PanelView™ 5000 and Studio 5000™ View Designer: Introductory Lab

For Classroom Use Only!

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Rockwell Automation

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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.

PanelView™ 5000 and Studio 5000 View Designer Introductory Lab

Contents

Before you begin

The PanelView™ 5500 terminal represents a new generation of HMI products for Rockwell Automation. The key driver behind this development was to make it easier to create powerful and attractive HMI projects by taking advantage of newer technologies, such as scalable vector graphics and by providing premier integration with our Logix controllers. PanelView™ 5500 projects are configured using the new View Designer software, which is part of Studio 5000.

Some of the main features of this first release of PanelView™ 5500 and the View Designer software include:

- PanelView™ 5500 terminals are available in sizes from 7" to 19" with wide screen formats at 9" and 12". Keypad versions are available for the 7", 10", and 15" sizes.
- PanelView™ 5500 terminals all support Device Level Ring network topologies for fault-tolerant network design.
- Project contents are held in a single .VPD file to enable easy project movement.
- Huge graphic library Toolbox with scalable vector graphic elements with built-in animations make it easy to quickly create good looking screen content.
- Runtime scaling allows users to use any size application on any size terminal.
- High-speed HMI button provides quick response and feedback for jogging applications.
- Intuitive Navigation Menu eliminates the need to configure rows of navigation buttons on all the screens.
- Runtime error notifications with error detail flyouts provide the information you need for quicker troubleshooting.
- Logix tag extended property support eliminates the need to create HMI tags.
- Scalable vector graphics allow users to easily resize individual screen elements and entire terminal applications.
- Preconfigured banner, alarm screens, and diagnostic screens are integrated with Logix - helping reduce design time and simplifying maintenance at runtime. Predefined screens are not included in your screen count limit.
- Logix-based alarms are automatically displayed on your HMI to help reduce development time.
- Advanced graphic animation capabilities through color/state tables, property binding, and events and commands for more efficient design.
- Role based security provides screen-level access control for each project.
- Security options on individual graphic elements allow for customized access.
- Easily create re-usable screens by leveraging screen properties which can be named and tied to a Logix data type.
- Reusable Add-On Graphics that can be linked to User-Defined Data Types and Add-On Instructions in Logix.
- Runtime Language Switching for up to 20 languages.
- Historical Trending and Data Logging
- Viewing PDF Documents at runtime
- Remote access to the terminal via VNC
- Testing a project within View Designer using the Emulator

PanelView™ 5000 and Studio 5000 View Designer is targeted for small applications consisting of a single controller reference, no more than 100 screens, and no more than 1000 alarms. Subsequent releases will expand the application size and continue to add exciting new features.

About this lab

Welcome to the Studio 5000™ View Designer Hands-On Lab! This session will provide you with the opportunity to get familiar with the newest HMI offering from Rockwell Automation. You will create a new project, explore the design time software, add elements to the project, download the project to a hardware terminal, and explore the runtime functionality of the project while connected to a controller.

This lab takes approximately 80 minutes to complete.

What Will Be Accomplished

As you complete the sections of this hands-on lab, you will:

- Work with the View Designer software to understand its features, functionality and flexibility
- Download and run a View Designer project on a PanelView™ 5000 terminal, exploring its runtime features

Who Should Complete this Lab

This hands-on lab is intended for those who:

- Have some experience with HMI software and Operator Interface
- Have little to no experience with View Designer design time software or PanelView™ 5000 terminals

Tools & Prerequisites

The following is required to complete this lab:

Software Programs

- Studio 5000™ View Designer software v4
- Studio 5000™ Logix Designer

Hardware Required

- Windows 10 computer
- CompactLogix 5380 processor
- Ethernet network
- PanelView™ 5510 9-inch wide terminal

Files required

- PV5K_Demo.ACD
- raC_Dvc_K350.VPD
- super_juice_logo_01.PNG
- cie-wp002_-en-p.PDF

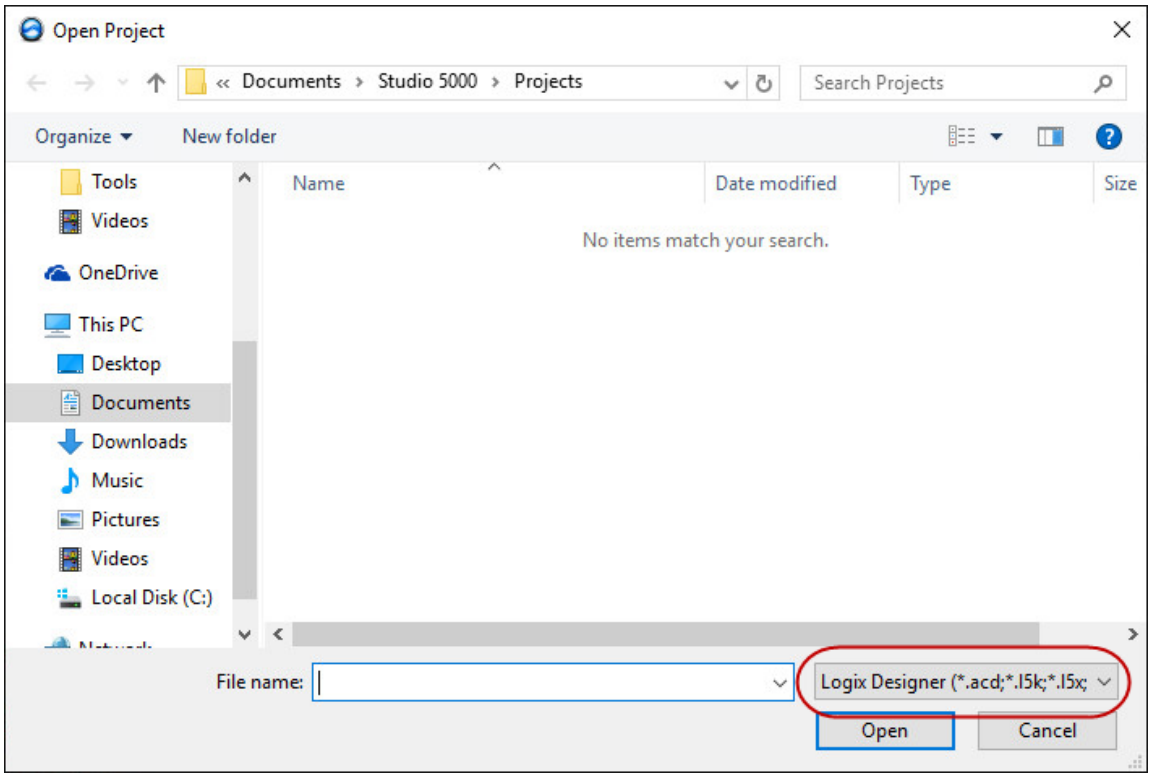
Download the Controller Project

This lab uses a ControlLogix L75 processor. Before beginning work with View Designer, start by downloading the controller's project using the steps below.

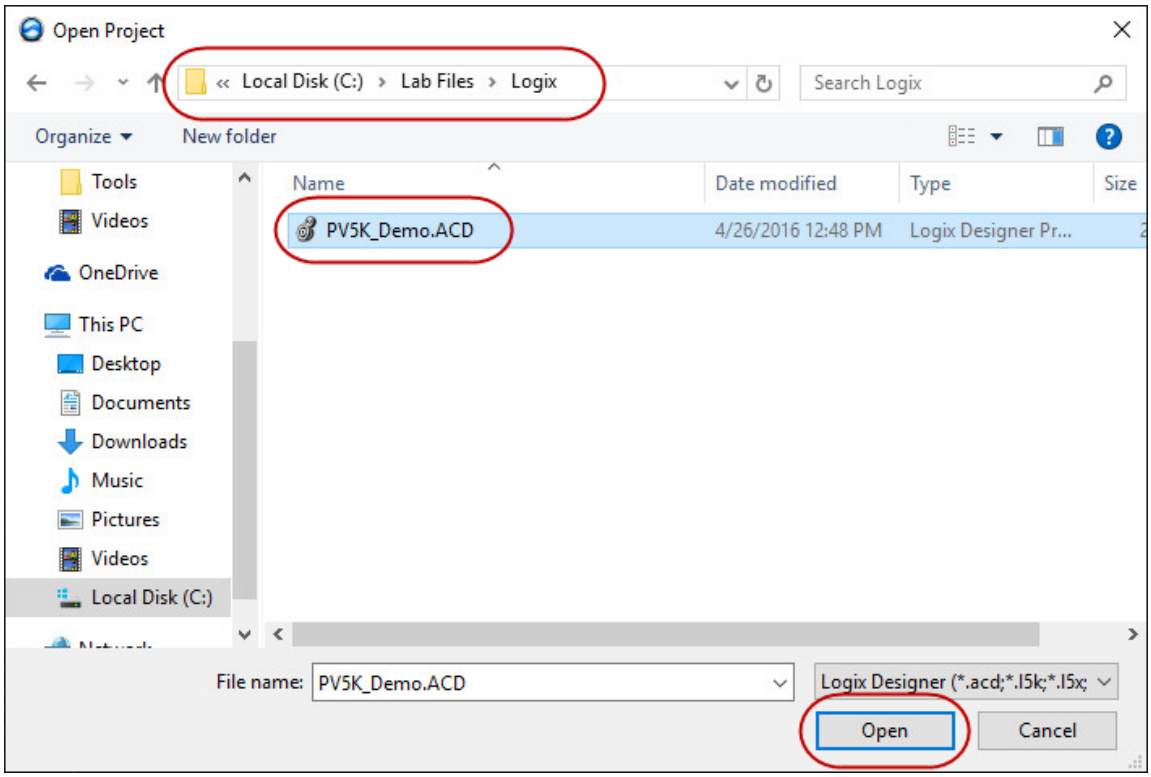
1. Open Studio 5000 by clicking the *Studio 5000* icon on the taskbar.

2. Under the Open heading, click *Existing Project*.

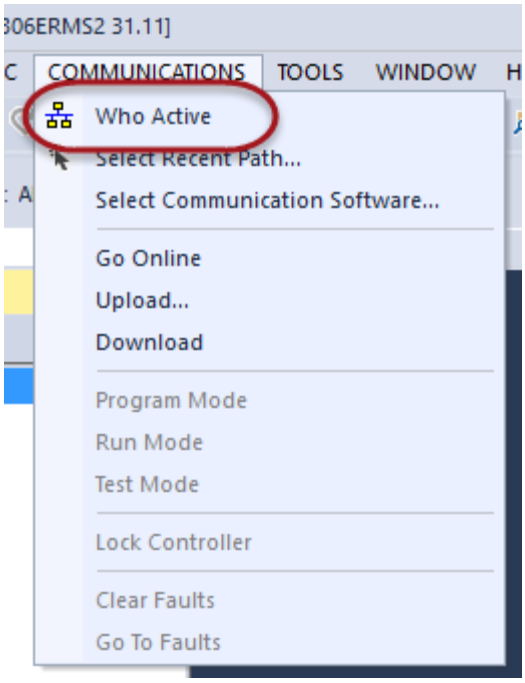
3. Verify **Logix Designer (*.acd, *.l5k, *.l5k, *.xml)** is selected as the file type.



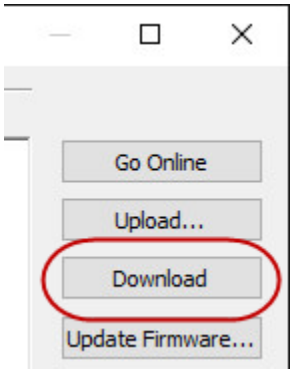
4. Browse to **C:\Lab Files\Logix**, select *PV5K_Demo.ACD*, and click *Open*.



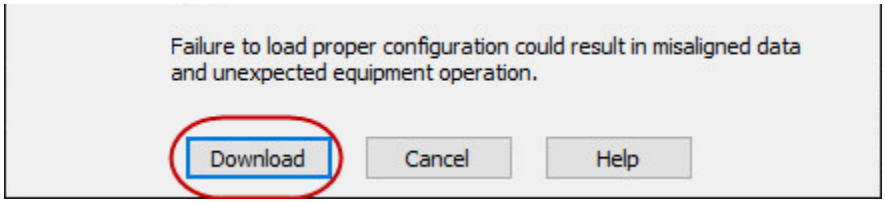
5. Using the **Communications** menu, select *Who Active*.



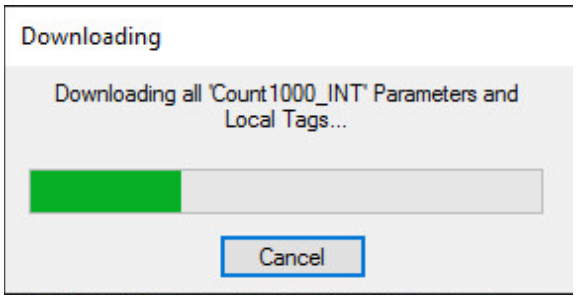
6. Click the *Download* button to start the download process.



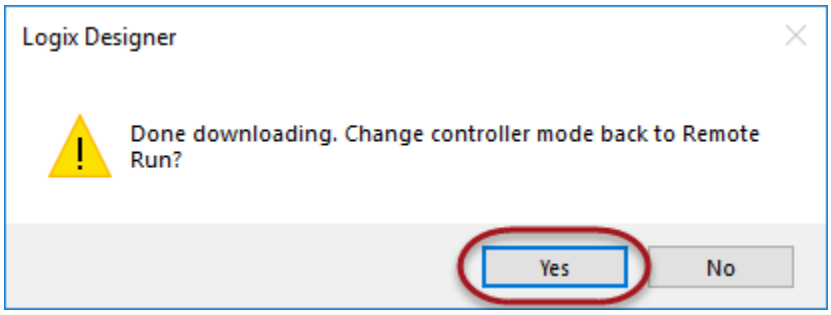
7. Click *Download* again.



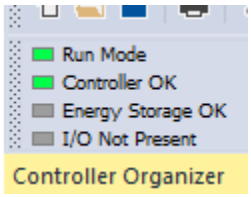
The project file will be transferred to the controller.



8. Click *Yes* to change the controller mode to Remote Run.



Notice the controller is set to Rem Run.



9. Minimize, but do not close Logix Designer using the *Minimize* button.

Create a View Designer Project

Studio 5000™ View Designer is a new software package that configures applications for the new PanelView™ 5000 operator interface product line. In this section of the lab, you will explore this new software by doing the following:

- Create a new project
- Configure Project Properties
- Add elements to a screen
- Bind properties to controller tags
- Create buttons out of native elements
- Apply a State table
- Learn about the Navigation Menu
- Learn about Runtime Diagnostics

As a result, your project will look similar to the picture below:

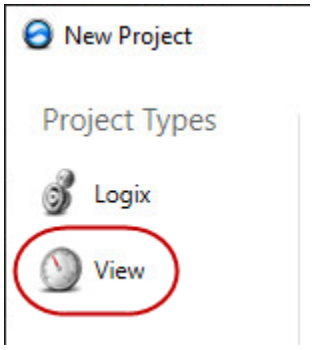
Launch View Designer

The View Designer software can be opened using the main Studio 5000™ launcher. The launcher allows users to select which type of project should be opened – Logix or View.

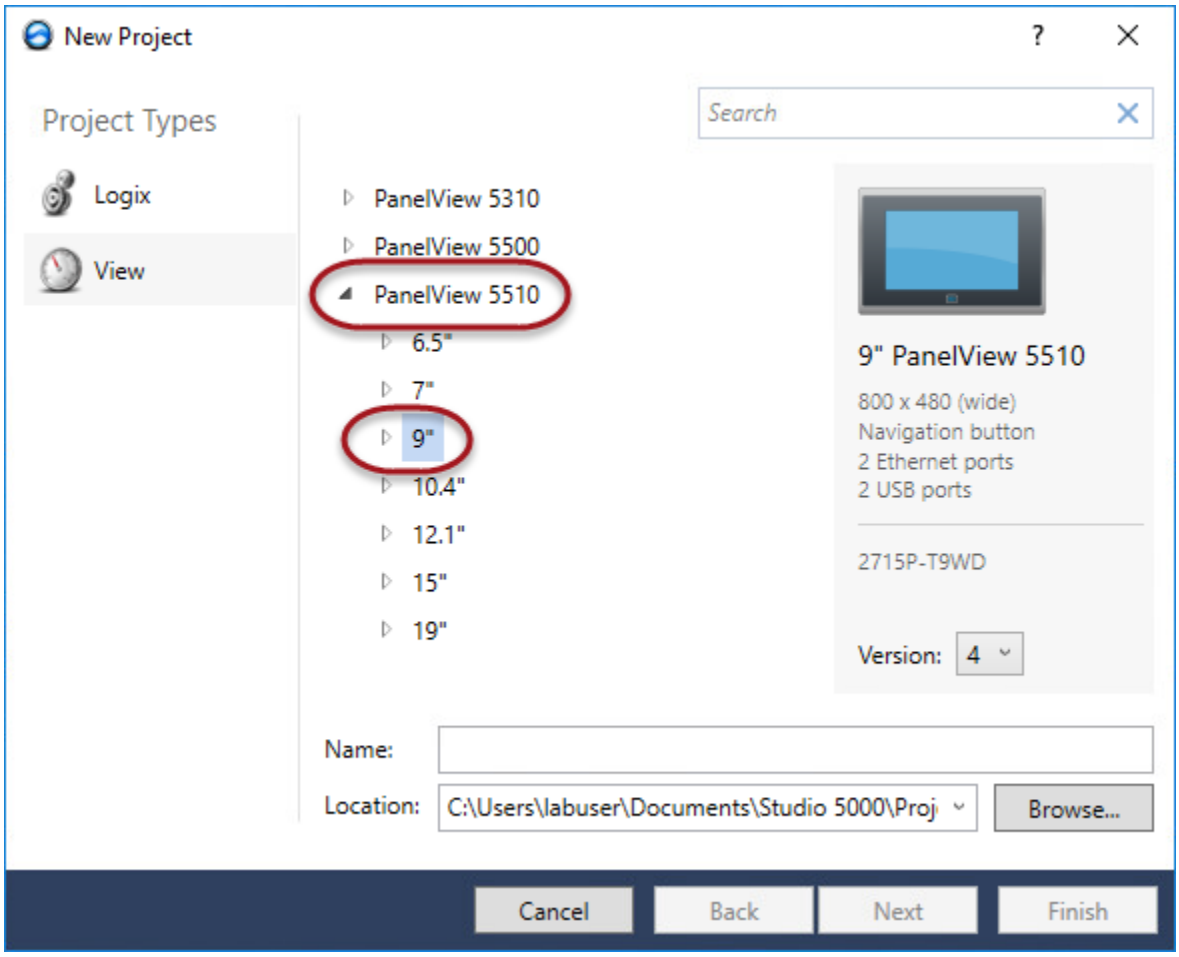
1. Open **Studio 5000** using the *Studio 5000* icon in the taskbar.

2. Under the **Create** heading, click *New Project*.

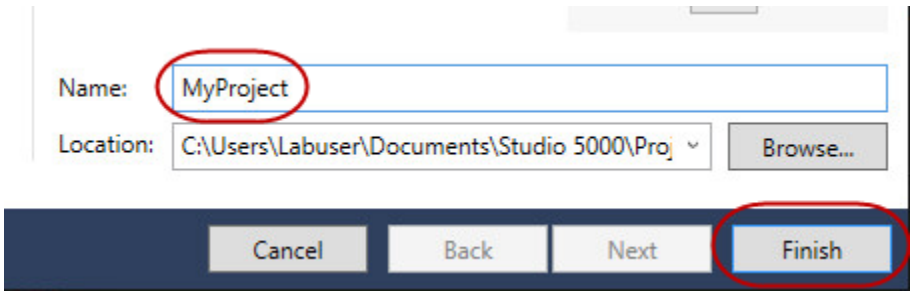
3. In the **New Project** dialog, select *View* as the **Project Type**.



4. Making sure that **PanelView 5510** is expanded, select *9”*.



5. Type *‘MyProject’* in the **Name:** field, and click ***Finish***.



The Studio 5000™ View Designer software will go through the process of loading all of its components. This may take a few minutes.

View Designer projects are stored as *.VPD files. This single file contains the entire project, similar to the concept of an ACD file for a complete Logix Designer application. The View Designer project can be moved between different computers by simply moving the *.VPD file.

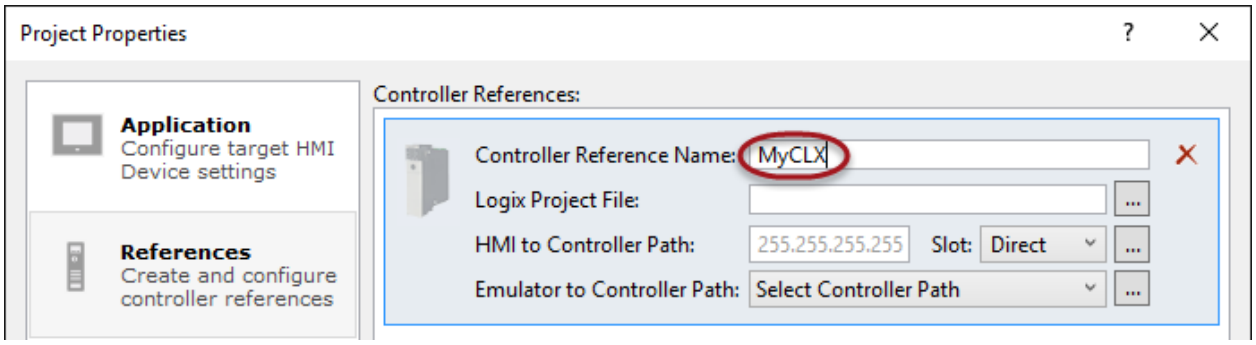
Note that the default project directory is <user>\My Documents\Studio 5000\Projects.

Configure Project Properties

The Project Properties dialog is used to configure the Controller Reference, Application settings, and Terminal properties.

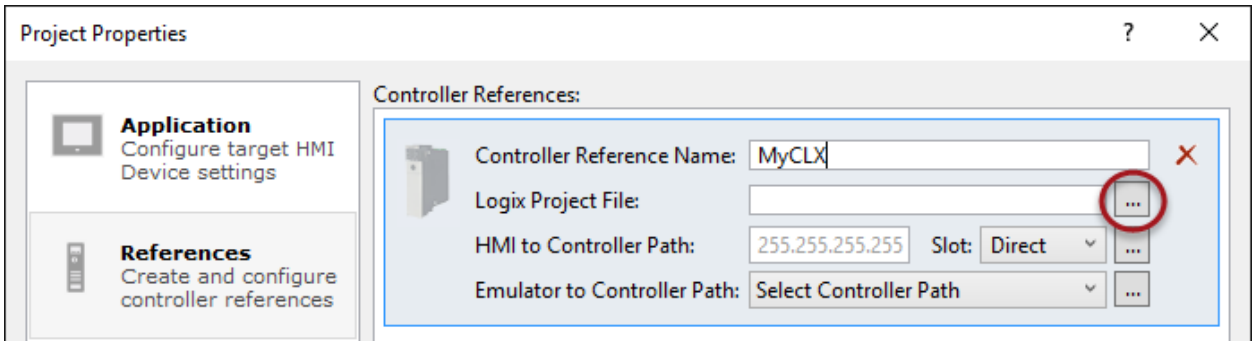
The first project property to be configured is a controller reference. A reference is a connection to a Logix Designer project file from the View Designer project file. This connection automatically synchronizes data between the two files during design time. There can only be one reference in a View Designer project, because PanelView™ 5000 can only communicate with a single controller at runtime.

1. Type *'MyCLX'* in the Name: field.

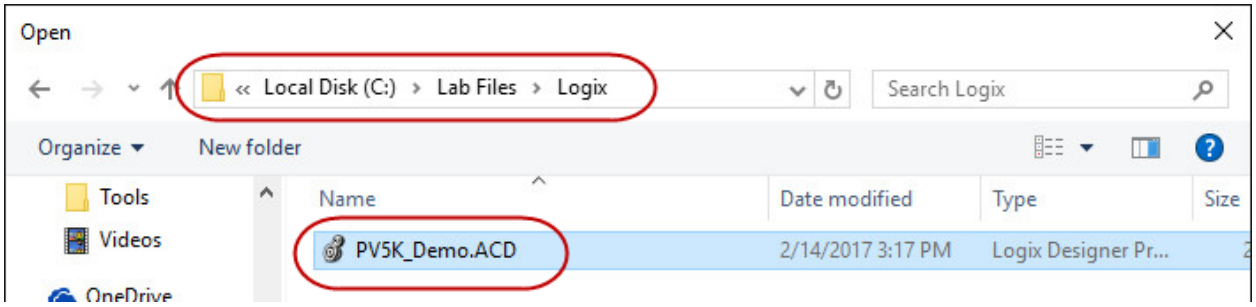


Note that the Controller Reference Name cannot be the same as the name of the project.

2. Click the *ellipsis* next to the **Logix project:** field to open the Windows Explorer dialog.

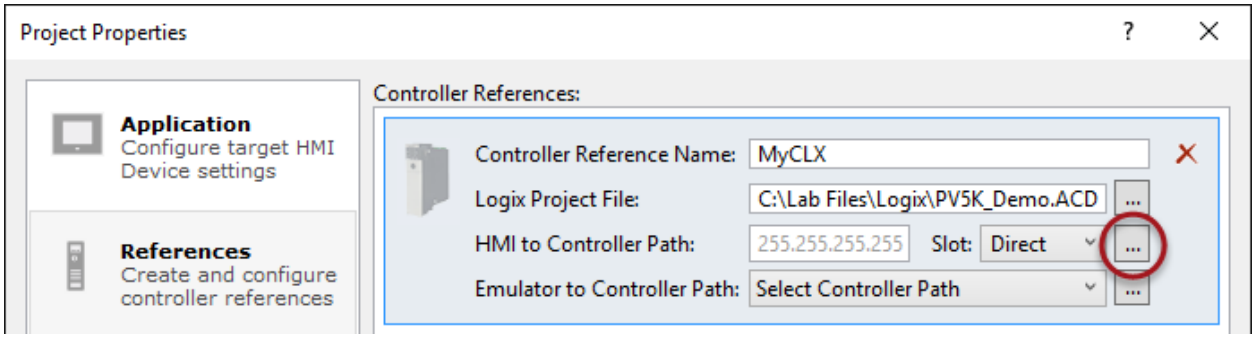


3. Browse to **C:\Lab Files\Logix**, and select *PV5K_Demo.ACD*.

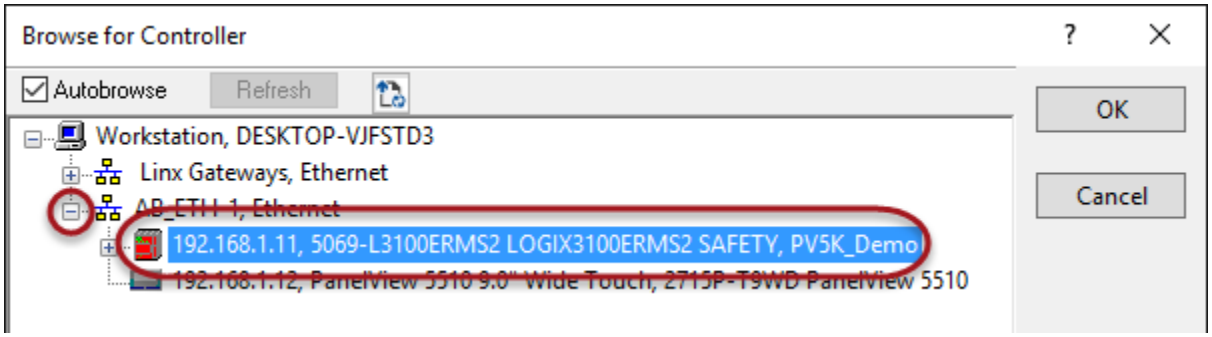


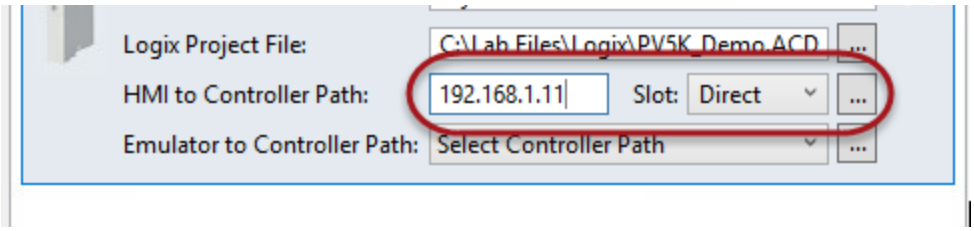
4. Click *Open*.

5. Next, click the *ellipsis* button for the **HMI to controller path**.



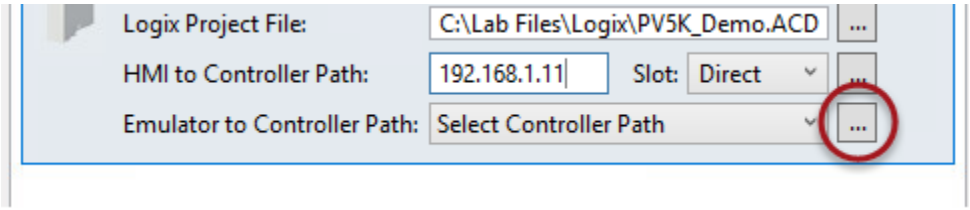
6. Expand *AB_ETH-1, Ethernet*, select *192.168.1.11, 5069-L3100ERMS2 SAFETY, PV5K_Demo*, then click *OK*.



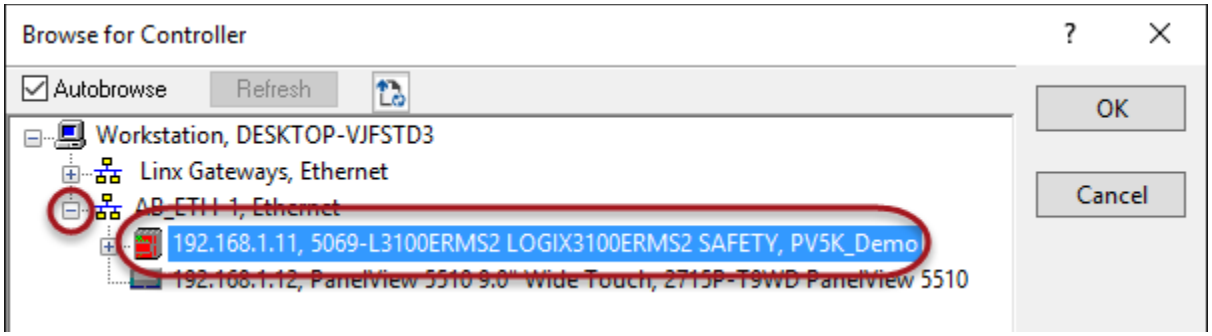


Notice the HMI to controller path field has been populated with the correct information for your processor

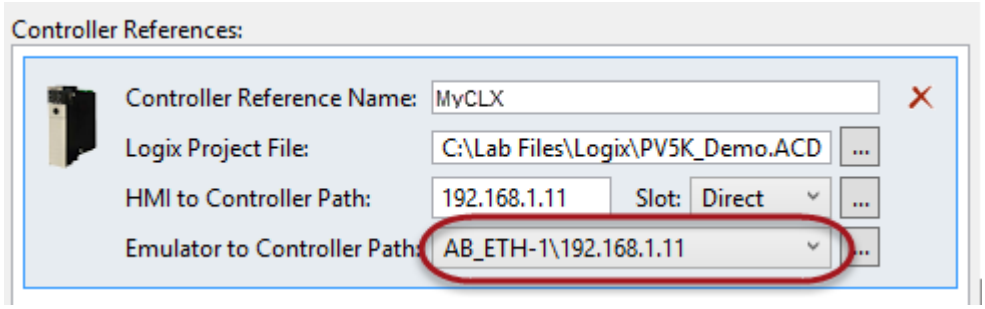
7. Configure the Emulator to Controller Path for the same controller using the *ellipsis* button.



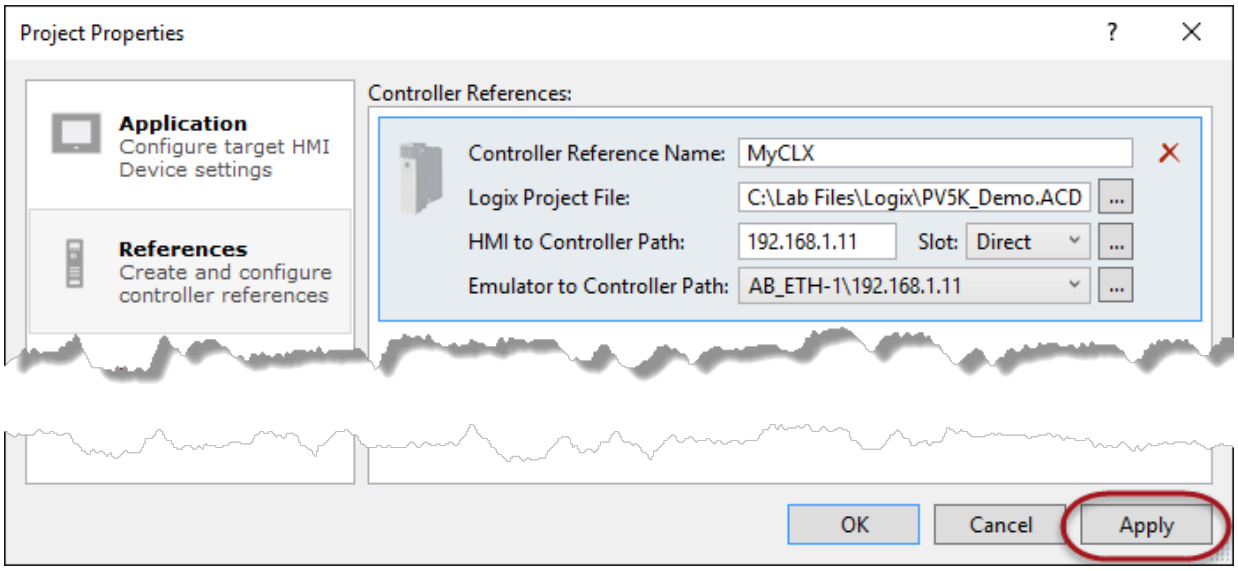
8. Expand *AB_ETH-1, Ethernet*, select *192.168.1.11, 5069-L3100ERMS2 SAFETY, PV5K_Demo*, then click *OK*.



The path and the controller selected should be the same as was chosen for the HMI to Controller Path configured earlier.

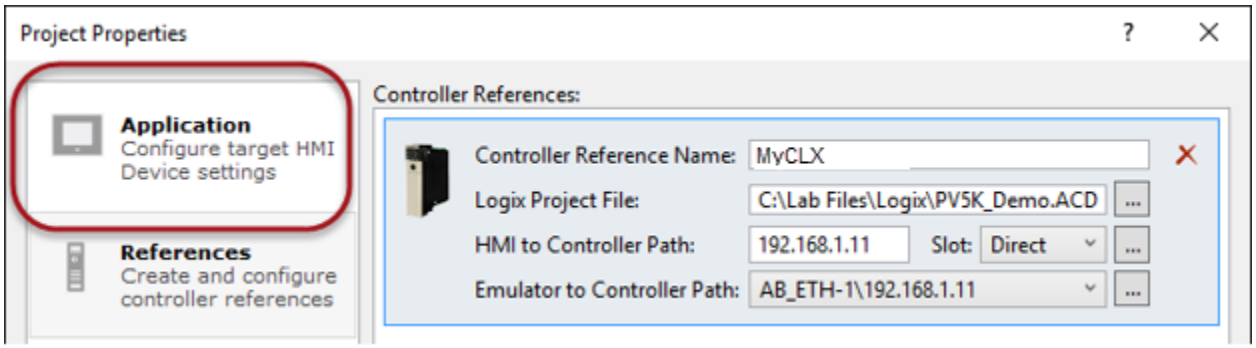


10. Click *Apply* to confirm the settings.

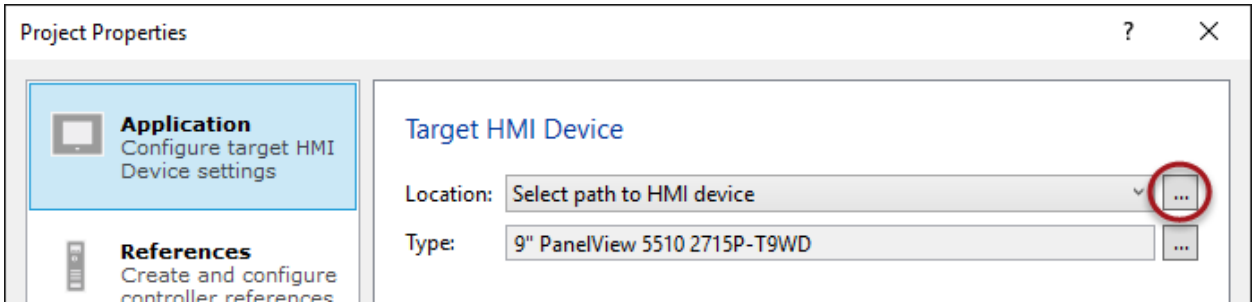


> The View Designer software supports browsing to tags located within an ACD file. Online tag browsing is not available, but if the tags within the ACD file change, synchronization will occur in the background to allow those tag changes to be seen.

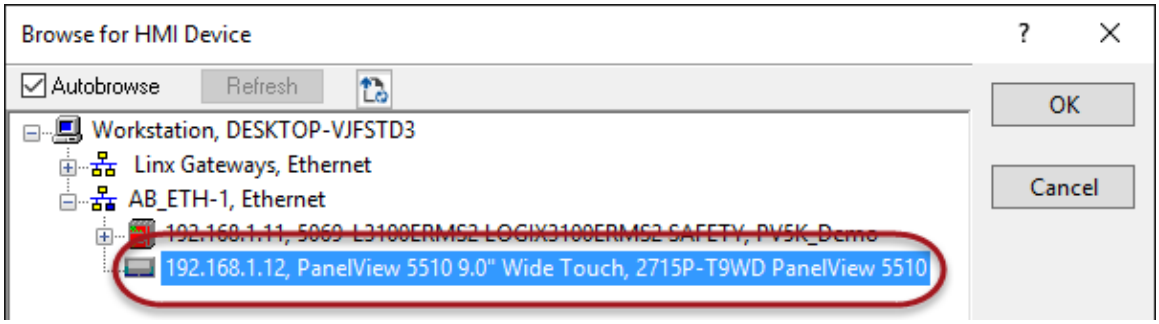
11. Click the *Application* tab.



12. Click the *ellipsis* for the Location of the Target HMI Device.



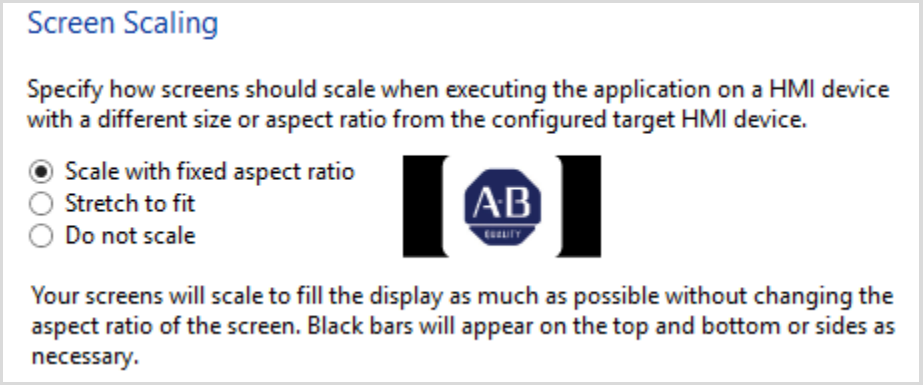
13. Use the **Browse for HMI Device** window to browse to the terminal at this station.



14. Click *OK*.

> Note that any of these settings can be modified at any time during the development process.

There are three options for Screen Scaling:



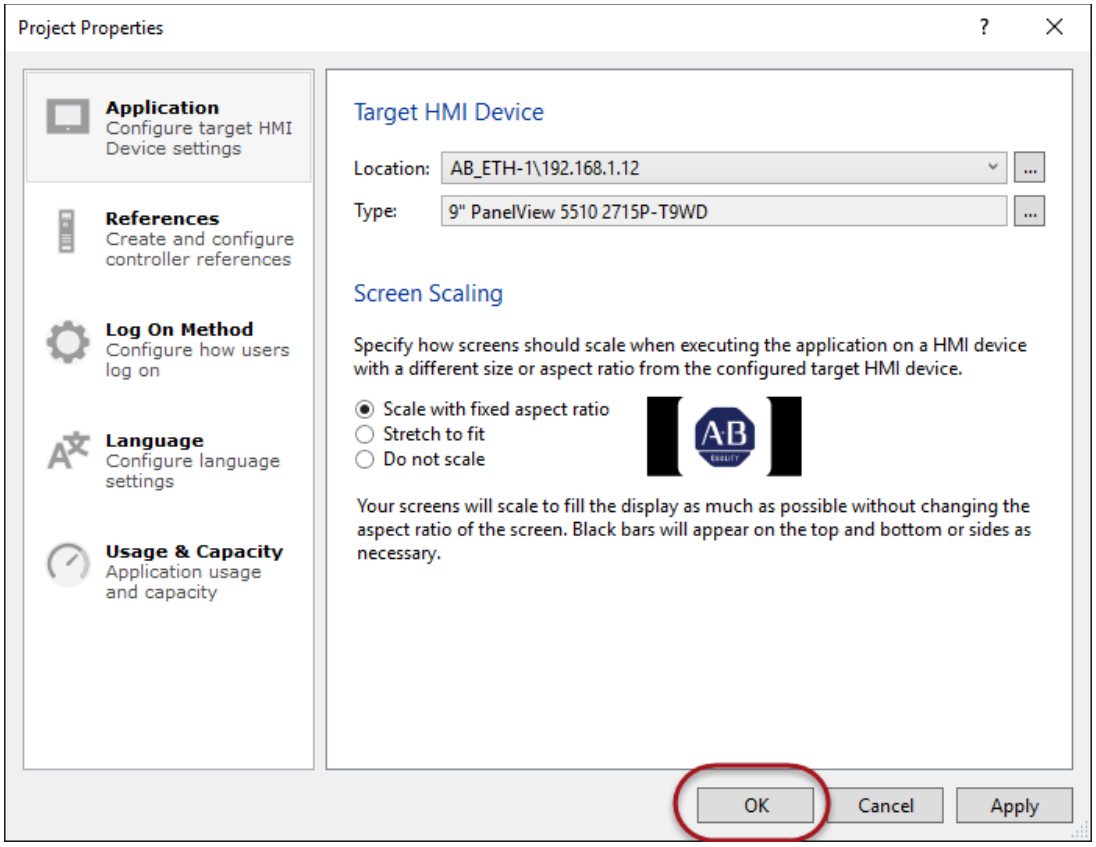
Scale with fixed aspect ratio: Screens will scale to fill the terminal display as much as possible without changing the aspect ratio.

Stretch to fit: Screen and all elements will stretch to fit the terminal display size, which may result in distortion of the elements that already exist on the screen.

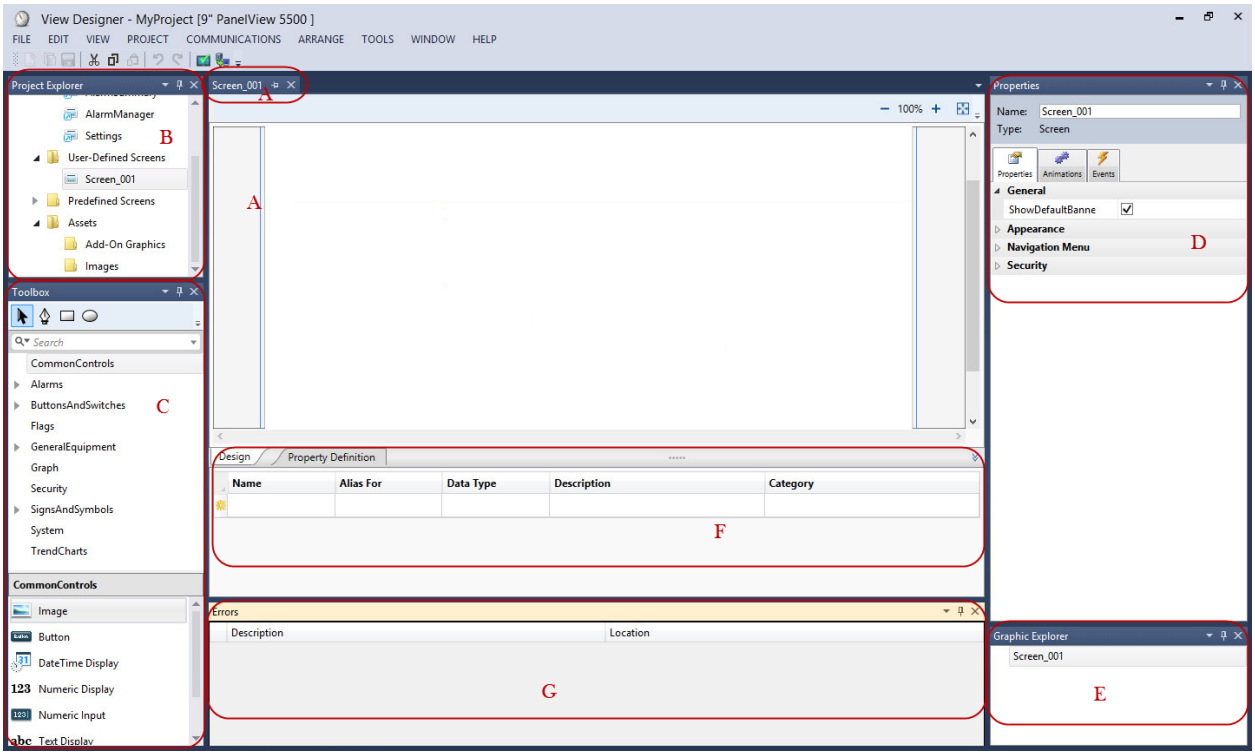
Do not scale: Screens and elements will remain in their original resolution, centered on the screen.

