

Adding and Configuring Graphic Displays and Graphic Objects

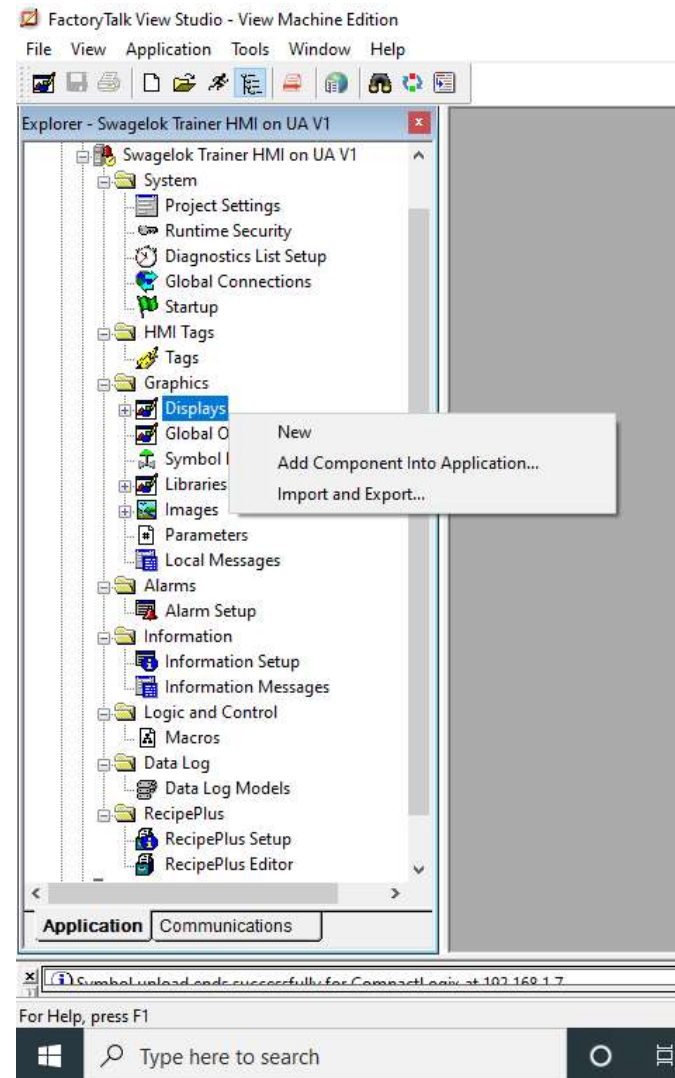
Dan Kandray

January 30, 2020

Adding New and Existing Graphic Displays

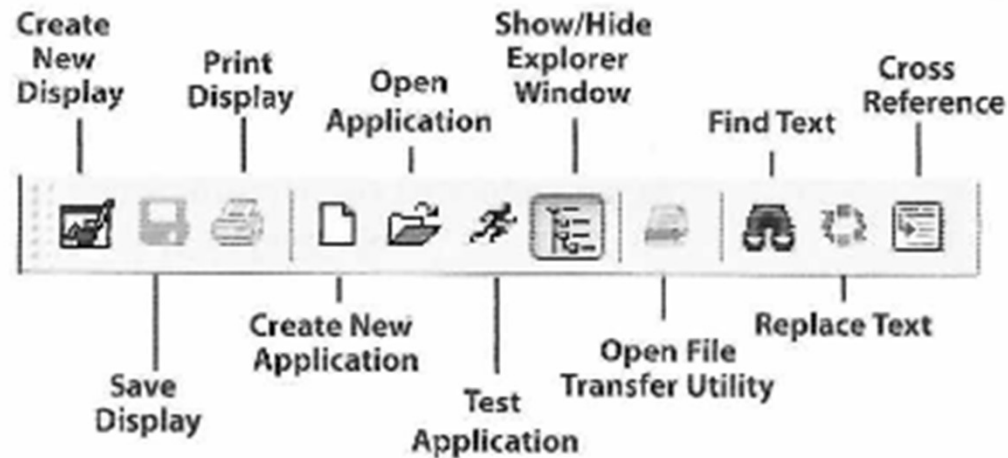
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- The Displays folder in the Explorer window allows users to:
 - create new graphic displays
 - Add existing displays
 - Export/Import Display
- To access, right-click on “Displays”
- Graphic displays are identified by a .GFX extension



Standard Toolbar

- Provides shortcuts to creating new graphic displays as well as performing other application-wide tasks:



