

¡Hola mundo! Se trata de mi solicitud de Intro

Parada

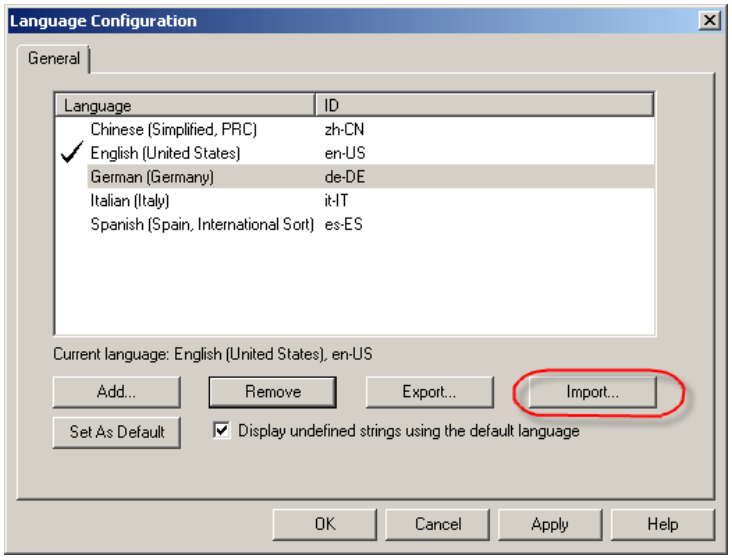
Intro_1.xls

	F	G	H	I	J
1	**en-US**	**REF**	**de-DE**	**REF**	**es-ES**
57	Shutdown		**UNDEFINED**		**UNDEFINED**
58	Hello World! This is my Intro		**UNDEFINED**		**UNDEFINED**

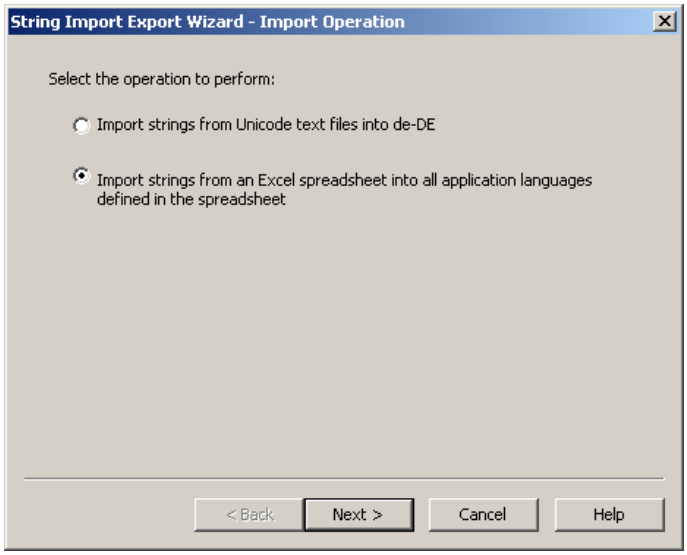
13. When finished, close and save the Microsoft Excel file.

14. Close the Microsoft Word document.

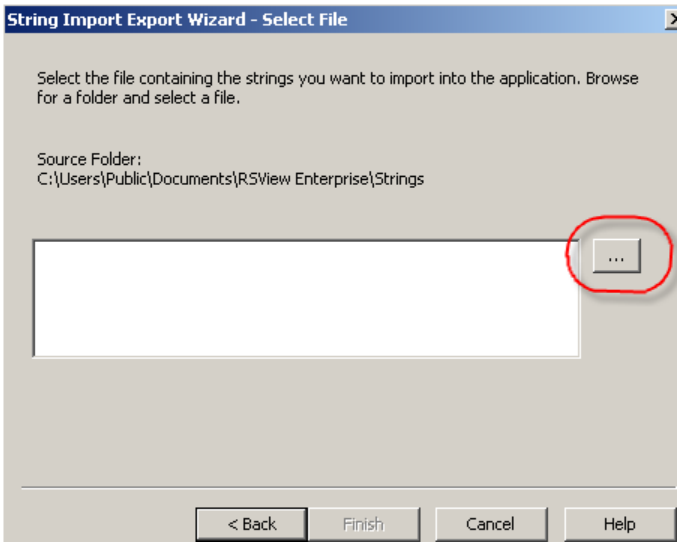
15. On the Language Configuration dialog, click the *Import* button.



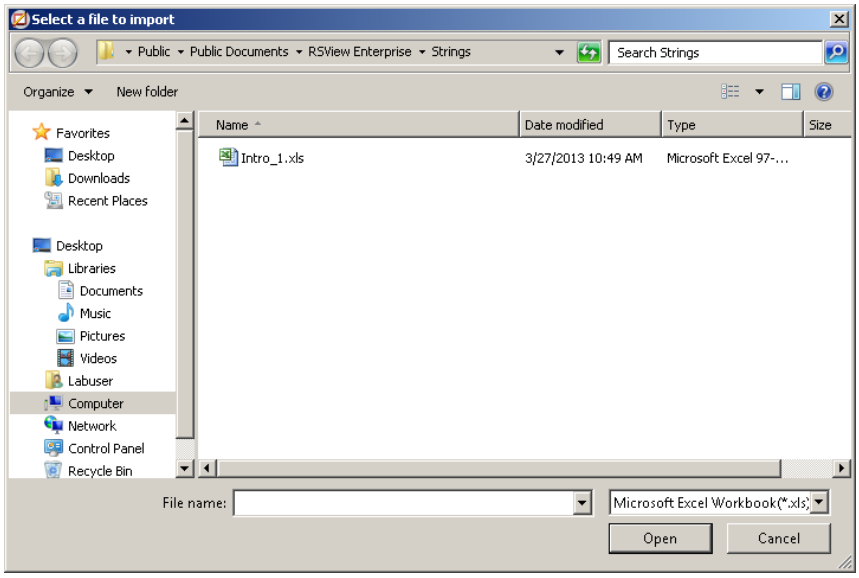
16. Select *Import strings from an Excel spreadsheet into all application languages defined in the spreadsheet*, and click *Next*.