This selection will be used if the project's Target HMI Device type changes, or if the project is downloaded to a terminal of a different size.

14. Click *OK* to close the MyProject Properties window.



Understanding the Studio 5000™ View Designer Software



A. A tab appears at the top of the screen canvas pane for each open screen for easy design navigation.

B. Project Explorer: All user defined screens, including popups, predefined screens, and assets are listed here. In addition, the Navigation Menu can be configured in the Project Explorer.

C. Toolbox: Built-in graphic elements that can be added to screens are listed here, sorted by categories.

D. Properties pane: Modify the properties of the graphic elements or the screen itself using this pane. State and Color Tables, and Event commands are also configured in this pane.

E. Graphic Explorer: A listing of all elements that are on the screen visible in the canvas. This pane makes it easy to navigate through grouped objects on the screen.

F. Property Definition: Re-usable properties or parameters are defined here to be used for screens or graphic element properties. This concept is covered in a different lab. (Not visible by default)

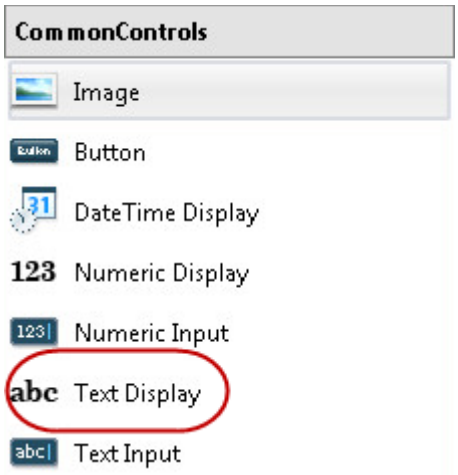
G. Errors pane: Errors that are found during the verification process are displayed in this contextual pane. This pane opens if errors or warnings are found in the project. (Not visible by default)

Use the steps below to explore the View Designer Software and its flexibility.

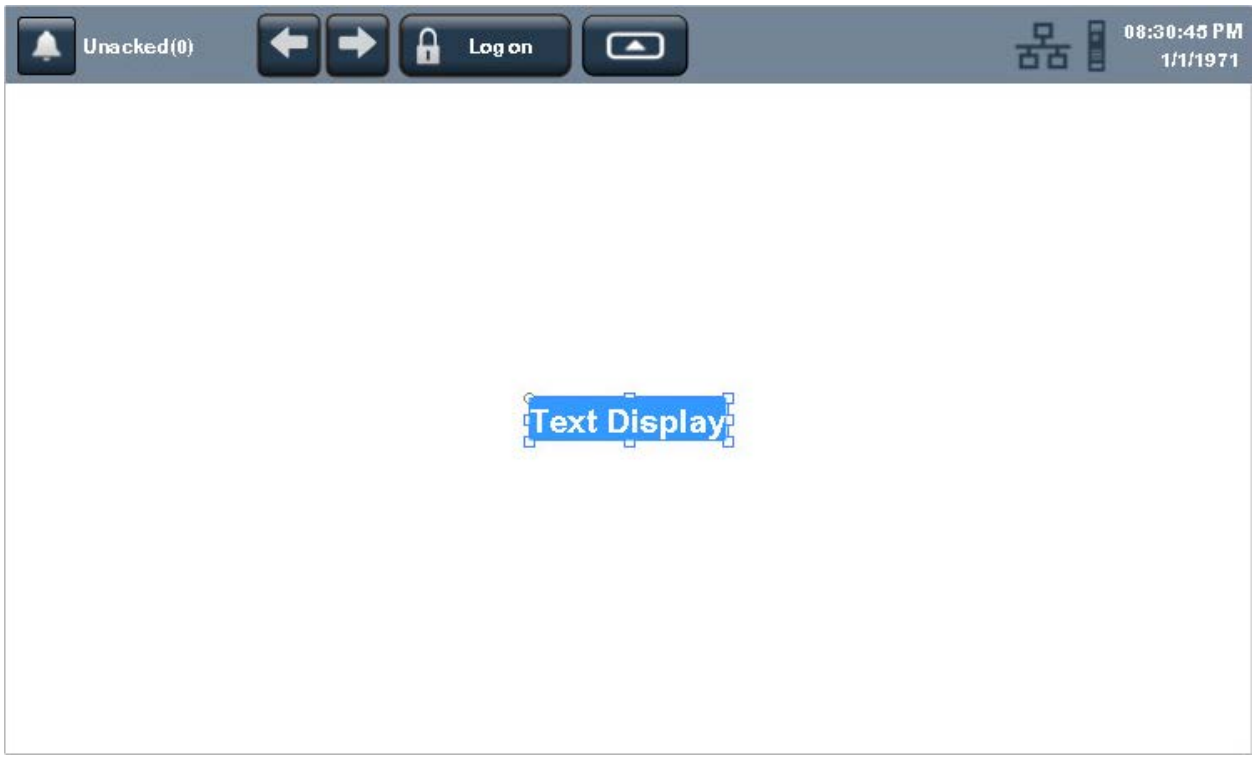
Adding Graphic Elements to a Screen

All built-in graphic elements can be found in the **Toolbox** pane of the View Designer software. This pane contains categories in which all elements are divided, and a filter can be applied to the toolbox to focus on specific types of elements. Use the steps below to add two elements to the screen canvas and configure them to display data from the controller.

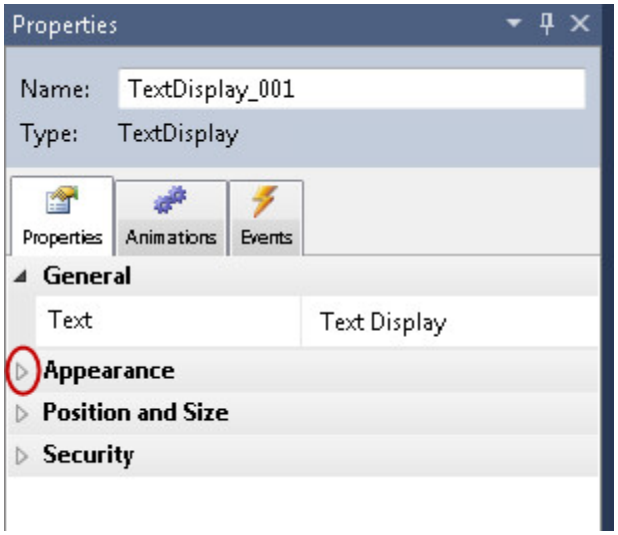
1. Locate the **Text Display** element in the **CommonControls** category.

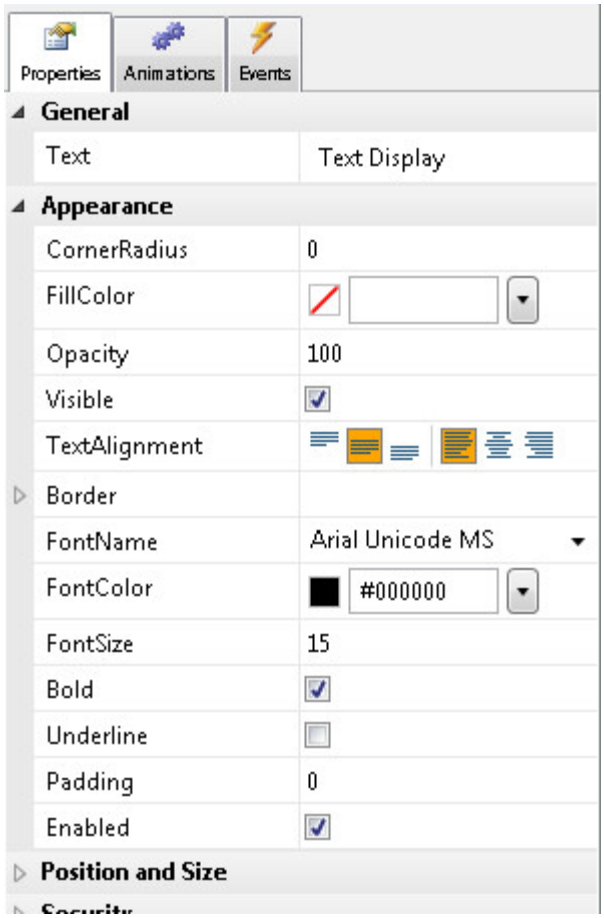


2. Double click the ***Text Display*** element in the **Toolbox** to add it to the screen canvas.



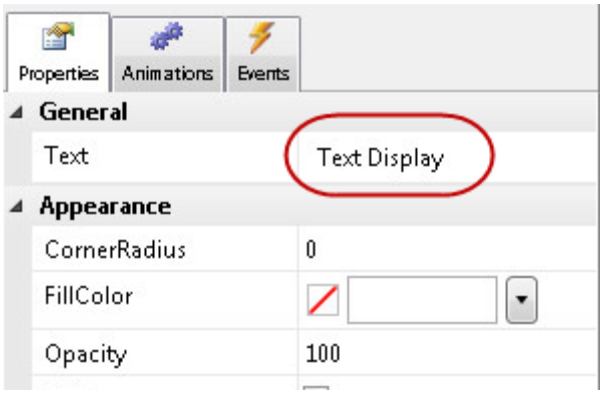
3. In the **Properties** pane, expand the ***Appearance*** category to view the properties found in that section.





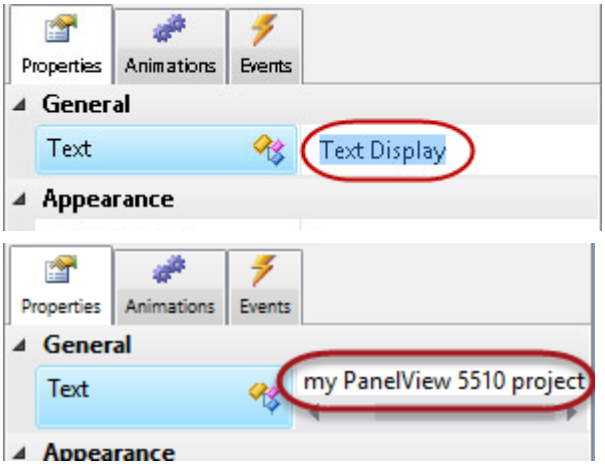
All properties for this element are found in this pane. Users can configure these properties with static values by changing the field next to each property.

4. Click in the *Text Display* field.



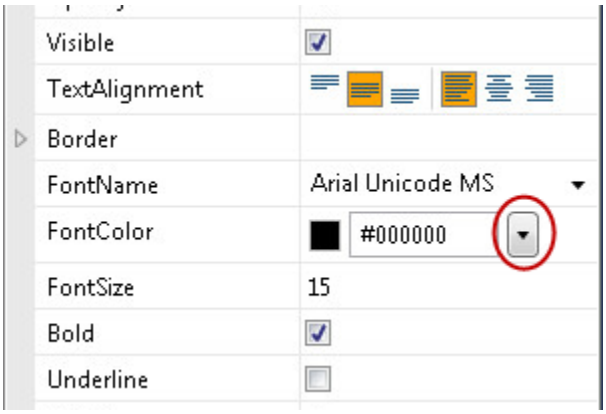
5. Replace the text by highlighting *Text Display* and typing *'This is my PanelView 5510 project'*.

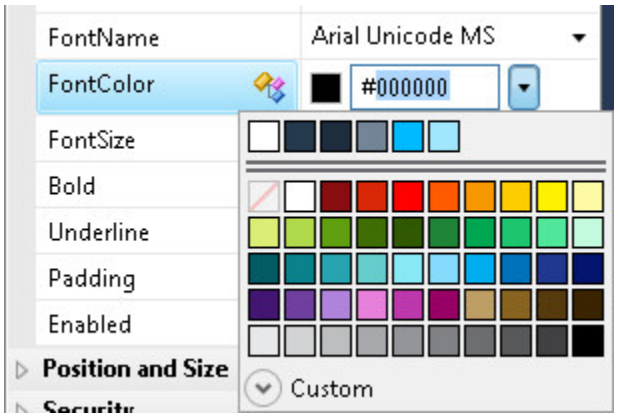
   Alternatively, in-line editing on the screen canvas can be used.



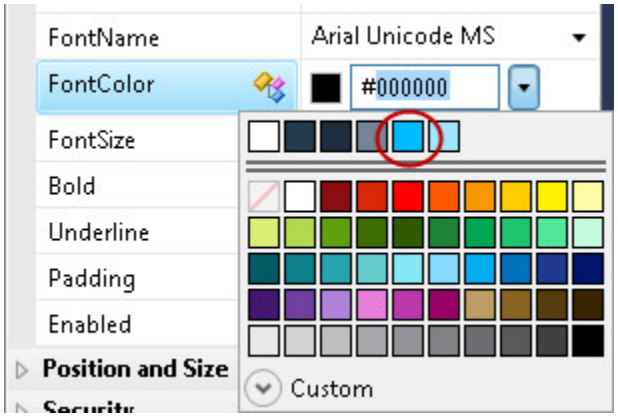
> Use the scroll bar to view the entire string.

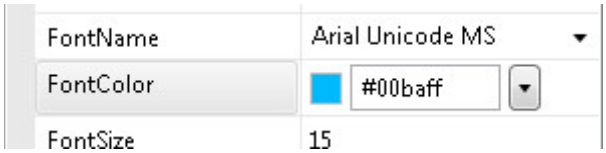
6. Now, select the drop down button for the *FontColor* property to open the Color Palette.



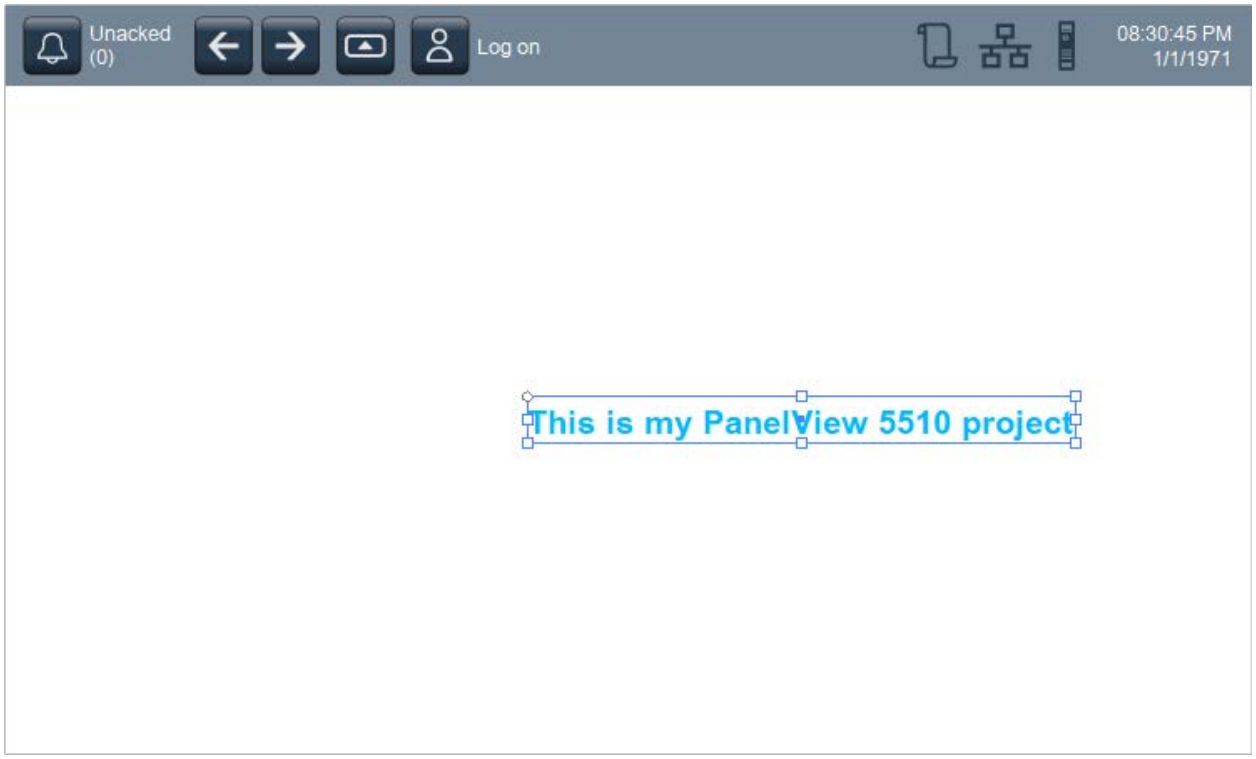


7. Double click *blue* for the FontColor.

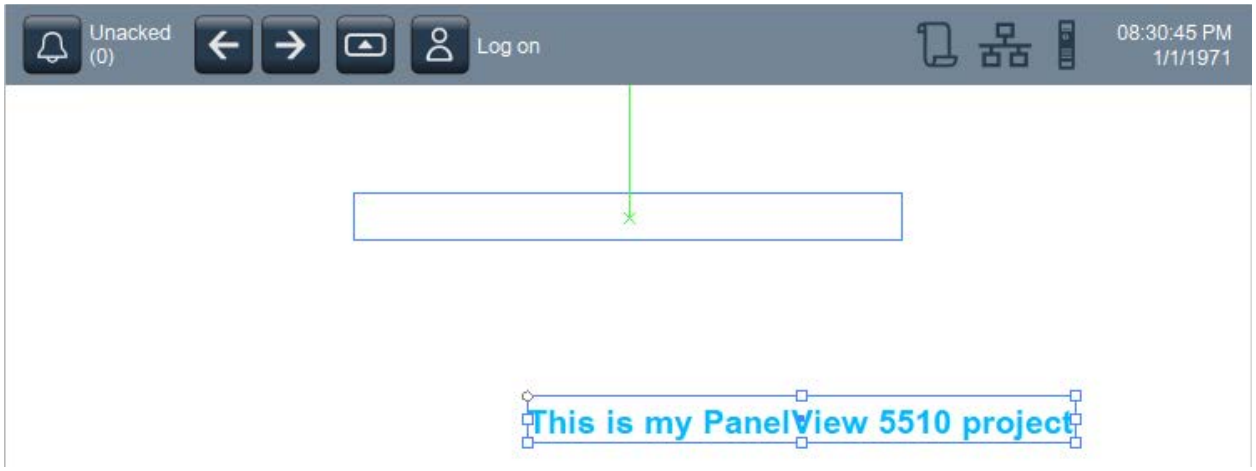




Notice the Text Display element has updated to reflect the text change.



8. Click and drag the Text Display element on the screen canvas until it is located in the upper middle area of the screen.



9. Now, click anywhere on the white space of the screen canvas.

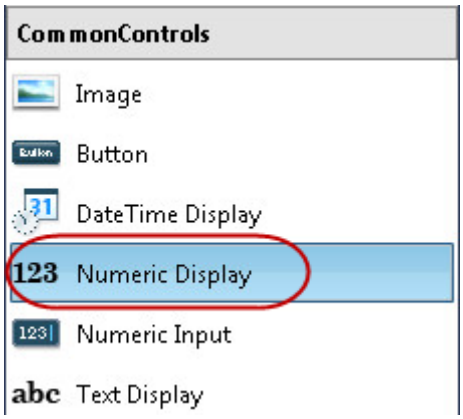
Notice that the Properties pane has changed – it is now displaying the properties of the screen itself.

Property Binding

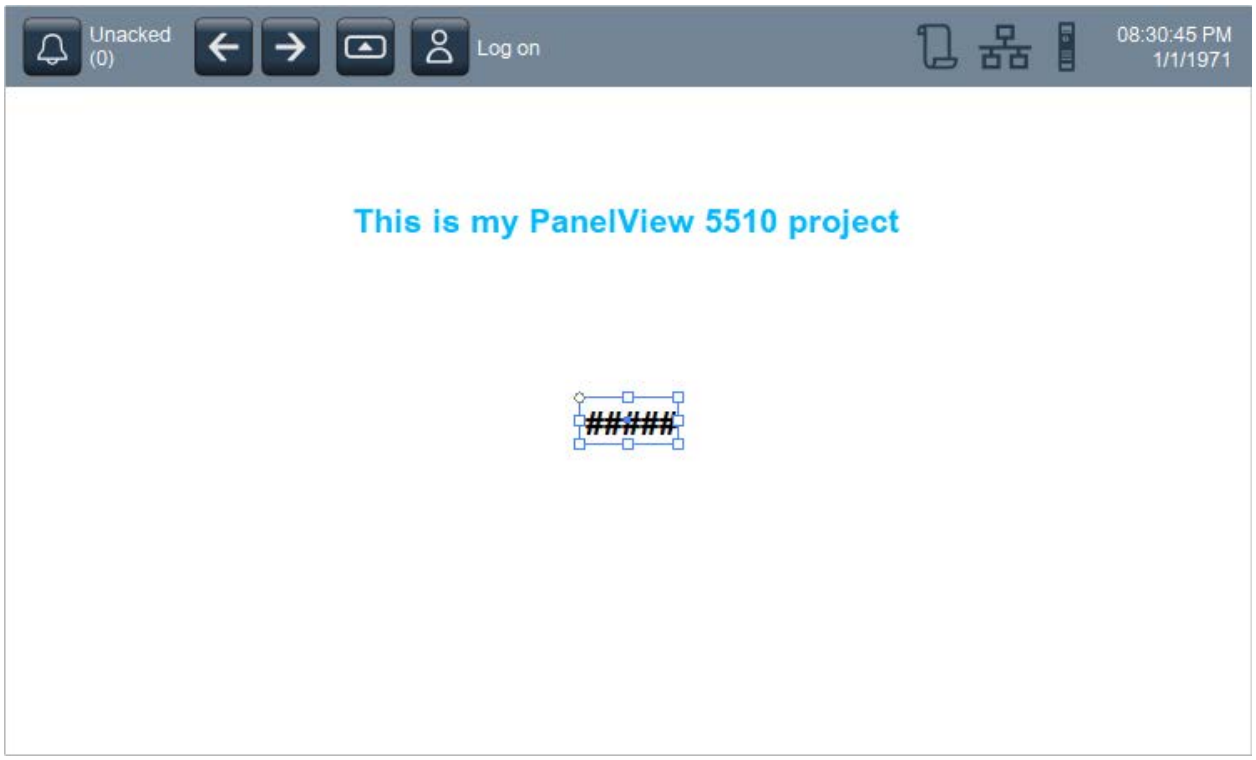
To configure a graphic element to change dynamically at runtime, a controller tag or expression must be bound to one or more of its properties. In this way, the value of the element property will be updated by the controller or expression data. In addition to controller tags and expressions, properties can be bound to the properties of other elements.

Follow the steps below to configure a Numeric Display so that its value is a number found in a controller tag.

1. Double click the *Numeric Display* element in the CommonControls category.



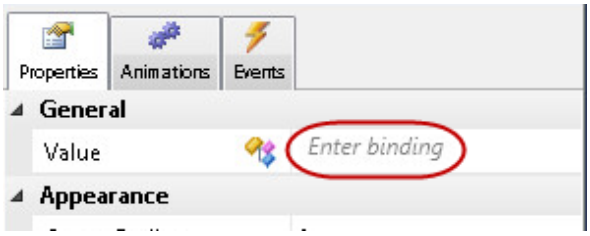
The element will appear on the screen canvas.



Binding a Tag to a Property

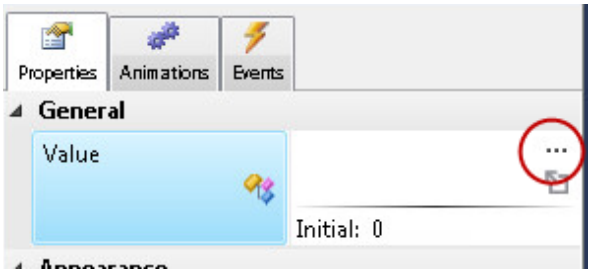
The offline Studio 5000™ Logix Designer ACD file configured in an earlier section is used to browse to and connect tags to element properties. The browser allows a user to search for tags based on a tag name, partial tag name, and data type. Follow the steps below to explore this process.

1. Making sure the numeric display is selected, click in the *Enter binding* field to associate a tag to the value that will be displayed.



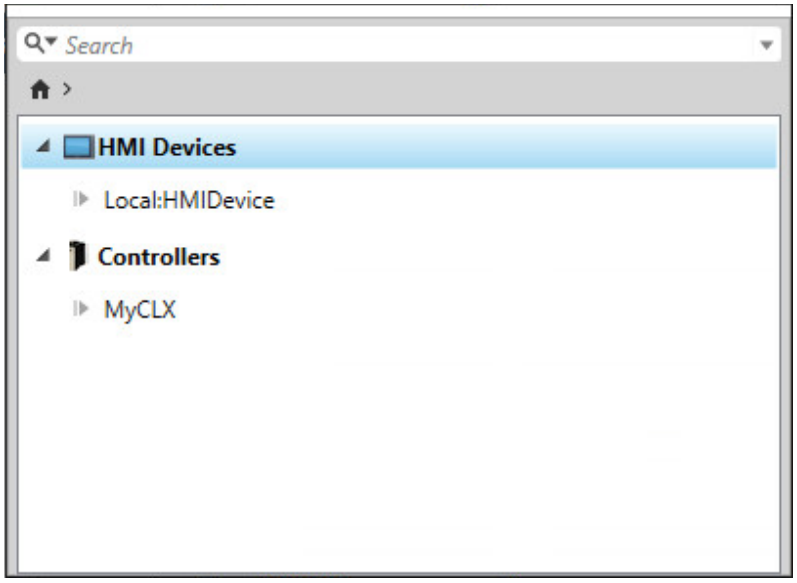
> Bindable properties display a Binding button when you point to them with the mouse cursor. For some elements, such as the Numeric Display, the value property is already configured to be bound, because that is the expected use of the element.
>
> Binding can be applied to almost every property of an element, such as X and Y position, FontSize, FontColor, Opacity, etc. The bound properties of the element can be fully animated, based on the value of any tag. Expressions can also be used.

2. Click the *ellipsis* button to open the Data Item Browser.



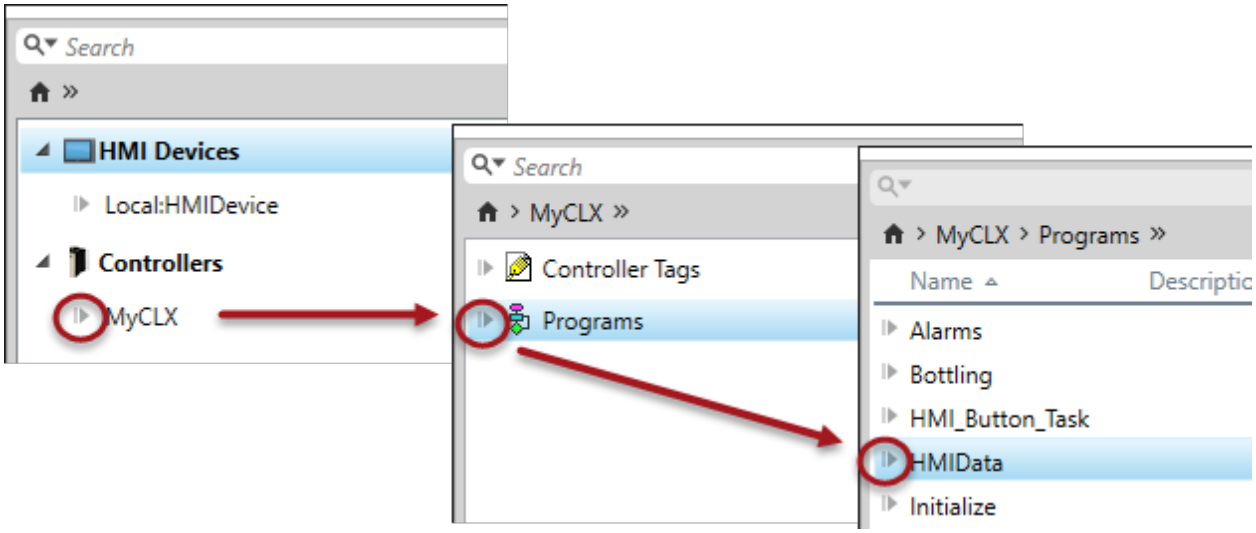
> The button opens the Expression Editor. Expressions can be used to manipulate tag values before displaying them on the terminal.

The Data Item Browser will open:

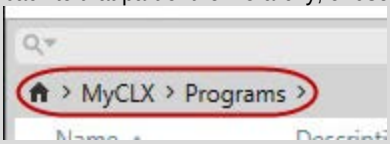


The **Search** box allows a user to search for any tag, using the tag name, a partial tag name, or a data type.

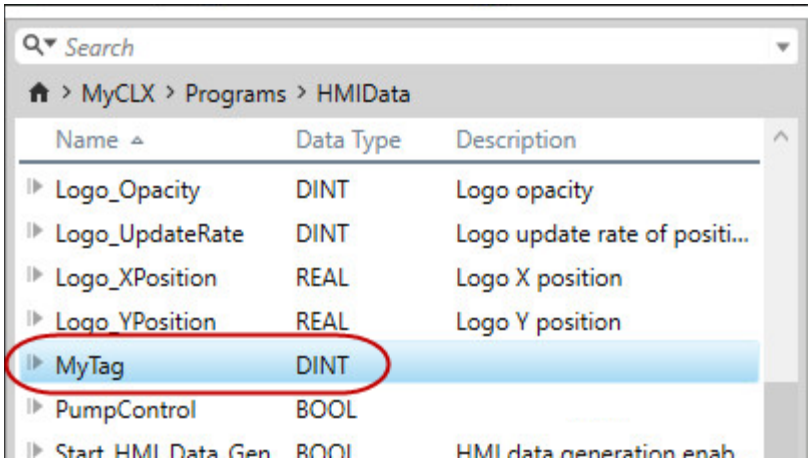
3. Expand *MyCLX* > *Programs* > *HMIData*



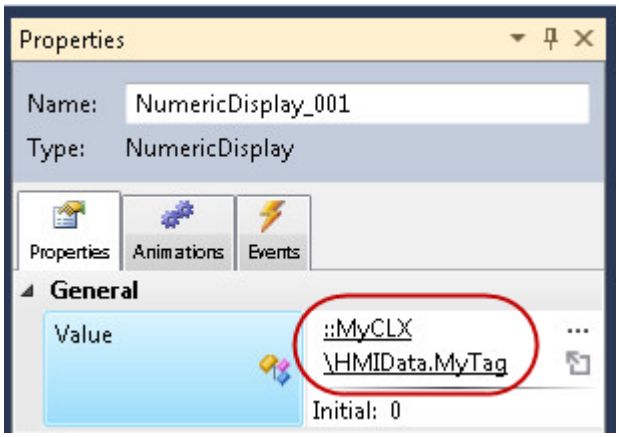
Notice the breadcrumbs at the top of the data item browser. In addition to the Home button, the breadcrumbs can be used to navigate to other parts of the ACD project hierarchy. Click on a link to navigate back to that part of the hierarchy, or use the right arrows to navigate forward in the hierarchy.



4. Scroll down and double click *MyTag*

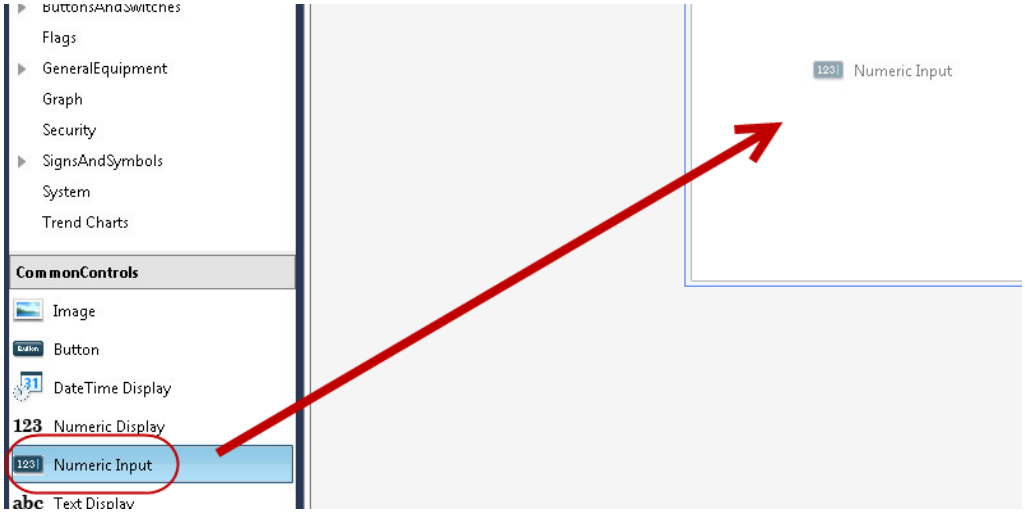


The tag will now appear in the Value property field.



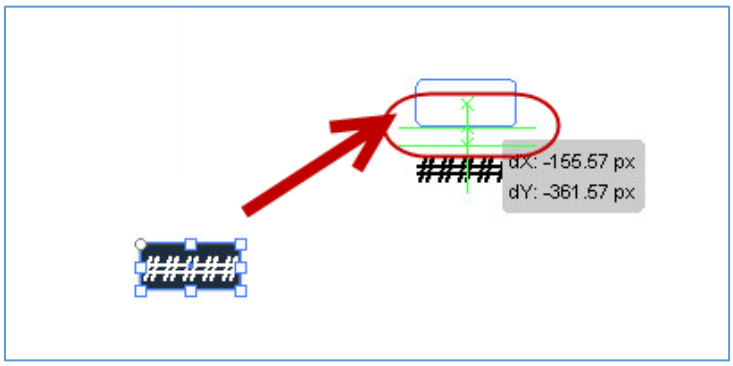
A numeric display has now been configured. Next, create a numeric input.

5. Click and drag the *Numeric Input* element onto the screen.



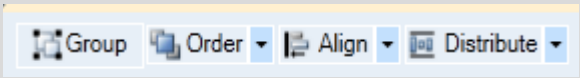
6. Use the alignment guides to reposition the element so that it is centered above the *Numeric Display*.

   Alignment guides, as well as other tools, have been included in View Designer functionality to ease the process of creating screens.



These alignment guides appear whenever one element is being moved into the proximity of another. They show the midline, top, bottom, and side of the element, and enable snapping to an aligned position.

Additionally, canvas tools are available – when multiple objects are selected, the menu of options appear above the screen canvas.



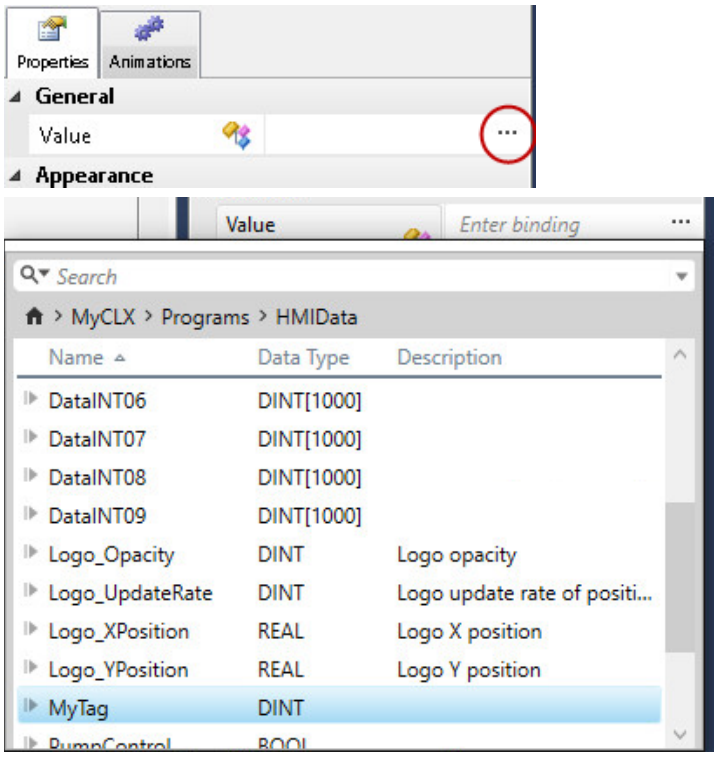
Group: Use this tool to create a group out of one or more elements on the canvas. The new group will function as a single graphic element. This group will now appear as a new entity in the **Graphic Explorer**.

Order: This tool will change how the selected element is stacked on the screen. The stacking order can be changed to move an element forward, backward, on top of all other elements, or behind all elements.

Align: Graphic elements can be aligned to the edges of other graphic elements, or to the bottom, vertical, or horizontal centers of the elements.

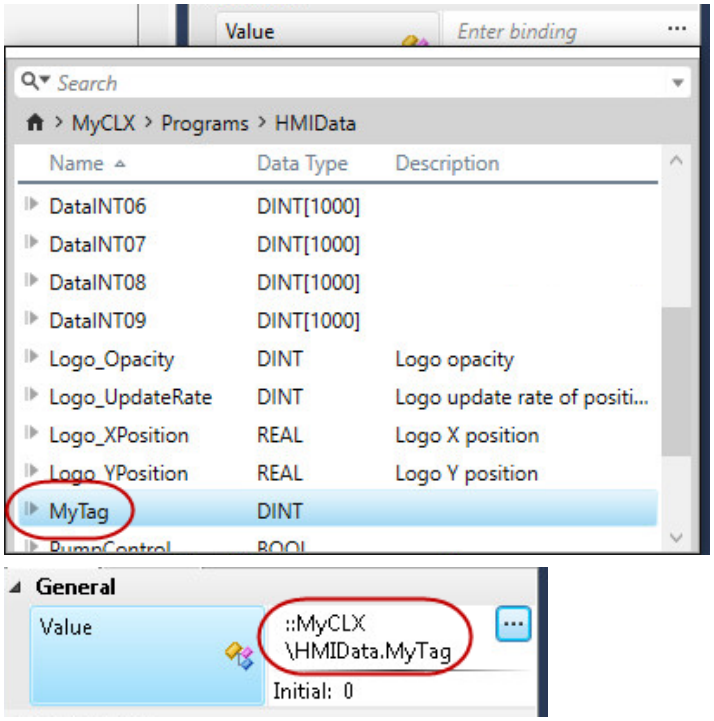
Distribute: This tool spaces elements evenly either horizontally or vertically. This tool can only be used when three or more elements are selected on the canvas.

7. With the NumericInput element selected, click the *ellipsis* button for Value in the Properties pane to open the Data Item Browser.



> Notice that the Data Item Browser opens to the most recent location that has been browsed.

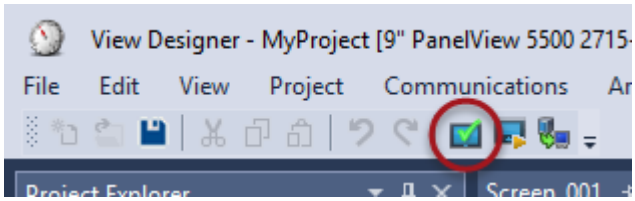
8. Double click *MyTag* to bind it to the Value property of the Numeric Input element.



Testing the Project using the Emulator

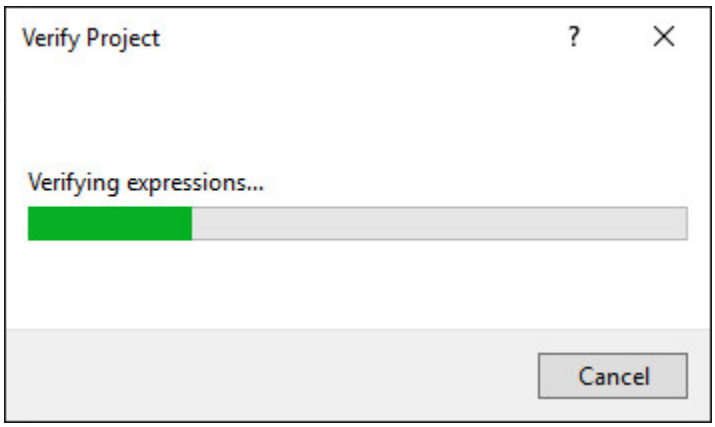
Now that the application has a couple of elements added, use the Emulator feature to test the project using the steps below.

1. First, verify the project by clicking the *Verify Project* button in the toolbar.

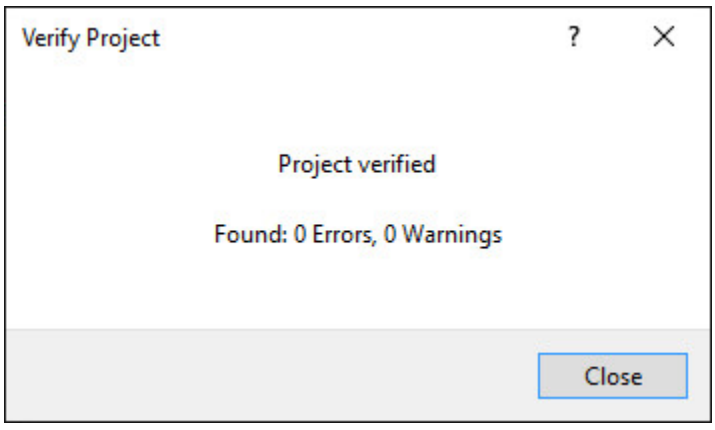


> Verification is also performed when the project is prepared for the emulator and when it is downloaded to the terminal.

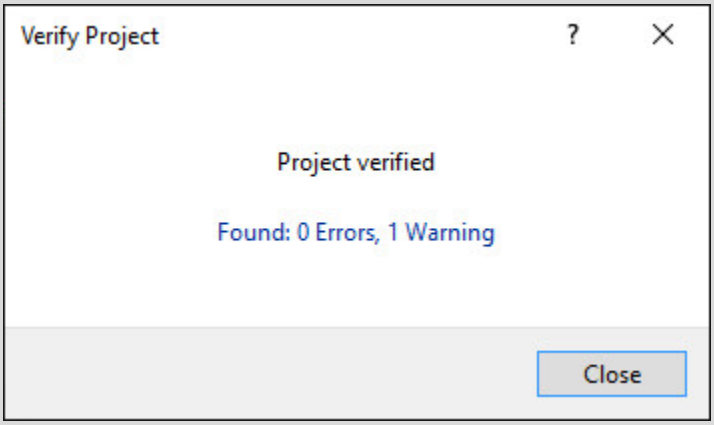
The software will verify the project, and display any errors or warnings that may exist.



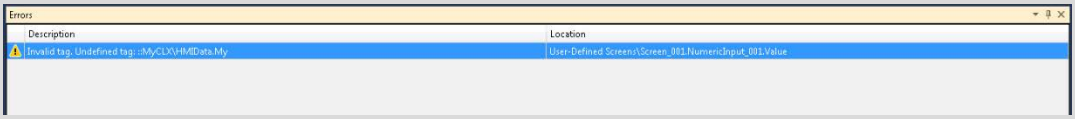
If no errors or warnings exist, the dialog will reflect that information.



Note: If errors or warnings are found, the dialog will update with the number of errors and warnings found.



If any errors or warnings are detected, the **Errors** pane will appear below the screen canvas pane when the Verify Project box is closed.

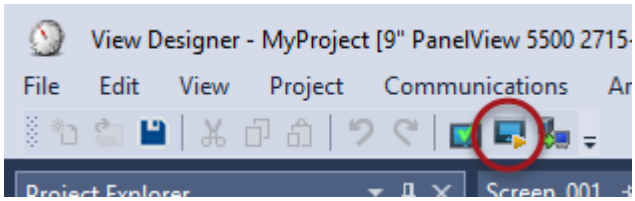


Double click the errors or warnings to be taken to the corresponding component of the project.

2. Close the **Verify Project** dialog using the *Close* button.

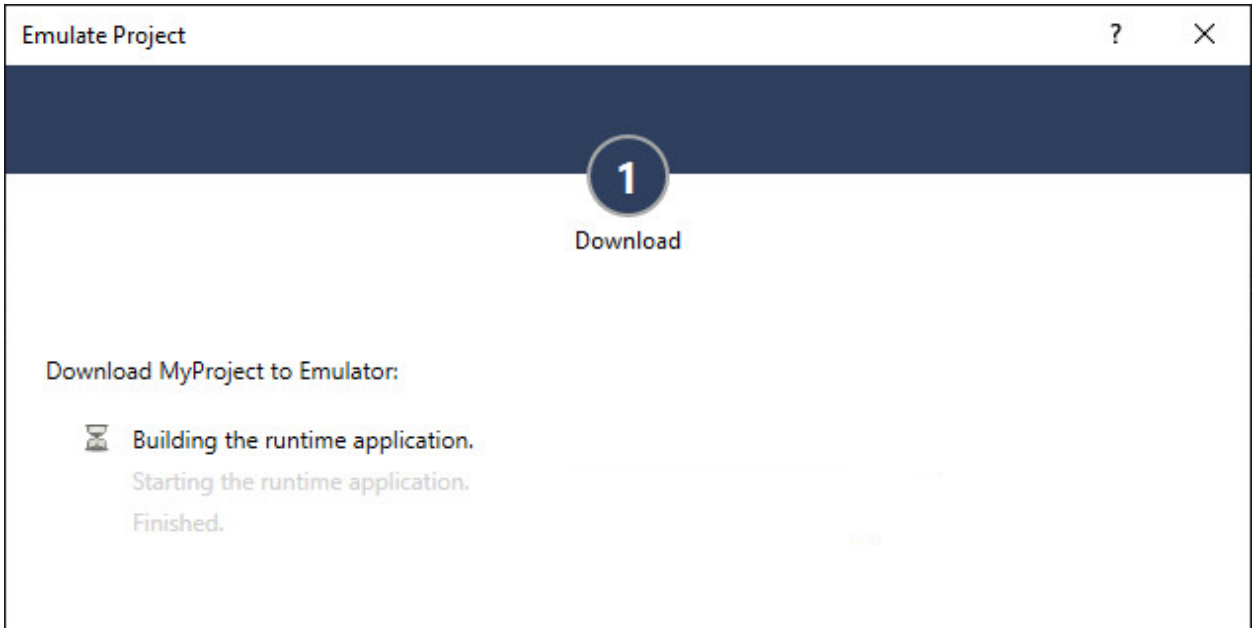
   If any errors or warnings have appeared, clear them, then verify the project again.