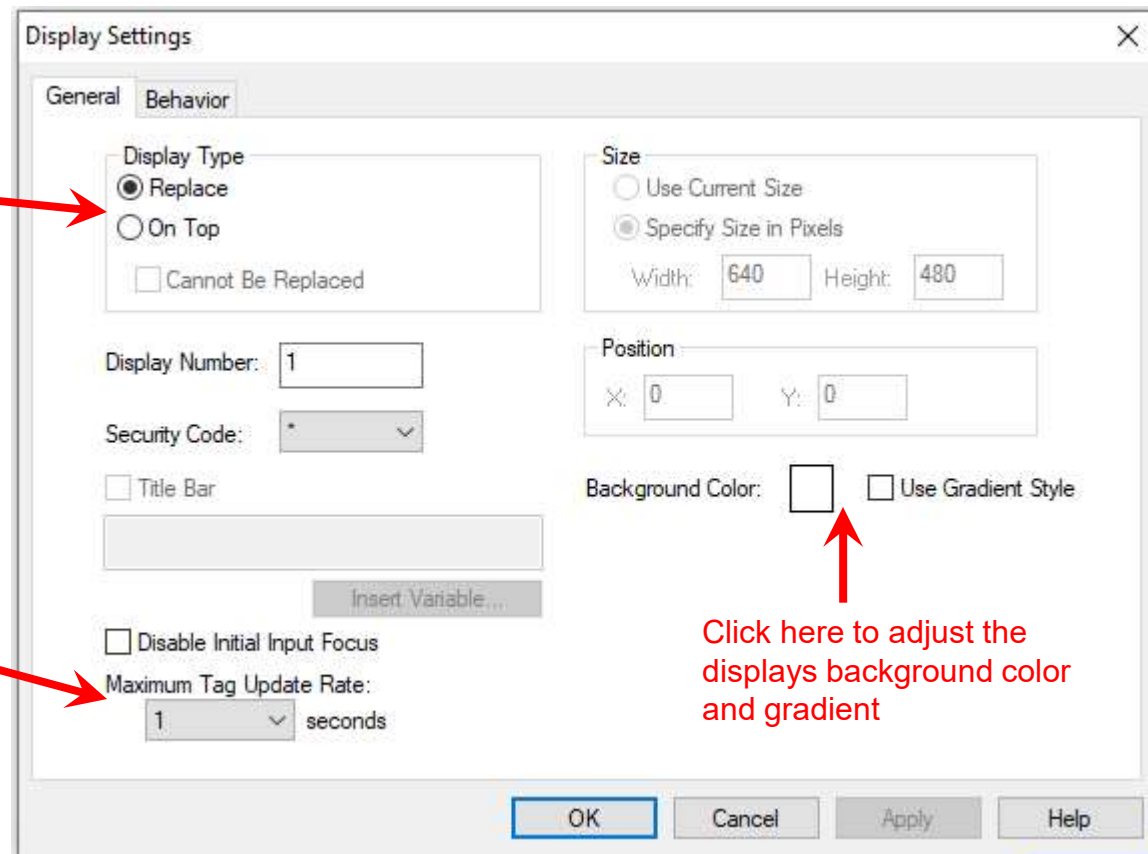
Configuring Graphic Display Settings

- General tab of the Display Settings dialog box allows users to define how the graphic display will look during runtime:

Replace is the default display type. Replace displays are full-sized displays. They use the project window size specified in the Project Settings editor. (See subsequent slides for more info)

Update rate considerations:

- Default rate is 1 s
- For most applications, 0.5 s is recommended



Click here to adjust the displays background color and gradient

Replace Display Type

- At runtime, you can have only one Replace display open at a time. When the operator opens a Replace display, this is what happens:
 - The Replace display that was open closes.
 - On Top displays that do not use the Cannot Be Replaced option are closed.
 - The new Replace display opens.
 - On Top displays that use the Cannot Be Replaced option remain open, on top of the new Replace display.