17. Click the *Browse* button.

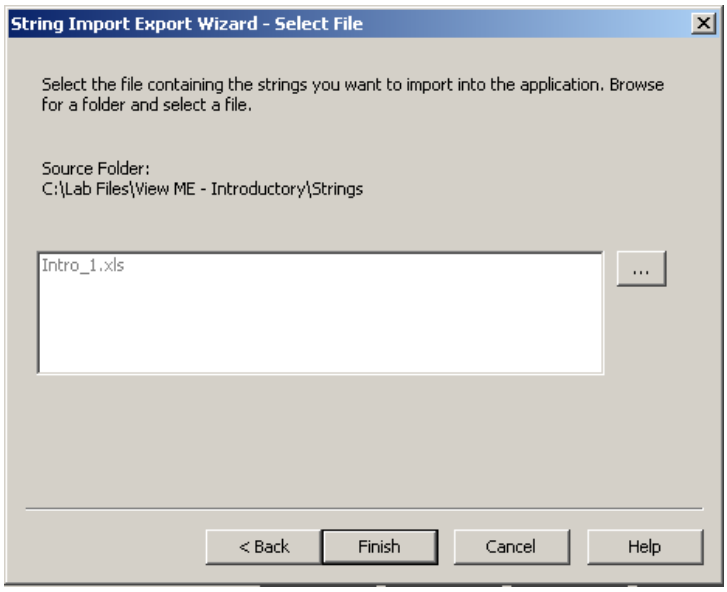


18. Select *Intro_1.xls* and click *Open*.



Note that the default path for this Excel file is C:\Users\Public\Documents\RSView Enterprise\Strings.

19. Click *Finish* to begin the import process.

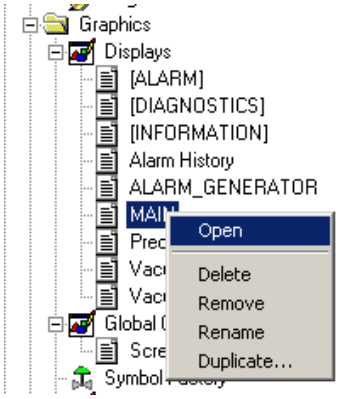


20. Once the import is complete, click *OK* to exit the **Language Configuration** dialog.

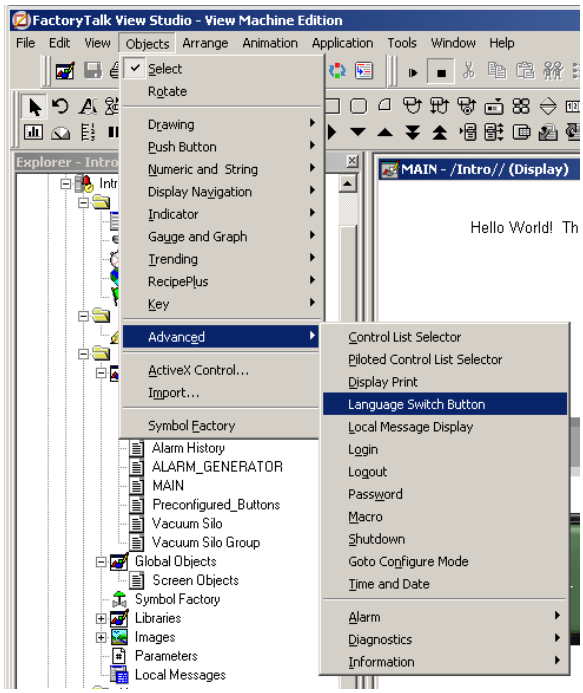
Adding Language Switch Buttons

Specialized Language Switch pushbuttons have been built into FactoryTalk® View Studio in order to make it easier for users to alternate between languages during runtime. These buttons are simple to add and configure for each language used in the application. A total of 5 languages have been configured in this application, so 5 Language Switch pushbuttons need to be added as well.

1. Open the *MAIN* display.

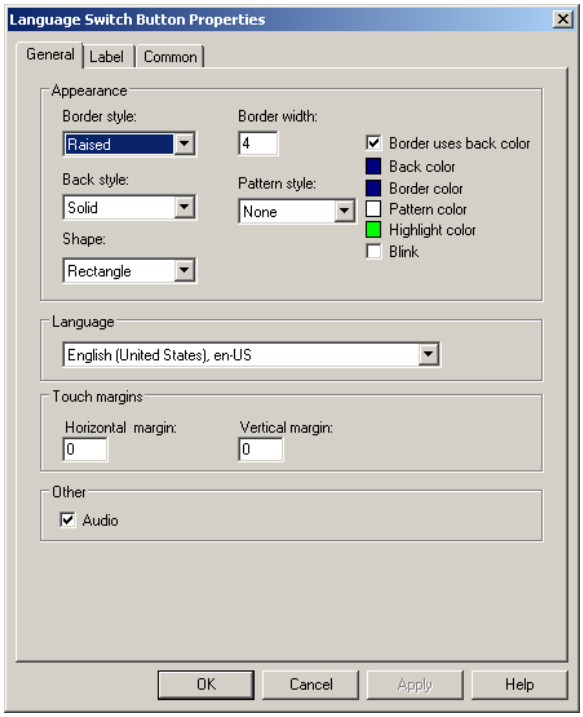


2. Click *Objects* > *Advanced* > *Language Switch Button*.



3. Add the button to the lower left corner of the MAIN display, by holding down the mouse's left button and drawing a square.

4. Leave the Language configured for *English*.



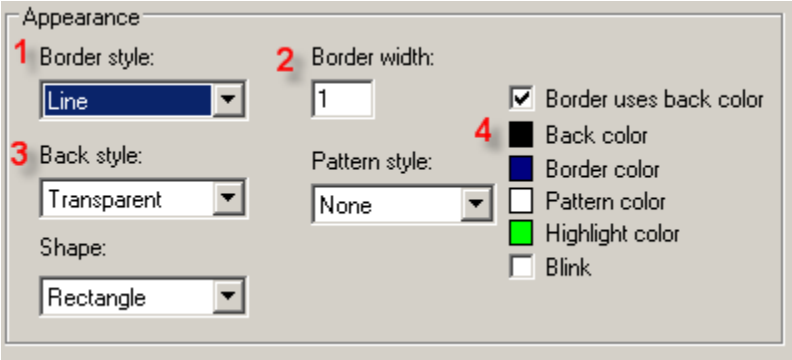
5. Change the following settings:

   1) Border style: *Line*

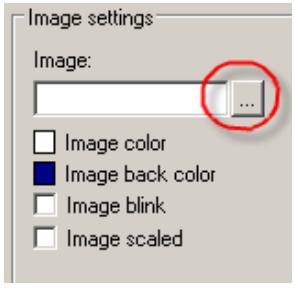
   2) Border width: *1*

   3) Back style: *Transparent*

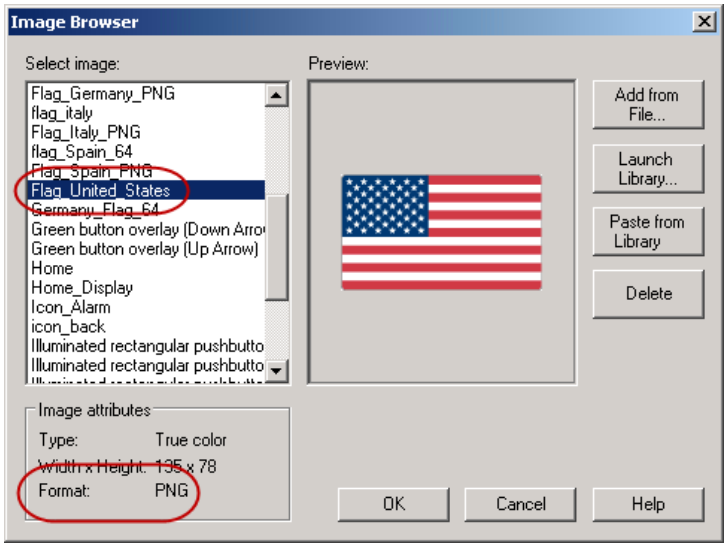
   4) Back color: *black*



6. Click the *Label* tab, and click the *Image browser* button.



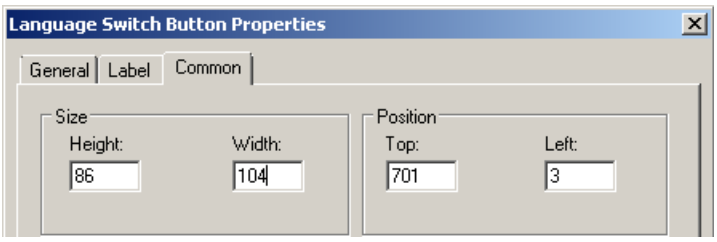
7. Select the *Flag_United_States* image.



> Note the format of this image is PNG. When FactoryTalk® View Machine Edition version 7.0 released, it included the ability to utilize the PNG image format. A PNG image is a high quality, high resolution file, and supports transparency. Additionally, a PNG file will not decrease in sharpness when resized.

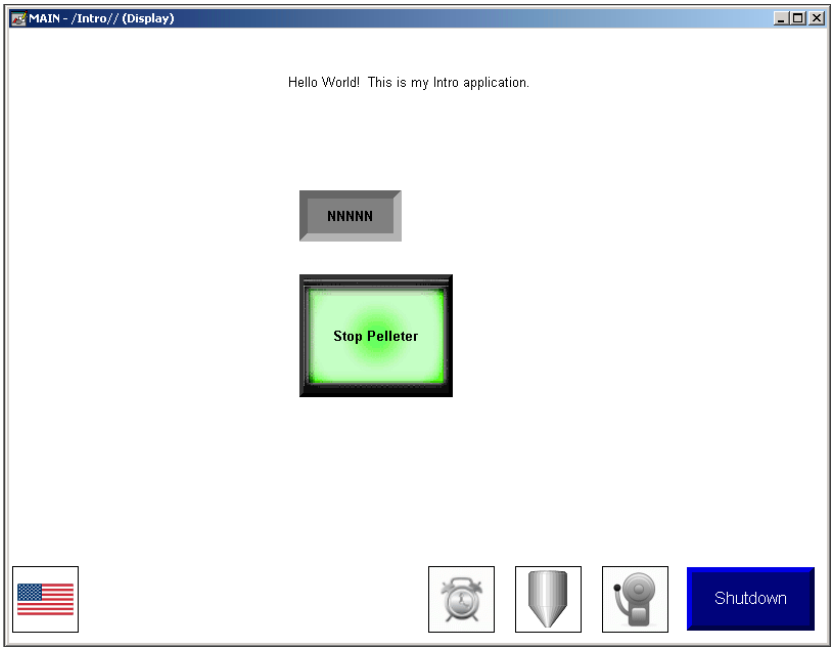
8. Click *OK*, then click *Apply* to apply the changes.

9. Click the *Common* tab, and enter the values shown below for **Size** and **Position**, then click *OK*.



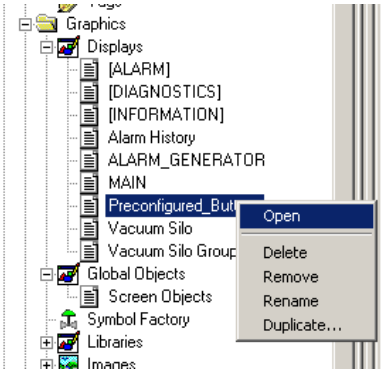
10. Click *OK* to apply the changes and close the **Properties** dialog box.

    The MAIN display should now look similar to the one below:

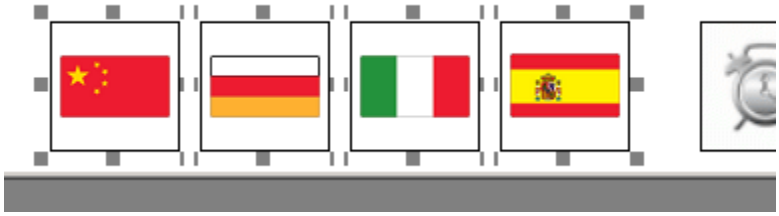


    Language Switch buttons are needed for the remaining languages configured for this application. They have been created and reside in the **Preconfigured Buttons** display.

11. Open the *Preconfigured Buttons* display.



12. Copy the 4 Language Switch buttons.



13. Close the *Preconfigured Buttons* display and paste the buttons onto the MAIN display.

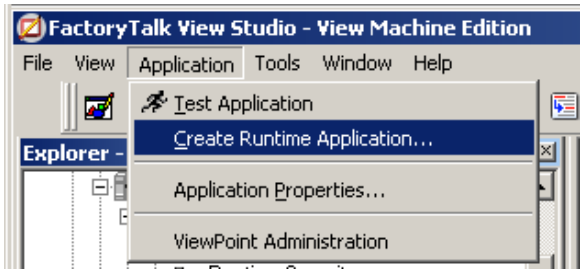
    Remember, the buttons will paste in the desired location.

14. Close the *MAIN* display, and save the changes when prompted.

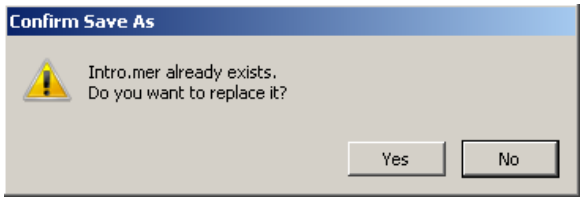
Testing the Language Switch Application on the Terminal

Remember, to test the application on the physical PanelView™ Plus terminal, a runtime file (.MER) must be created and downloaded to the terminal.