3. Next, click the *Emulate* button.

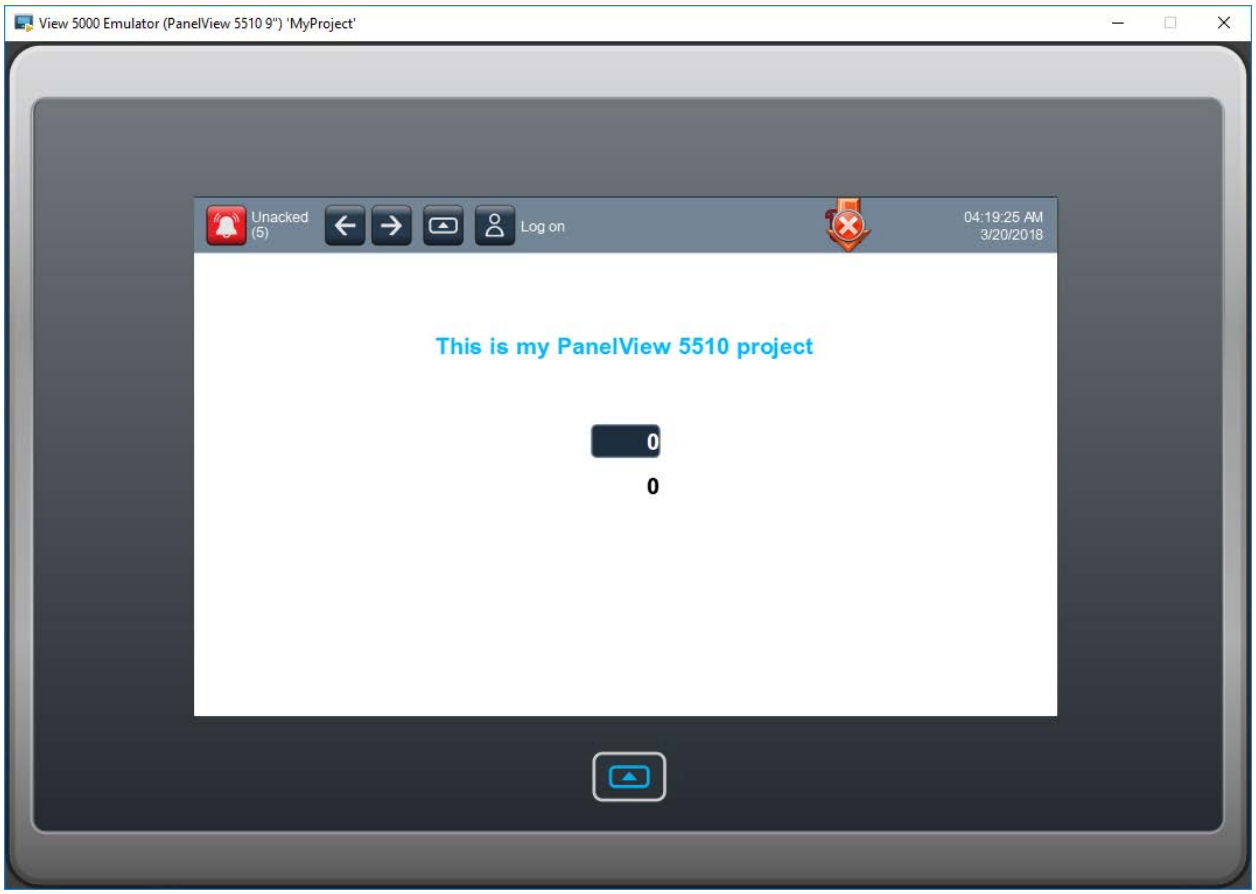


The information entered into the Project Properties dialog for the Emulator to Controller path will be used to establish the connection between this View Designer instance and the controller at this station.

The Emulate Project dialog window will open.



When the project has been built, and the runtime application has started, the Emulator will open.



Notice the two elements in the banner that are displaying runtime diagnostic icons:

These elements are bound to terminal system tags – because the project is running using the Emulator instead of a terminal, these elements cannot connect to the system tags. This results in the runtime diagnostics shown here.

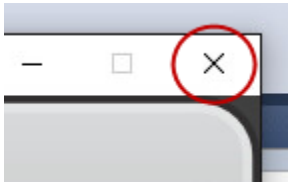
4. Use the numeric input element to open the soft keypad.

5. Enter the number *'15'* and click *OK*.

Notice that the Numeric Display is showing the new value.

15

6. Close the Emulator.



Now, let's continue to modify this application.

Animation, Events, and Popups

Understanding Animation

Many elements have useful built in properties such as level, fill color, and show flow that can be bound to tags and expressions. Alternatively, State and Color Tables can be configured for elements when it is necessary to reflect multiple values of a tag or expression in different ways.

Understanding Events

Events can be configured for any element on a screen. Event options include:

- Button Behavior
- Key Press
- Key Release
- State Enter
- State Exit
- Touch Press
- Touch Release

Once an Event is added to an element, the designer can then create and configure one or more commands that will be performed when that event occurs. Commands include:

- Incrementing, Toggling and Writing to a tag
- Screen / Popup navigation
- Language switching
- PDF navigation
- Interacting with the Logix HMIBC instruction

Understanding Popups

Popups are a different type of screen that can be created for the PanelView™ 5000 terminal. These are usually smaller than the terminal's screen, but can be configured to be any size.

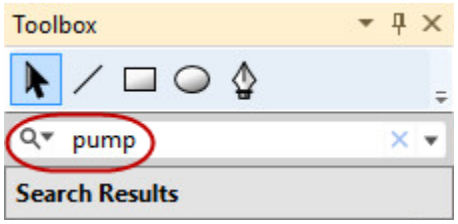
In this section you will do the following:

- Use built-in animation to determine when a pump's flow color is visible
- Add an Event to the pump element so that it toggles a tag when the pump is touched at runtime
- Create a popup
- Turn a text display into a multistate indicator

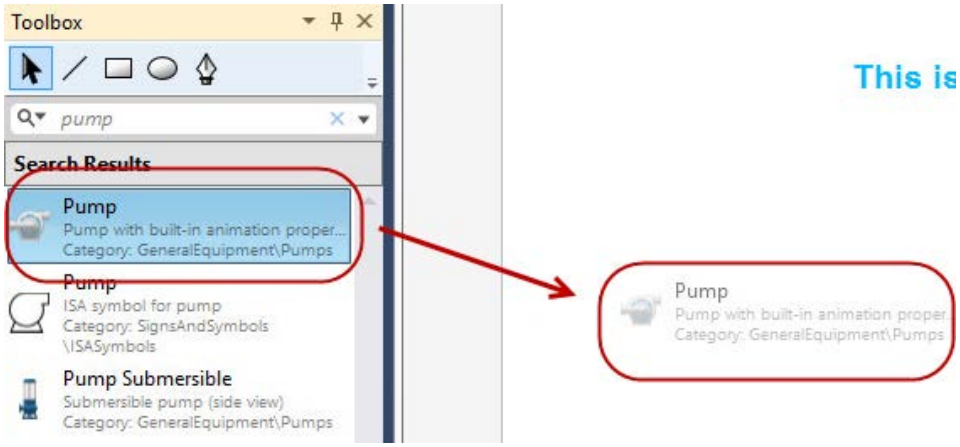
Configure Built-in Animation

First, let's turn one of the native elements into an indicator and button.

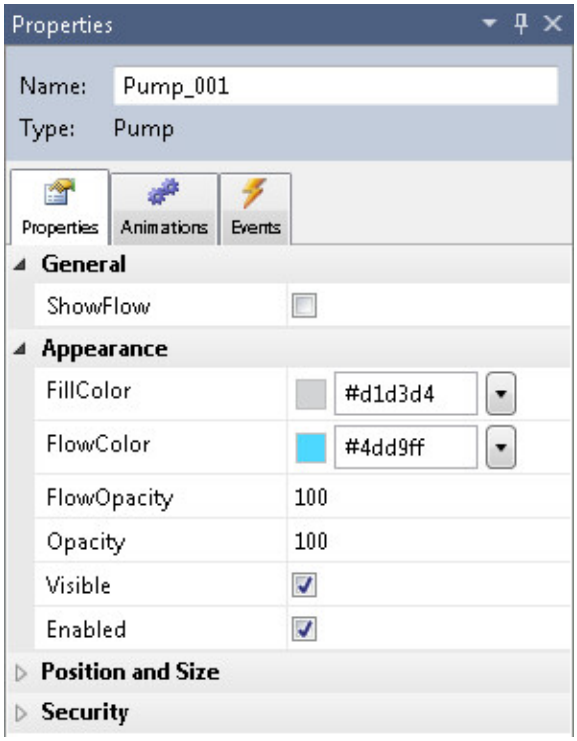
1. Return to View Designer, and in the **Search** field of the **Toolbox**, type *'pump'*.



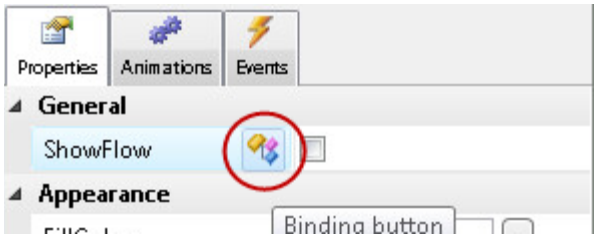
2. Select the first *Pump* and drag it to the screen canvas.



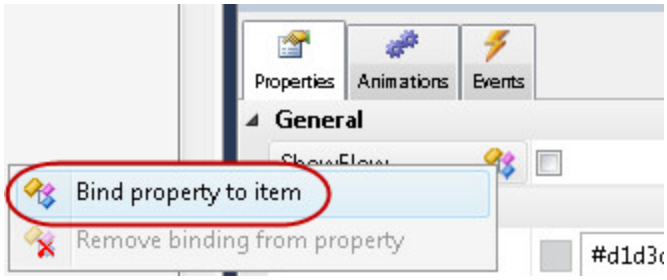
The Properties panel will now display the available properties for the Pump element.



3. Float the mouse over the *ShowFlow* property so that the binding button appears, and click the *binding button*.

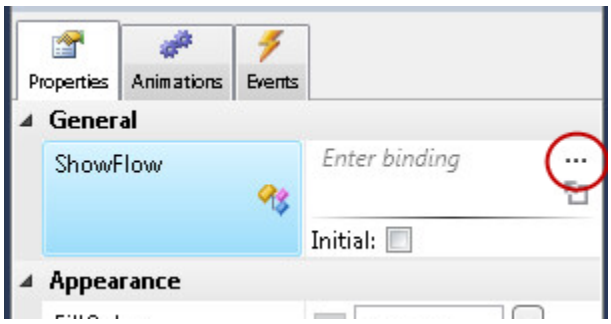


4. Click *Bind property to item*.



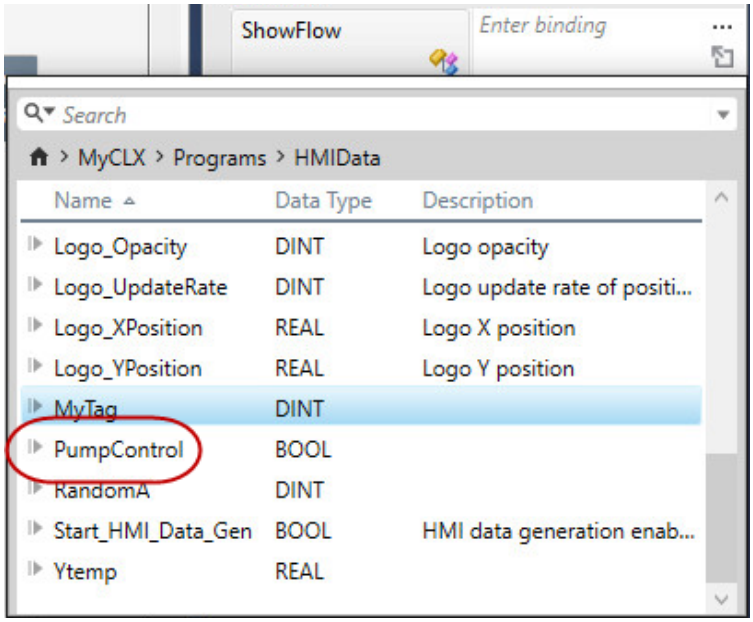
> Remember, almost any element property can be bound to a controller tag or expression using the Binding button.

5. Use the *ellipsis* button to open the Data Item Browser.



The Data browser should return to MyCLX > Programs > HMIData, with MyTag highlighted.

6. Double click *PumpControl*.

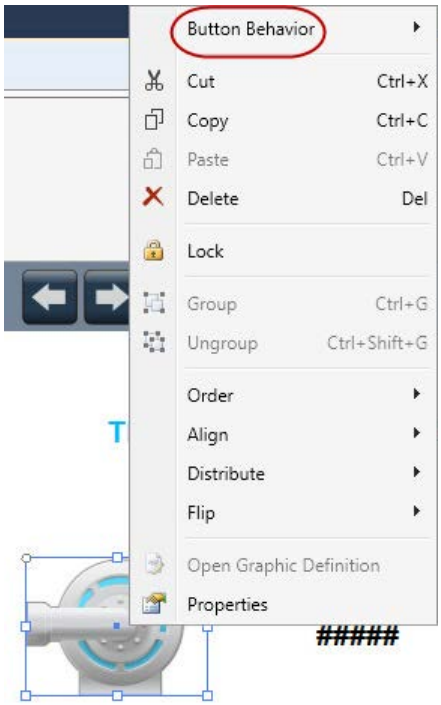


> Note that the PumpControl tag is Boolean, so the Pump element will only show its flow when the value of the PumpControl tag is 1.

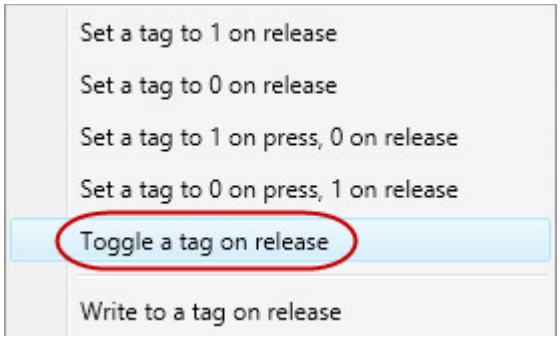
Using Button Behavior

For the pump element, Button Behavior will be used to toggle the value of a tag in the controller. Follow the steps below to configure Button Behavior.

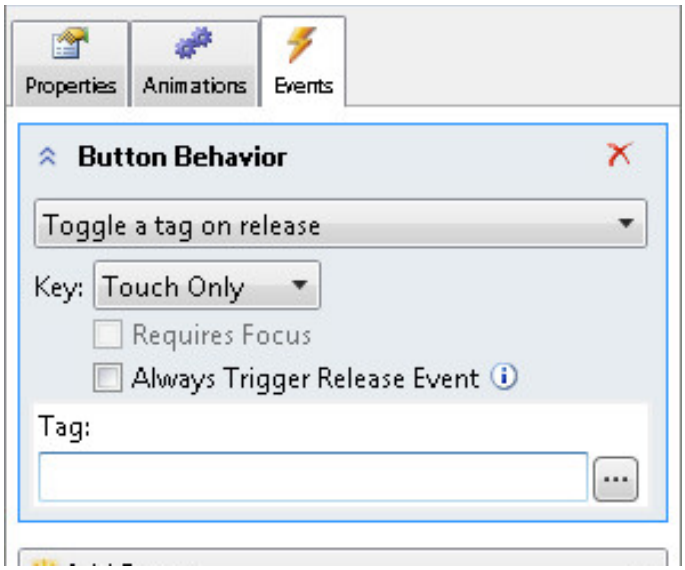
1. Right click the *pump* element and float the mouse over *Button Behavior*.



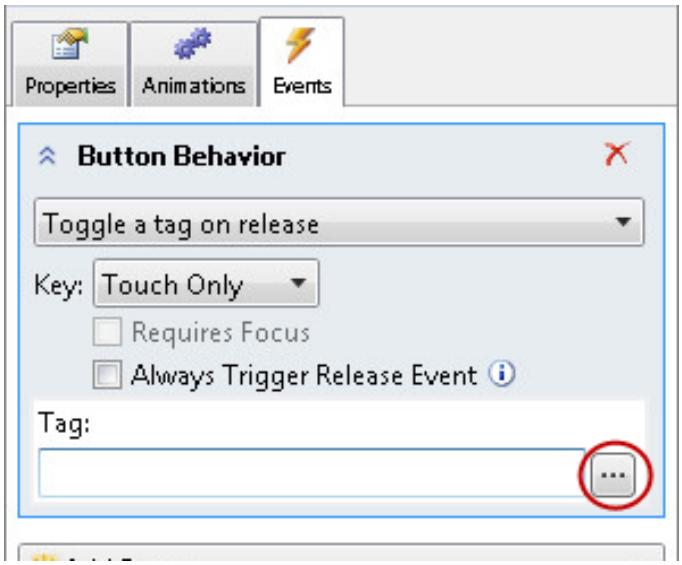
2. Click *Toggle a tag on release*.



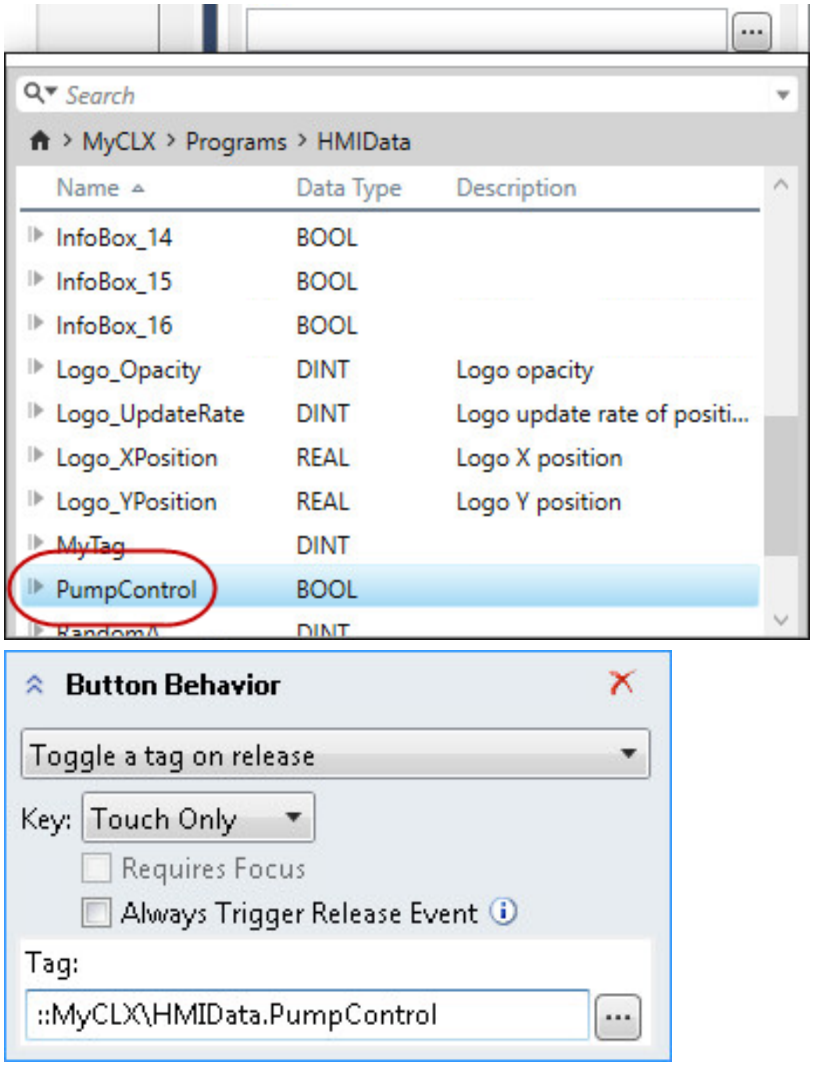
Notice that the **Properties** panel has automatically opened the **Events** tab, with the **Button Behavior** event partially configured.



3. Use the *ellipsis* button to open the **Data Item Browser**.



4. Double click *PumpControl*.

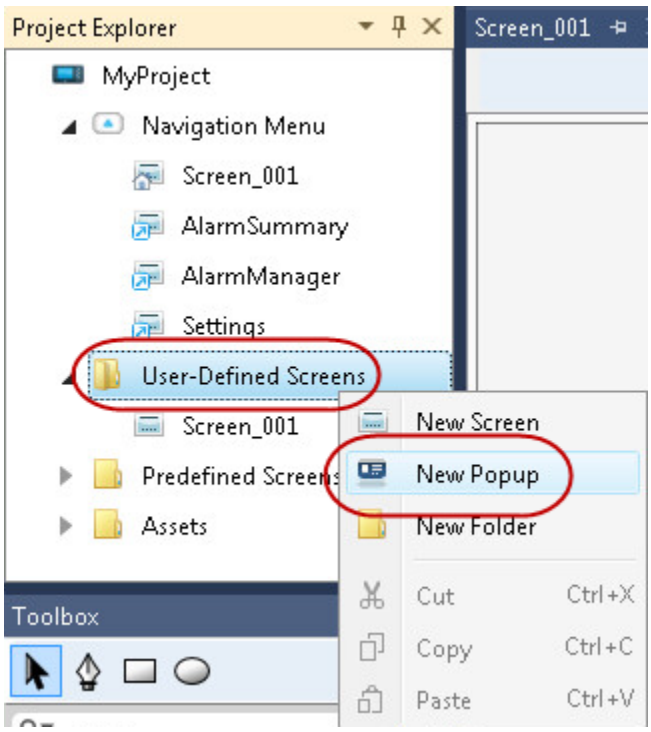


5. Save the project using the *Save* button in the toolbar.

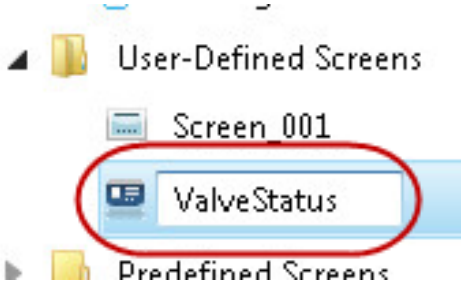
Create a Popup and Use State Table Animation

A Popup is a small window that appears superimposed on the currently open screen of the PanelView™ 5000 terminal. This provides a method of showing data related to the screen, including diagnostic information, without having it displayed all the time, or requiring the user to navigate to another screen. A popup can also be used to prompt a user to do something related to that screen.

1. Right click *User-Defined Screens*, and select *New Popup*.

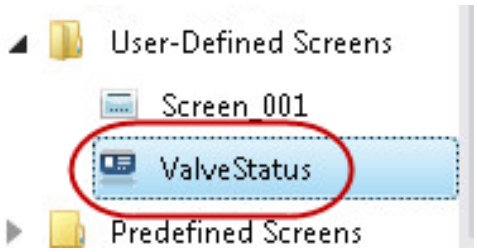


2. Type *'ValveStatus'* and press *Enter* on the keyboard.

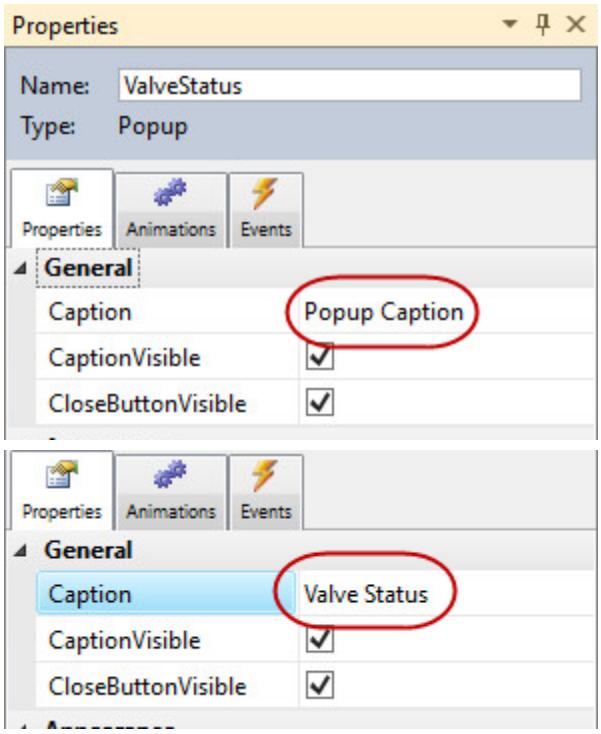


3. Double click the new *Popup Display* to open it.

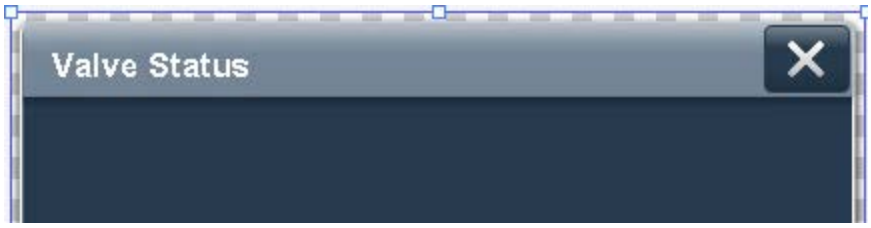
   The display can also be opened using the Enter key.



4. Change the Popup Caption using the steps below:
   - Click in the *Popup Caption* field, and highlight *Popup Caption*
   - Type *'Valve Status'*
   - Press *Enter*



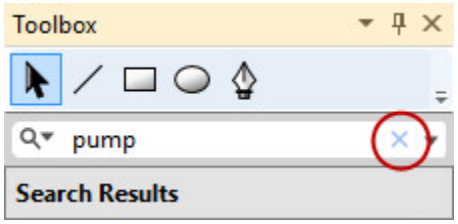
Notice the caption has updated accordingly.



Using State Table Animation

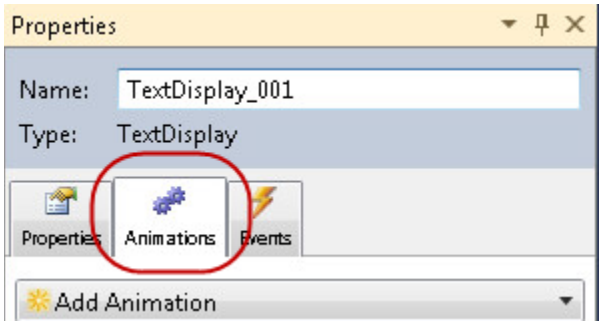
The State Table makes it possible to select specific properties that will be affected by a value change. In this way, a custom multistate indicator can be configured. Follow the instructions below to specify the properties of the Text Display that will be affected by the tag value.

1. Clear the filter used in the **Toolbox** by clicking the **x** in the search field.

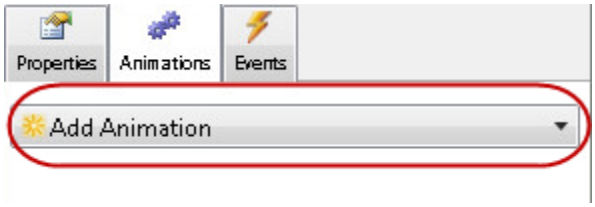


2. Double click ***Text Display*** to add it to the Popup.

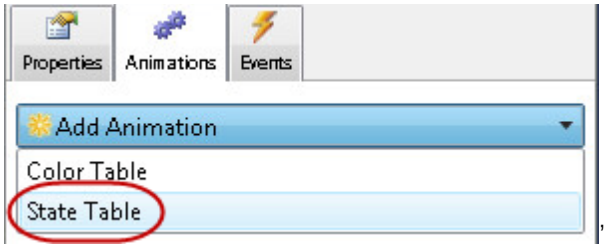
3. Click the ***Animations*** tab in the **Properties** pane.



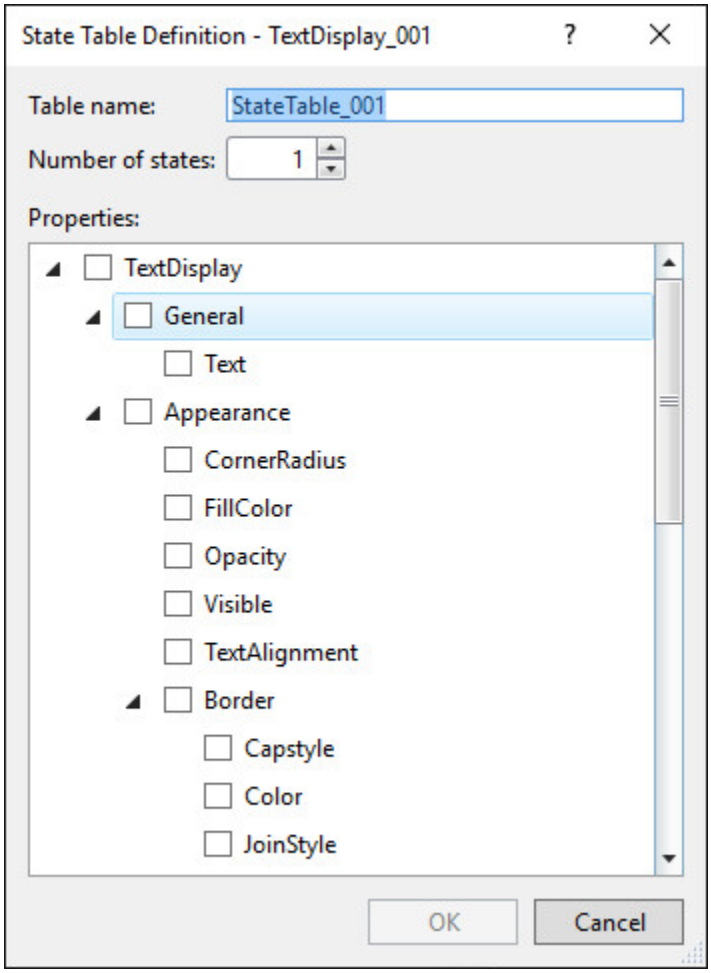
4. Open the drop down list by clicking ***Add Animation***.



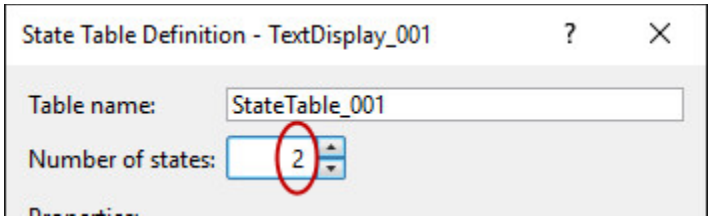
5. Select *State Table* from the list.



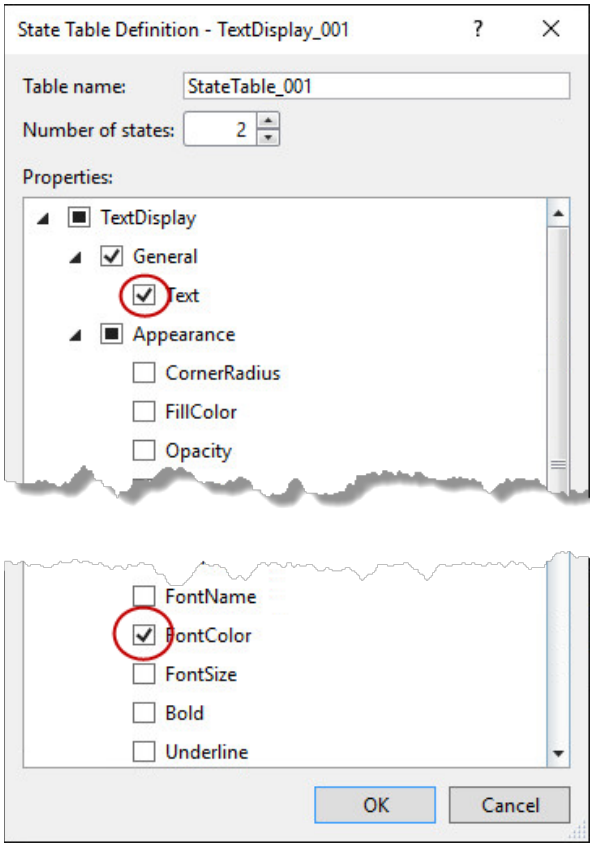
The State Table Definition dialog window will open:



6. Increase the Number of states to *2*.

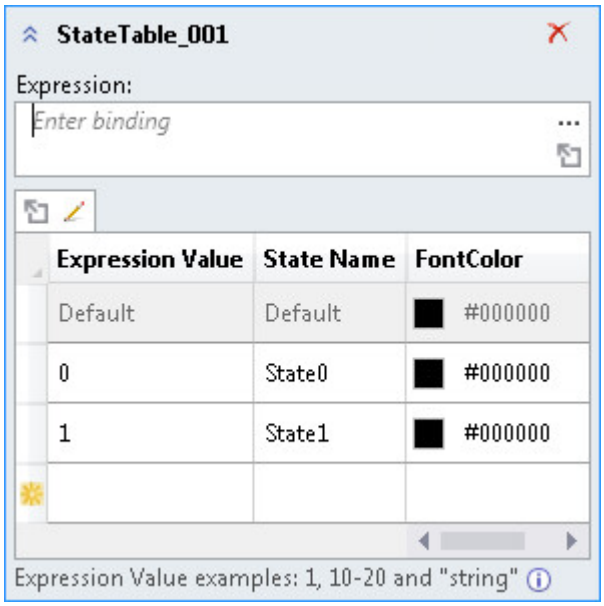


7. Click the checkboxes for the following:
   - Text
   - FontColor



8. Click *OK*.

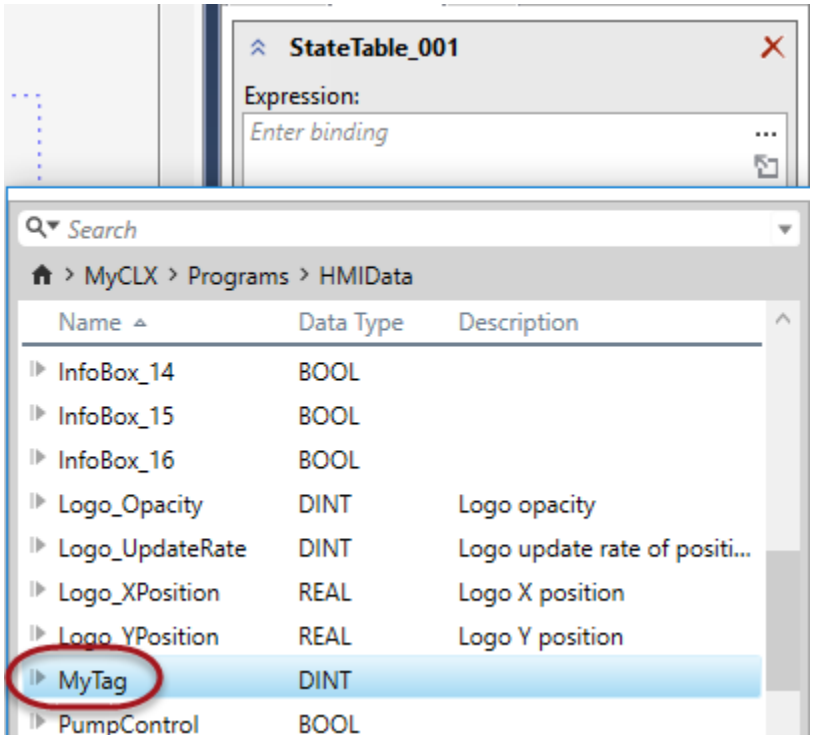
   The State Table will appear with the selected configurations.

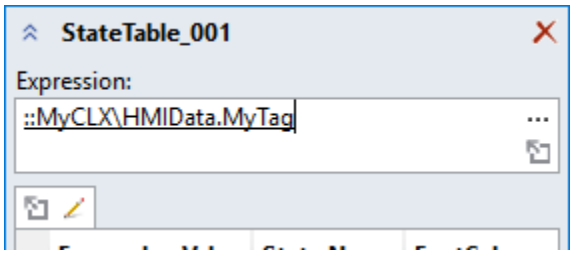


9. Click the *ellipsis* in the Enter binding field to open the Data Item Browser.

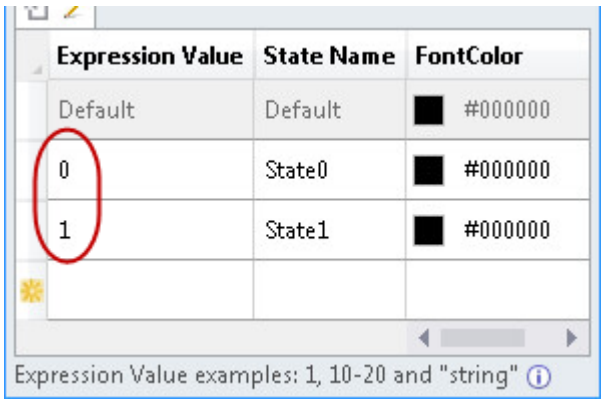
This area can be used to bind tags to the State Table. In addition, Expressions can be used in this field.

10. Double click *MyTag*.

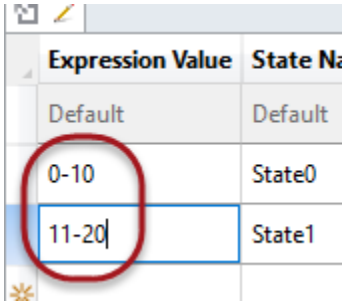




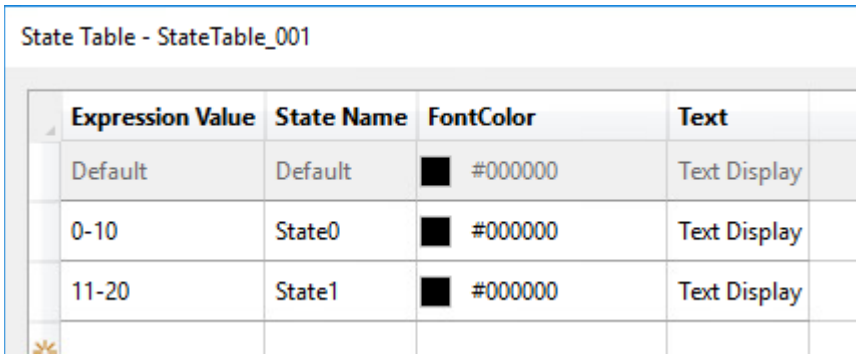
Notice that each state has an **Expression Value** by default. These values can be single digits, or a range of values.



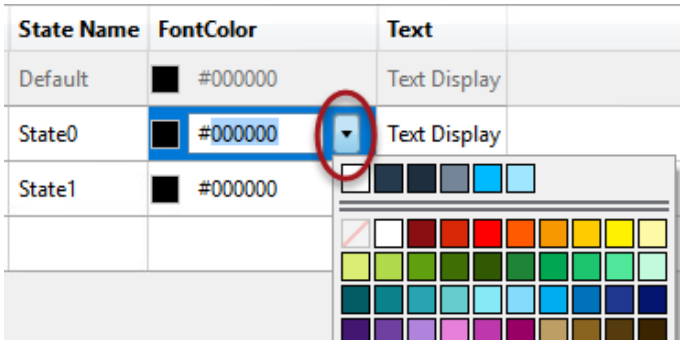
11. Change the **Expression Value** to the following:



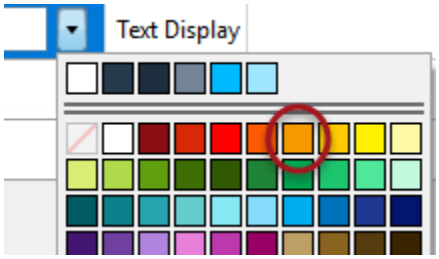
12. Open the **State Table Editor** using the *Open table editor* button.



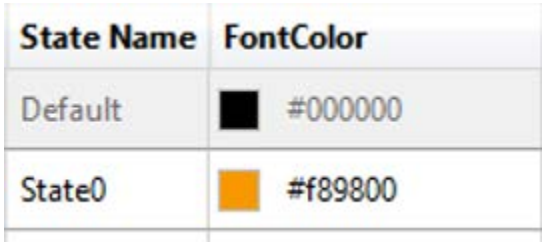
13. For State0, select the FontColor field, and use the *drop down* button to open the Color Palette.



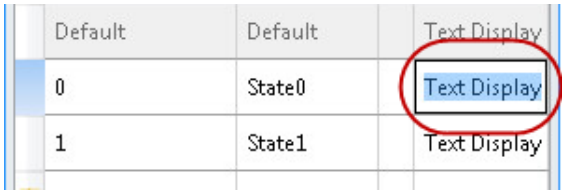
14. Double click *Orange*.

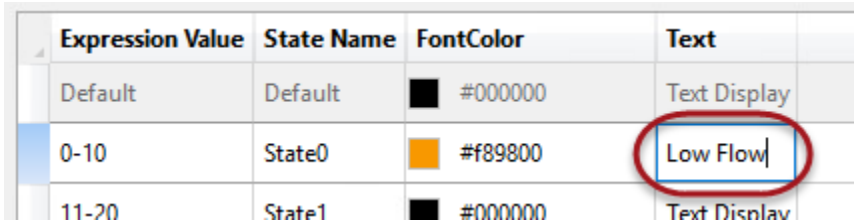


Note: it is also possible to manually enter the color's hex value (f89800 for orange) in the FontColor field.



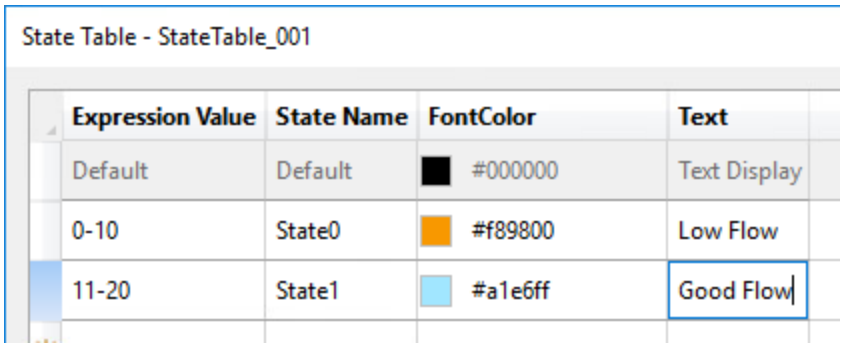
15. Click in the *Text Display* field, and type *'Low Flow'*.





16. Repeat the steps above for the remaining state, so that the State table matches the picture below:

    The State Table should now look like the following:

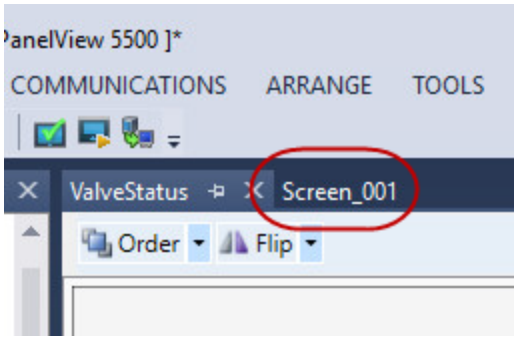


17. Click *Close*.

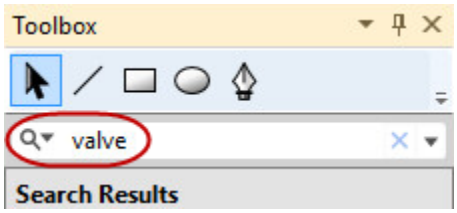
Create a Navigation Event

There are two ways to use navigation during runtime. One is to add Event navigation to any element. The other is to add a shortcut to the Navigation Menu in the Project Explorer that points to the screen. Because Valve Status is a Popup type, it cannot be added to the Navigation Menu. Therefore, an element on another screen needs to have a Navigation Event configured. Follow the steps below to create an element with a navigation event.