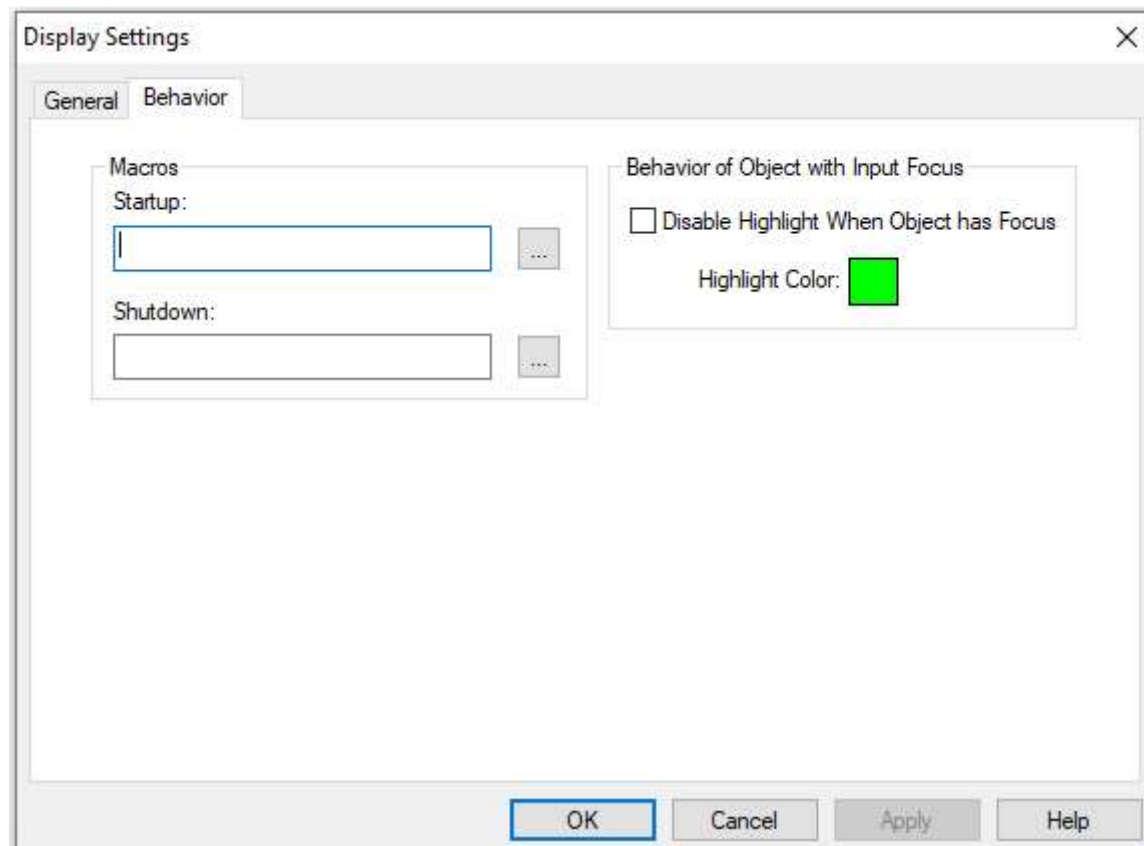
Note: If the operator attempts to open a Replace display that is already open (for example, using a **Goto display** button to which the same display is assigned), the display does not close and FactoryTalk View sends an error message to FactoryTalk Diagnostics.

On Top Display Type

- Use the On Top option to create pop-up displays that open on top of the current Replace display.
 - Usually, On Top displays are smaller than Replace displays, so the operator does not lose track of display navigation.
- You can open multiple On Top displays.
 - If more than one On Top display is open, the display that has focus, or had the most recent focus, appears on top.
- When an On Top display closes, the display that had the most recent focus appears on top.
- Use the Cannot Be Replaced option if you want the On Top display to remain open when a new Replace display is opened.
- On Top displays do not have a Close button in the title bar. Be sure to create a close button graphic object in On Top displays so the operator can close them.
- The operator cannot move an On Top display by dragging its title bar. The runtime position of the display is fixed (according to the position settings defined for the display).
- You can specify unique titles for On Top displays. You can use embedded variables in the title, and the title text can switch languages at runtime.