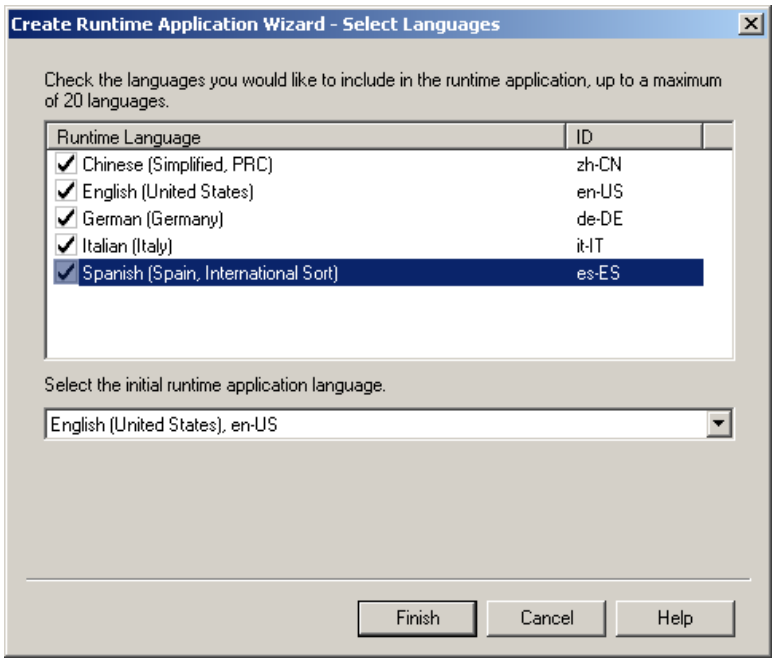
1. Select *Create Runtime Application* from the Application menu.



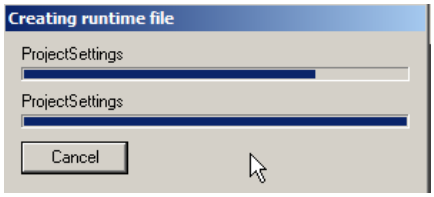
2. Confirm the following information on the Create Runtime Application dialog:
   - File name: *Intro.mer*
   - Save type: *Runtime 8.0 Application (*.mer)*
3. Click the *Save* button to begin runtime application creation.
4. If prompted, click the *Yes* button to replace the existing runtime application.



5. Select all the languages to include in the runtime file, and click *Finish*.

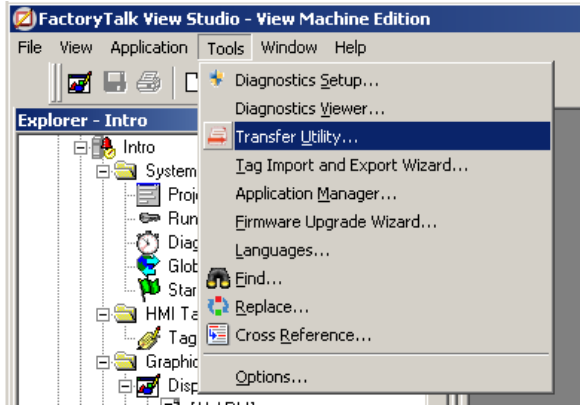


After a few moments, a progress dialog will appear.



This dialog will close when the application has been created.

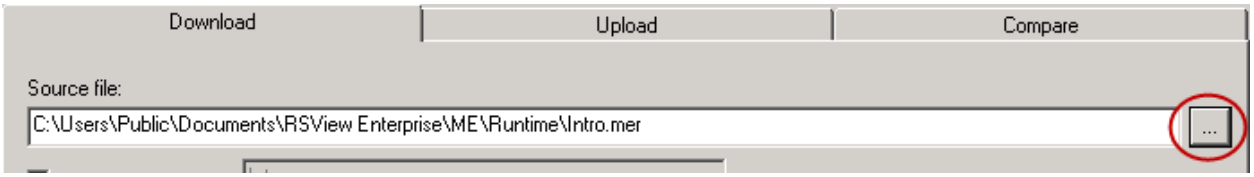
6. To download the MER to the terminal at your workstation, select *Tools* > *Transfer Utility*.



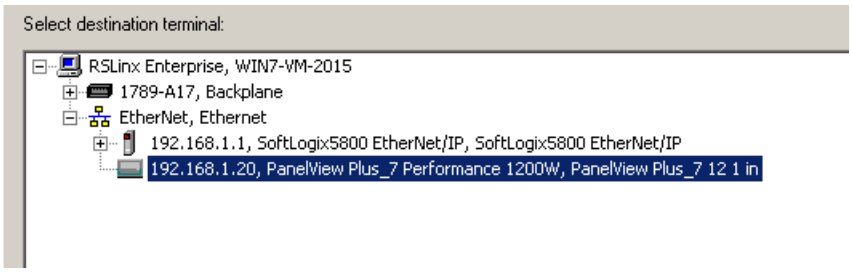
The Transfer Utility will open.

7. Verify the Source file field contains the following: C:\Users\Public\Documents\RSView Enterprise\ME\Runtime\Intro.mer.

   If it does not, browse to the file using the *ellipsis* button.



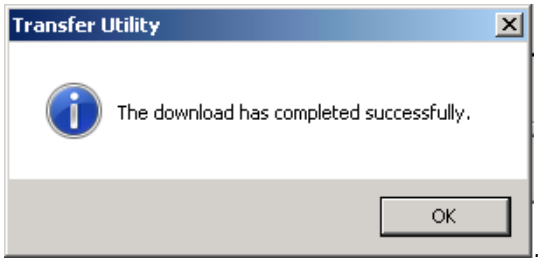
8. Select *192.168.1.20, PanelView Plus_7 Performance 1200W* in the Select destination terminal: tree.



9. Click the *Download* button. If prompted to overwrite the existing file, click *Yes*.

   During the download, a progress dialog will update.