1. Return to the Screen_001 screen by clicking its tab.

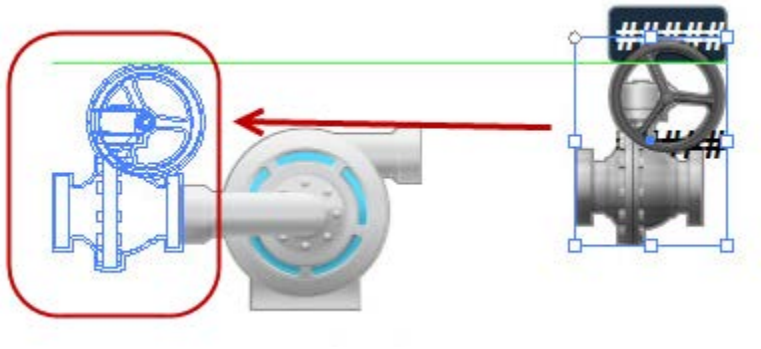


2. Type *'Valve'* in the Toolbox search field.

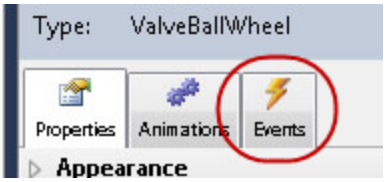


3. Scroll down to find *Valve Ball Wheel*, then double click it to add it to the canvas.

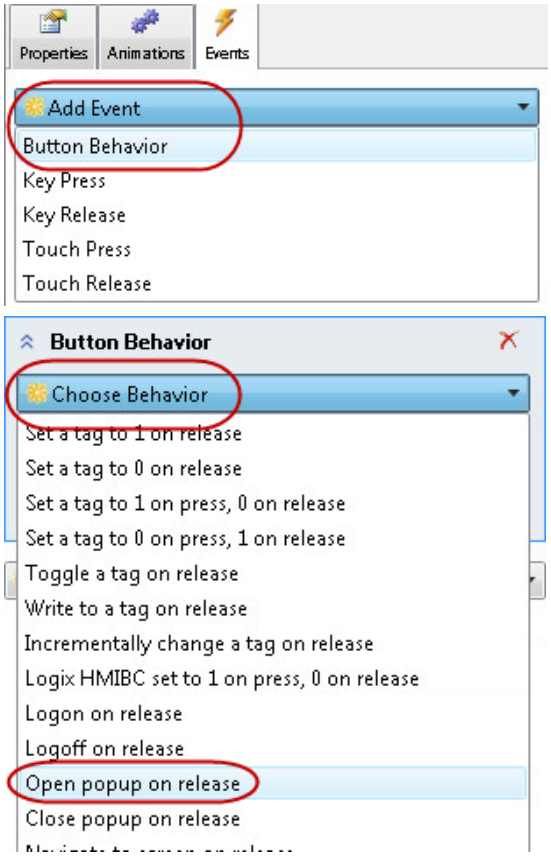
4. Reposition the element so it is around the inflow of the pump.



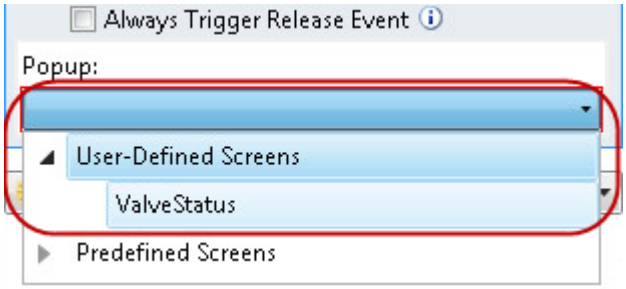
5. Click the *Events* tab.



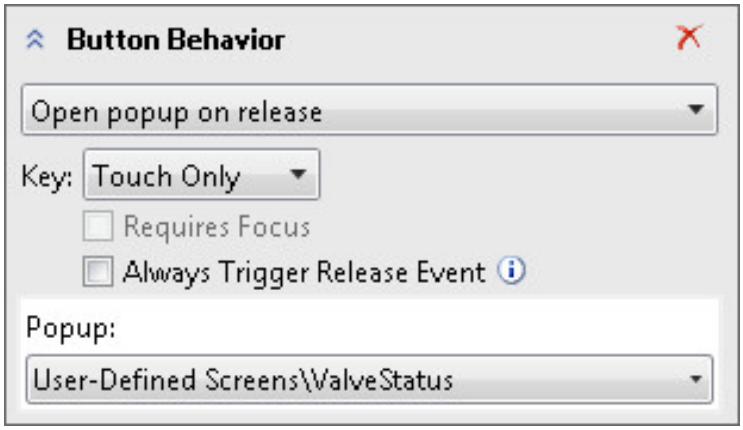
6. Use drop down menus to select the following:
   - Button Behavior
   - Open popup on release



7. Use the *Popup* drop down list to expand *User-Defined Screens*, then select *ValveStatus*.



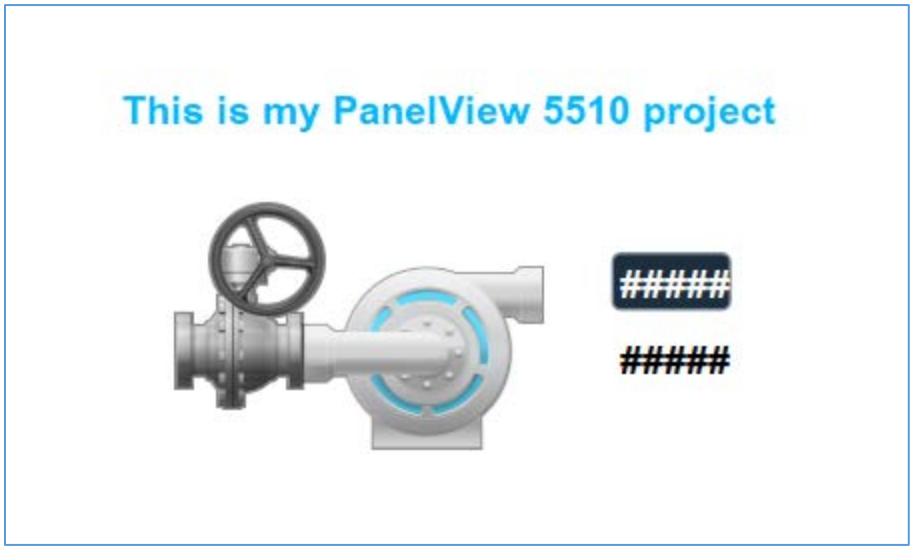
The Button Behavior configuration should look like the following:



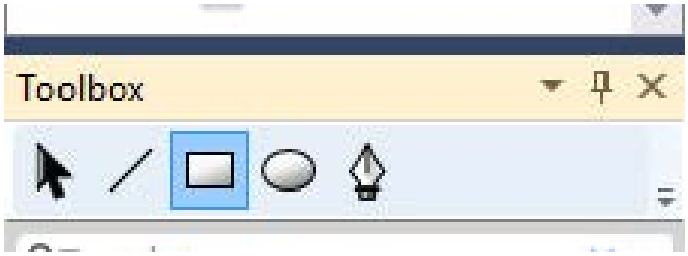
Graphic Explorer

The Graphic Explorer is used to easily locate and manipulate graphic elements, particularly when multiple elements are grouped together or stacked on top of each other.

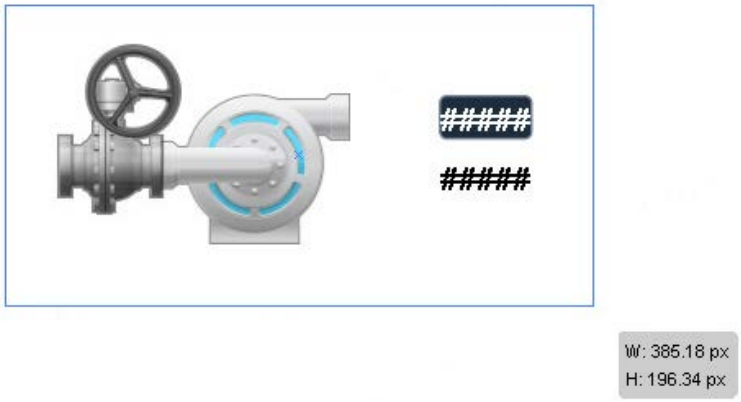
1. Rearrange the elements on the screen, using the mouse and guidelines, until the screen looks similar to this:



2. Click the *Rectangle* drawing tool in the Toolbox.

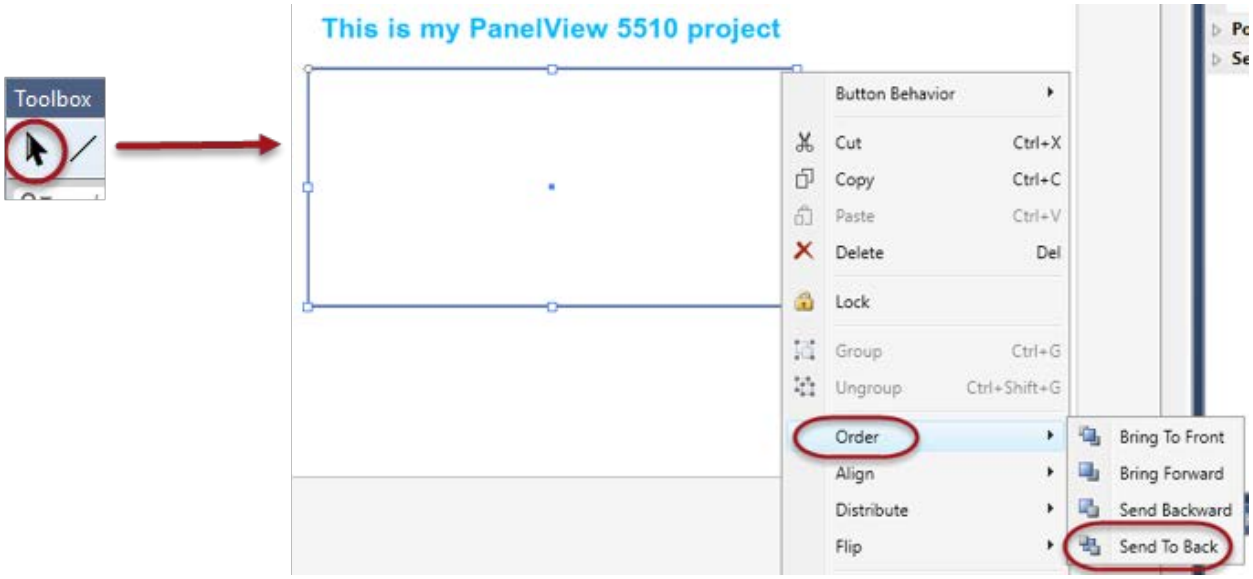


2. Draw a rectangle around the existing elements.



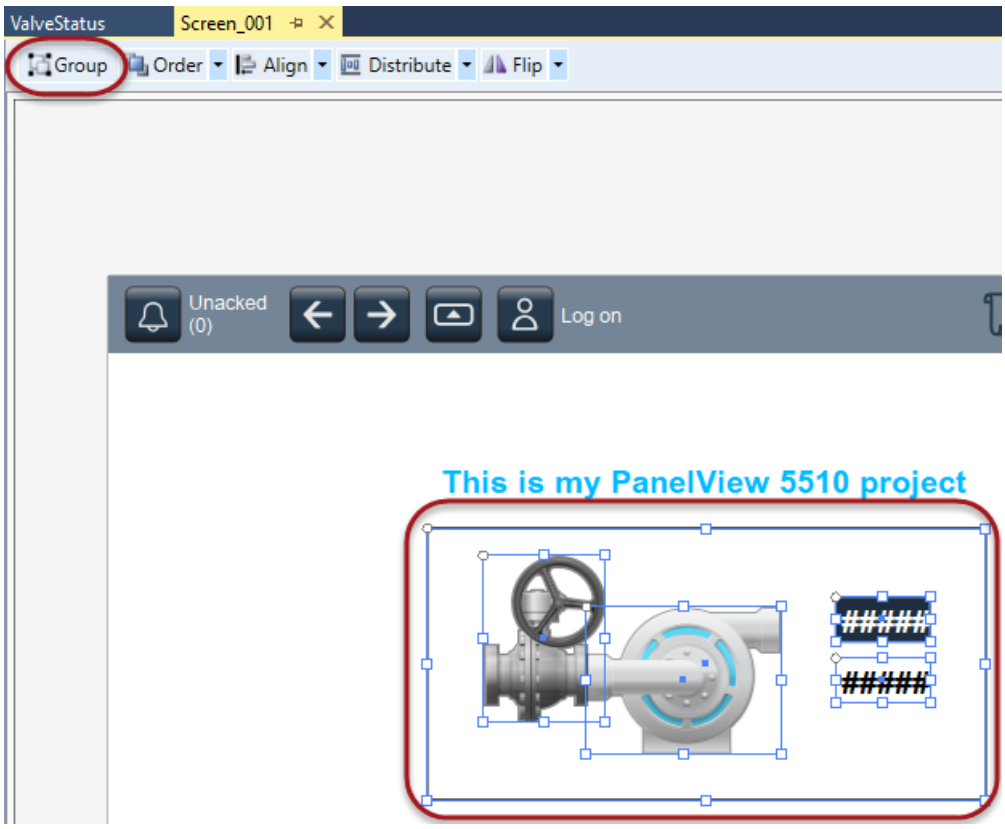
The rectangle will appear on top of the existing elements, but should instead be used as a background.

3. Click the *Selection Tool* arrow in the Toolbox, then right click the newly drawn rectangle and select *Send To Back*, found under Order.

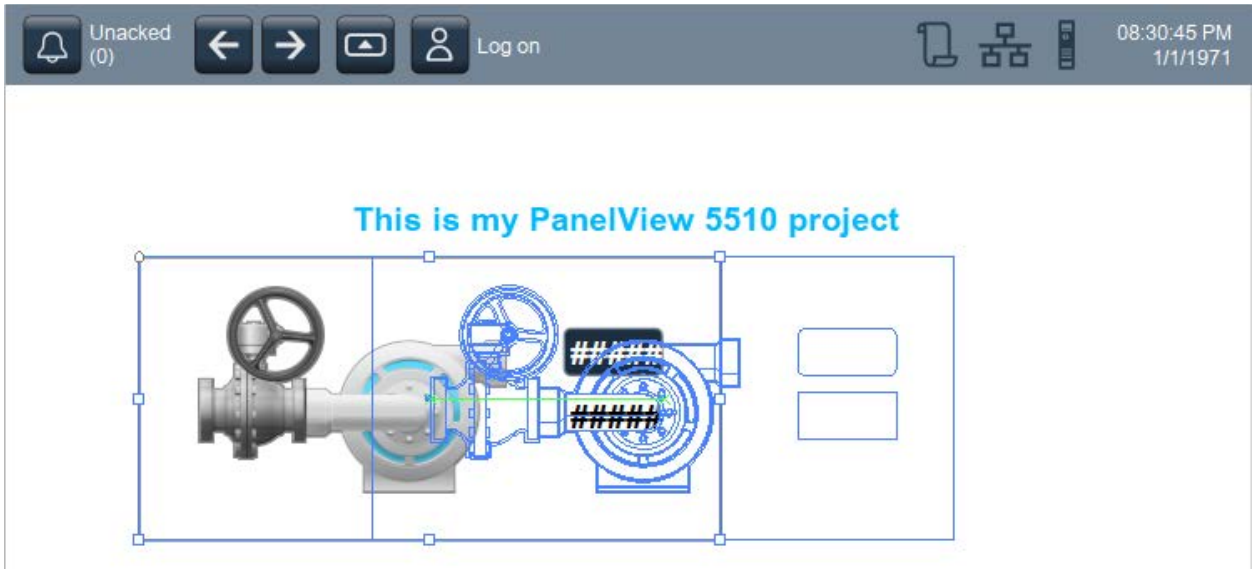


4. To make it easier to move the objects, select the *Rectangle*, *NumericInput* and *NumericDisplay*, *Pump* and *BallValve* objects, and select *Group*.

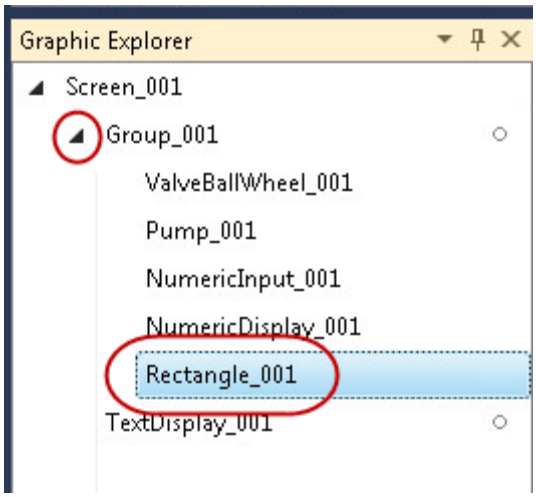
   Select all elements by using the mouse to click and drag around all the elements, or use the CTRL key on the keypad to select all of the elements.



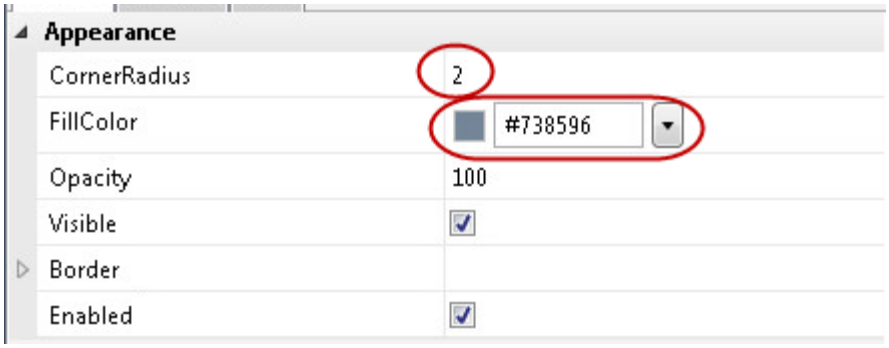
5. Use the alignment lines to center the group of objects with the *TextDisplay*.



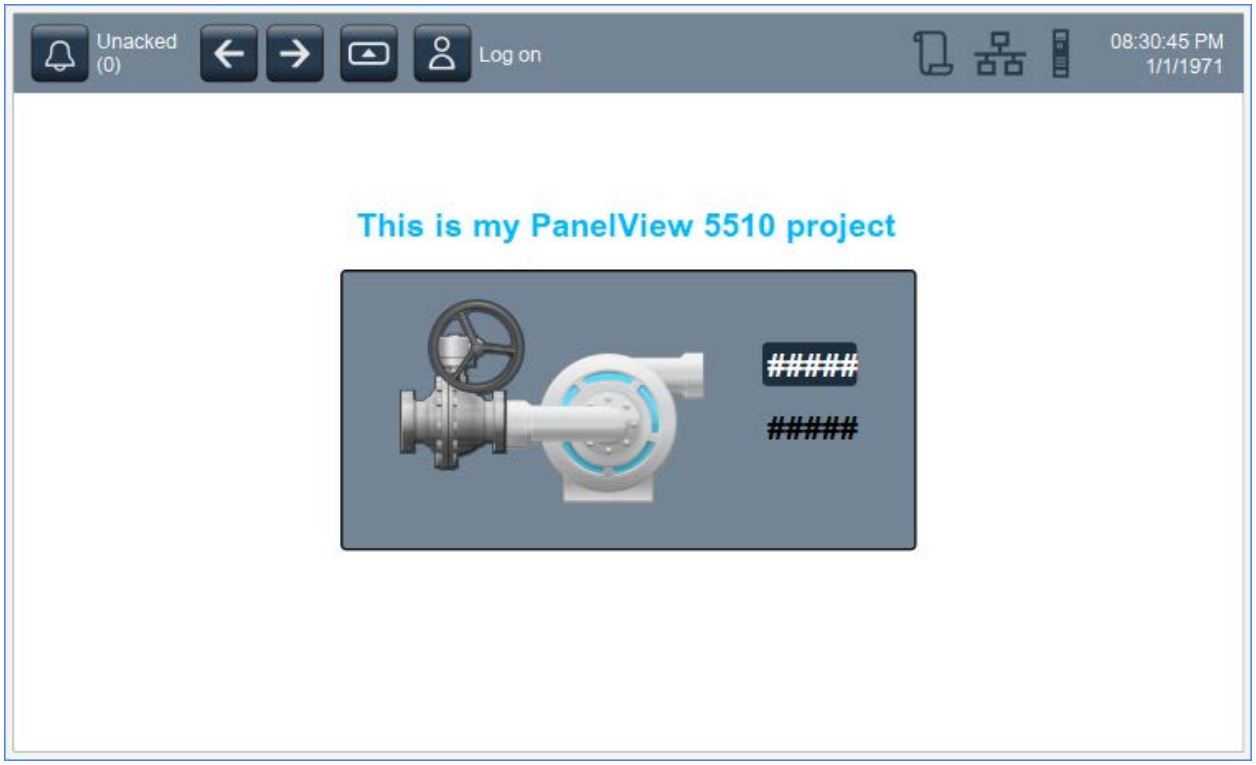
6. In the **Graphic Explorer**, found in the lower right corner of the screen, expand *Group_001*, and select *Rectangle_001*.



7. Change the **CornerRadius** property value to *2*, and the **FillColor** to *medium gray (#738596)*.



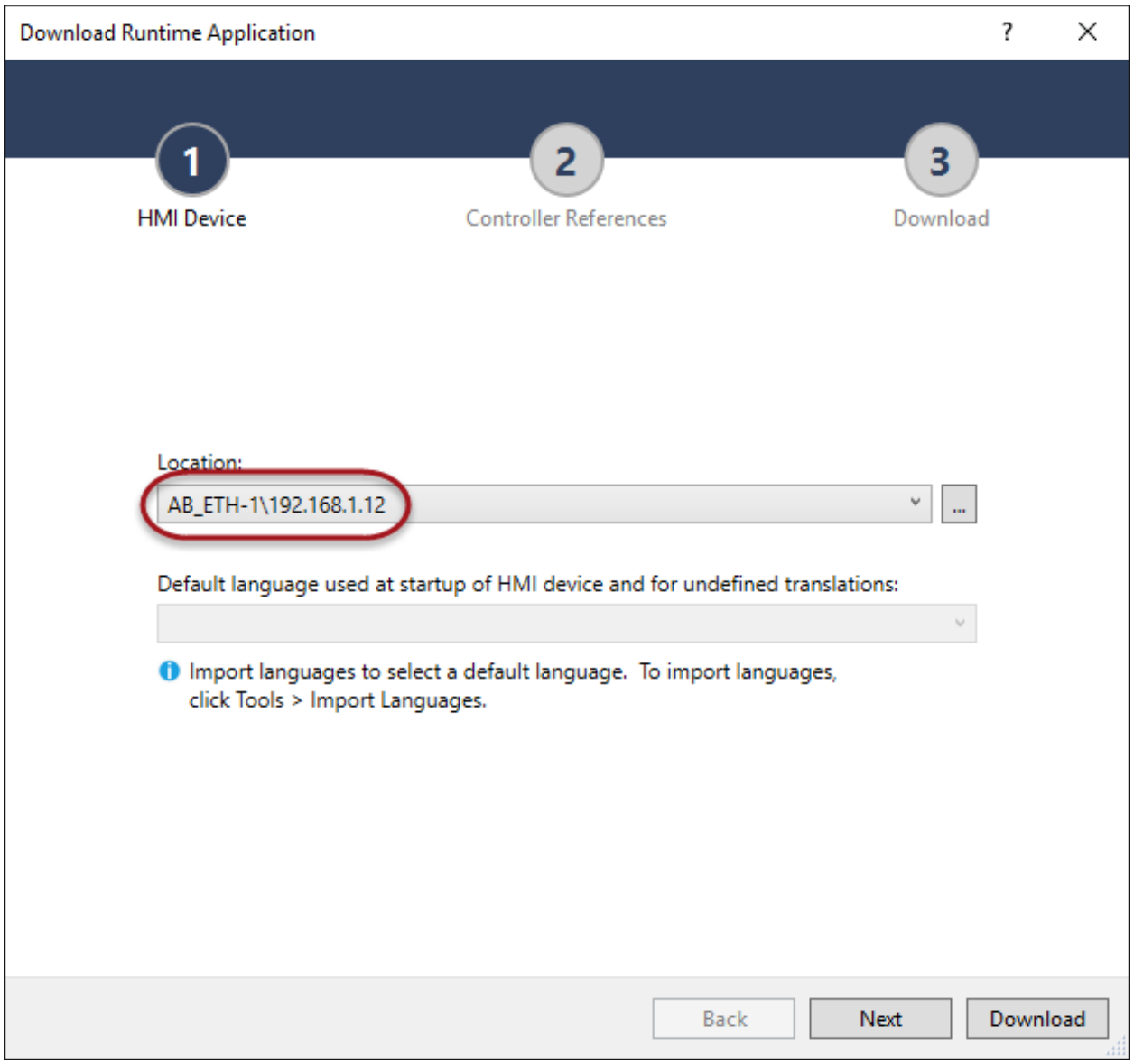
The screen should now look similar to the following:



Download and Explore

1. Click *Communications*, and select *Download…*

2. In the **Download Runtime Application** dialog window, verify that the **HMI Device Location** is correct.

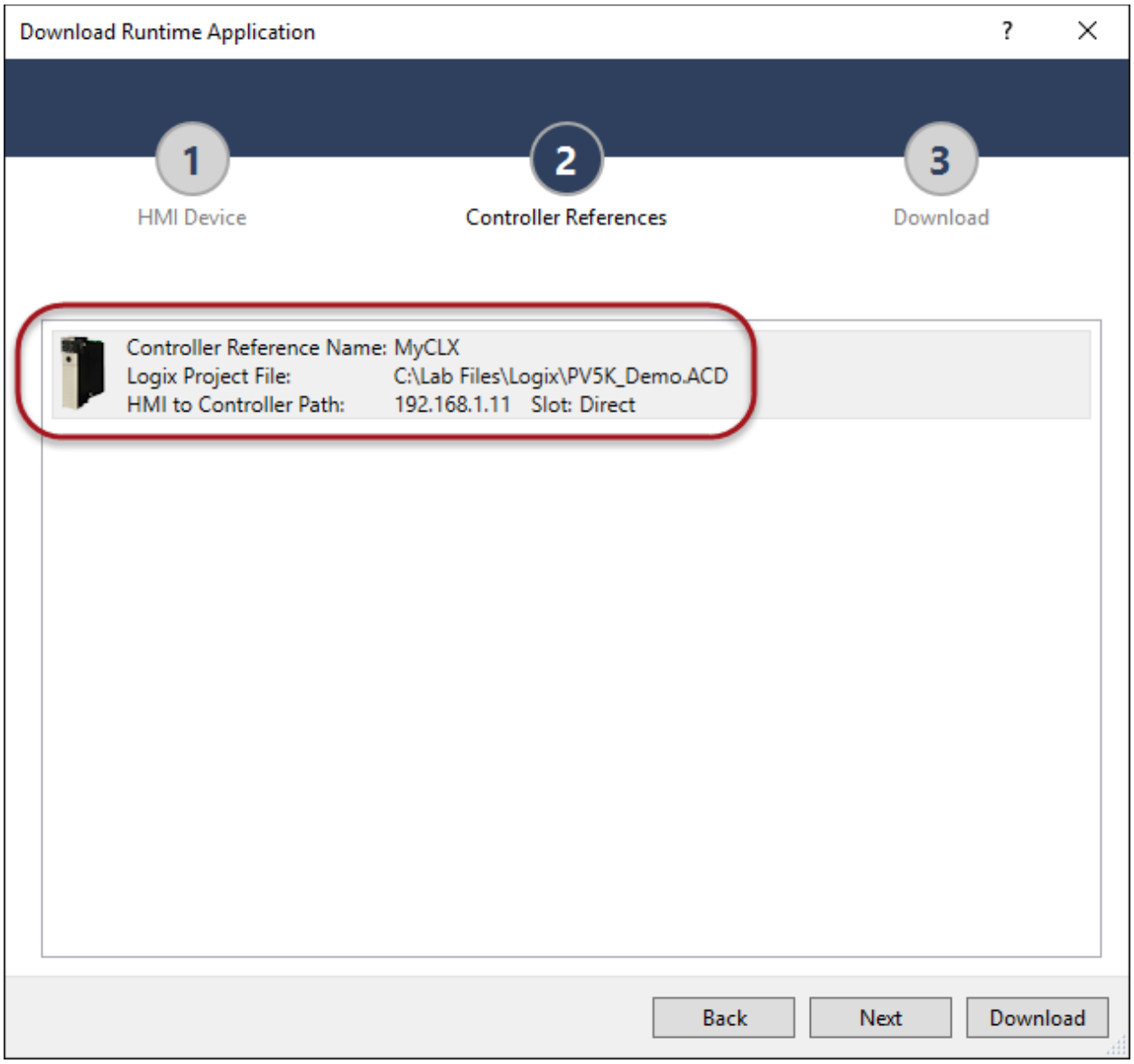


HMI Device Location: Use this page to specify the communication path from the computer running View Designer to the HMI device to which the runtime application will be downloaded.

3. Click *Next*.

4. Now, verify that the **Controller Reference** is correct.

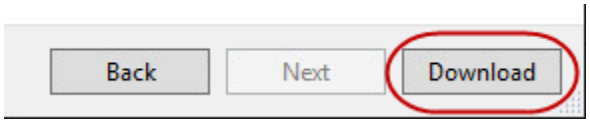
   Note that the controller path shown below may not match that at this station.



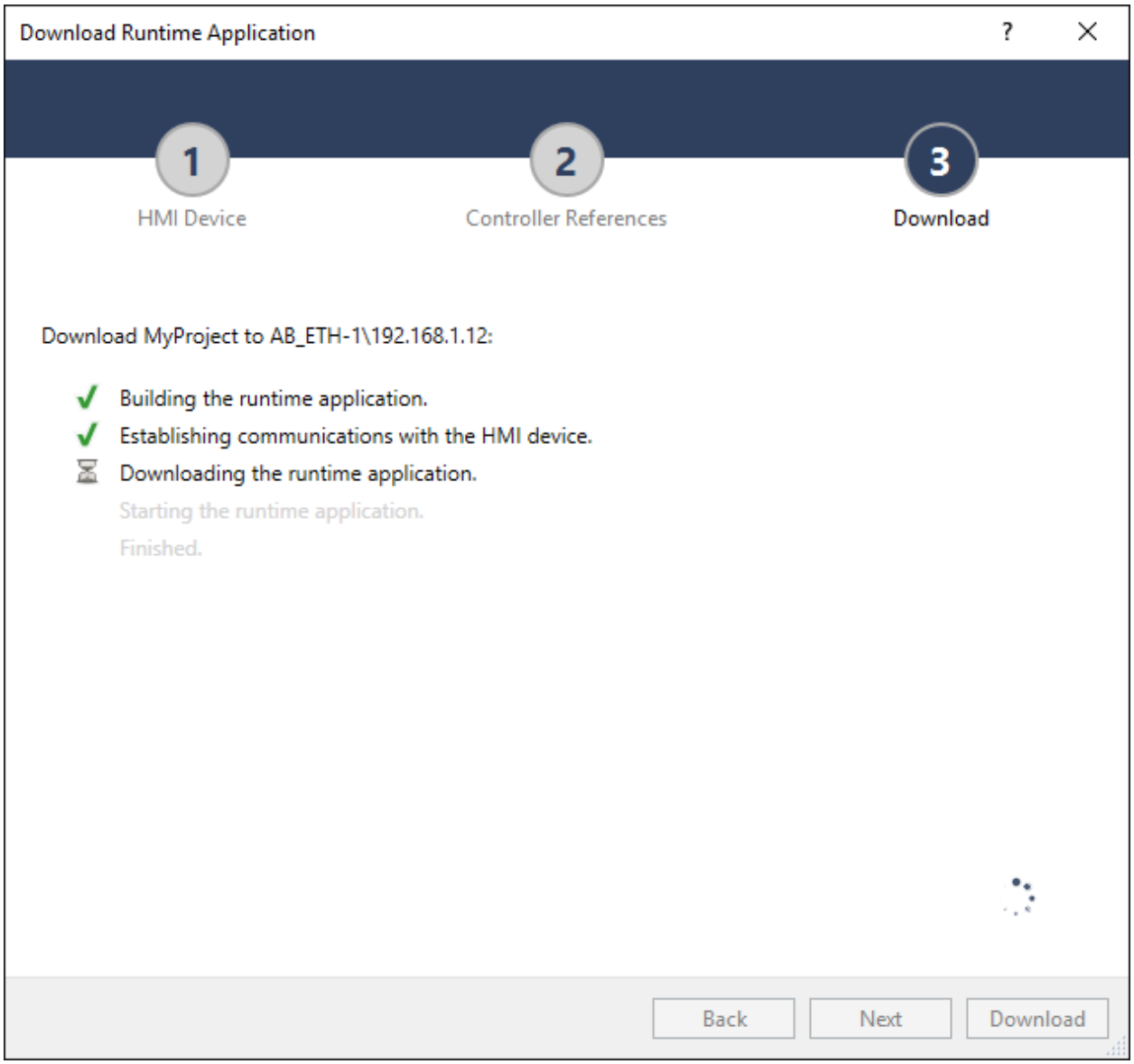
Controller References: This page shows the controller references for the project as entered in the Controller References tab of the **Project Properties** dialog box. Use this page to make sure that the correct controller reference and project is selected.

5. Click *Next*.

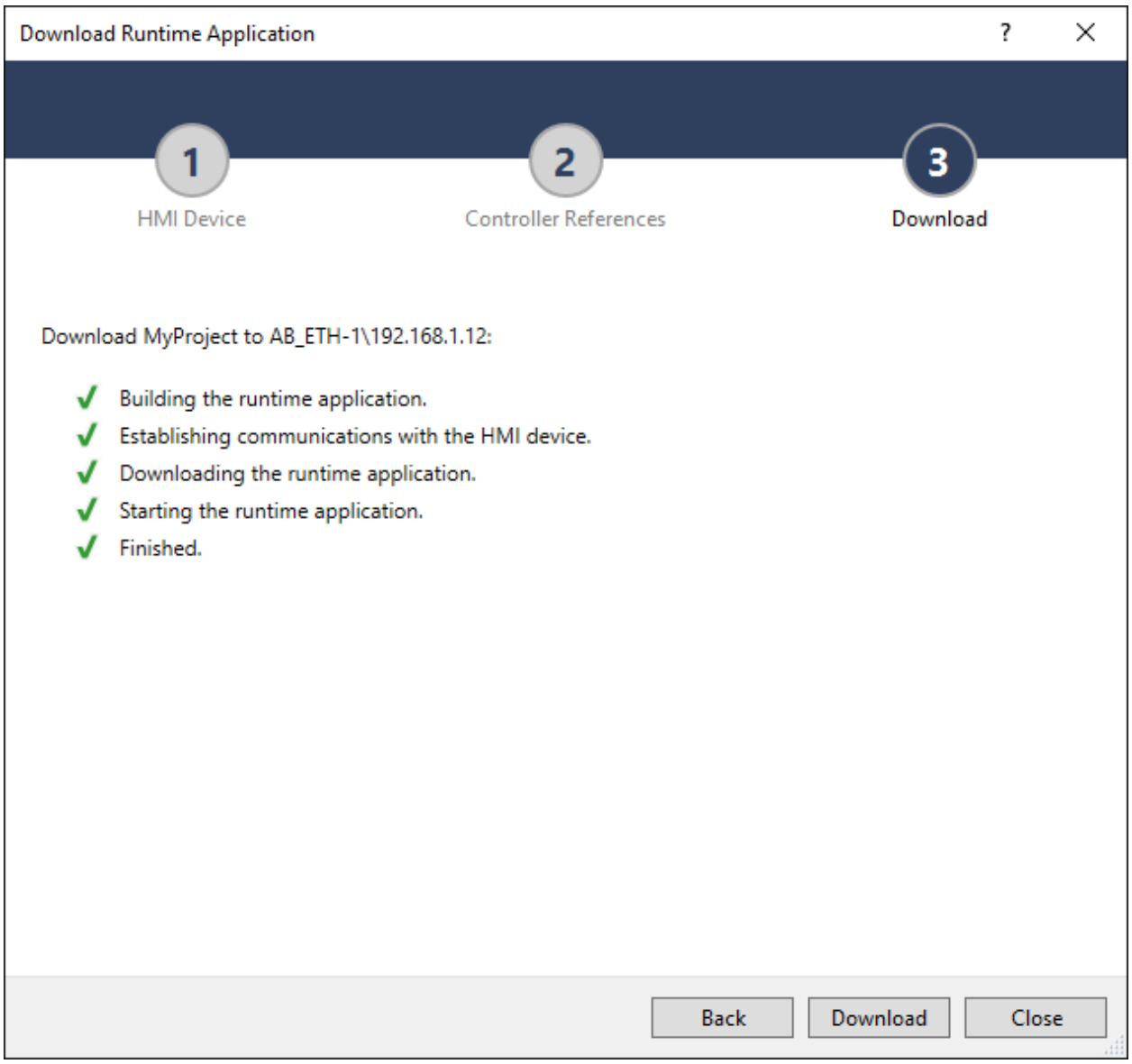
6. Click *Download* to start the process.



The software will now build the runtime application, first verifying the project, then connecting with the terminal. It will then download the project and the terminal will start the application when the download is complete.



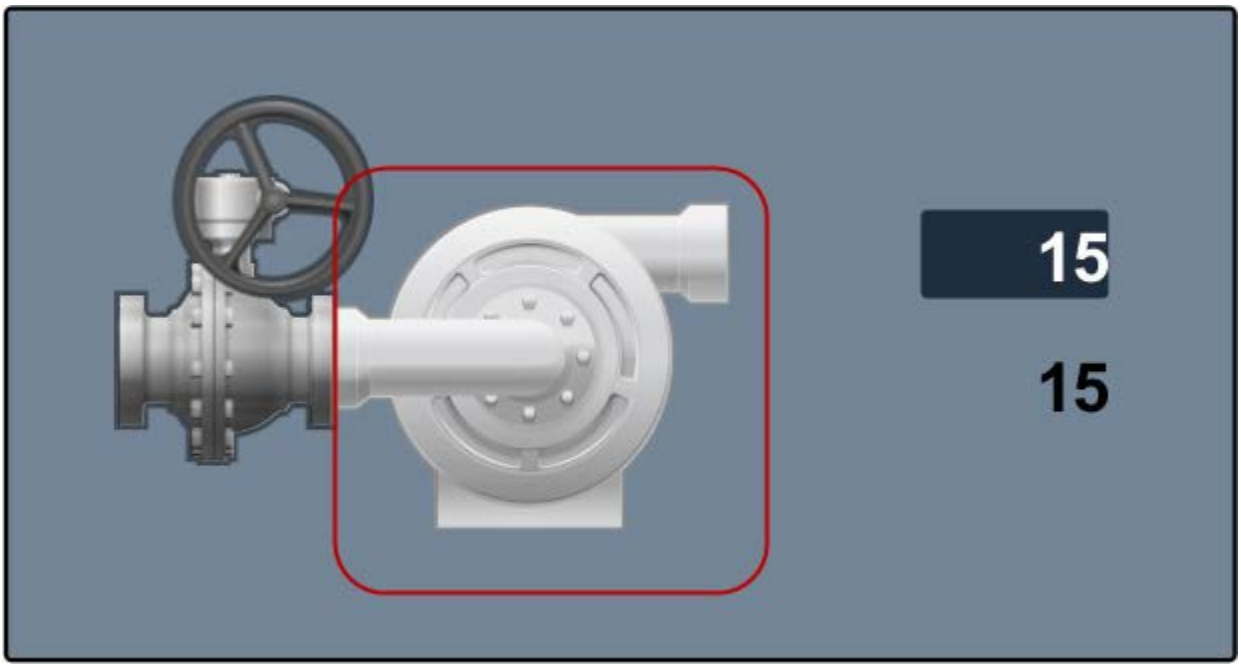
Download: This page shows the progress of the download process as View Designer saves and verifies the project, builds the runtime application, connects to the HMI device, and transfers the runtime application to the HMI device.



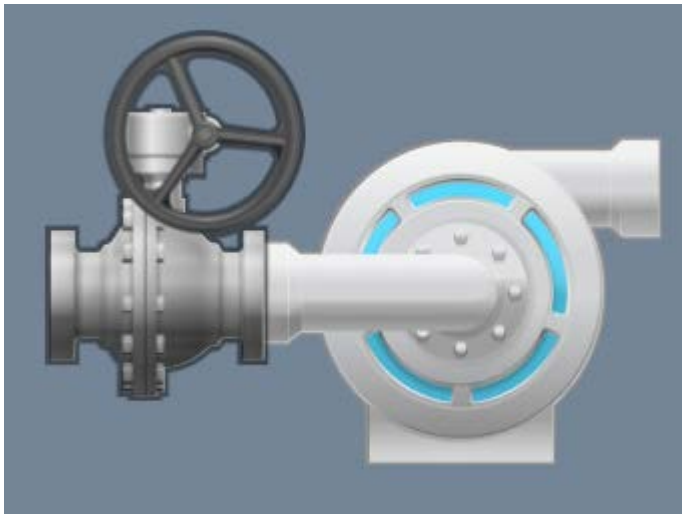
7. When the download is complete, click *Close*.

8. Turn to the terminal at this station.

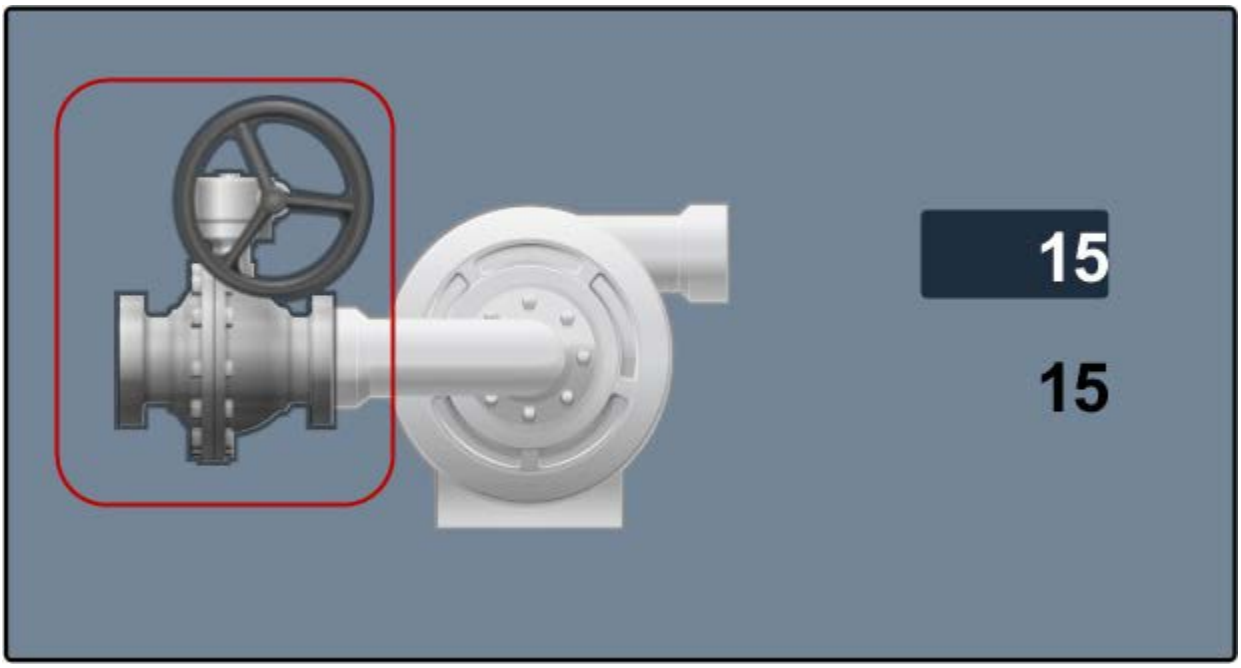
9. Press the *Pump* element.



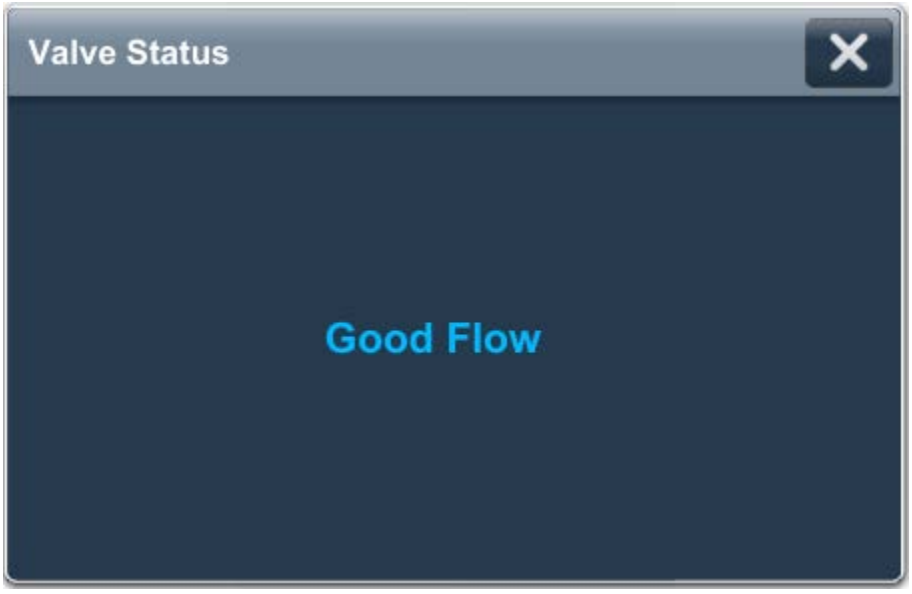
Notice that the flow color now appears, as the tag has been toggled.



10. Now, press the *Valve* element.



The Popup will appear. Notice that the text display is showing the configuration for the the value of the tag.



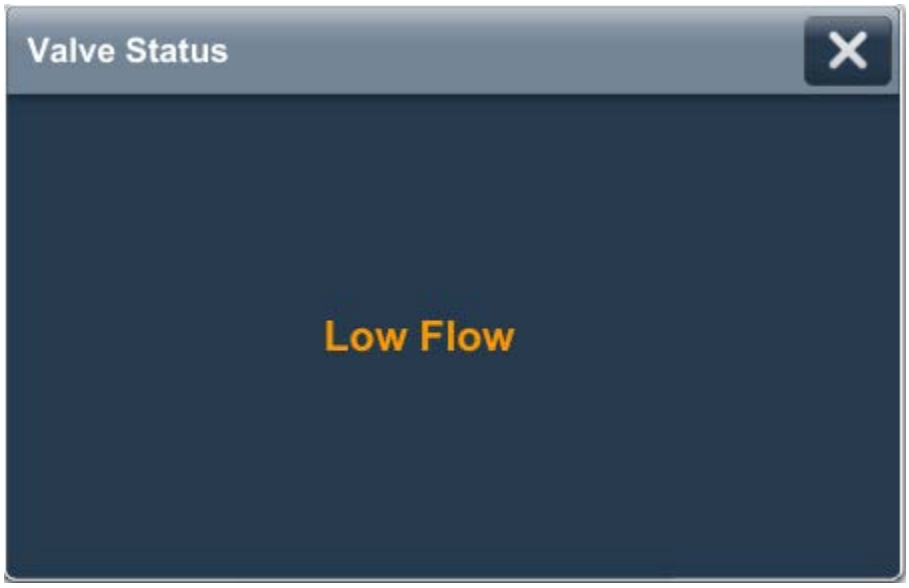
The popup display's Text Display has been configured with a state table that changes the color and the text of the display based on the value of MyTag.