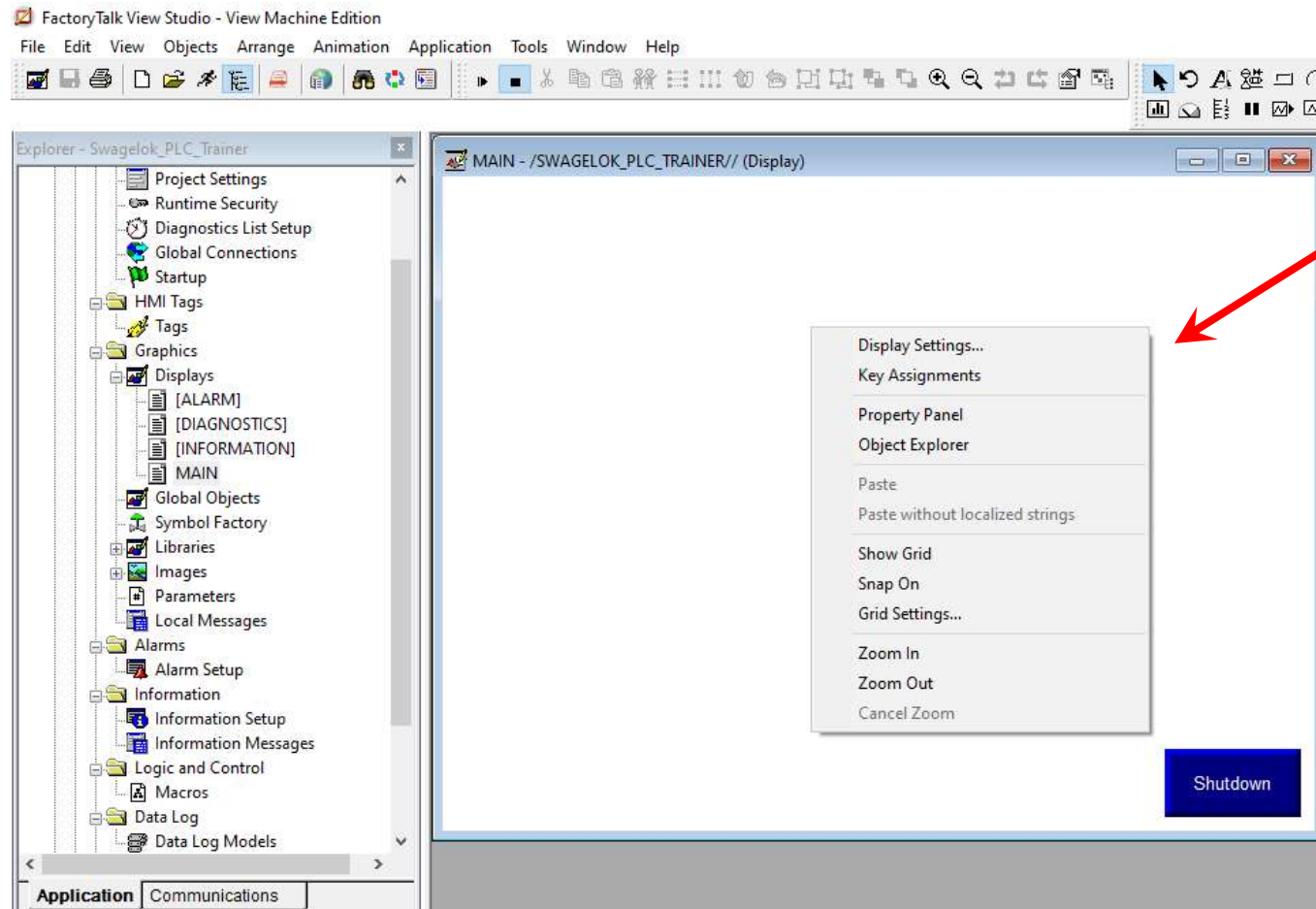
Configuring Graphic Display Settings

- Behavior tab of the Display Settings dialog box allows users to define how the graphic display will behave at runtime:



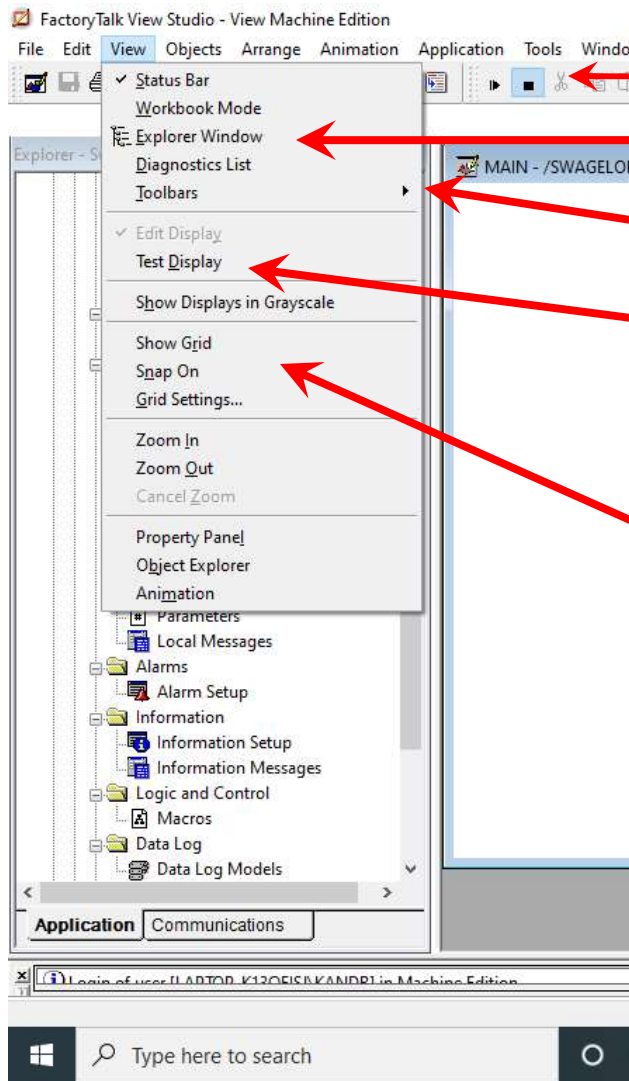
To access Display Settings Dialog Box

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Right-Click in
inside of
display and
select "Display
Settings..."