10. Click *OK* to acknowledge the dialog that the download completed successfully

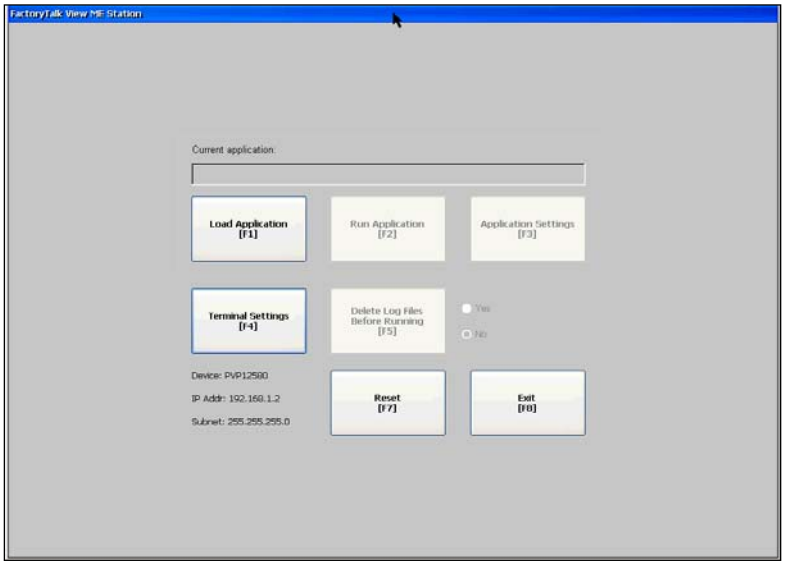


11. Click the *Exit* button to close the Transfer Utility.

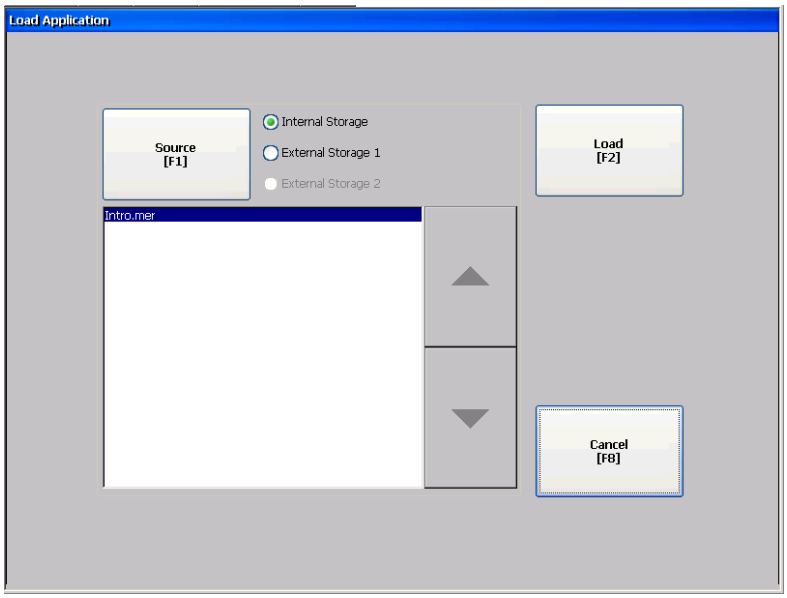
Running the Application

Use the PanelView™ Plus to run the downloaded runtime application. If FactoryTalk® View ME Station is not open, double-tap the desktop icon to open it.

1. Press the *Load Application [F1]* button.



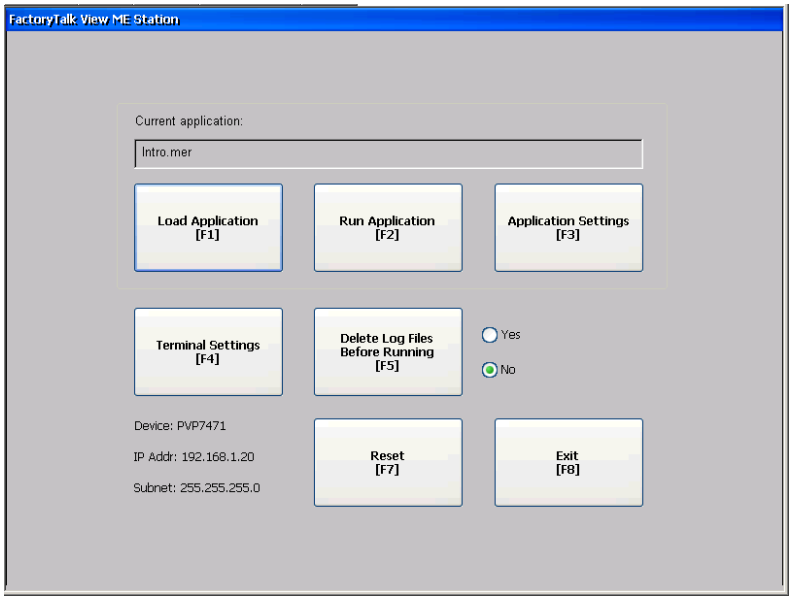
2. Select *Intro.MER* from those available in the terminal's Internal Storage.



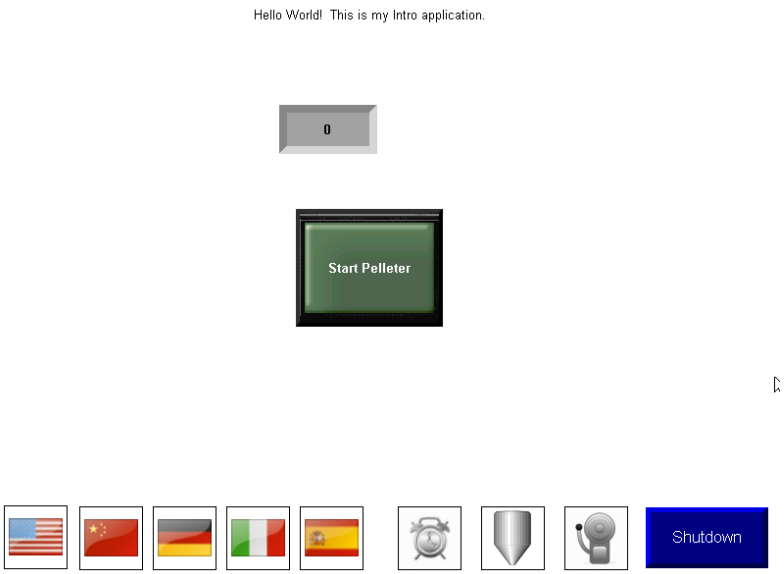
3. Press *Load [F2]* to load the runtime file into memory.

4. When prompted, press *Yes [F7]* to overwrite the terminal's current communication configuration with the configuration contained within the Intro.mer file.

5. Once it has successfully loaded, press the *Run Application [F2]* to start the runtime file.



After the start-up process is complete, you should see the startup display.



6. Click the Language Switch buttons and notice how the text changes for the 2 objects that were translated on the MAIN display.

7. When finished, press the *Shutdown*

   Congratulations!

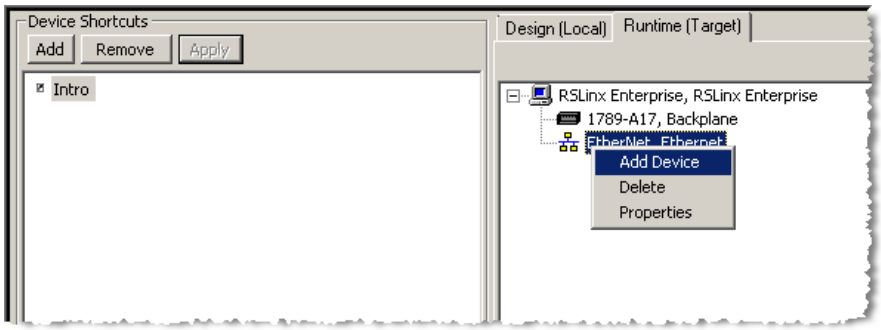
   You have successfully added languages to the application, translated the text strings of two objects, and added Language Switch pushbuttons.

Appendix A – Manually Configuring Runtime Communications Path

1. Click on the *Runtime (Target)* tab 

to select it.