11. Close the *Popup Display*.

12. Press the *Numeric Input*, and change the value to 7.

13. Press the *Valve* element again.

    Notice the text display has updated, based on its State Table configuration.



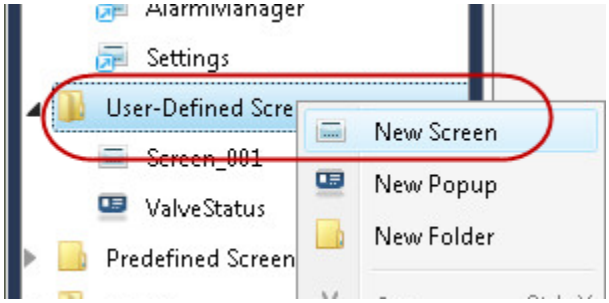
Configuring the Navigation Menu

The Navigation Menu appears at the bottom of the PanelView™ 5000 screen and displays the contents of the project, including folders and screens. This menu can be used to navigate anywhere in the project, versus using touch navigation on graphic elements. Use the steps below to configure the Navigation Menu in View Designer, and explore the Navigation Menu at runtime.

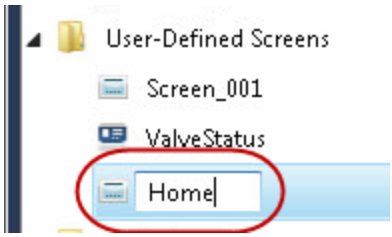
Create a new screen

First, add a second screen that contains an image.

1. In the **Project Explorer** pane, right click *User-Defined Screens*, and select *New Screen*.



2. Name the screen by typing *'Home'*, and press *Enter*.

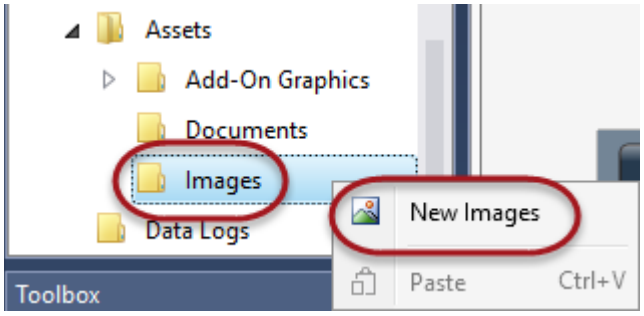


3. Double click *Home* to open the screen in the canvas.

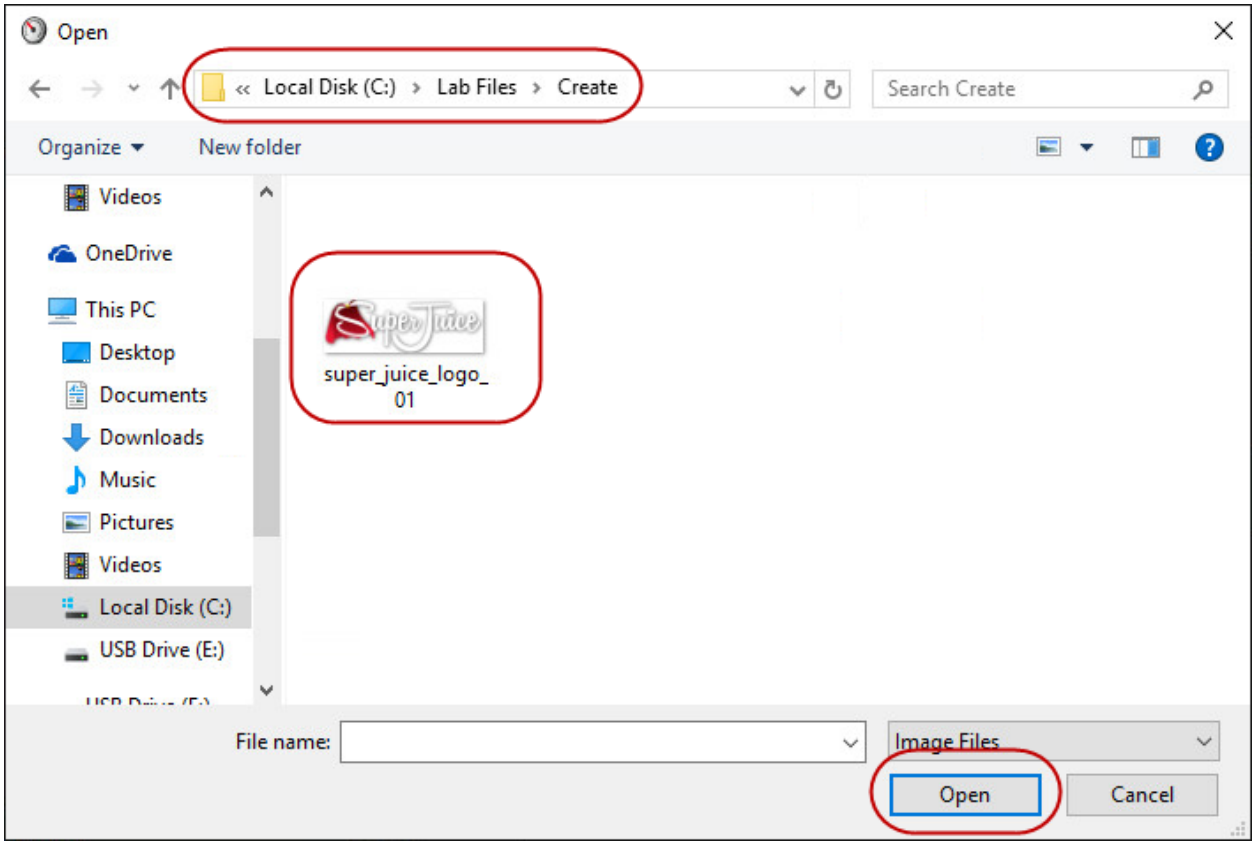
Add an image to the project

Native elements in View Designer use scalable vector graphics, making it possible to resize the elements without degrading their sharpness. It is possible, however, to add other images into a project in order to customize the screens.

1. In the **Project Explorer** pane, right click *Images*, and select *New Images*.

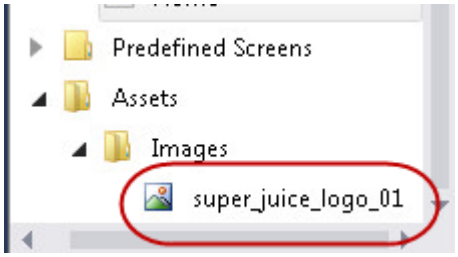


2. Use the **Open** window to browse to **C:\Lab Files\Create** and select *superjuice_logo-01.png*, then click *Open*:

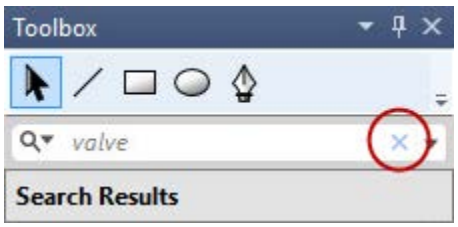


> Supported image file types include: *.png; *.svg; *.bmp; *.jpg; *.jpeg.

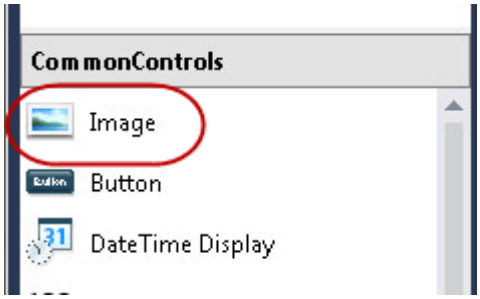
3. Press *Enter* on the keyboard to keep the default name of the image.



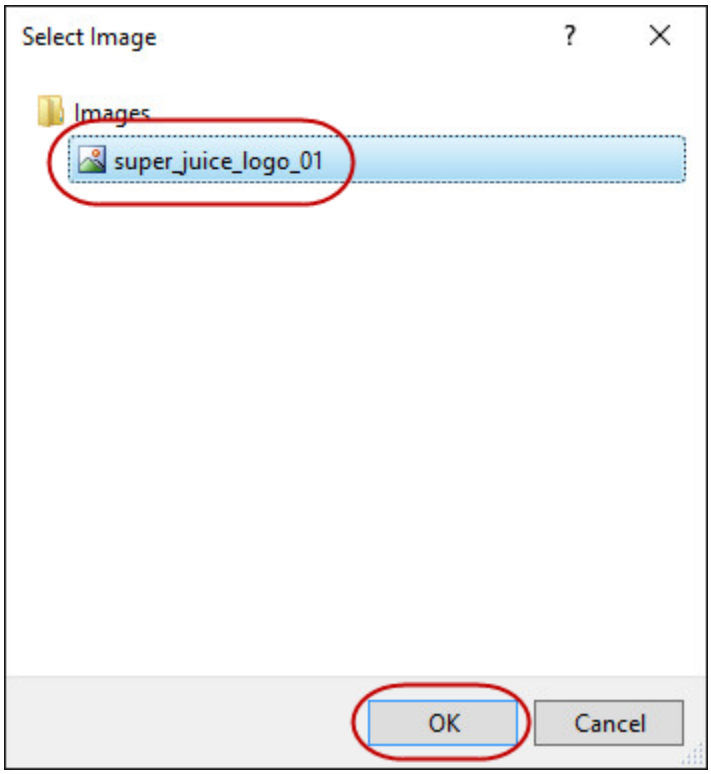
4. In the **Toolbox** pane, remove the search filter by clicking the *x* in the **Search** field.



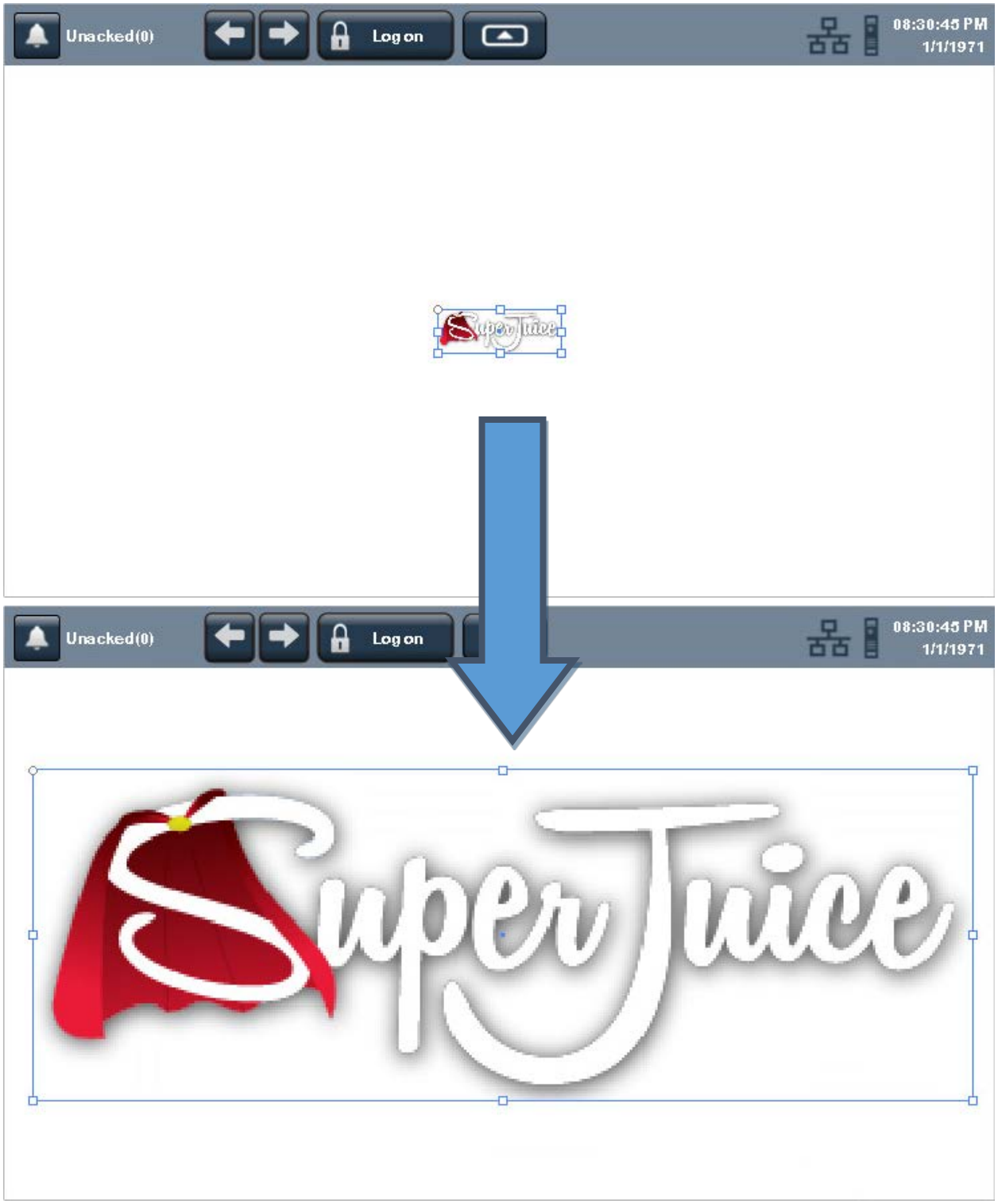
5. Double click *Image* under the **CommonControls** category.



6. In the **Select Image** dialog, select the image that was just added, and click *OK*.

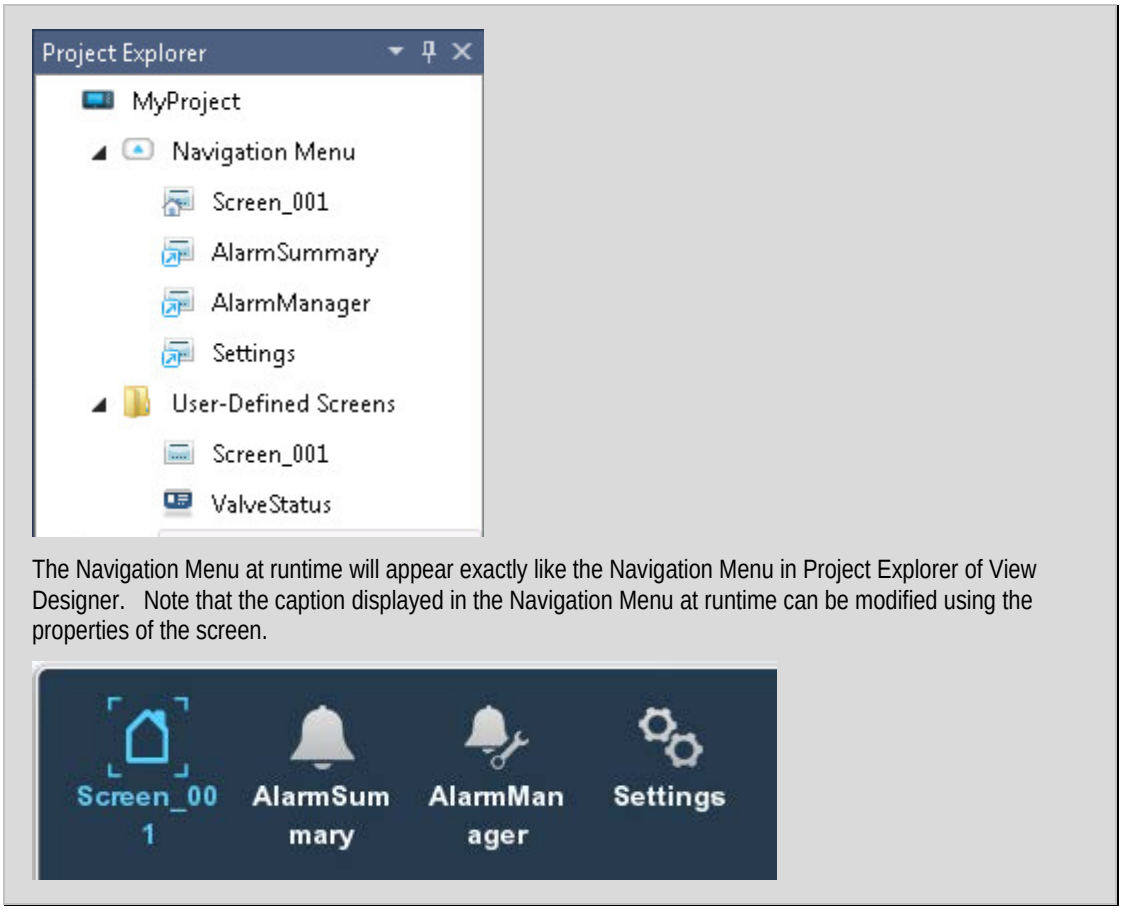


7. Resize the image so that it occupies more of the screen.



Configure the Navigation Menu

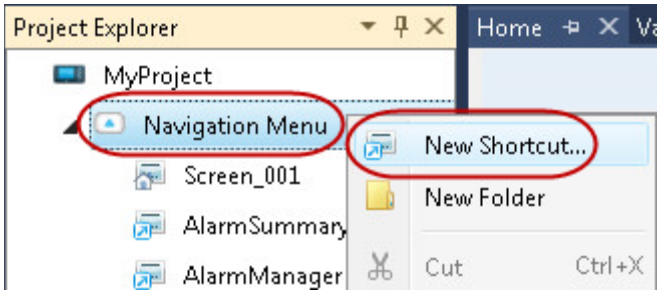
At runtime, the Navigation Menu appears at the bottom of the screen and displays the contents of the project, including folders and screen shortcuts, on the PanelView™ 5000 terminal. Using this menu, users can browse the contents of the application, and open individual items within it.



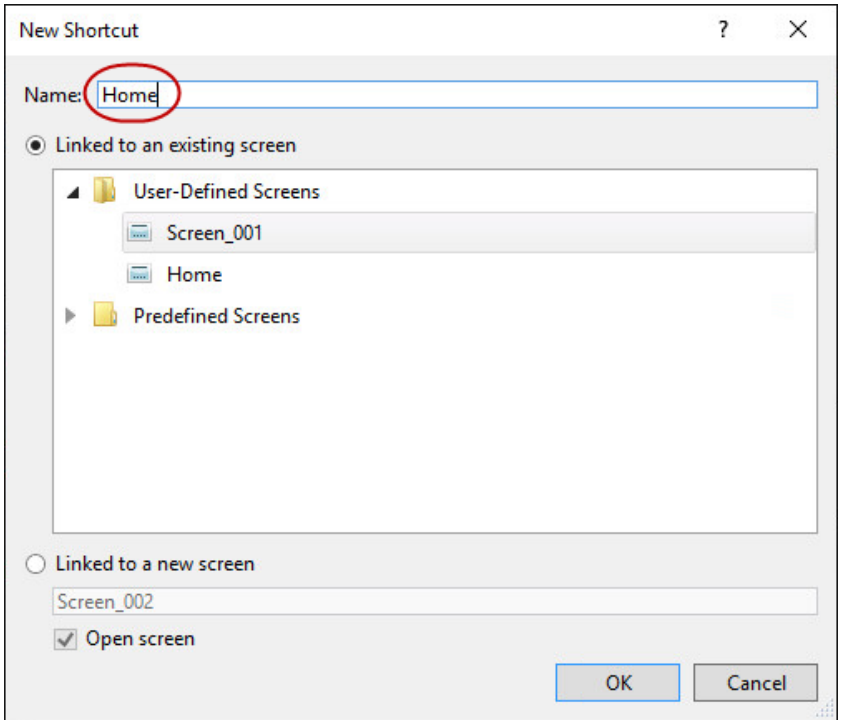
The Navigation Menu at runtime will appear exactly like the Navigation Menu in Project Explorer of View Designer. Note that the caption displayed in the Navigation Menu at runtime can be modified using the properties of the screen.

User-defined screens are not automatically added to the Navigation Menu. To be able to navigate to a screen at runtime using the Navigation Menu, a shortcut must be added to the Navigation Menu in the Project Explorer pane.

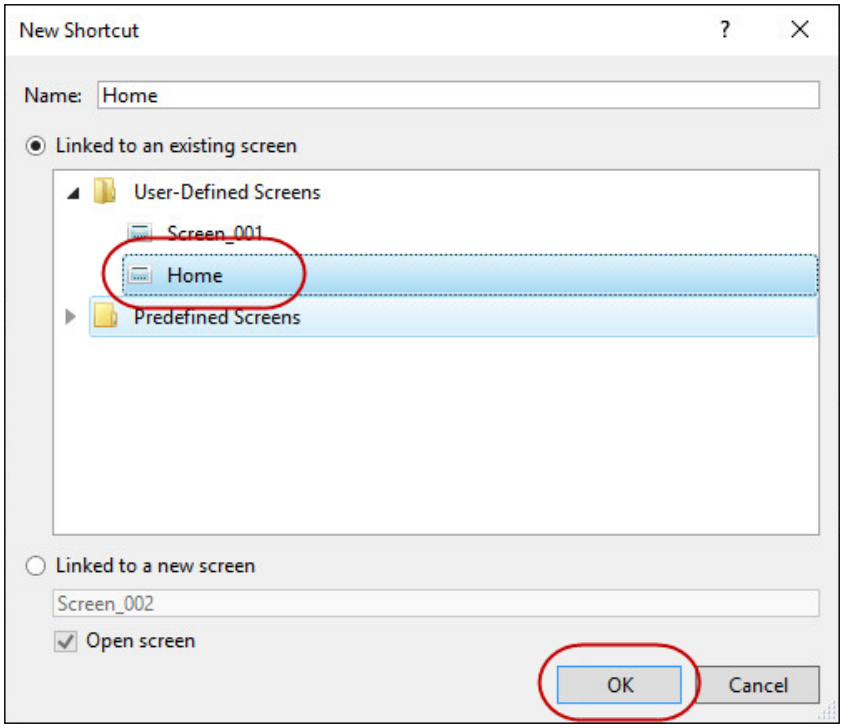
1. In the Project Explorer, right click *Navigation Menu*, and select *New Shortcut...*



2. In the New Shortcut dialog box that appears, type *'Home'* in the Name: field.

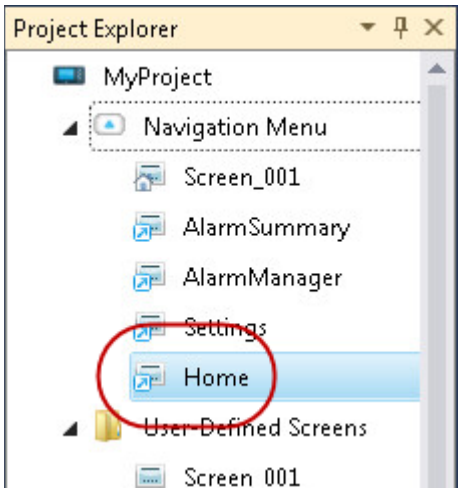


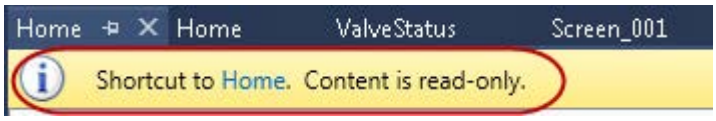
3. Select *Home*, found under User-Defined Screens, and click *OK*.



Alternatively, the screen can be clicked and dragged into the Navigation Menu to create the shortcut.

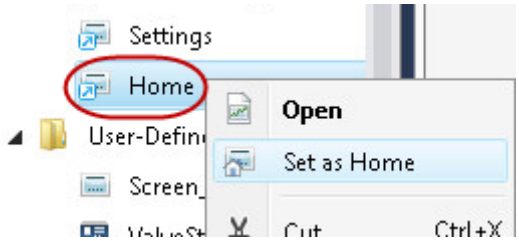
The new **Home** shortcut will open in the screen canvas. Notice the information banner at the top, stating that the content is read-only.



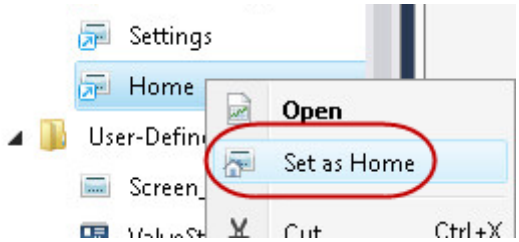


> A **Shortcut** is a link to a screen that displays the same content as the screen. A shortcut is read-only, any changes that are needed must be performed on the base screen (in the User-Defined Screens category).

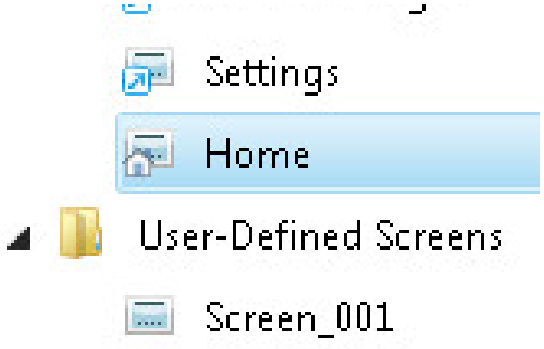
5. Now, right click the *Home* shortcut in the **Project Explorer**.



6. Select *Set as Home*.

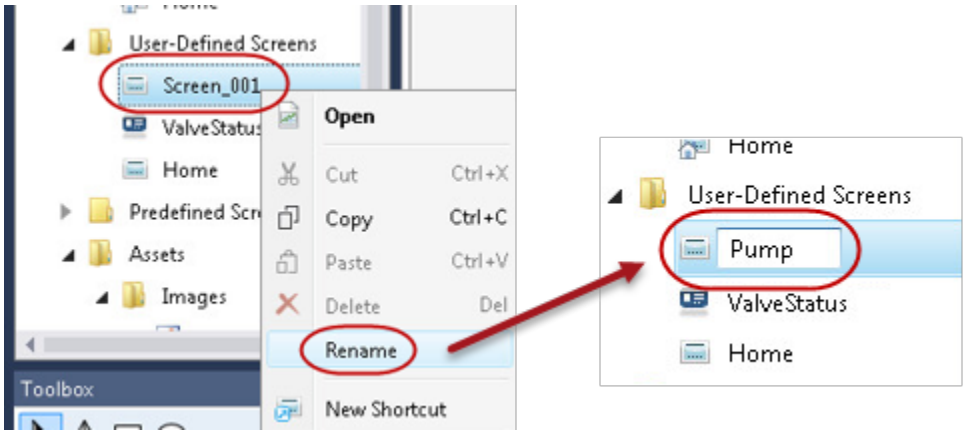


Notice the home icon  now appears next to the Home shortcut in the Navigation Menu.



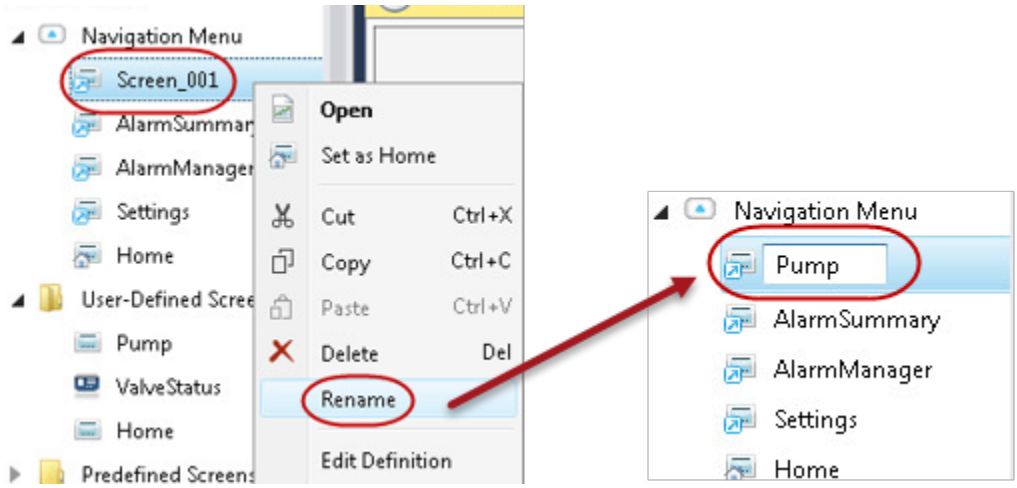
When a shortcut is **Set as Home**, it will be the initial screen displayed on the terminal at runtime.

7. Right click *Screen_001* in the **User-Defined Screens** folder, and change its name to *Pump*.



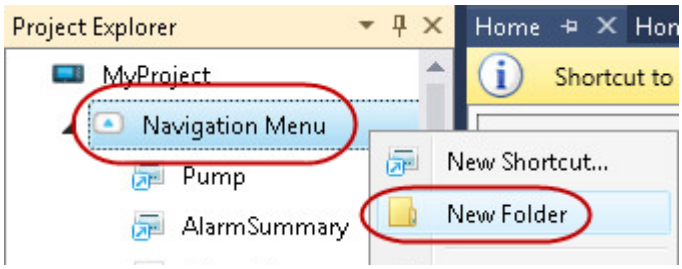
Note that the screen shortcut did not automatically update its own name, though it is still pointed at the correct screen.

8. Rename *Screen_001* under the **Navigation Menu** category to *Pump*.

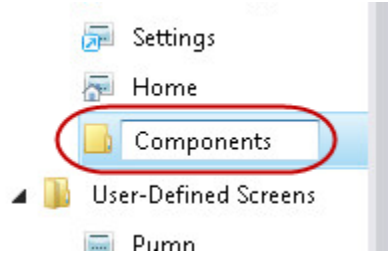


In a completed project, many more screens would be created. To help navigate through the project, use folders to categorize the screens.

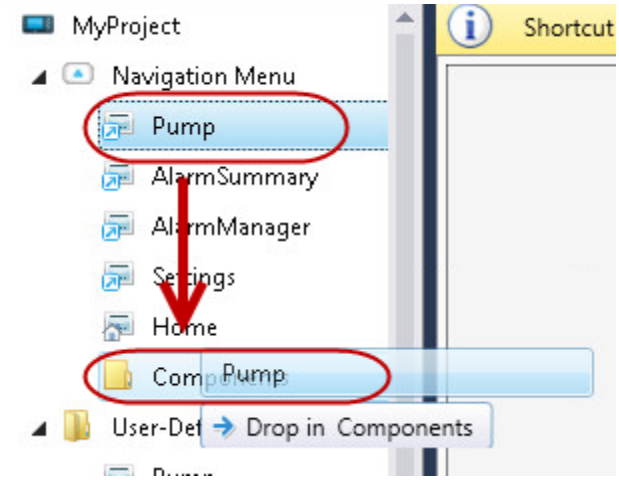
9. Right click *Navigation Menu*, and select *New Folder*.



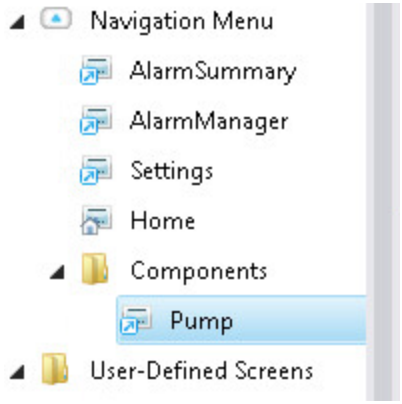
10. Rename the folder by typing *'Components'* and pressing *Enter*.



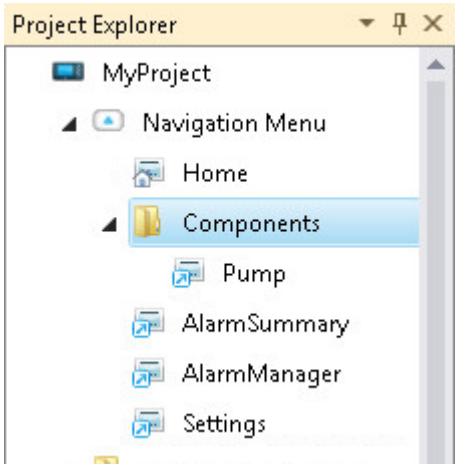
11. Add the **Pump** screen shortcut to the new folder by clicking and dragging it.



The **Navigation Menu** should now look similar to the following.



12. Finally, rearrange the order of screens in the **Navigation Menu** by clicking and dragging them until they look like the picture below:

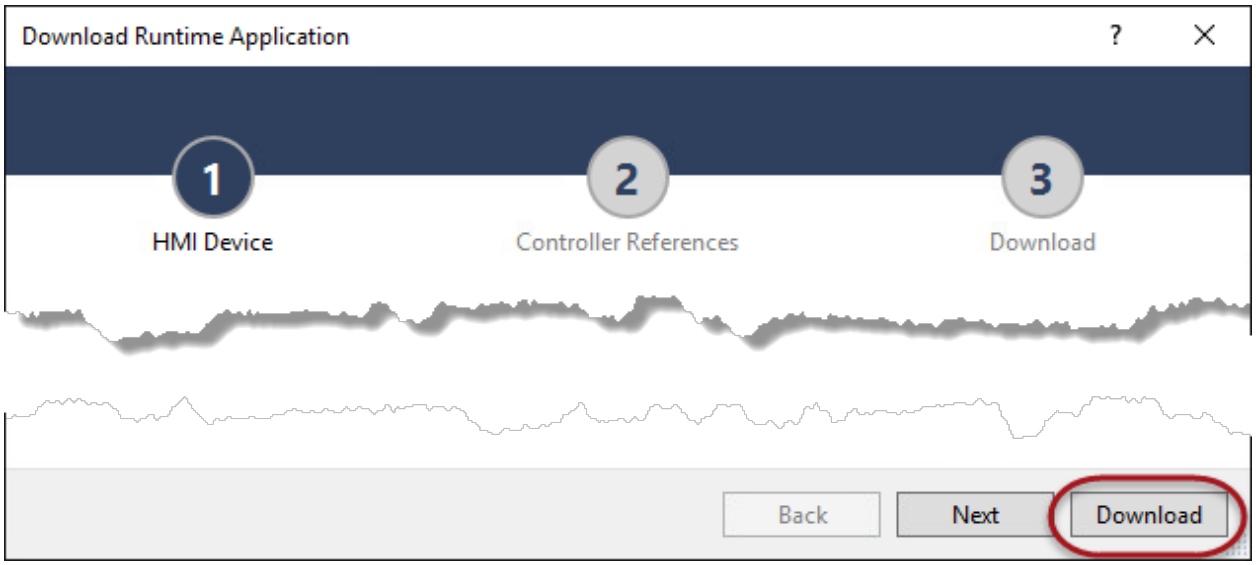


Download and Explore

1. Click *Communications*, and select *Download...*

Because the **HMI Device Location** and **Controller References** were checked the last time the project was downloaded, those steps can be skipped.

2. Click *Download*.



3. Edit the project if any errors or warnings are found.

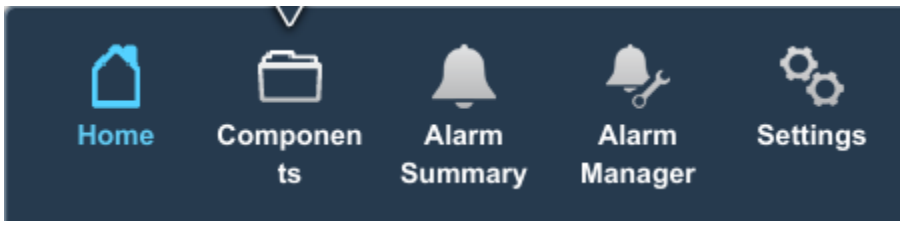
   Download the project once the errors and warnings are cleared.

4. Close the **Download Runtime Application** window using the *Close* button.

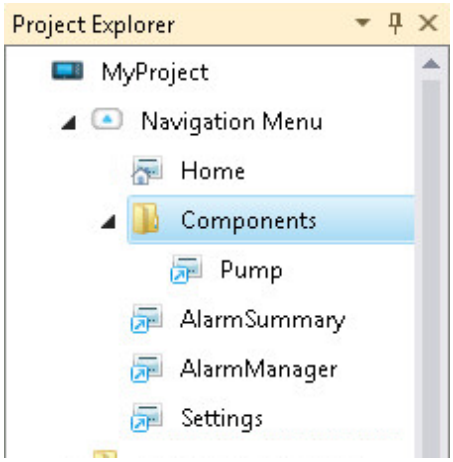
5. Turn to the terminal at this station.

   Notice the new opening screen is the **Home** screen.

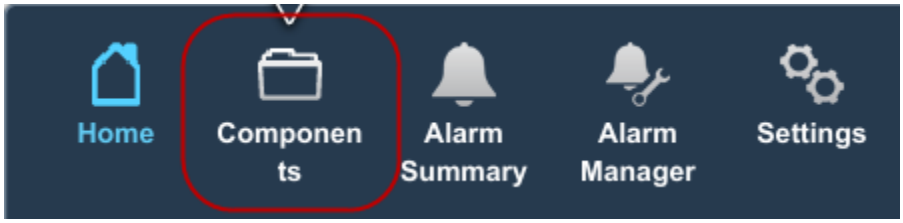
6. Use the **Navigation** button on the terminal to open the **Navigation Menu**.



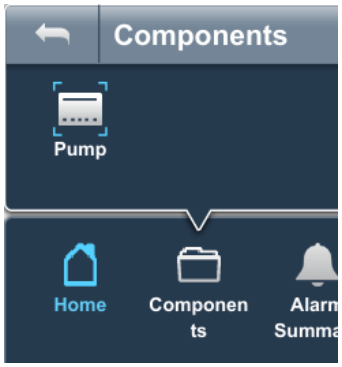
Notice the menu reflects the order of shortcuts that were configured in the **Project Explorer**.



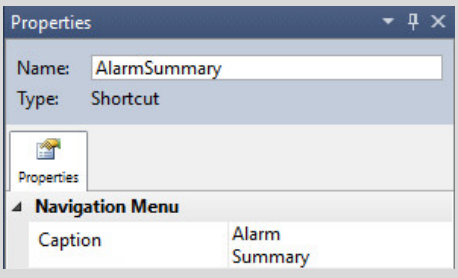
7. Tap the *Components* folder.



The Pump screen that was put in the **Components** folder is now visible.



By default, the Navigation Menu will display the shortcut name as its caption. Shortcut names do not allow spaces or carriage returns. Use the Caption property in the property panel to modify shortcut captions to be shorter, include spaces, or carriage returns.



Continue to explore the Navigation changes made to the application if desired.

Understanding Alarms in View Designer

PanelView™ 5000 is able to subscribe to Logix-based Device Alarms configured in Logix Designer. Alarm instructions are used to monitor and control alarm conditions. These instructions integrate alarming between PanelView™ 5000 projects and ControlLogix controllers. View Designer has two alarm tables to view the alarms, Alarm Summary and Alarm Manager. First, we'll take a look at the Logix Designer device-based Alarms, and then we'll explore the Alarm tables.

Working with device-based Alarms and Events

Digital (ALMD)

A digital alarm (ALMD instruction) is configured to monitor its input for one of the following alarm conditions:

- The input value equal to one
- The input value equal to zero

When the alarm condition is true, the alarm enters the In Alarm state. When the alarm condition is false, the alarm enters the Normal or Out of Alarm state.

Analog (ALMA)

An analog alarm (ALMA instruction) can be configured to monitor for two types of alarm conditions:

- Level
- Rate of Change

Level alarms monitor an input for alarm conditions that go In Alarm when the input value goes above or below predefined limits. When defining a level alarm, you can configure up to four alarm level conditions, each with limits (sometimes called thresholds), a severity and alarm message. The supported alarm conditions are:

- High High (HIHI)
- High (HI)
- Low (LO)
- Low Low (LOLO)

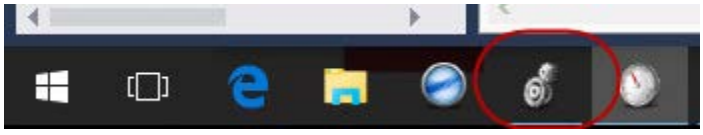
Rate of Change alarms monitor an input for alarm conditions that go In Alarm when the input value changes faster or slower than predefined limits. When defining a level alarm, you can configure up to two rate of change conditions, each with limits, a severity, and an alarm message. The supported alarm conditions are:

- Rate of Change Positive (ROC_POS)
- Rate of Change Negative (ROC_NEG)

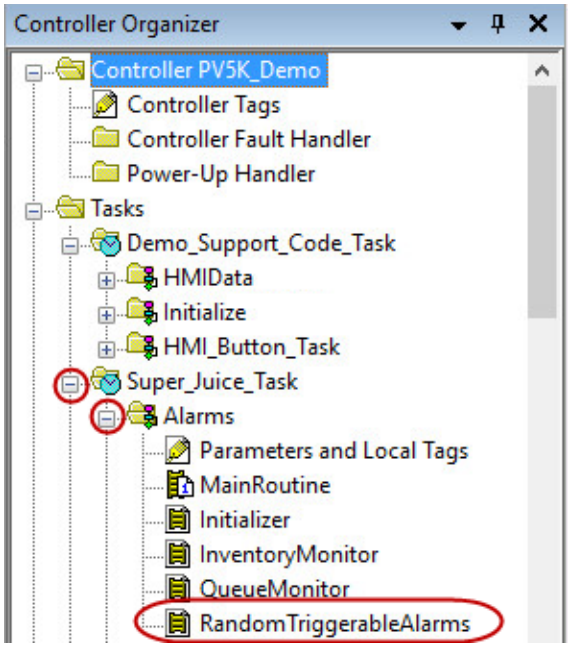
Alarm Instructions in Logix Designer

Let's take a closer look at the alarm instructions in Logix Designer.

1. Restore Logix Designer.

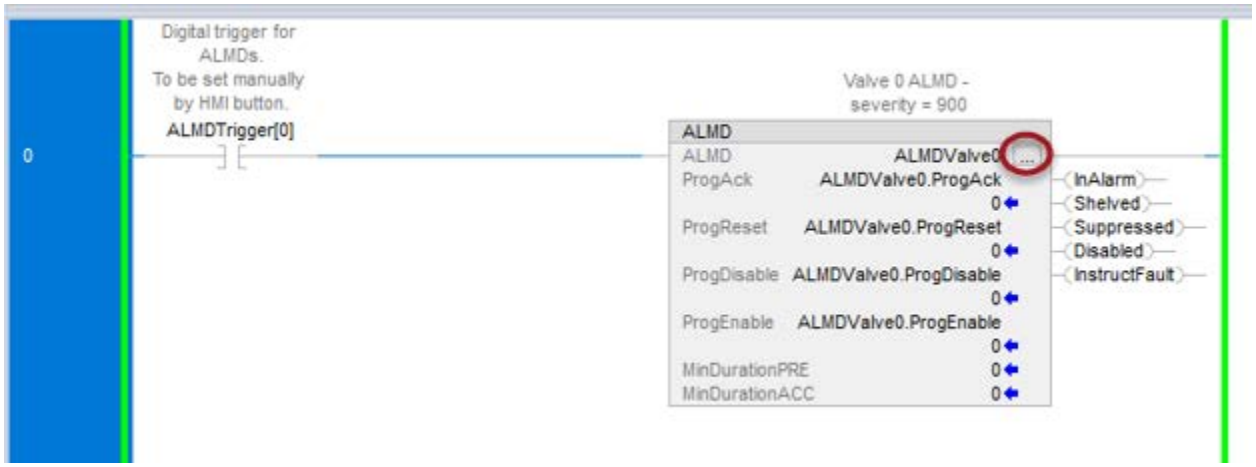


2. Expand *Super_Juice_Task*, then *Alarms*, and double click *RandomTriggerableAlarms*.

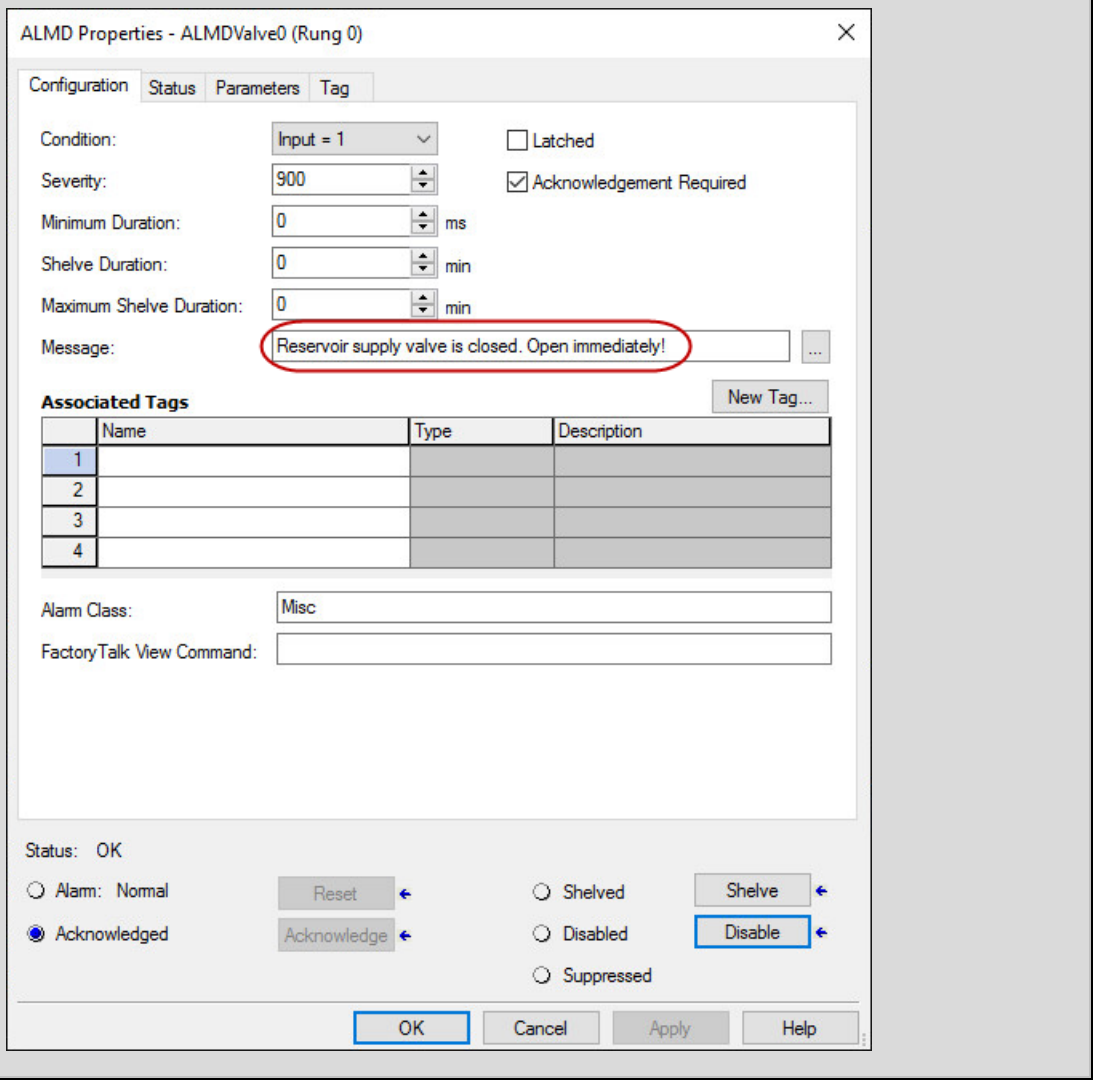


The first rung shows a digital alarm, an ALMD.