FactoryTalk View Studio View Options



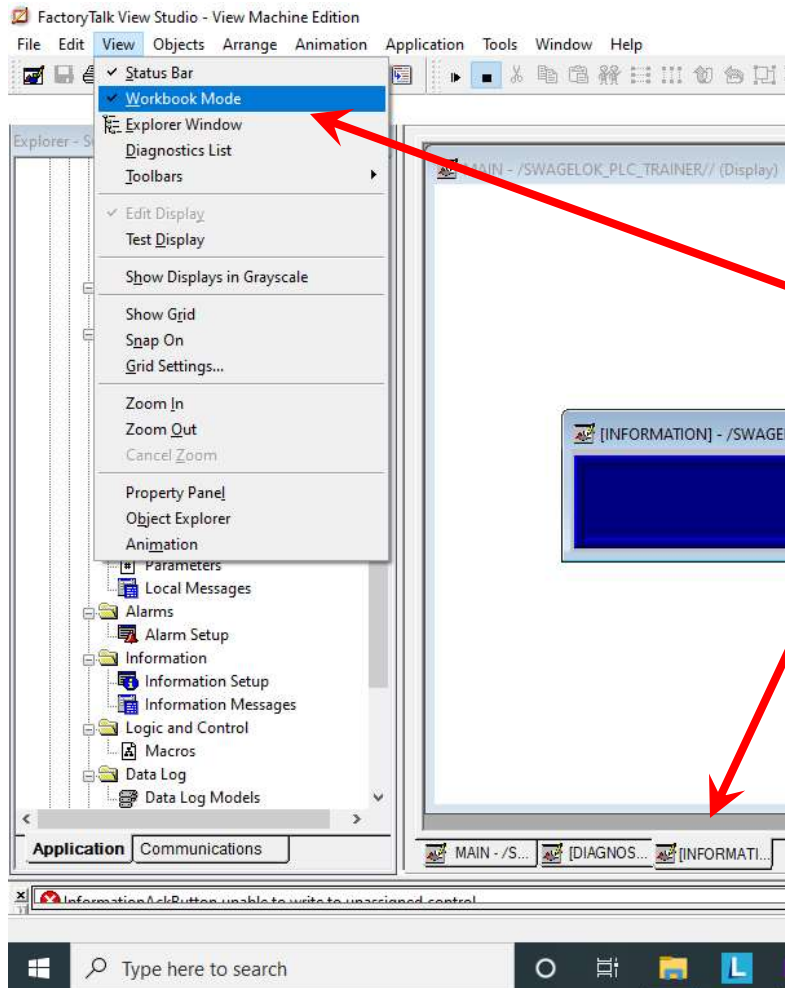
Clicking on any of these items
Enables/disables their appearance

Open/close toolbars

To test the objects in your displays as you
work, use the Test Display tool to switch
to test mode. When you are finished
testing, switch back to edit mode to
continue editing.

Enabling a grid and snap provides reliable
method for lining up graphic objects on
the display