2. Right-click on *EtherNet, Ethernet* item to open the context menu, and select *Add Device.*

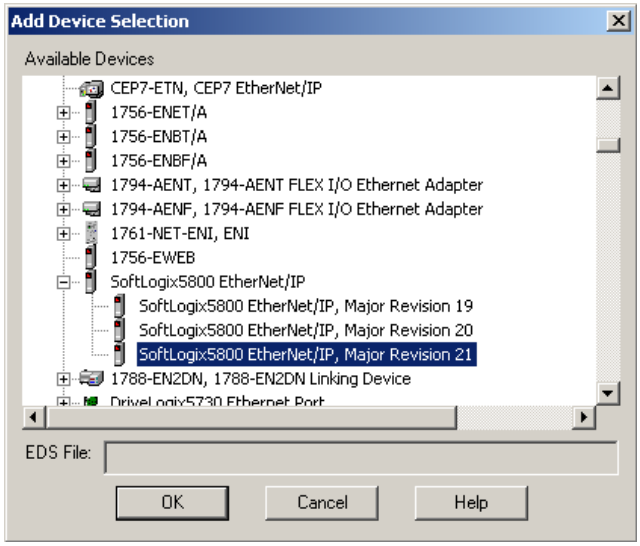


3. Click *Add Device* which opens the Add Device Selection dialog.

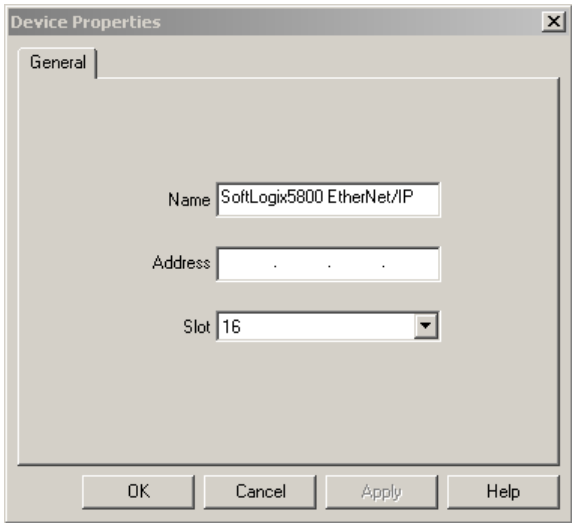
4. Expand the EtherNetIP Devices item by clicking the *expander*  .

5. Select the *expander*  next to SoftLogix 5800 EtherNet/IP.

6. Select *SoftLogix 5800 EtherNet/IP, Major Revision 21*.

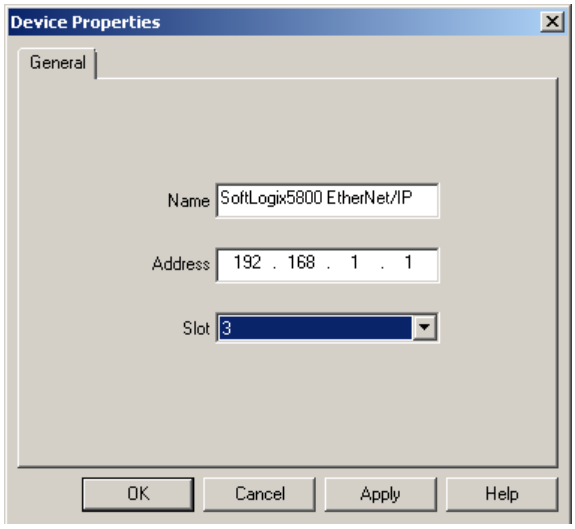


7. Click the *OK* button [OK] to accept the selection. This action opens the **Device Properties** dialog.

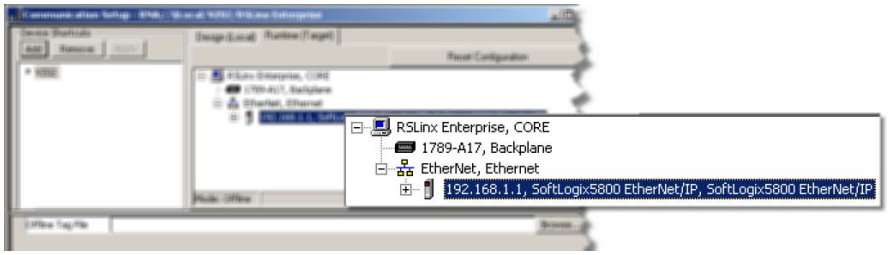


8. Enter '192.168.1.1' in the **Address** field to set the device's TCP/IP address.

9. Change the selected **Slot** to *3*.

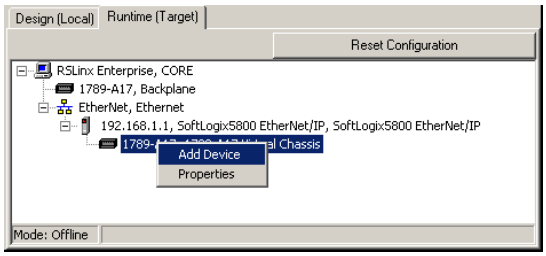


10. Click the *OK* button [OK] to add the device to the **Runtime (Target)** configuration.

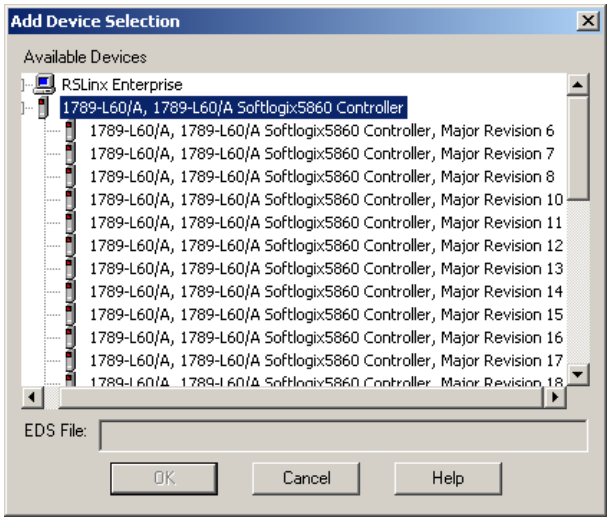


11. Use the expander to open the 192.168.1.1, SoftLogix5800 EtherNet/IP, SoftLogix 5800 EtherNet/IP device.

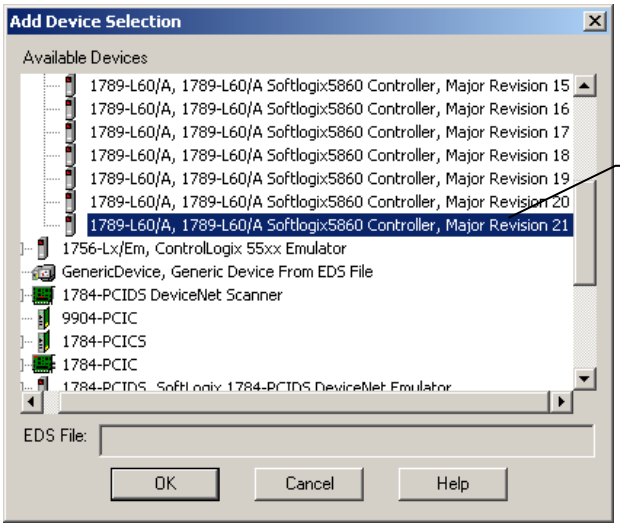
12. Right-click the *1789-A17, 1789-A17 Virtual Chassis* item and select *Add Device*.