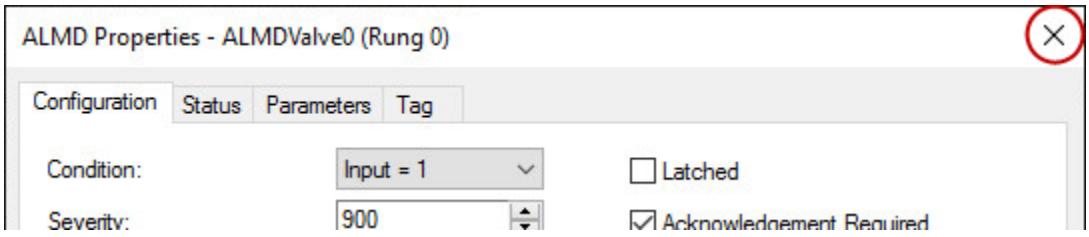
3. Click the *ellipsis* button for the ALMD in Rung 0 to explore its properties.



Notice the alarm message configured directly in the ALMD instruction. This message will appear on the PanelView™ 5000 alarm summary without any further alarm configuration within the HMI software.



4. Close the ALMD Properties dialog by clicking the *X* button.



System Banner – Alarm Status

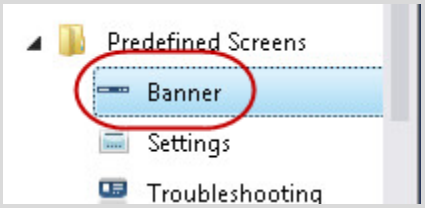
1. Turn to the terminal at this station.

Notice the red **Alarm button** on the **System Banner**.

The pre-configured banner that is generated with new projects includes this button and text display that shows the number of Unacknowledged alarms.

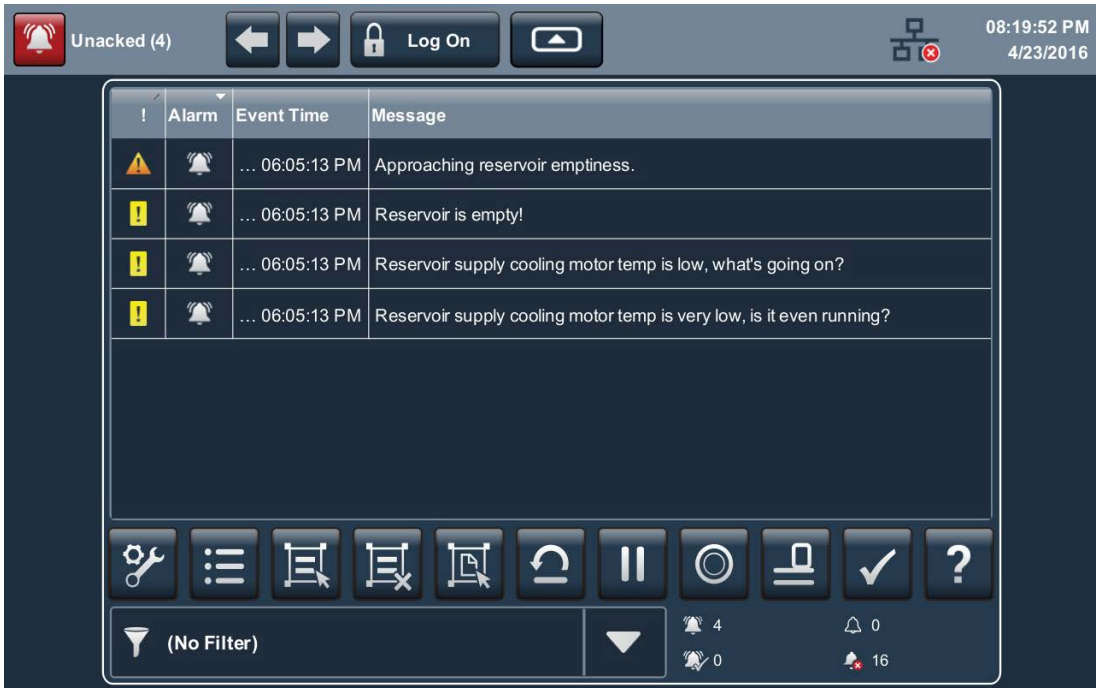
Note: The number of Unacked alarms may differ from the picture above. This number changes, dependent on the controller projects position in its process.

The **System Banner** is a Predefined screen created when a new application is created. It is fully configurable by double clicking the **Banner** in the **Project Explorer**.



3. Tap the *Alarm button* in the **System banner**.

The **AlarmSummary** screen will open on the terminal.



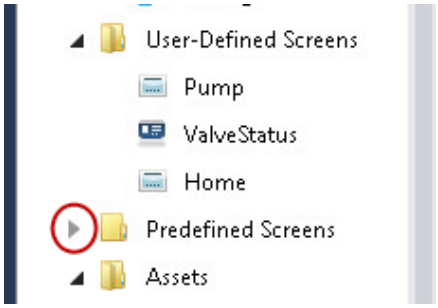
Learn how this screen was configured in the next section.

Alarm Summary Element in View Designer

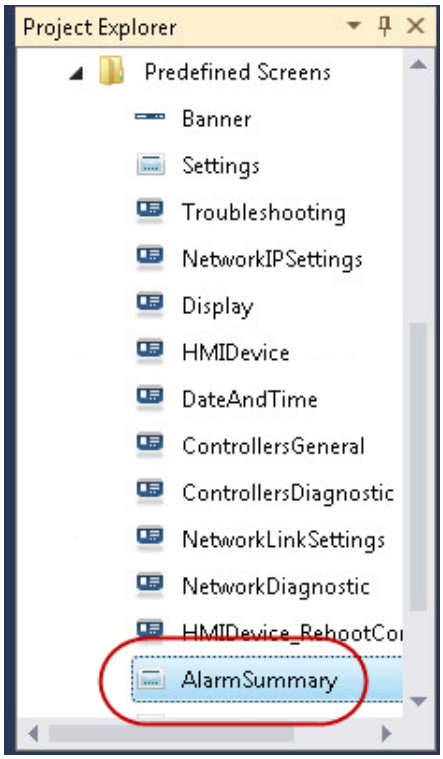
The Alarm Summary element is a list of alarms at runtime that are in noteworthy states or require attention (for example, alarms that are In Alarm and Unacknowledged).

Explore this element in View Designer using the steps below.

1. Back in View Designer, expand *Pre-Defined Screens* in the Project Explorer.

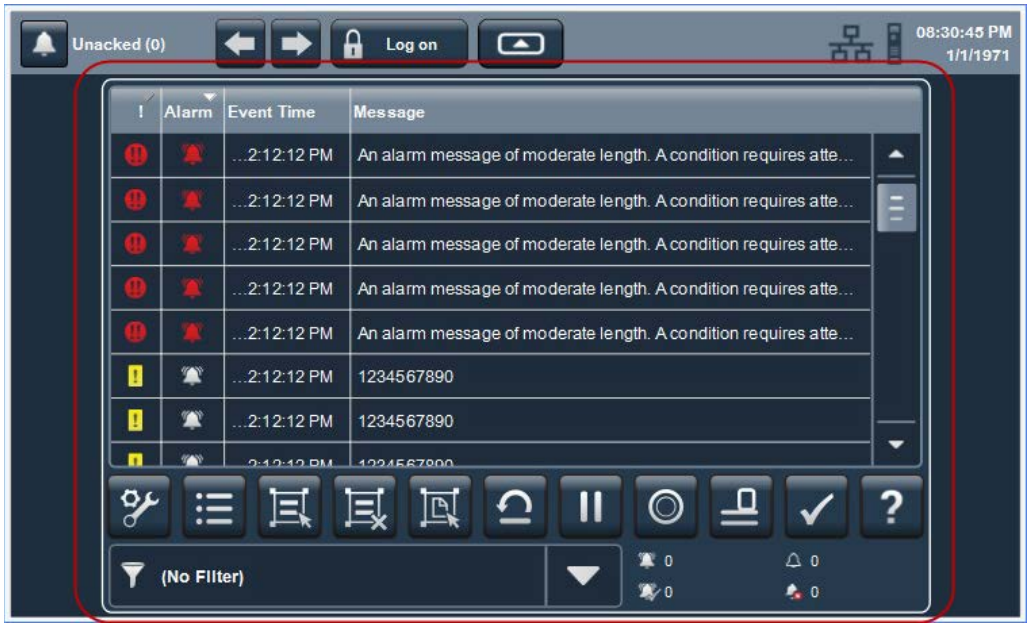


2. Double click *AlarmSummary* to open the screen.

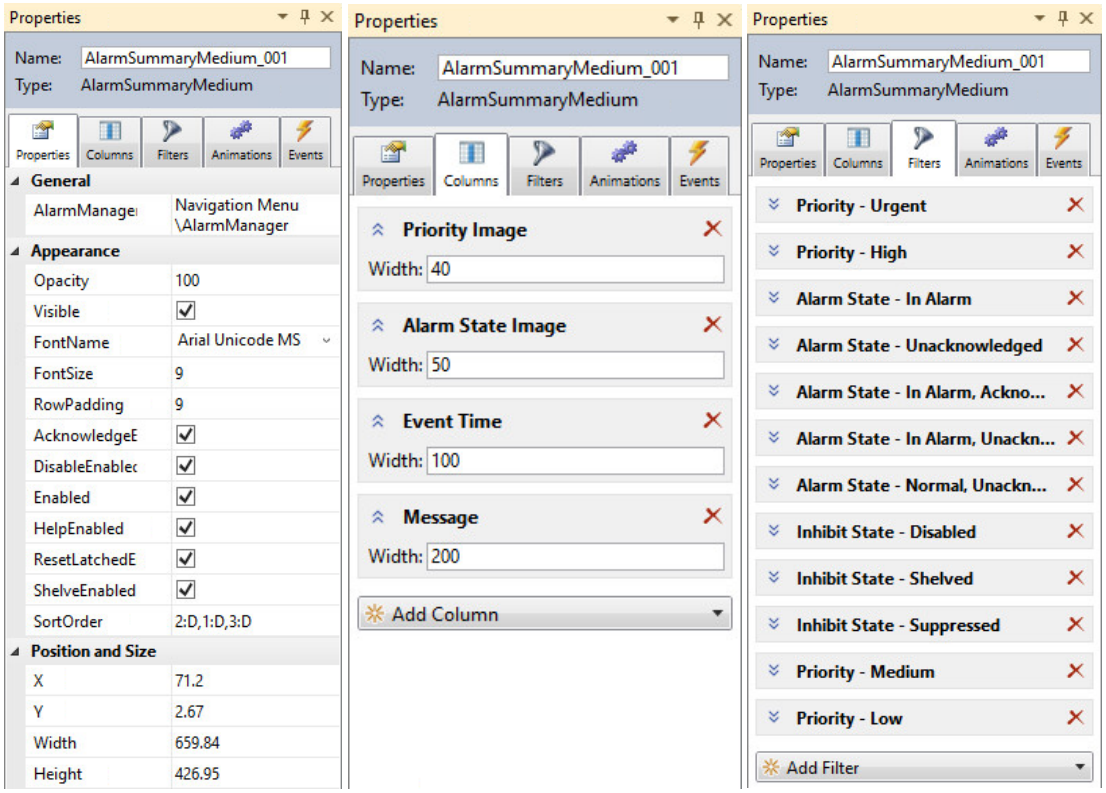


> This predefined screen consists only of the Alarm Summary element, found in the Toolbox, under the Alarms category. No other configuration needs to occur in the View Designer project.

3. Select the *Alarm Summary* element to see the different properties that can be configured.



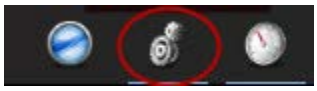
Note that the **Properties** pane for the **AlarmSummary** shows that many properties of the element can be configured, including the width of all columns, the priority levels, and how the alarms are sorted.



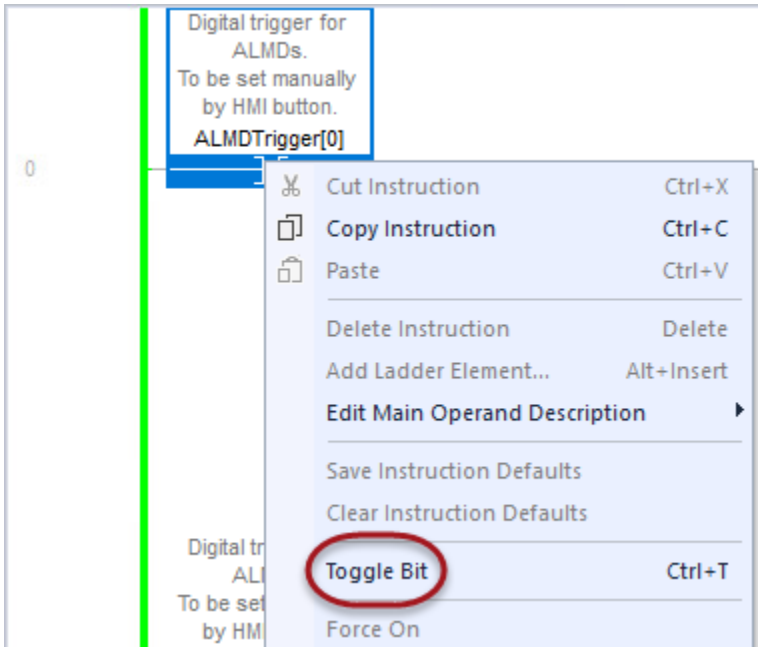
Alarm Summary Element at Runtime

Use the steps below to explore and interact with the Alarm Summary element on the terminal.

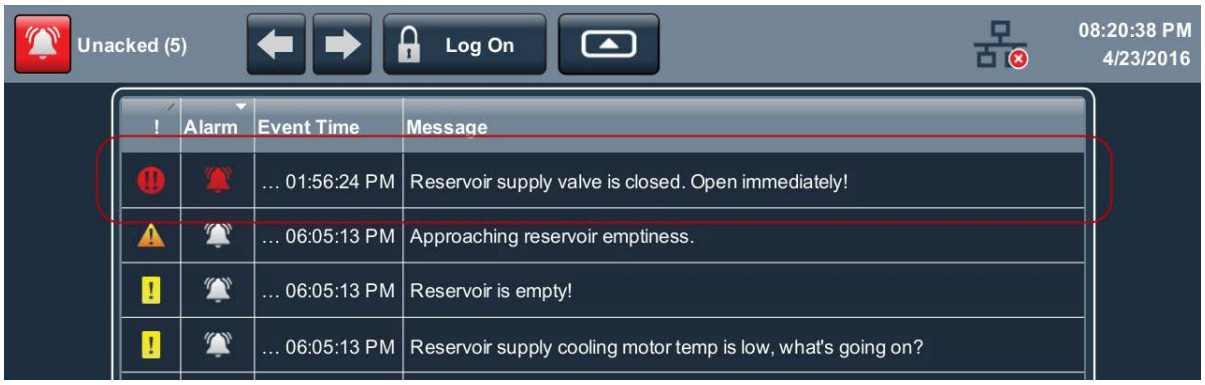
1. Restore *Logix Designer*.



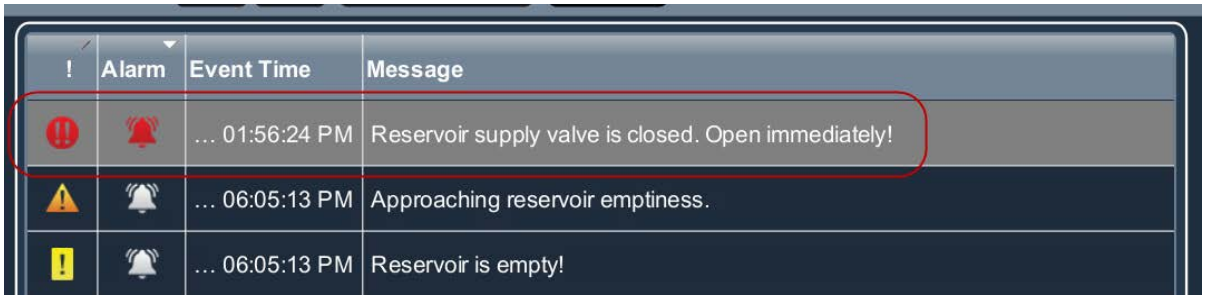
2. Right click the *ALMDTrigger[0]* in Rung 0 and select *Toggle Bit*, then turn to the terminal.



Notice that the Alarm Summary has updated on the terminal to reflect that the alarm has been triggered.



5. Select the alarm that was just triggered so that it is highlighted in gray.



6. Use the *Acknowledge* button to acknowledge the alarm.

The alarm will move to the bottom of the list, because it has been acknowledged, but not yet removed from the list, as it is still in alarm.

Alarm Manager Element in View Designer

The Alarm Manager is a table that lists all alarms configured in the system and their current states. The Alarm Manager subscribes to alarms in the controller and is used to monitor and interact with those alarms from the HMI. Every alarm from the controller is listed unless an alarm is removed from the controller itself.

Use the Alarm Manager to:

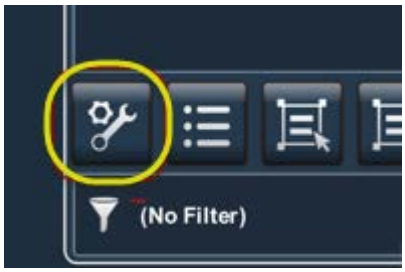
- Enable or disable alarms to take them out of service
- Shelve and un-shelve alarms
- Reset counts for alarms
- View details for a selected alarm or alarm condition
- Sort alarms
- Filter alarms
- Pause alarms
- View alarm errors

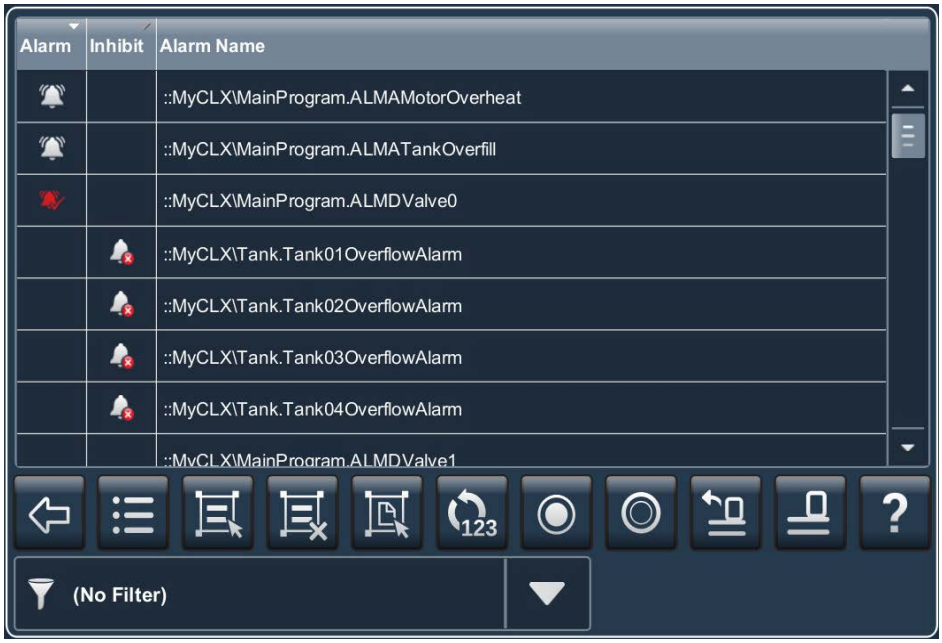
Alarm Manager Element at Runtime

Use the steps below to explore the Alarm Manager on the terminal.

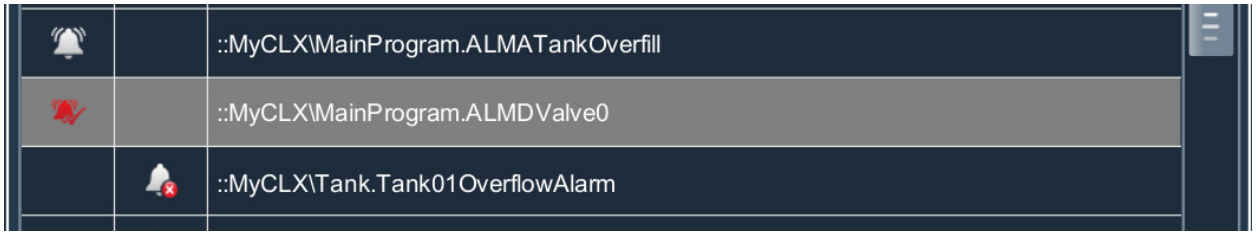
1. Click the *Alarm Manager* icon at the bottom of the *Alarm Summary* element.

   Alternatively, the **Navigation Menu** can be used to navigate to the **Alarm Manager** screen.

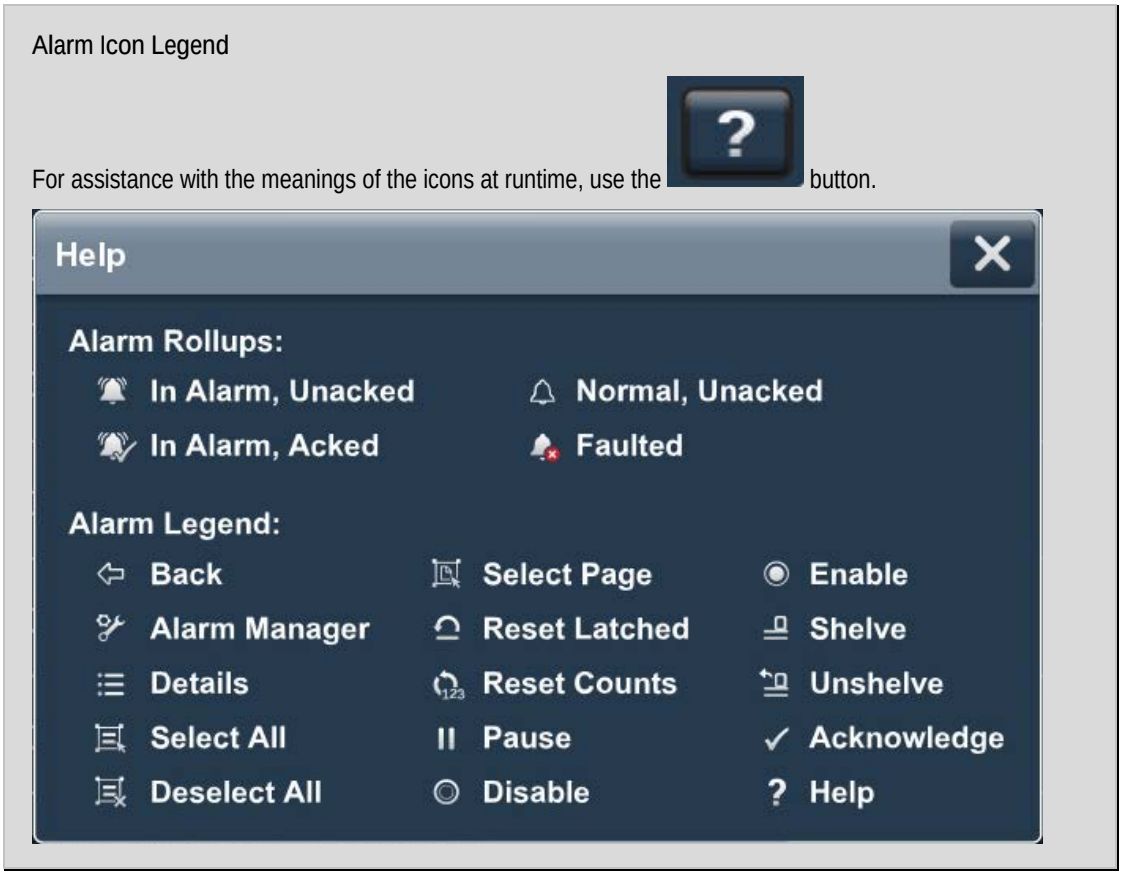




2. Tap the *ALMDValve0* that was triggered in one of the previous sections so that it is highlighted in gray.

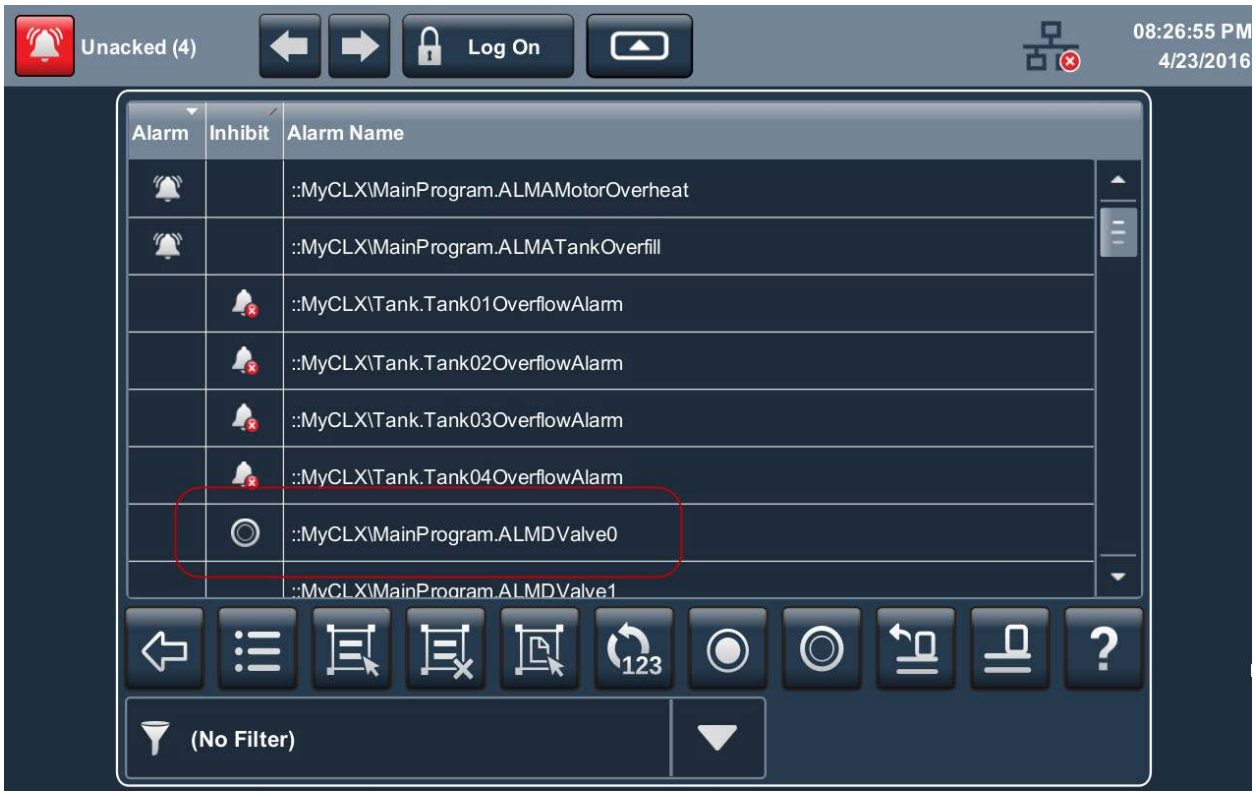


   Note that the icon for the ALMDValve0 alarm is showing that it is **In Alarm** and **Acknowledged**.



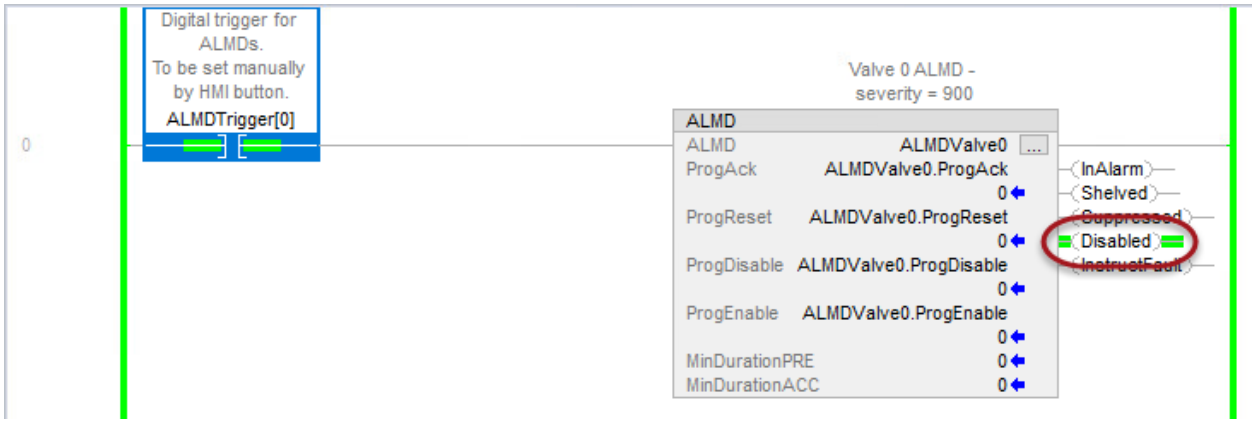
3. Select the *Disable Alarm* button at the bottom of the Alarm Manager.

Notice the Disable Alarm symbol is now in the **Inhibit** column, indicating the alarm has been disabled.



The alarm may be in a different location after it has been disabled.

4. Return focus back to **Logix Designer**, and notice the **Disabled** bit is **ON** for the ALMD instruction.



5. Enable the alarm using the PanelView terminal, and toggle ALMDTrigger[0] **off**.

6. Minimize, but don't close Logix Designer.

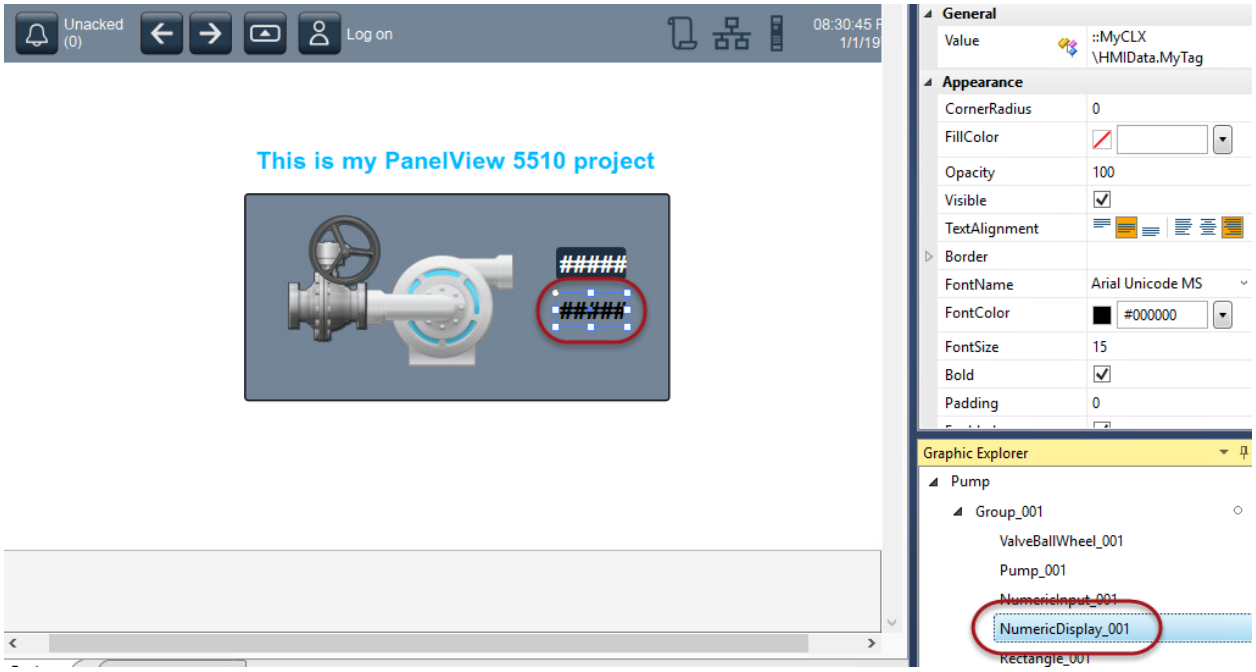
Using Runtime Diagnostics

View Designer and PanelView™ 5000 terminals use Runtime Diagnostics to display any issues that may occur during runtime. Explore this functionality using the steps below.

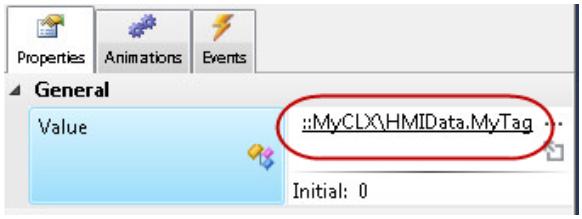
Break a Bound Tag

1. Return to the View Designer Software.
2. Open the *Pump* screen by clicking its tab in the Screen Canvas area.

3. In the **Graphic Explorer**, expand *Group_001* and click *NumericDisplay_001*.

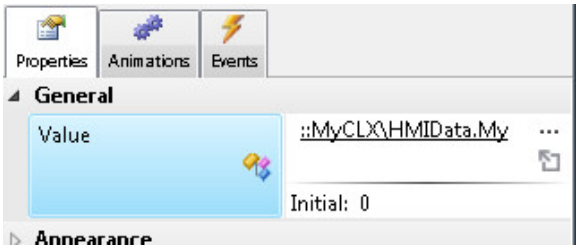


4. In the **Properties** pane, click in the *Value* field.



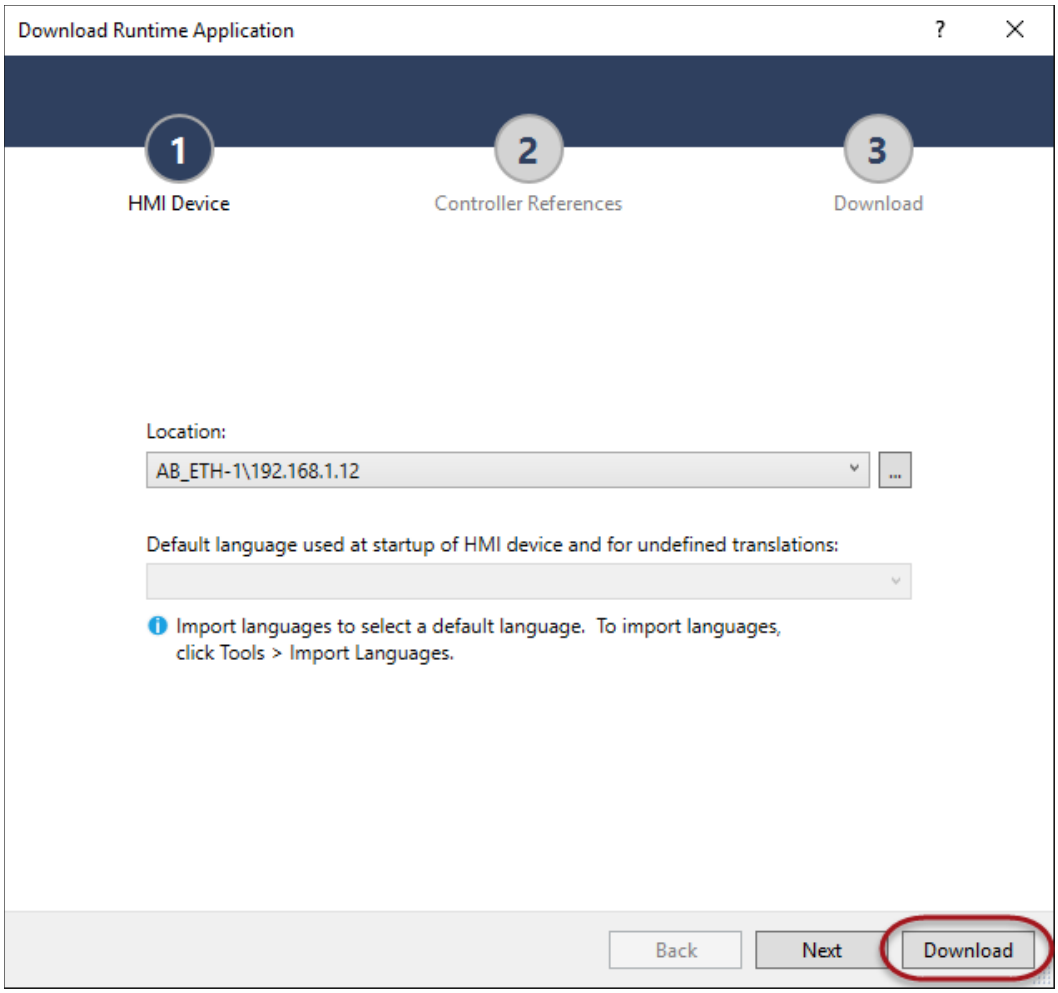
5. Move the cursor to the end of the tag, and remove the letters *Tag* from the string.

   This will intentionally use an invalid tag name. The value field should now look like the following:

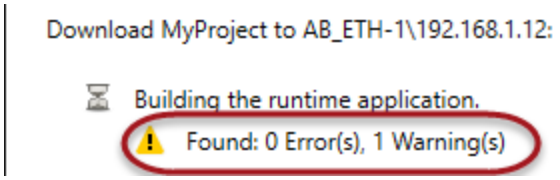


Download and Explore

1. Download the project to the terminal using the *Download* button in the toolbar.



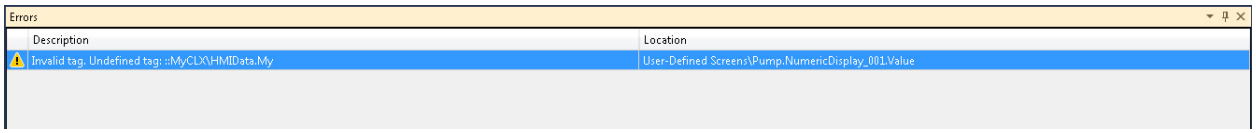
Note that the verification process found one warning.



Note: View Designer will continue to download the project to the terminal. If the verification found an error, the download process would be halted.

2. Ignore the warning that was found, and click *Close*.

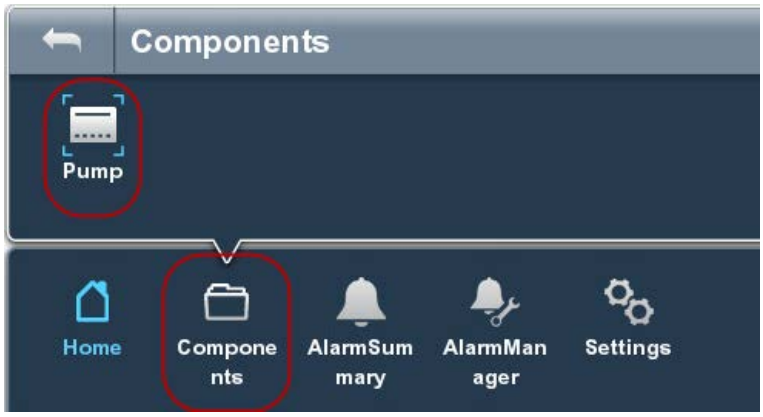
Notice that an Error pane has opened, showing the warning found during verification.



The software is indicating that the tag bound to the Value property of the Numric Display is undefined.

3. Turn to the terminal, and press the *Navigation button*  on the terminal or in the System Banner.

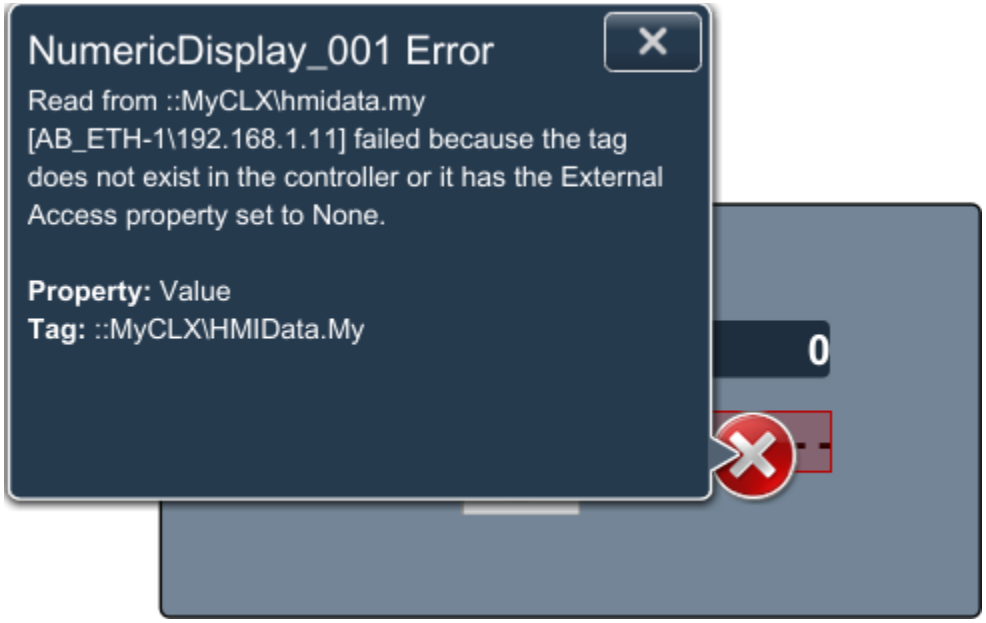
4. Use the Navigation Menu to open the *Pump* screen.



Notice the Numeric Display now has a red circle with a white x. This indicates that there is a problem with the element.

5. Tap the *red circle with white x*.

   A message box with an explanation for the error will open.



> Notice that the error window shows the element name, the tag information, and the probable cause of the issue. This allows operators to get a good idea of what the potential problem is, and how to fix the issue.

6. Now, return to View Designer, and resolve the issue by replacing the full tag name in the NumericDisplay (::MyCLX\HMIData.MyTag).

7. Save and download the project to the terminal again.

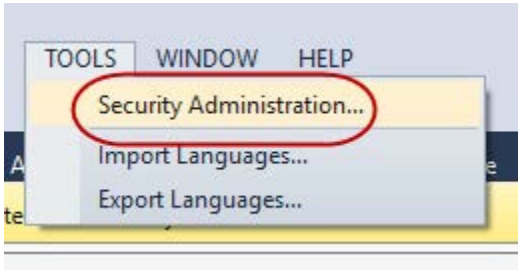
Using Security with View Designer

View Designer provides the ability to control access to the runtime project using its security functionality. Individual screens, shortcuts and popups can be secured, as well as graphic elements. In addition, it is possible to secure the terminal itself, as well as the ability to download projects to the terminal.

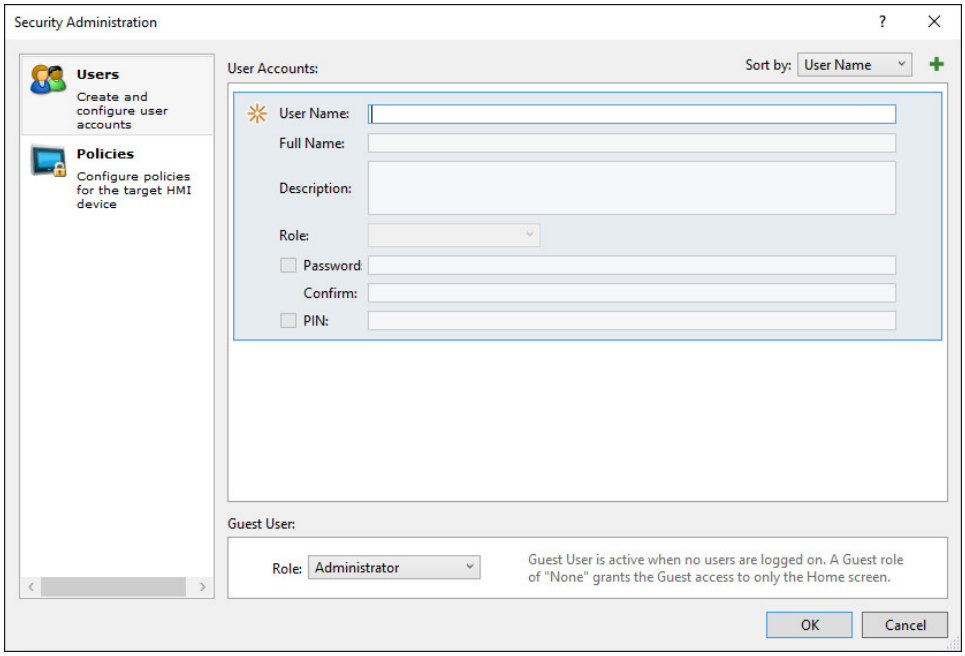
Use the steps below to explore the ability to secure screens using Users, Roles, and Screen Security properties.