Workbook Mode

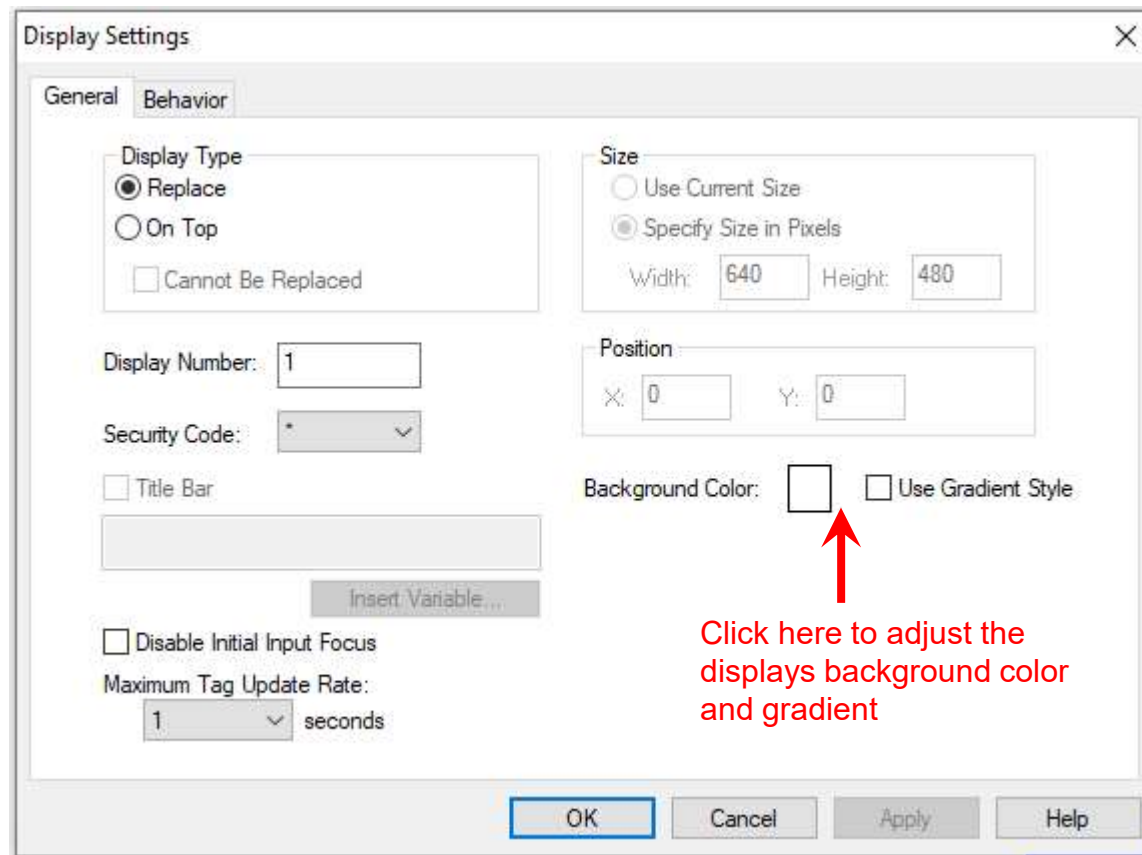


If you select Workbook Mode from the View menu, the workspace shows tabs at the bottom for each open editor or component.

- Workbook Mode allows you to bring forward an open item more quickly than by using the Window menu.

Adjusting Display Color & Background

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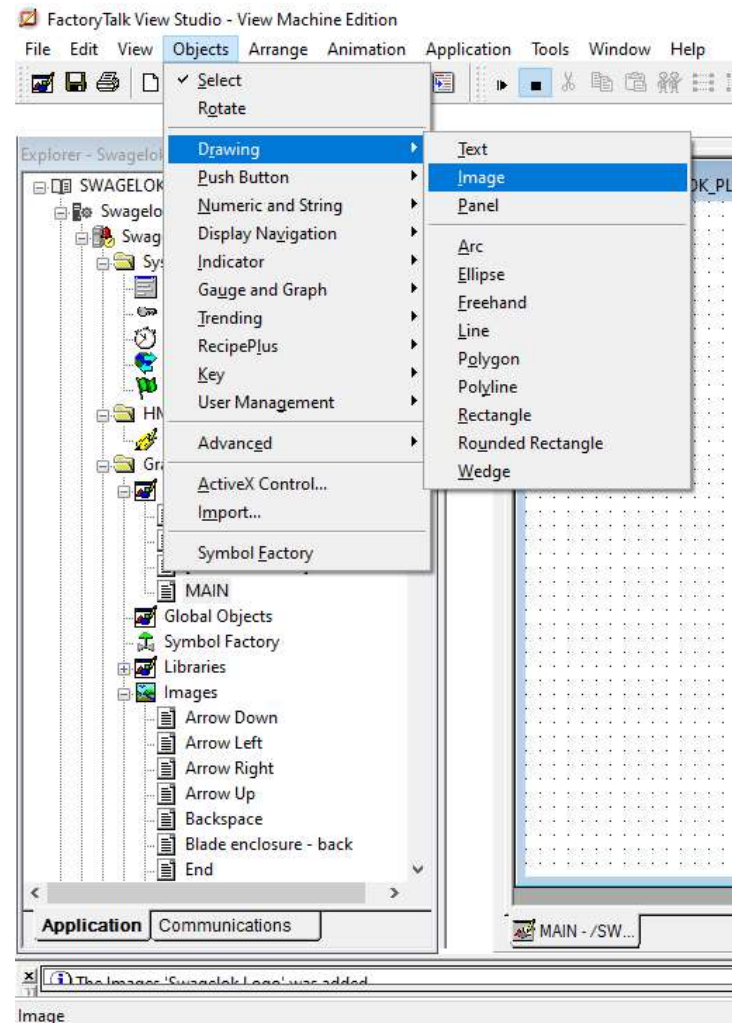
CREATING GRAPHIC OBJECTS

Graphic Objects

- The elements that make up a graphic display are called graphic objects. Use objects to control your process, machines, and application.
- FactoryTalk View comes with a complete range of configurable objects such as push buttons, list selectors, bar graphs, and trends.
- FactoryTalk View also comes with drawing objects that you can use to illustrate your graphic displays. The drawing objects include text, bitmap images, and geometric and freehand shapes.