13 Expand the 1789-L60/A, 1789-L60/A SoftLogix 5860 Controller item by clicking.



14. Select the *1789-L60/A SoftLogix 5860 Controller, Major Revision 21* item.

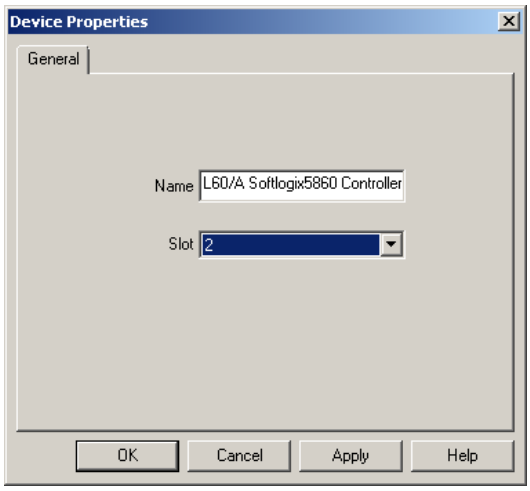


It is important that you select the correct Major Revision for the SoftLogix 5860 Controller.

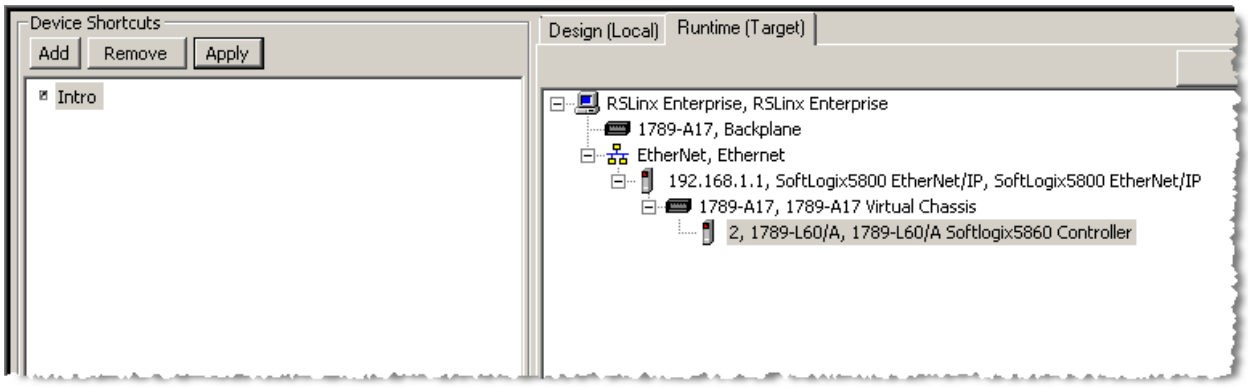
The correct revision is Major Revision 21.

15. Click the *OK* button  to accept the selection.

16. Change the controller's **Slot** property to *2*.

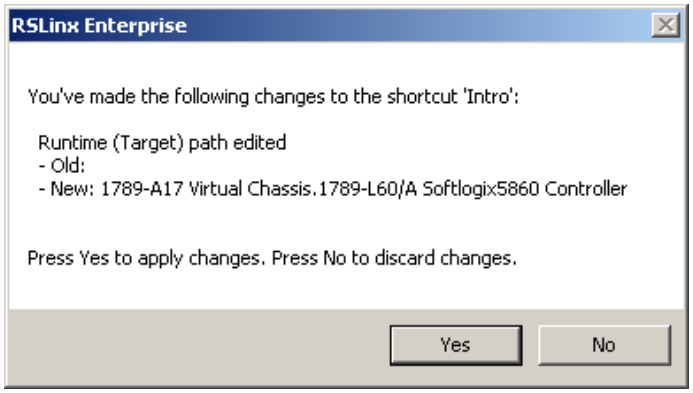


17. Click the *OK* button  to add the device to the **Runtime (Target)** configuration.

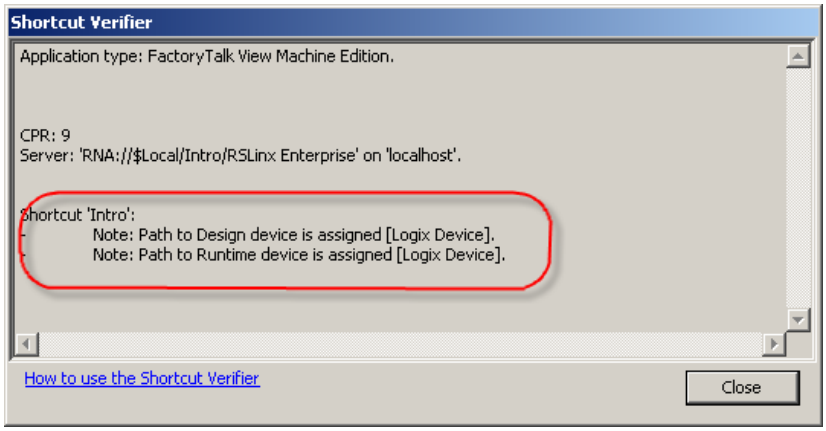


18. Click the *Apply* button  in the **Device Shortcuts** pane.

19. Click the *Yes* button  to apply the changes to the **Intro** shortcut.



20. Click the *Verify* button Verify to confirm the Design and Runtime associations.



Confirm both the Design and Runtime devices are assigned for shortcut Intro.