Configuring Users and Roles

1. Use the *Tools* menu to select *Security Administration…*



The Security Administration dialog will open:



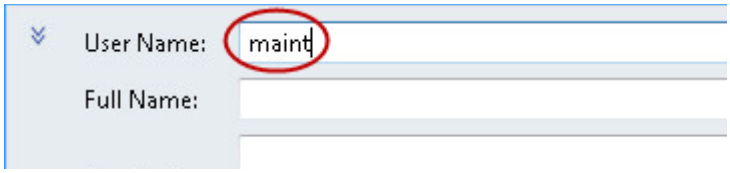
The Security Administration dialog window is where Users, Roles and Policies are configured for the full project.

Users: A user will log in during runtime with a username and password or a PIN.

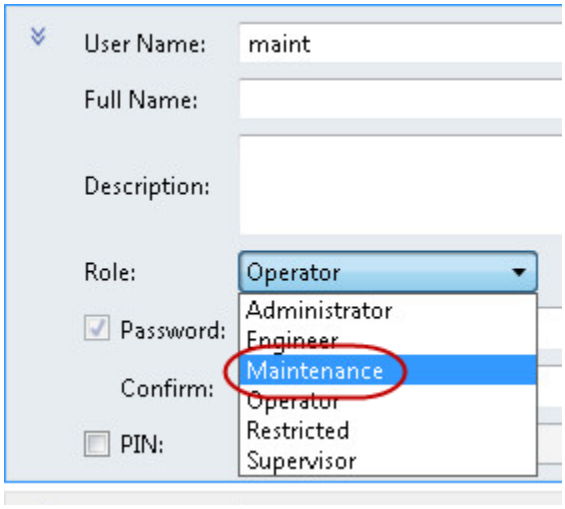
Roles: A role is defined for each user. This role will be used to determine access levels for any screen that should be secured.

Policies: The Policies tab is the location in which settings such as Number of Passwords to Remember, the required length of passwords and complexity requirements can be configured.

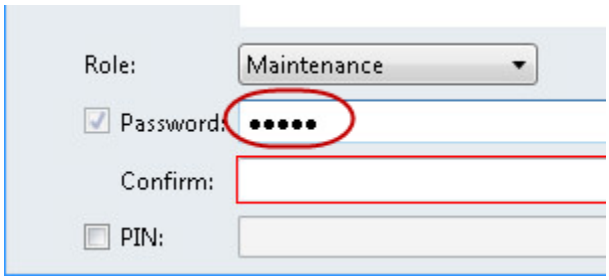
2. Type *'maint'* in the **User Name:** field.



3. Use the drop down list for **Role** to select *Maintenance*.

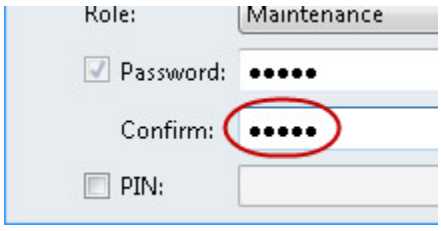


4. In the **Password** field, type *'maint'*.



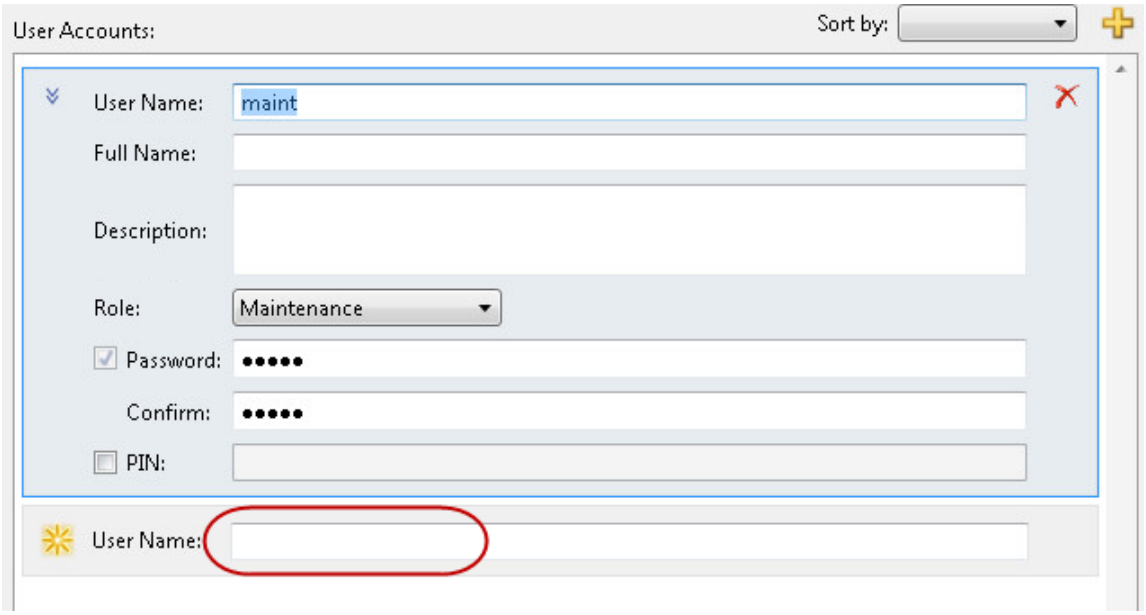
Notice the Confirm field has a red outline – this is because the Password and Confirm entries do not match.

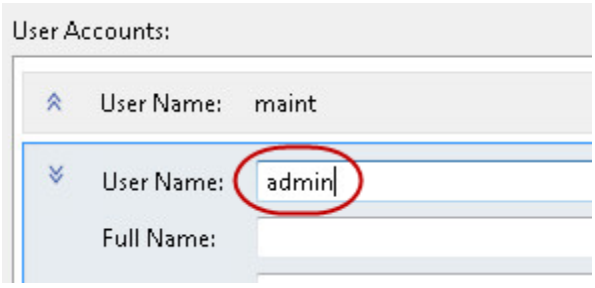
5. In the **Confirm** field, type *'maint'*.



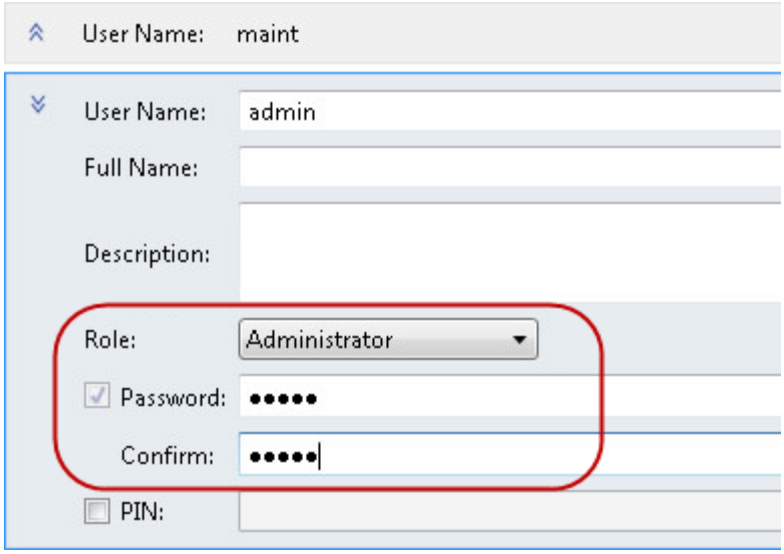
The red outline has disappeared because both the Password and Confirm fields have the same characters entered.

6. Create another user by typing *'admin'* in the second User Name field.

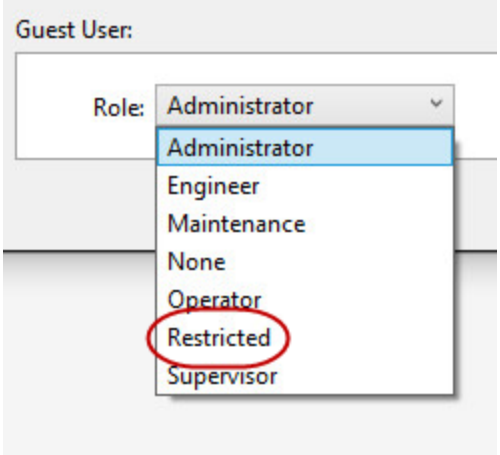




7. Continue configuring the user, using the information below:
   - Role: *Administrator*
   - Password: *admin*
   - Confirm: *admin*

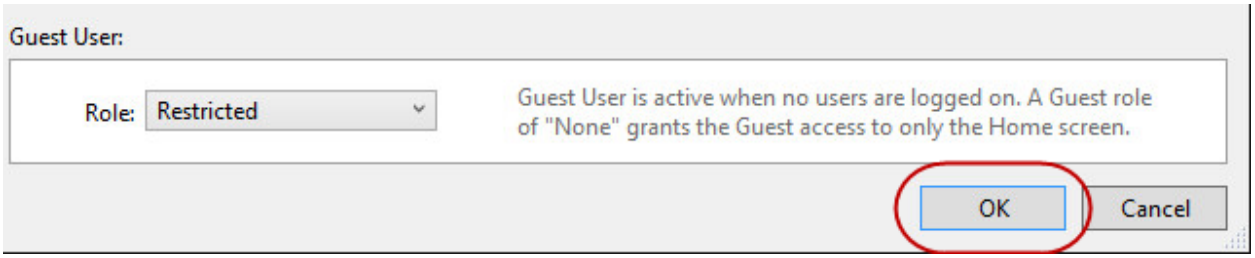


8. Change the Guest User role to *Restricted* using the drop down list.



> Notice the information for the Guest User:
>
> Guest User is active when no users are logged on. A Guest role of "None" grants the Guest read-only access to only the Home screen.
>
> This means that if the guest has the None role configured, the Guest user will be unable to view any other screens in the Navigation Menu, and will not be able to navigate to any screen using Navigation events on an element on the Home screen.

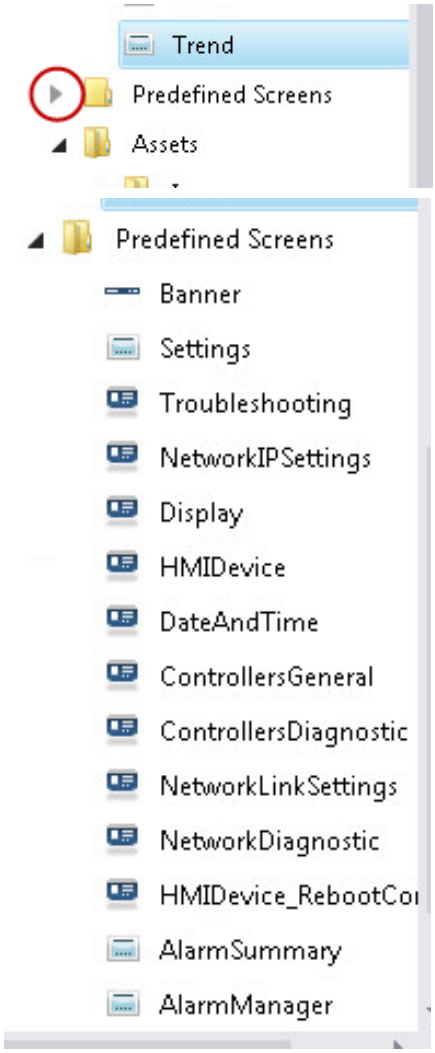
9. Click *OK* to close the Security Administration dialog.



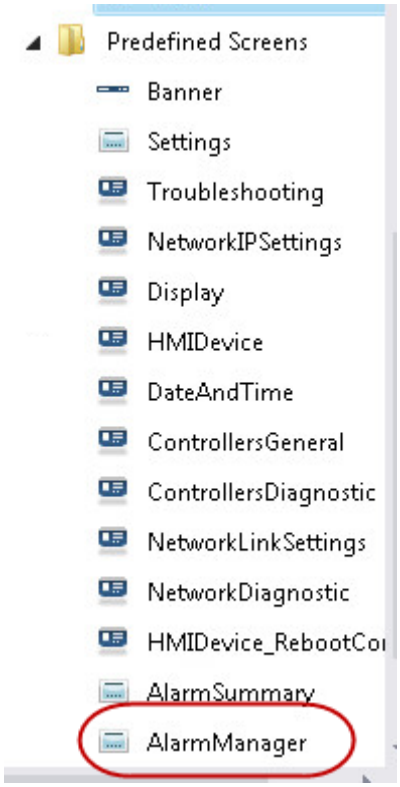
Securing Screens

Screen security can be configured in the Screen's properties. This is done using the Project Explorer and the Properties pane.

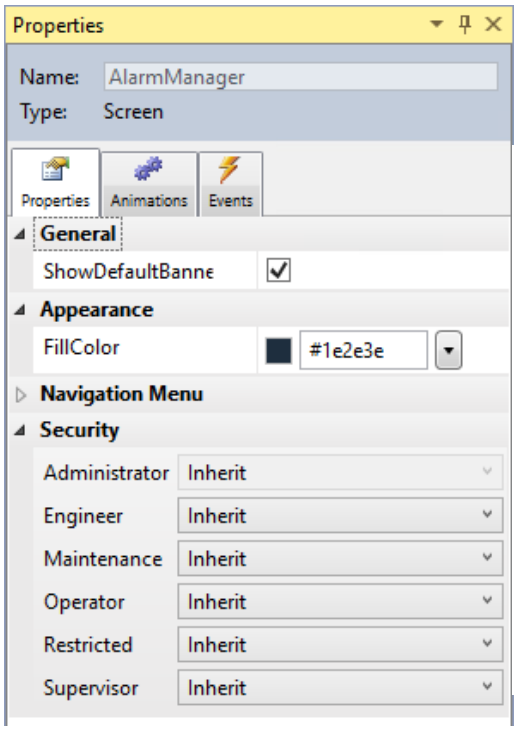
1. Expand the *Predefined Screens* category in the **Project Explorer** pane.



2. Scroll down and select *AlarmManager*.



3. In the **Properties** pane, expand the *Security* category.



Access options:

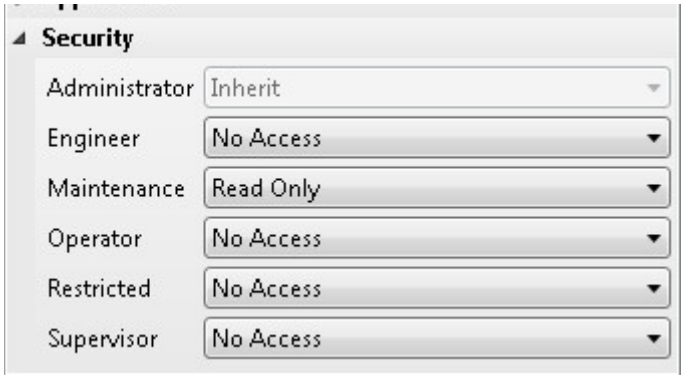
Inherit: Grants the role the same access assigned to the parent folder. All roles have Inherit access by default.

Full Access: Grants the role access to open interact with the item, and shows the item in the Navigation menu on the HMI device.

Read Only: Grants the role access to open the item, but denies interaction with it. The item appears in the Navigation menu on the HMI device. Users assigned to a role with read-only access can still interact with the Navigation menu and alarm tables.

No Access: Denies the role access to open or interact with the item. The item does not appear in the Navigation menu on the HMI device.

4. Use the drop down lists beside each role so that they look like the following:
   - Engineer: No Access
   - Maintenance: Read Only
   - Operator: No Access
   - Restricted: No Access
   - Supervisor: No Access

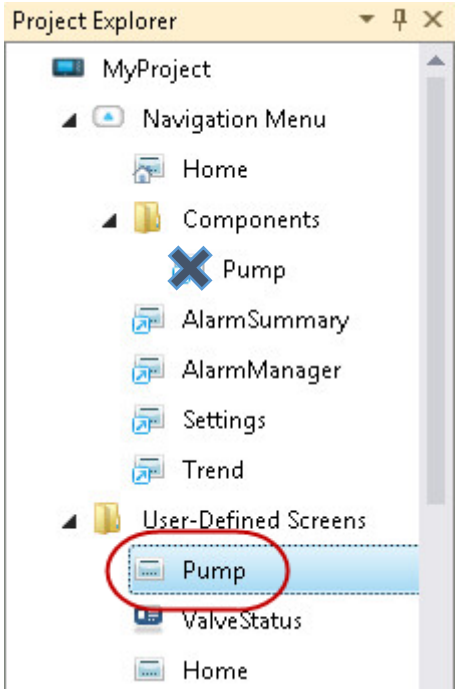


Securing Elements

In addition to securing screens, individual or groups of elements can also utilize security features. In the steps below, configure an element to be disabled based on the logged in user.

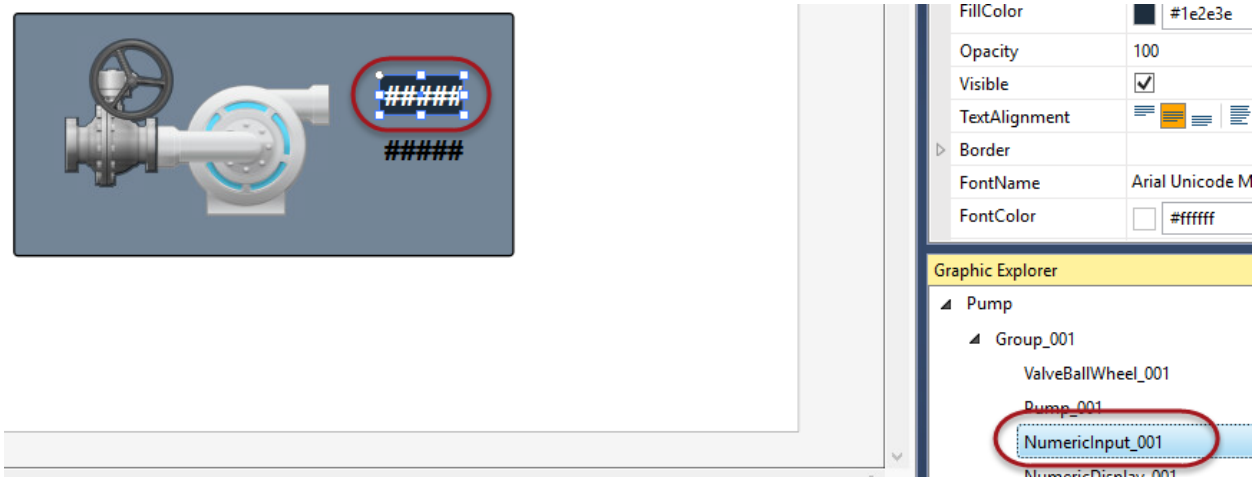
1. Now, return to the **Project Explorer** pane, scroll up, and open the *Pump* screen

   Make sure to select the **Pump** screen under the **User-Defined Screens** category.

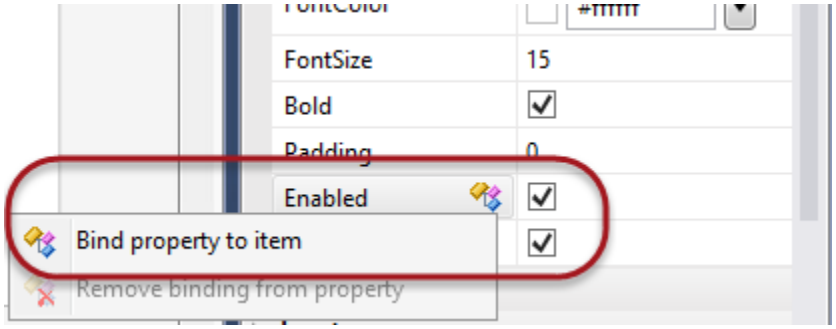


DO NOT select the **Pump** shortcut in the Navigation Menu.

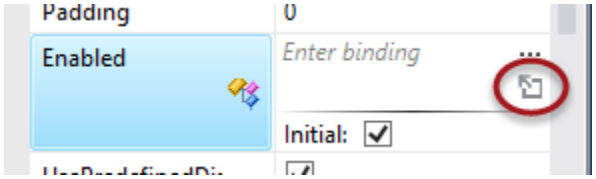
2. Select the *Numeric Input* element using the Graphic Explorer.



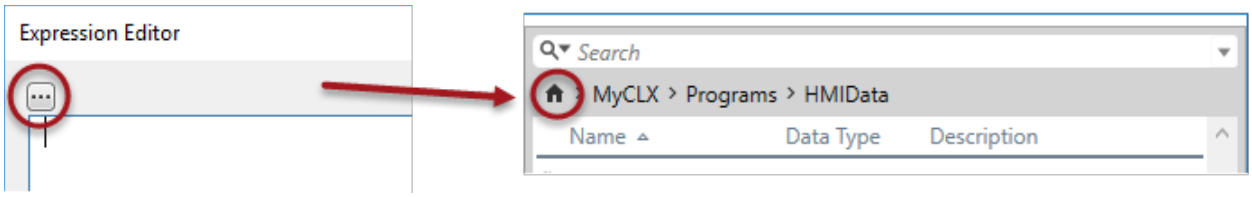
3. Under the *Appearance* category of properties, click the *Binding button* for the Enabled property to select *Bind property to item*.



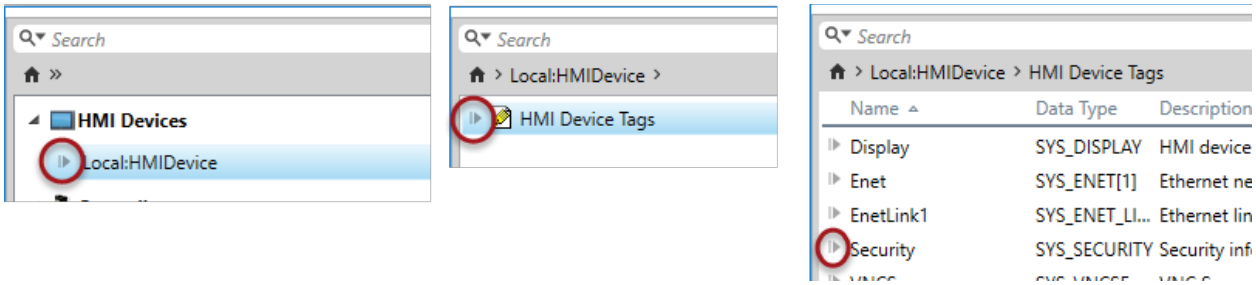
4. Open the Expression Editor using the *Open Expression Editor* button.



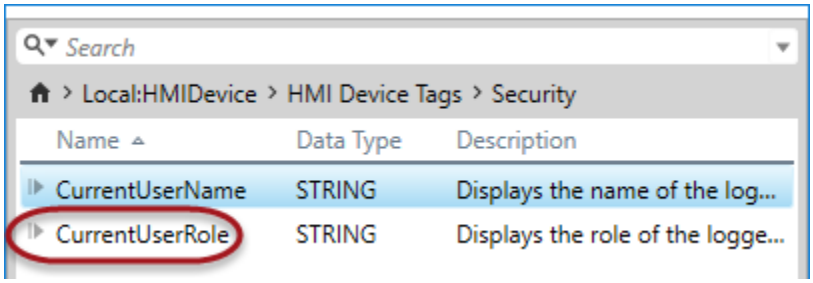
5. Using the *ellipsis* button, open the Tag Browser, and click the *home* button.

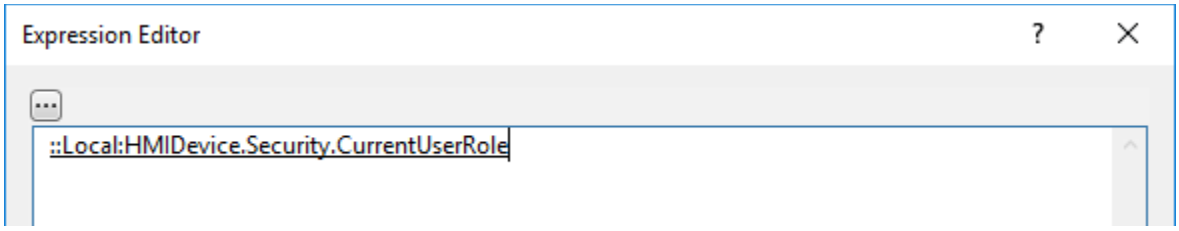


6. Expand *Local:HMI Device*, then *HMI Device Tags*, and finally, *Security*.



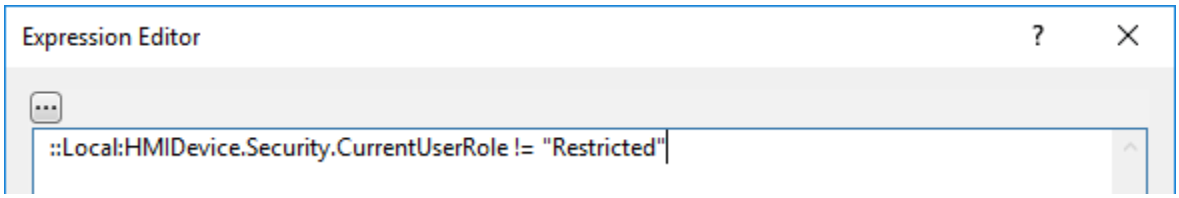
7. Double click *CurrentUserRole* to add it to the editor.





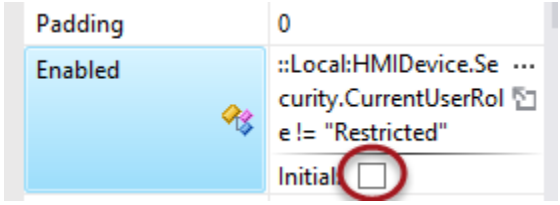
8. Type "***!= "Restricted"*** " after CurrentUserRole, so that the field looks like the picture below.

   This addition to the expression will result in the numeric element to be disabled when any user with a Restricted role is logged in.



9. Click *OK* to close the Expression Editor.

10. Uncheck the *Initial* checkbox.



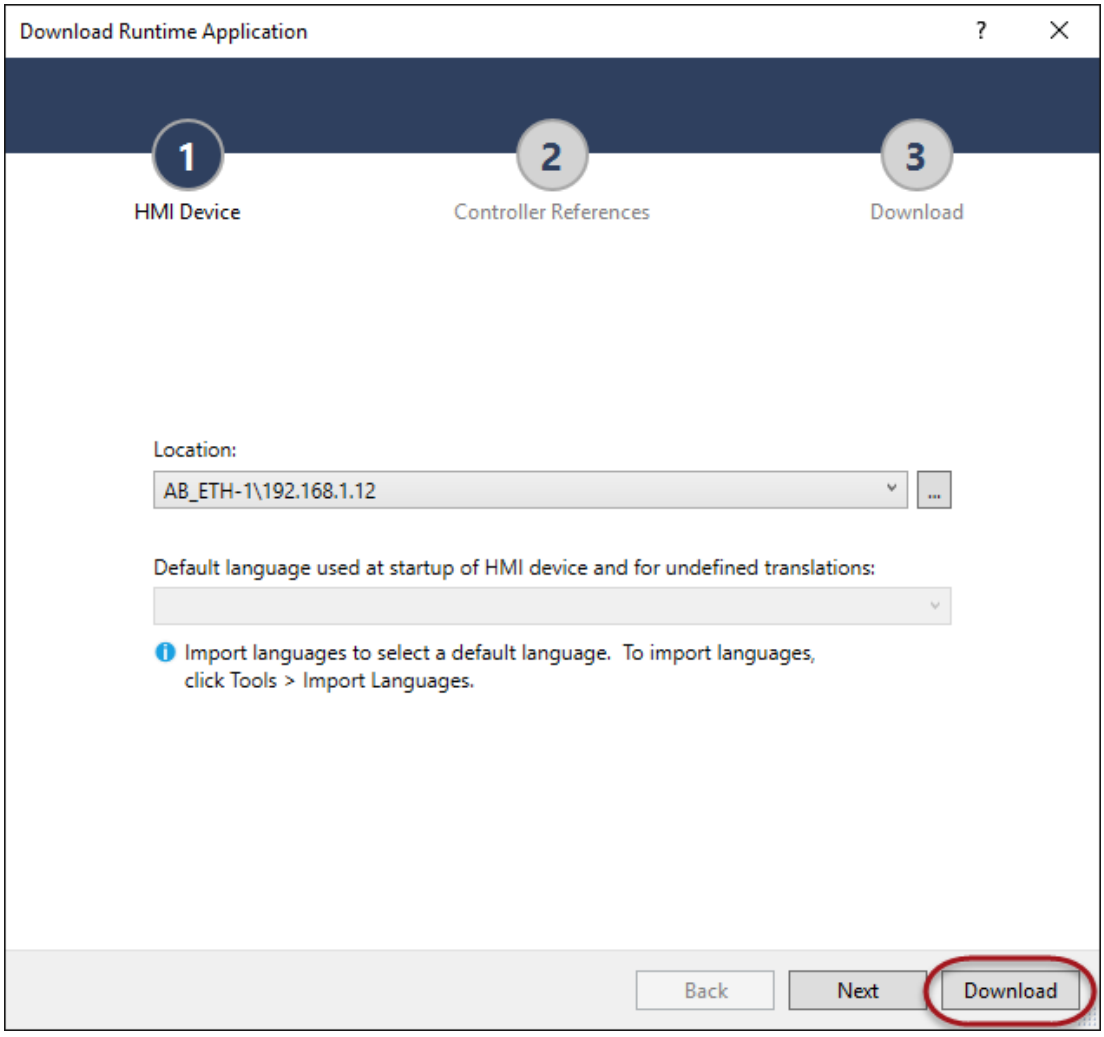
Download and Explore

Follow the steps below to download the project to the terminal and test the trending function.

1. Click *Communications*, and select *Download...*

   Because the HMI Device Location and Controller References were checked the last time the project was downloaded, those steps can be skipped.

2. Click *Download*.

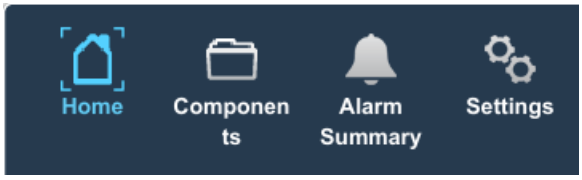


3. Close the Download Runtime Application window using the *Close* button.

Exploring Security at Runtime

1. On the terminal, press the *Navigation Button*.

   Notice that the **AlarmManager** screen is no longer in the Navigation Menu. This is because by default, Guest is logged into the application.



2. Tap the *Components* folder, and select *Pump*.

   Notice that the Numeric Entry element has a crosshatch over it, indicating that the element is disabled.

3. Press the *Numeric Entry* element.

   As a result of the press event, a red circle with a white x appears.

4. Tap the *red circle*.

   The error display will show as below:

5. Use the *Navigation Menu* button to view the Navigation Menu.

   Notice the Alarm Manager is missing from the Navigation Menu. Remember, the screen was secured so that Maintenance users have Read Only access, and Administrator users have full control. No other roles have the ability to navigate to the screen.

6. Next, press the *Log On* button.

6. Press the *User name* field, and type *'maint'*.

7. Press *OK*.

8. Press the *Password* field, and type *'maint'*.

9. Press *OK*.

10. Press *Log on*.

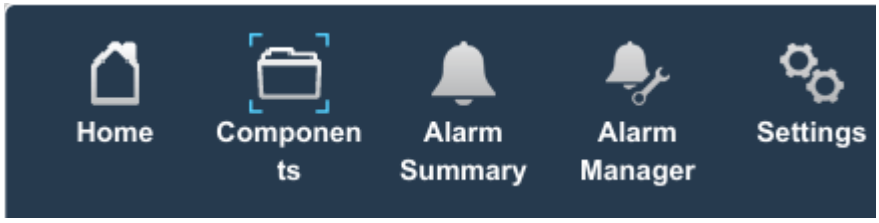
Notice the Numeric Entry is now enabled.

11. Press the *Numeric Entry* object, enter a new value, and press *OK*.

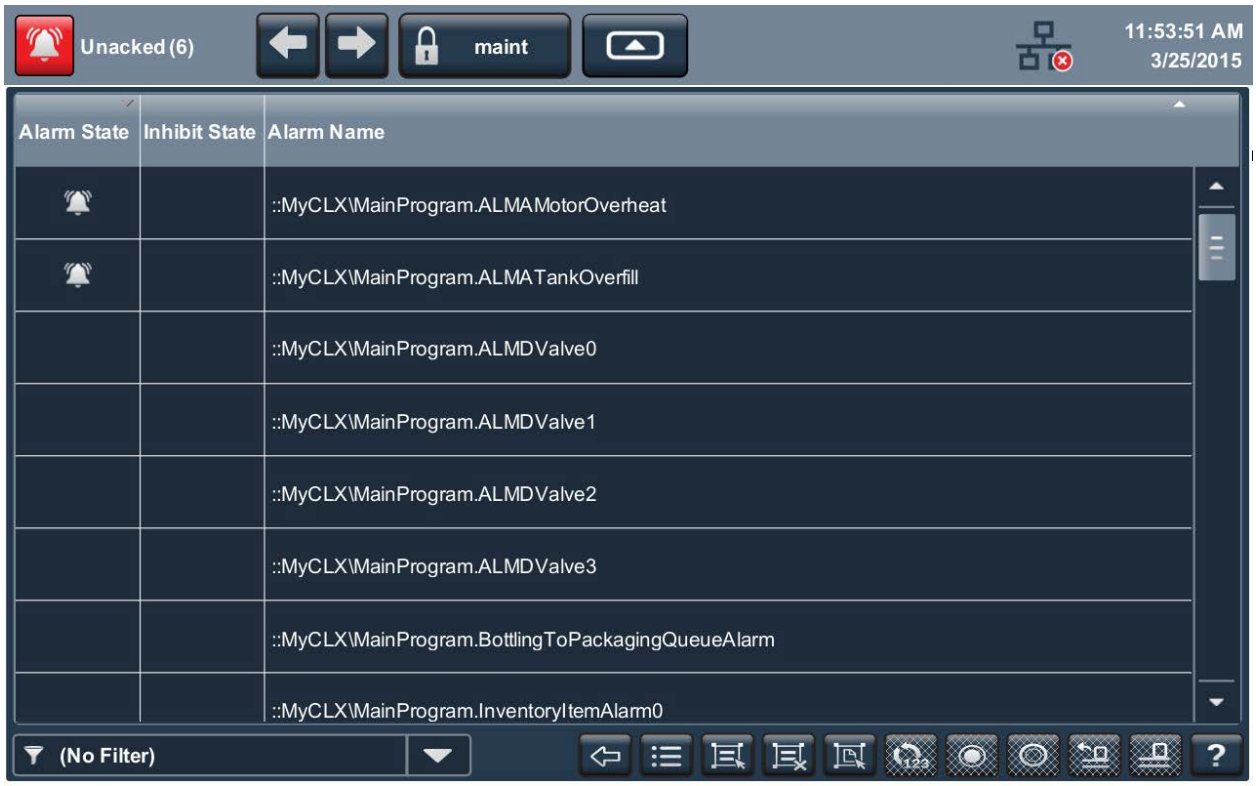
Notice that the entry has been sent to the controller, and the obejcts on the screen are updated.

12. Now, press the *Navigation button*.

Notice that the AlarmManager screen is now visible.



13. Press the *AlarmManager* icon.



14. Try to interact with the *Disable* button on the screen.

Notice that the button is disabled, and that pressing the button results in the red circle with a white x appearing.

15. Next, press the *Log On* button.

Note that the button displays the user logged in currently.

16. Press the *User name* field, and type *'admin'*.

17. Press *OK*.

18. Press the *Password* field, and type *'admin'*.

19. Press *OK*.

20. Press *Log on*.

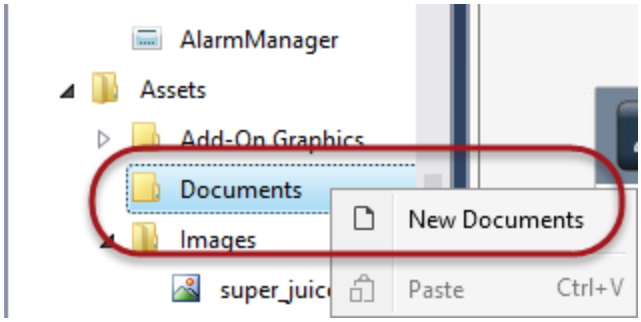
    Notice that all of the buttons on the AlarmManager screen are now enabled.

You have now configured the project so that only certain users have access to designated screens. In addition, you have explored what happens when elements are disabled by security access!

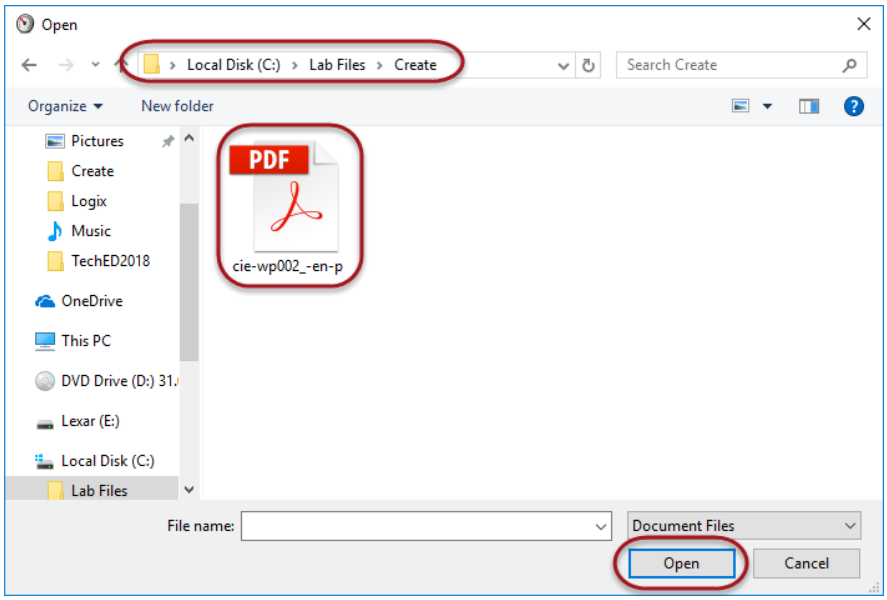
Optional – Using PDF Documents in View Designer

PanelView 5500 terminals have a PDF Viewer that allows operators to quickly access documentation about the process or machine for operating procedures, troubleshooting and maintenance. HMI Designers can easily embed PDF documents on their screens using the PDF Reader available in Studio 5000 View Designer which includes a predefined PDF viewer, navigation controls and zoom controls. Simply place the PDF Reader on a screen and select the PDF document to view.

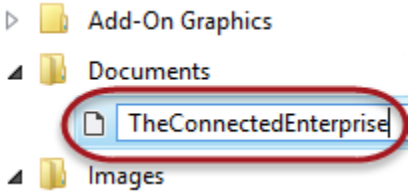
1. In **Project Explorer**, scroll down to **Assets**, then right click *Documents* and select *New Documents*.



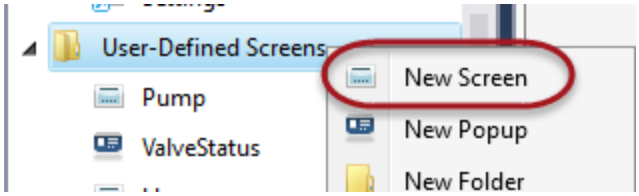
2. Browse to *C:\Lab Files\Create*, select *cie-wp002_-en-p*, then select *Open*.



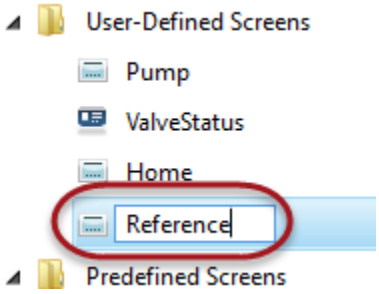
3. Type *'TheConnectedEnterprise'*, then press *Enter* to accept the new document name.



4. Right click *User-Defined Screens*, and select *New Screen*.



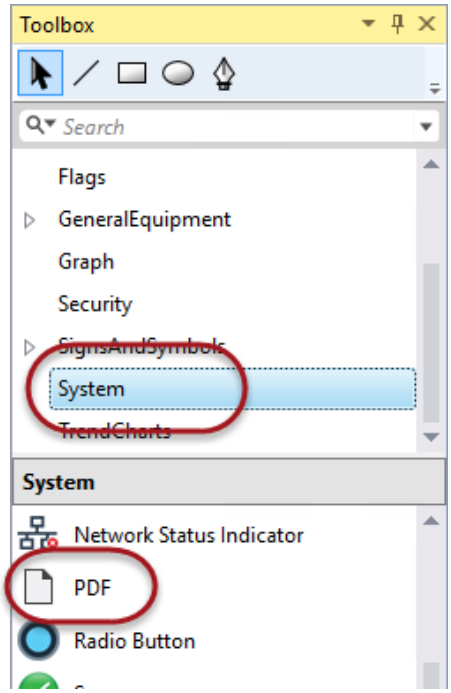
5. Name the screen ***'Reference'***.

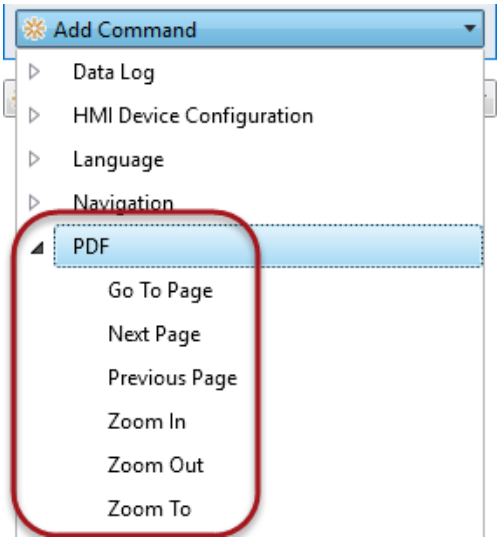


6. Double click the new screen to open it.

Adding a PDF Viewer to a View Designer Project

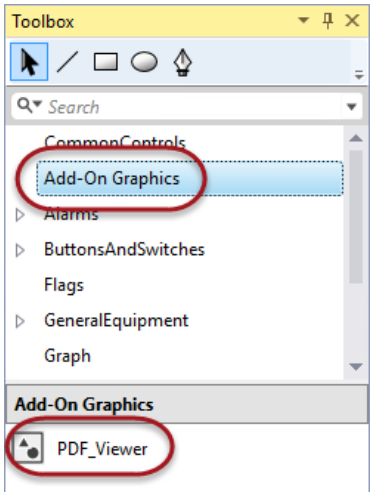
There are multiple ways that a PDF viewer can be added to a project screen. The first is by using the PDF Viewer element, found within the System category of the Toolbox. The PDF viewer is a simple element that displays the PDF file. Navigating through the document can be done using a press and slide movement, or by adding elements with event commands specific to PDF navigation.



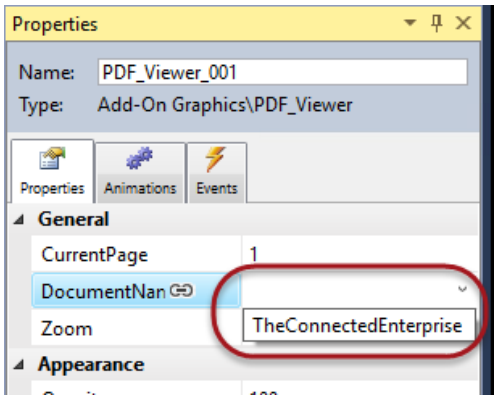


This section will demonstrate how to use an Add-On Graphic that has been created as pre-defined content with each View Designer project.

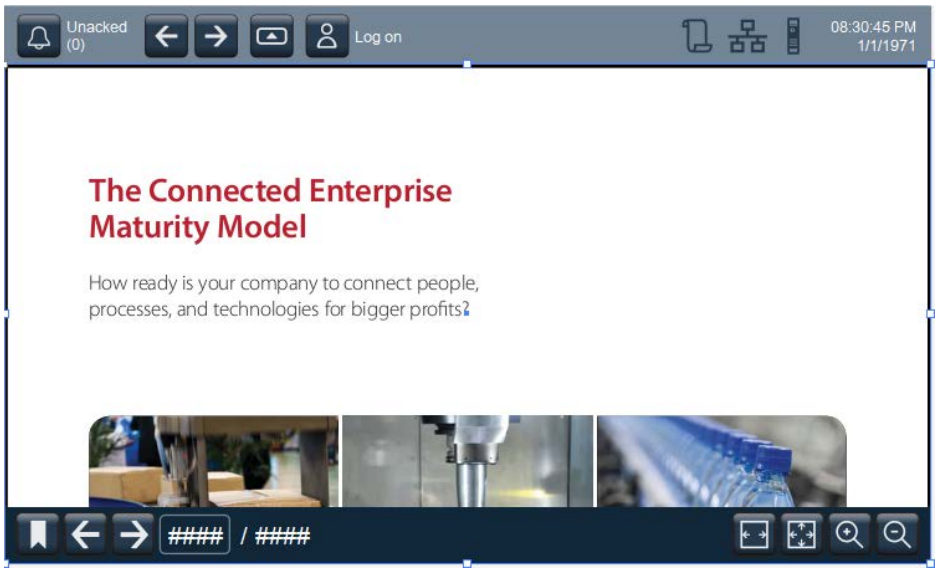
1. In the **Toolbox**, select *Add-On Graphics*, then double click *PDF_Viewer* to add it to the screen.