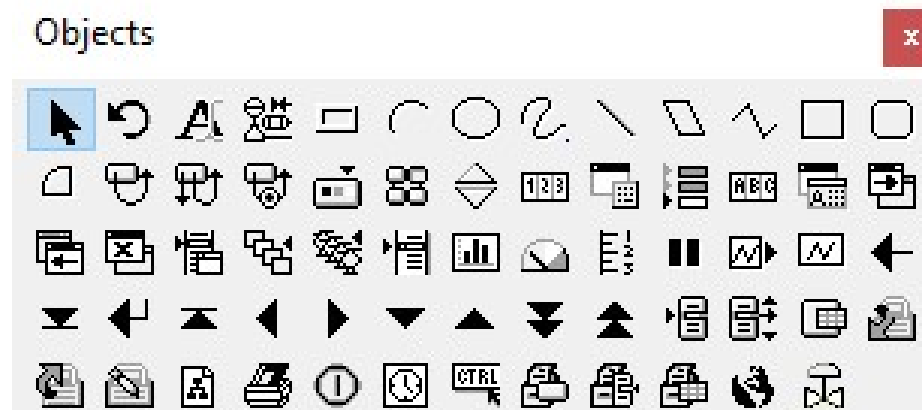
Graphic Objects

- Text and graphic objects are used to provide operators with an accurate representation of the machine or process they are controlling and monitoring
- Users can modify items in the graphics library or create new library files
- Objects menu provides a list of available tools.
 - The drawing objects submenu is used when creating text and graphic panels



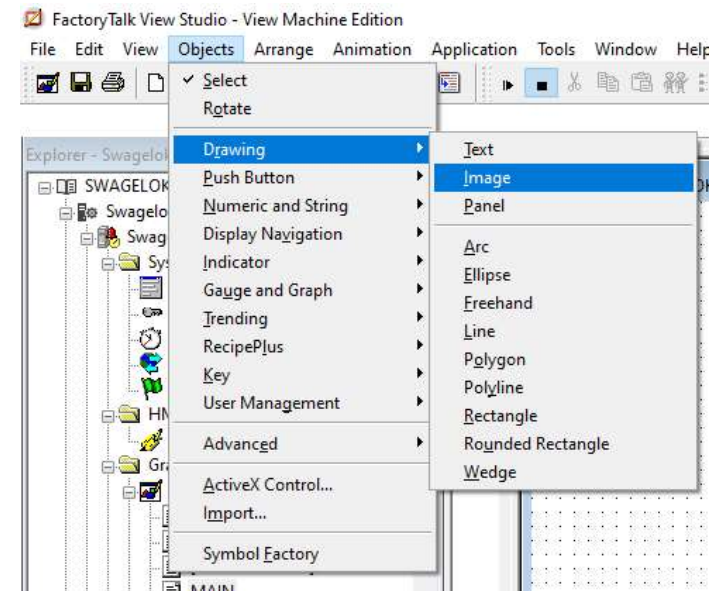
Graphic Objects

- The Objects toolbar provides shortcuts to creating basic graphic objects:



Creating Graphic Objects

- To create an object, you must select the object's tool, either by clicking a menu item or by clicking the tool on the toolbar.
- **To select a tool**
 - Click the tool on the toolbar, or select the tool from the **Objects** menu. When you click a tool, the pointer changes to show which tool is active.
- **To deselect a tool, use one of these methods:**
 - Double-click an empty area on the display.**
 - Click the **Select** tool .
 - Click another tool.



Objects

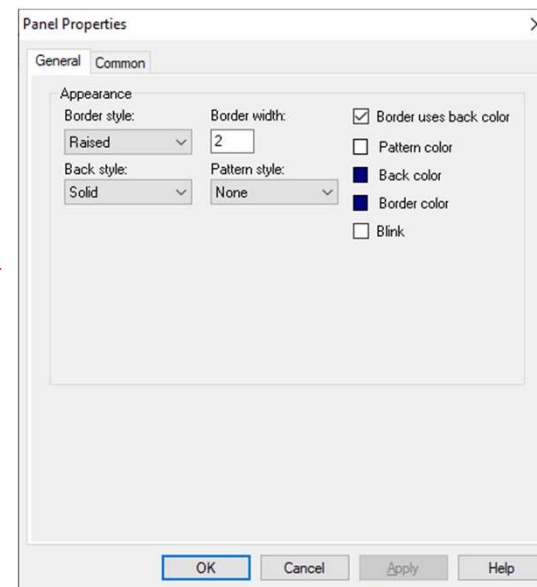
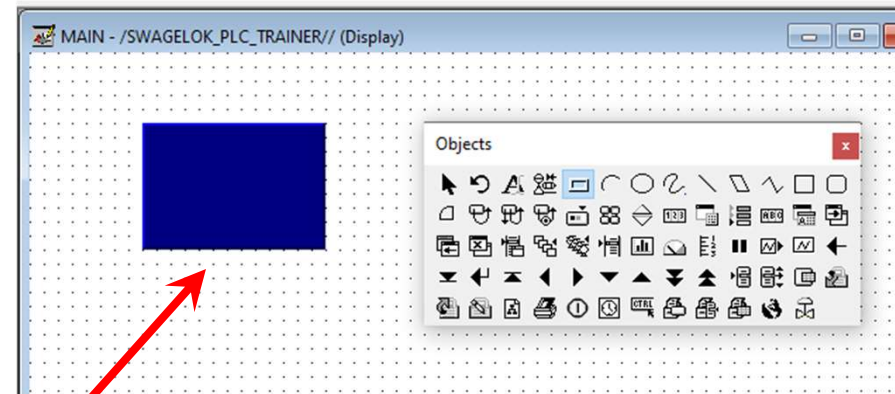


**For some drawing objects, double-clicking an empty area of the display creates another instance of the object. For these objects, to finish drawing, click the Select tool.