21. Close the Shortcut Verifier dialog by clicking the *Close* button Close.

Lab Configuration and Setup

Lab Information

Lab Name	**FactoryTalk® View Machine Edition and PanelView™ Plus Introductory Lab**
Lab Description	**This hands-on lab focuses on basic FactoryTalk® View Machine Edition concepts for new users. Topics include creating an application; working with displays; global objects, and tags; using parameters; testing and running the application; and language switching.**
Lab Creator	**Wil Mattheis**
Date Created	**02/04/2015**
Updates:	

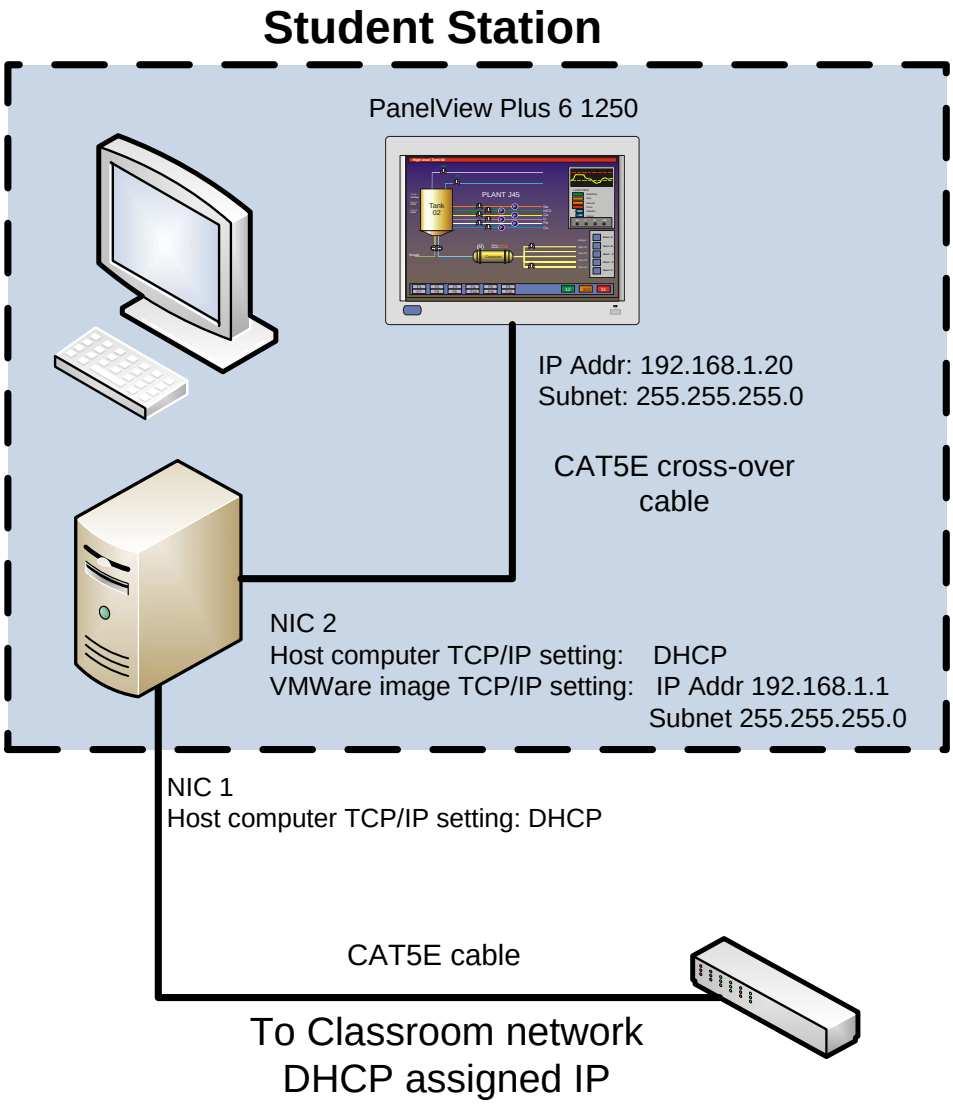
Hardware Configuration per Student

Qty	Demo Cat.# / Description	Communication	Location	Firmware
1	**Computer workstation consisting of**			
1	***2 GHz CPU***			
1	***4 GB RAM***			
1	***Hard drive. Minimum 40GB capacity***			
1	***USB Keyboard***			
1	***USB Mouse***			
1	***Ethernet adapter.***	***Configured for DHCP***		
1	***Ethernet adapter.***	**IP Address: 192.168.1.1, Subnet: 255.255.255.0**		
1	***Video adapter. Minimum resolution: 1260 x 1024 pixels***			
1	***LCD Display. Minimum resolution: 1260 x 1024 pixels***			
1	**Ethernet CAT5E cable 5ft (PanelView™ Plus terminal to SoftLogix Ethernet adapter)**			
1	**PanelView™ Plus 7 Performance 12" W**	**IP Address: 192.168.1.20, Subnet 255.255.255.0**		**8.00.XX or later**

Computer/Host Settings

Location	Files
Computer Name	**Varies by machine**
IP Address (NIC 1)	**DHCP – connected to Event classroom network**
IP Address (NIC 2)	**Host computer TCP/IP setting:DHCP** **VMware image TCP/IP setting:** **IP Addr: 192.168.1.1** **Subnet: 255.255.255.0**
Operating System	**Windows 7 Professional**

Basic Setup Diagram



Location	Files
C:\Lab Files\ViewME – View ME - Introductory \PVP	None required.
C:\Lab Files\ViewME – View ME - Introductory \SoftLogix	Block_Machine.acd (Slot 2)
C:\Lab Files\ViewME – View ME - Introductory \ViewME	Translated Word doc for languages & prebuilt displays and graphics for a PVP7 Performance 12" W terminal size

Additional Equipment Required per Workstation

Qty	Items
1	Ethernet CAT5E cable 5ft (used with PanelView™ Plus terminal)
1	Ethernet CAT5E cable 5ft (used with Event classroom network)
1	PanelView™ Plus 7 Performance 12'W

RSLinx - DDE/OPC Topic Configuration

Topic Name	Path to Hardware
N/A	

RSLinx - Driver Configuration

Topic Name	Path to Hardware
AB_VBP-1 (no topic required)	Virtual backplane driver to be able to download the acd file to the SoftLogix v21 controller in slot 2 (if running this lab independent of the VM Image

RSLinx Enterprise - Shortcut Configuration

Shortcut Name	Path to Hardware
Intro	Ethernet, Ethernet > 192.168.1.1 > Backplane > 2, 1789-L60 v21

Application Versions

Vendor	Software	Version	Service Pack
Rockwell	FactoryTalk® Activation Manager	3.62.11	CPR9 SR6.1
Rockwell	FactoryTalk® Diagnostics	2.71.00	CPR9 SR7.1
Rockwell	FactoryTalk® Service Platform	2.71.00	CPR9 SR7.1
Rockwell	FactoryTalk® View Machine Edition	8.00.00	CPR9 SR7
Rockwell	RSLinx Enterprise	5.70.00	CPR9 SR7
Rockwell	RSLinx Classic	3.71.00	CPR9 SR7.1
Rockwell	Studio 5000	21.00.00	CPR9 SR5.1
Rockwell	SoftLogix 5800	21.00.00	CPR9 SR5.1
Rockwell	.NET Framework	4	
Microsoft	Internet Explorer	10	
Rockwell	PanelView™ Plus 7 Performance	8.00.xx	

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