2. In the Properties panel, use the drop down menu for **DocumentName**, and select *TheConnectedEnterprise*.



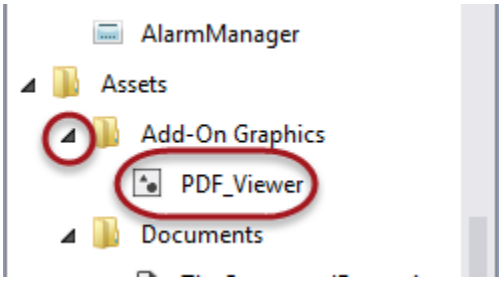
Notice the Add-On Graphic has updated to display the first page of the document.

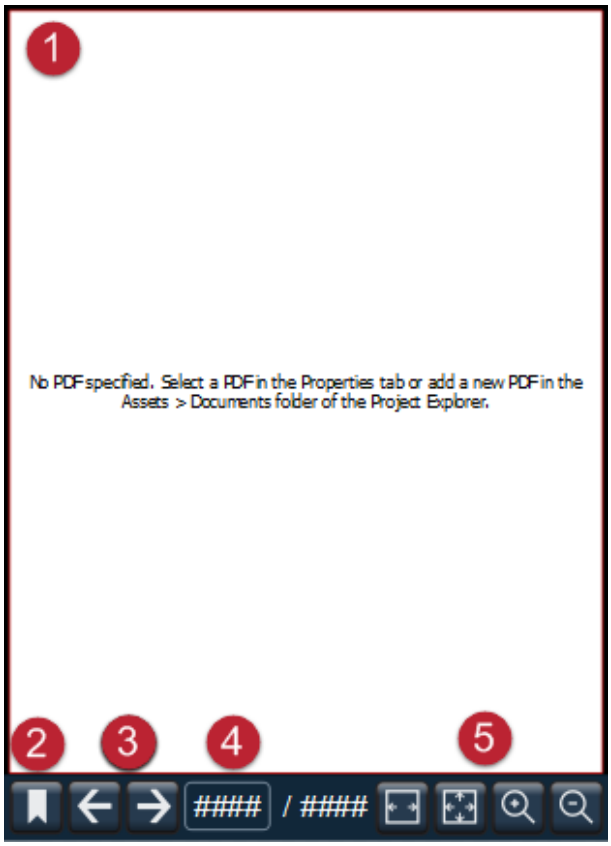


Understanding the PDF Viewer Add-On Graphic

An Add-On Graphics has been created with elements that would typically be used with documents. Use the steps below to explore this predefined content.

1. In the Project Explorer, expand the *Add-On Graphics* folder, found under Assets, then double click *PDF_Viewer*.

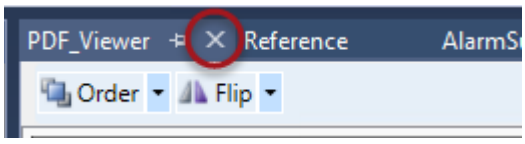




1 – PDF Viewer Element: Displays the selected PDF File
2 – Bookmark Button: Toggles the bookmark pane, showing any bookmarks configured for the document
3 – Forward and Back Buttons: Buttons that advance or reverse page navigation
4 – Page Number Input: Used to specify a page to view
5 – Zoom buttons: Including fit width, page, zoom in and zoom out

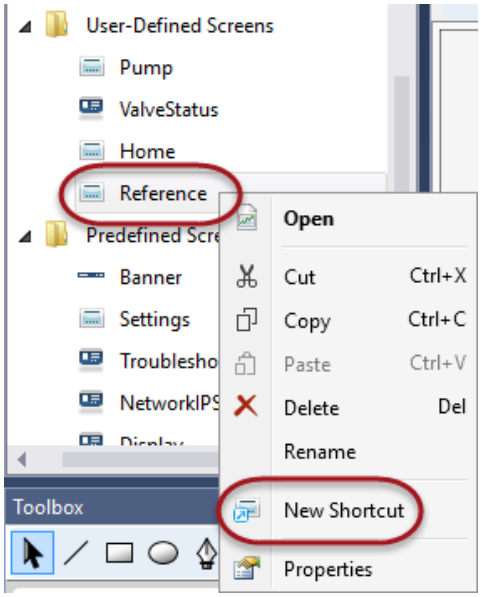
2. Click around the Add-On Graphic, exploring the Events tabs of different elements to understand more about how they were configured.

3. Close the PDF_Viewer Add-On Graphic using the X.

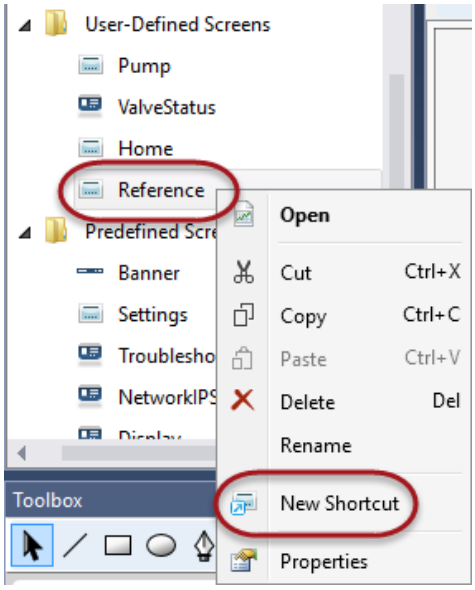


Add the screen to the Navigation Menu

1. In the Project Explorer, under User-Defined Screens, right click *Reference*, and select *New Shortcut*.

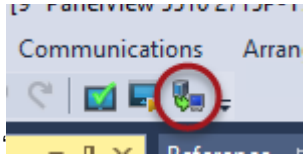


2. Press *Enter* to accept the name of the new shortcut.



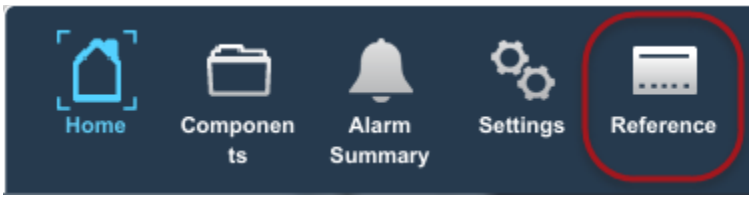
Download and Explore the PDF Viewer

1. Click the *Download* button on the toolbar.



2. Close the **Download** dialog when complete.

3. Turn to the terminal, and use the *Navigation Menu* button to open the *Reference* screen.

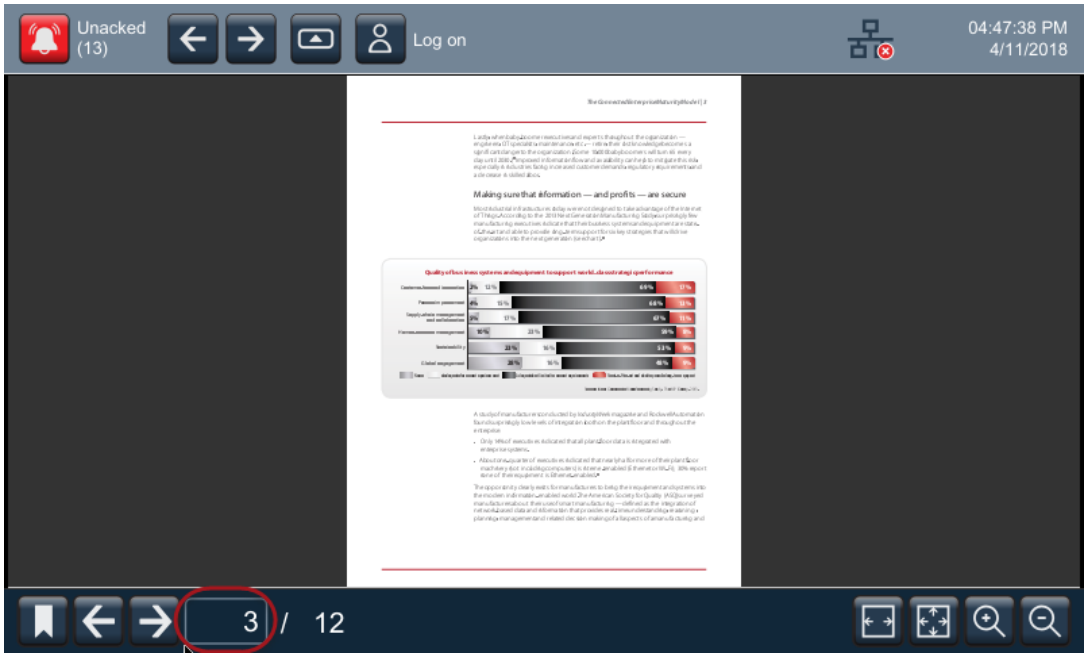


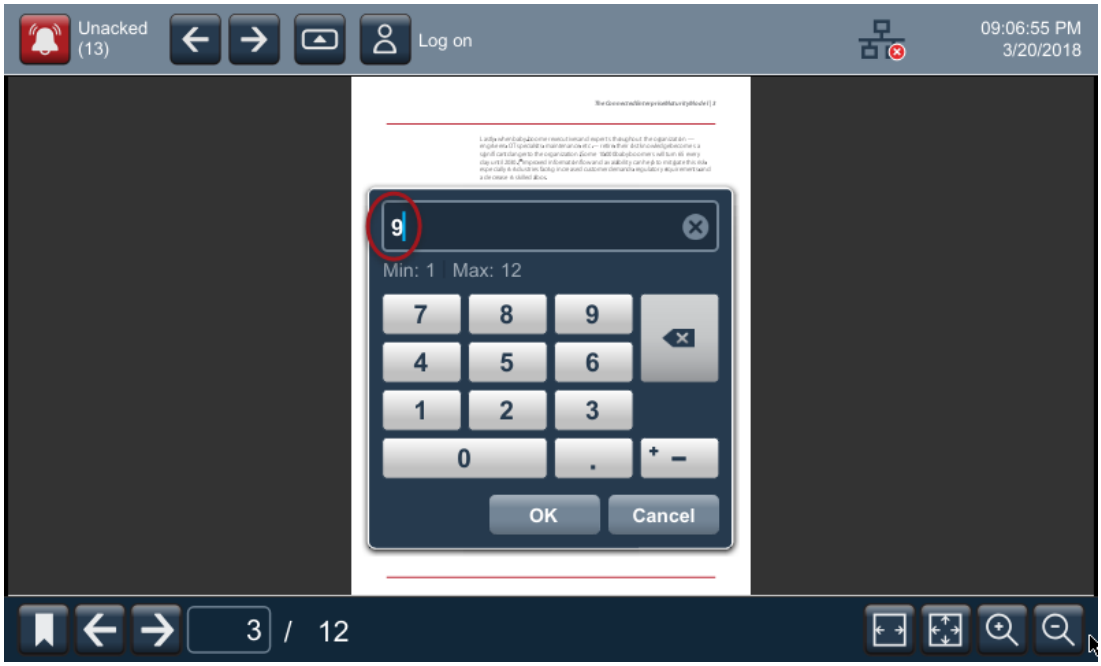
4. Use the *Fit to Page* button to zoom out.

5. Press the *right arrow* button one or two times.

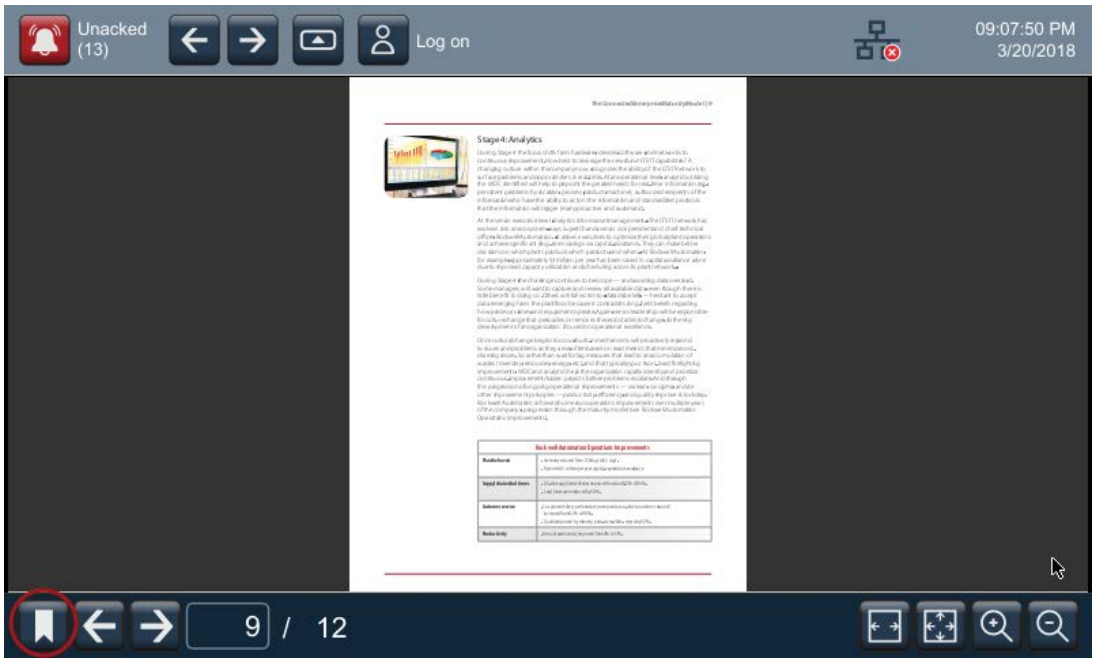
   Notice the PDF advances the corresponding number of pages.

6. Press the *page number input* element, then enter *9*, and press *OK*.

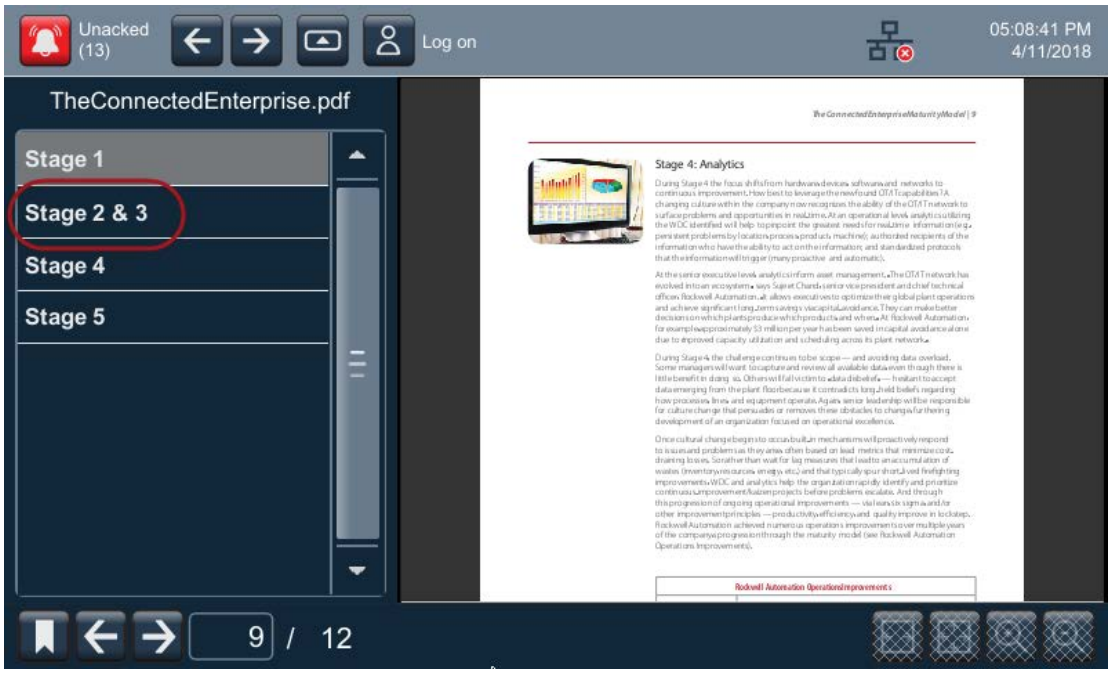




7. Press the *bookmark* button to open the bookmark panel.

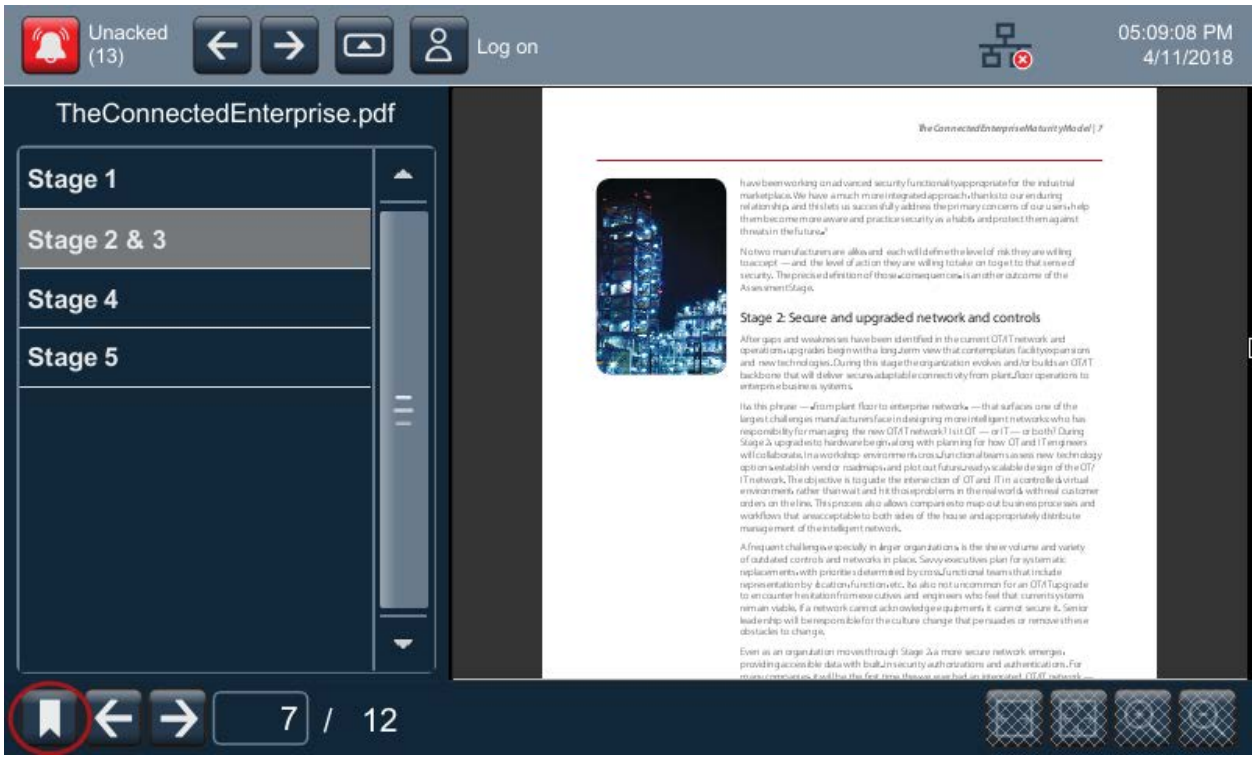


8. Press *Stage 2 & 3*.



The PDF will move to the bookmarked page.

9. Press the ***bookmark*** button to close the bookmark panel.



10. Feel free to continue exploring the PDF on the terminal.

Optional – Using Faceplates with View Designer

Application Content from Rockwell Automation helps engineers create automation projects from standardized, life-cycle managed, application-focused libraries in an efficient, sustainable way. The Power Automation Library is the first release available on the PCDC and include View Designer Faceplates and Logix Designer AOI and Device configuration.

For more information on implementing the Power Automation library, see the release notes and operational videos included in the download from PCDC.

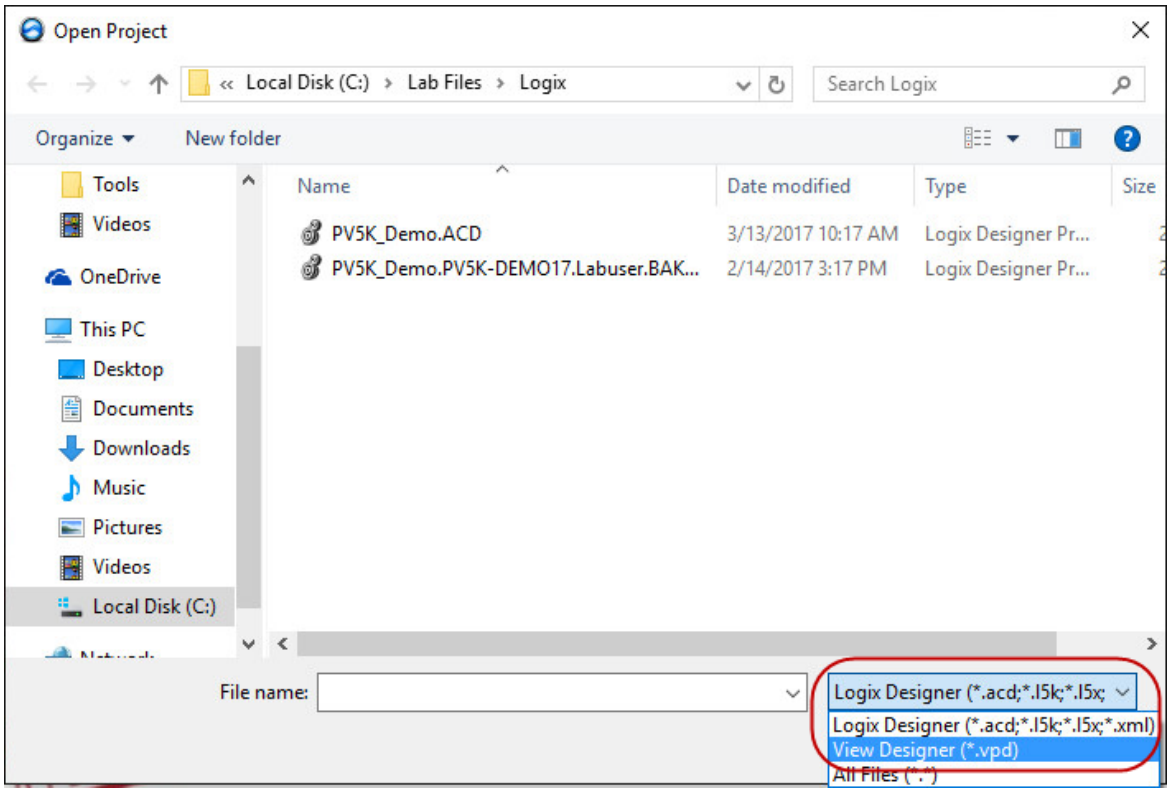
Open the Automation Device Faceplate project

This section will walk through the Kinetix 350 faceplate from the Power Automation Library.

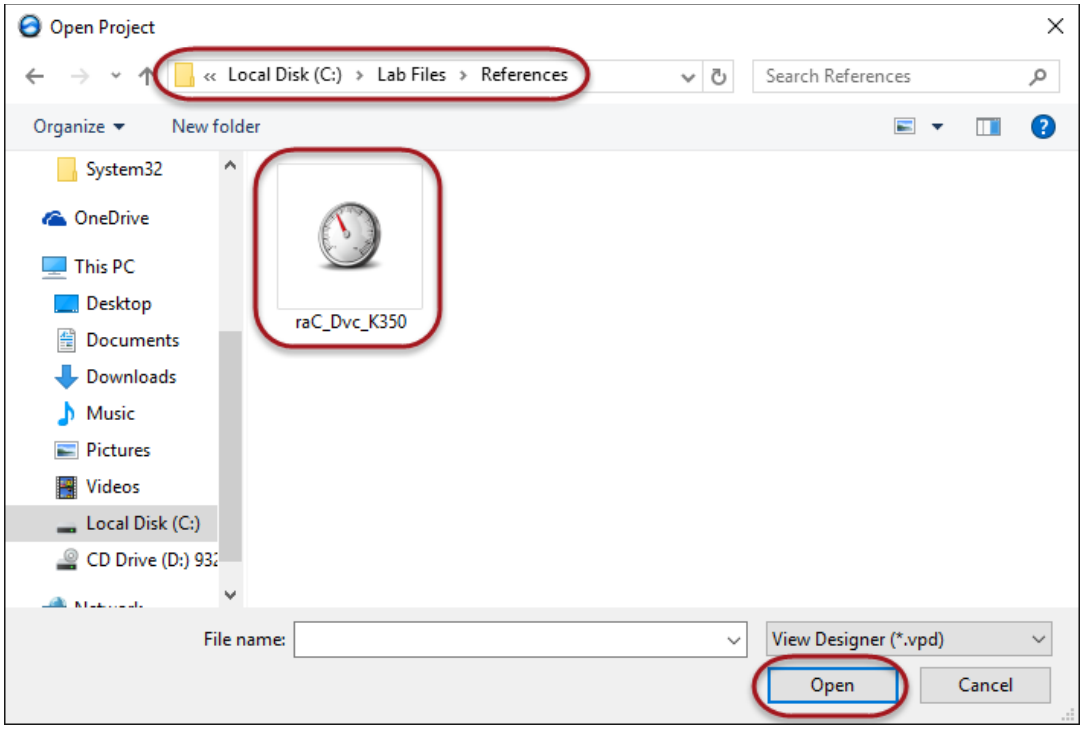
1. Open Studio 5000 by clicking the **Studio 5000 icon** on the taskbar.

2. Under the **Open** heading, click **Existing Project**.

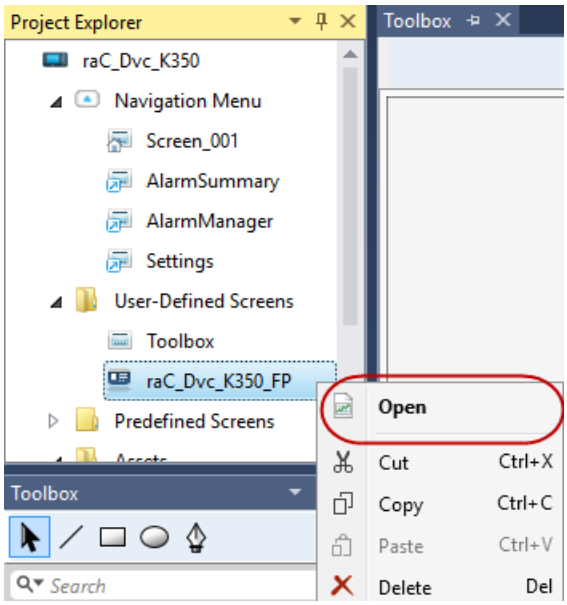
3. Select *View Designer (*.vpd)* from the browse filter settings.



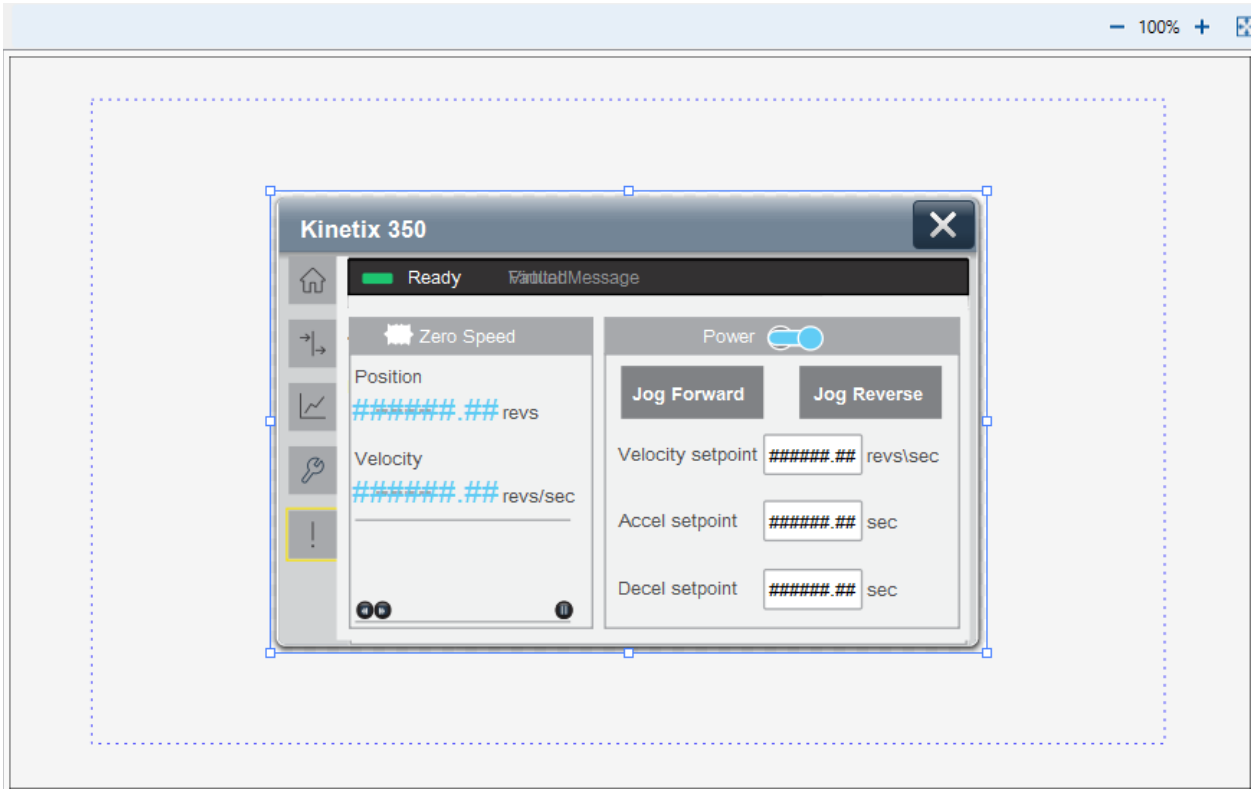
4. Browse to C:\Lab Files\References, select *raC_Dvc_K350.VPD* and click *Open*.



5. Right-click on *raC_Dvc_K350_FP* pop-up screen, then select *Open*.



All of the faceplate contents are on the pop-up display.



Faceplate Properties and Content

Groups

Each tab on the left side of the display will navigate to different content.

1 = Home

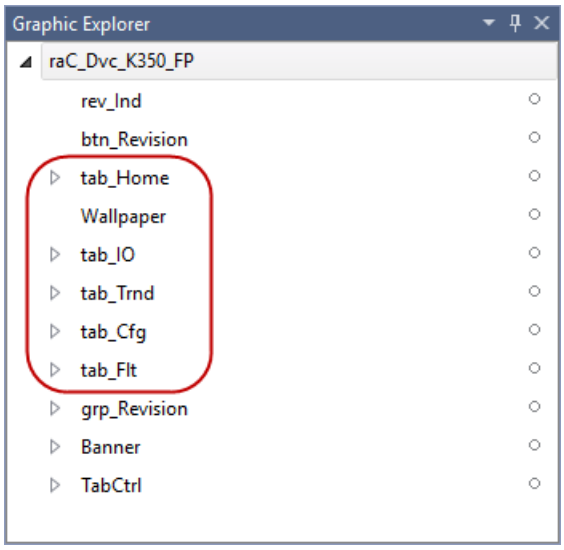
2 = I/O

3 = Trend

4 = Configure Trend

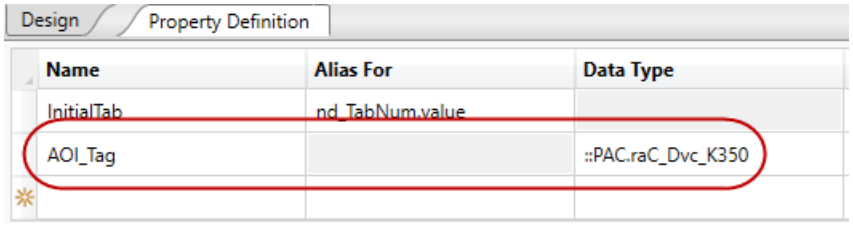
5 = Faults

You can see these tab groups in the graphic explorer.



Property Definition

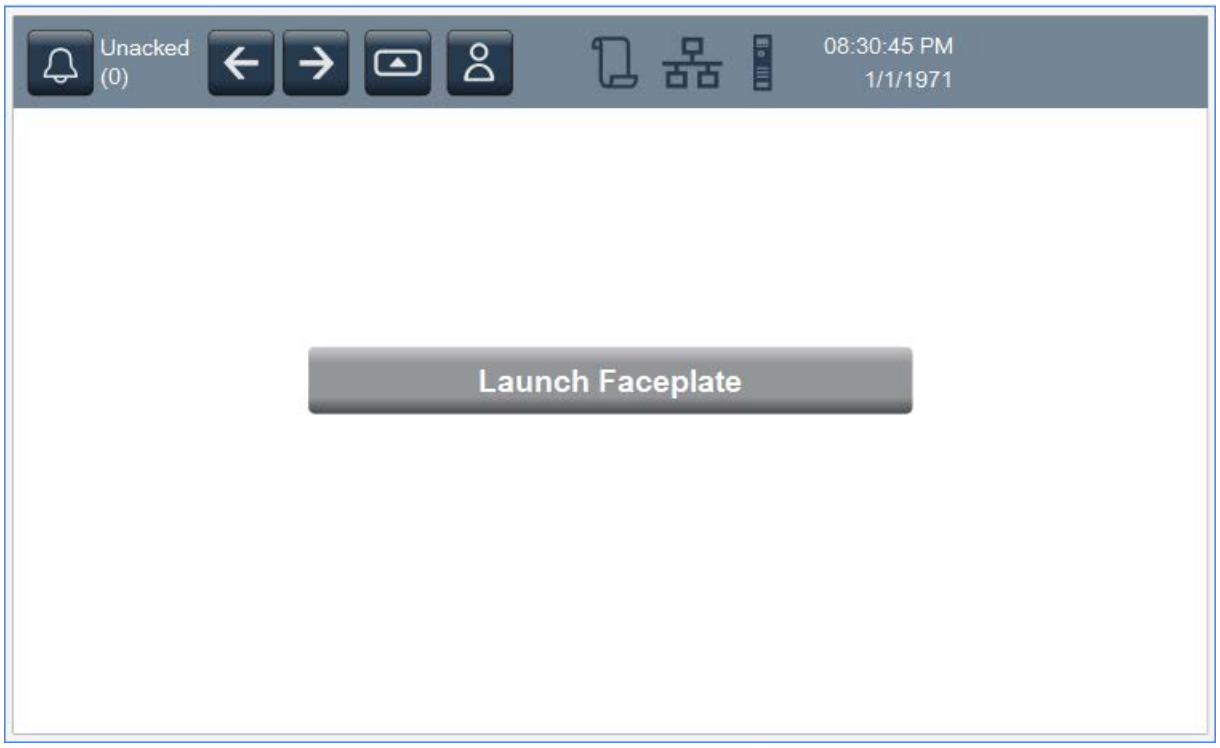
Property definitions are used as a placeholder in a tag reference. For example, the same faceplate pop-up screen can be used to manage multiple devices by using a property in its bindings. At runtime, different tag instances can be passed to a graphic element each time the faceplate is opened, allowing the same element to be used with multiple tag instances. The faceplate screen has a user defined property AOI_Tag with a data type of raC_Dvc_K350.



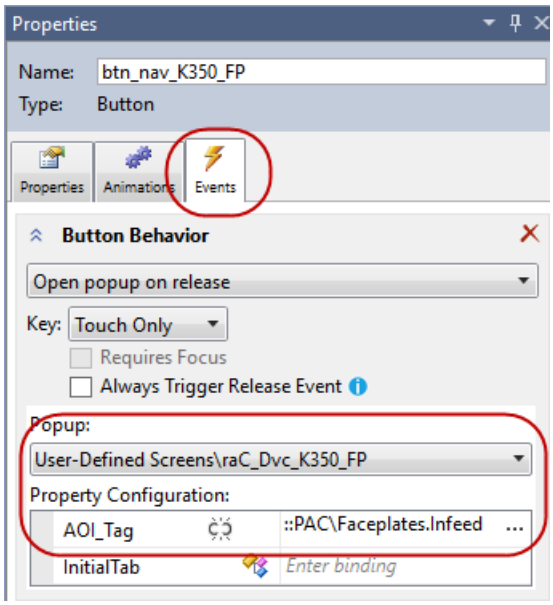
Navigation

The faceplate is opened from a button event.

1. Open the *Toolbox* screen from User-Defined Screens.



2. Click on the *Launch Faceplate* button to view its properties. Click on the *Events* tab.

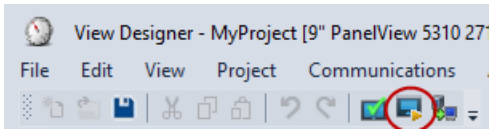


The button opens the faceplate screen raC_Dvc_K350_FP, and all references of AOI_Tag will be replaced with Faceplates.Infeed which is an instance of the user-defined data type.

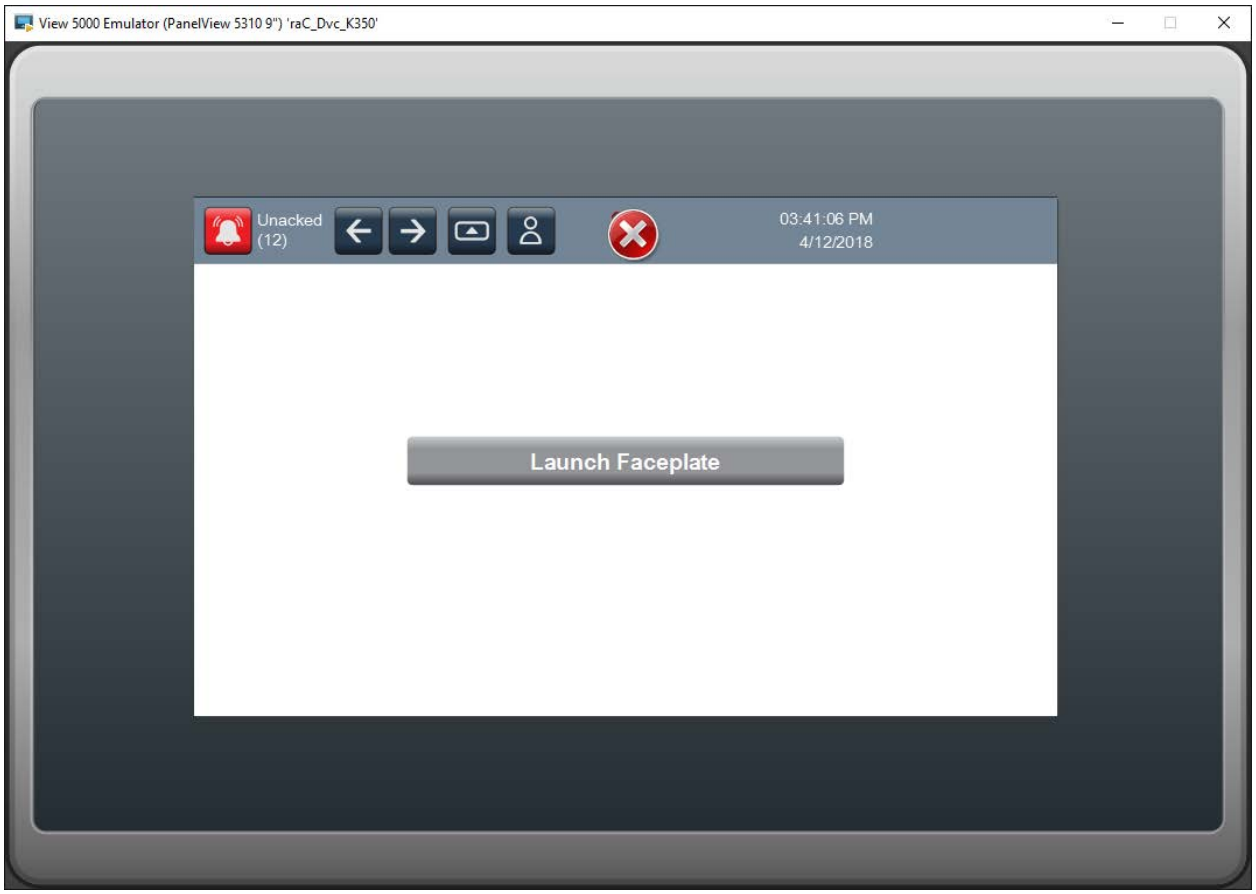
Testing the Faceplate

Now you are ready to test your faceplate!

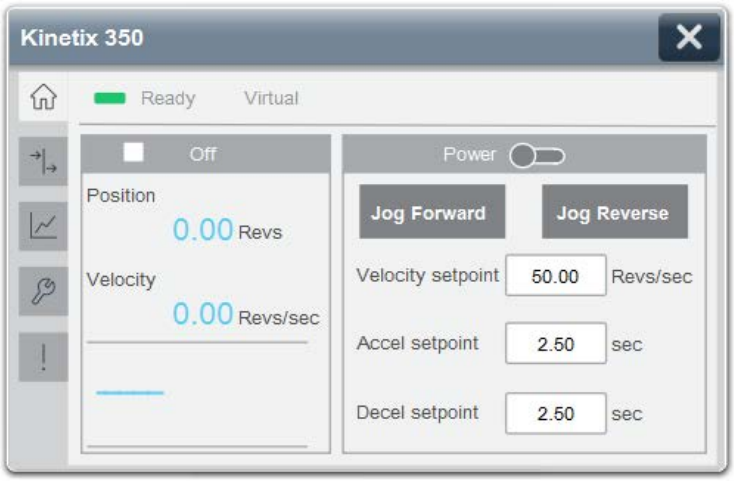
1. Click the Emulate Project icon.



2. Click on the **Launch Faceplate** button to open the pop-up.



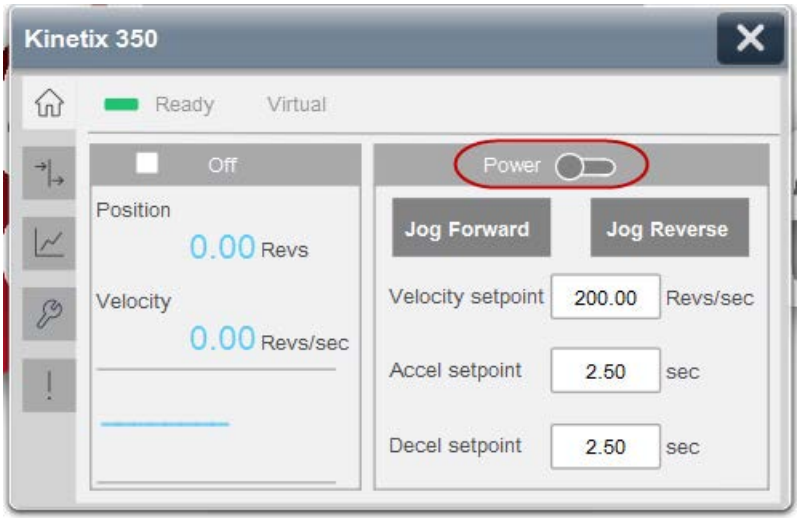
The faceplate opens on the Home page and should look like this:



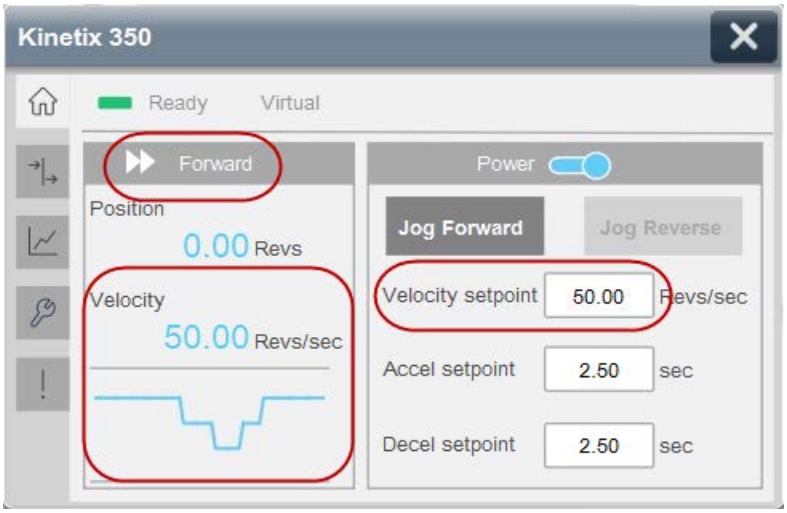
Notice that the banner at the top of the faceplate is showing a **Virtual** status. 

The faceplate and AOI allow you to test the faceplate without being connected to a drive. Some functions won't update such as position.

3. To test the jog feature on the faceplate, click on the power toggle.



4. Click the **Jog Forward** and **Jog Reverse** buttons. You also change the setpoints.



Notice that the Velocity setpoint is copied to the Velocity commanded value and is reflected in the Trend Sparklines. The direction and status of the drive is also updated.

Optional

Feel free to explore the other tabs under the home tab. Here's a quick summary:

- **I/O tab** displays status led indicators
- **Trend tab** displays full position and velocity trends

- Trend configure tab allows you to change the trend's min and maximum values and Engineering units to your application.
- Fault tab displays the last four faults on the device. Click on each row to show:
    - Details tab provides more detailed information on the fault, and possible actions.

For detailed information about the operation of the faceplate, see the release notes and video located in: C:\Lab Files\References.

You have now completed the Using Faceplates with View Designer section!

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