Creating Graphic Objects in General

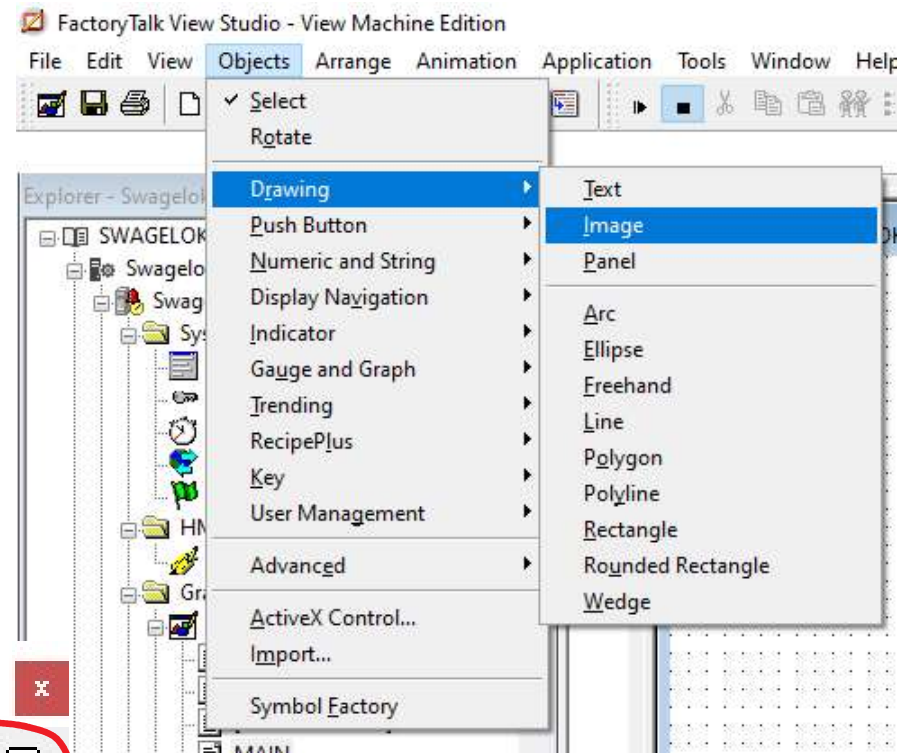
- **To create a graphic object**

1. Select the tool for the object to create.
2. Click the mouse where you want to position the object, and then drag to draw a rectangle the general size you want the object to be.
3. Double-click the object to open its **Properties** dialog box.
4. In the dialog box, specify how the object looks, its behavior, and connections.



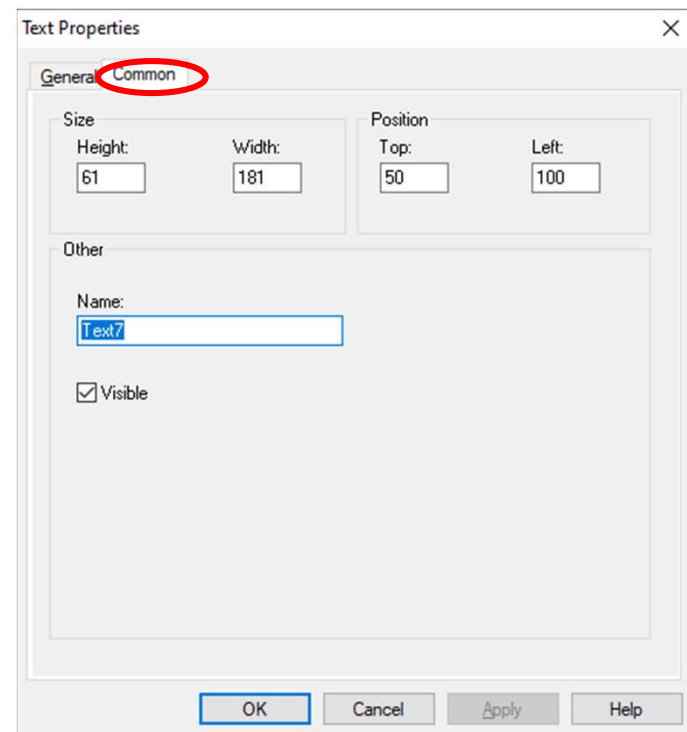
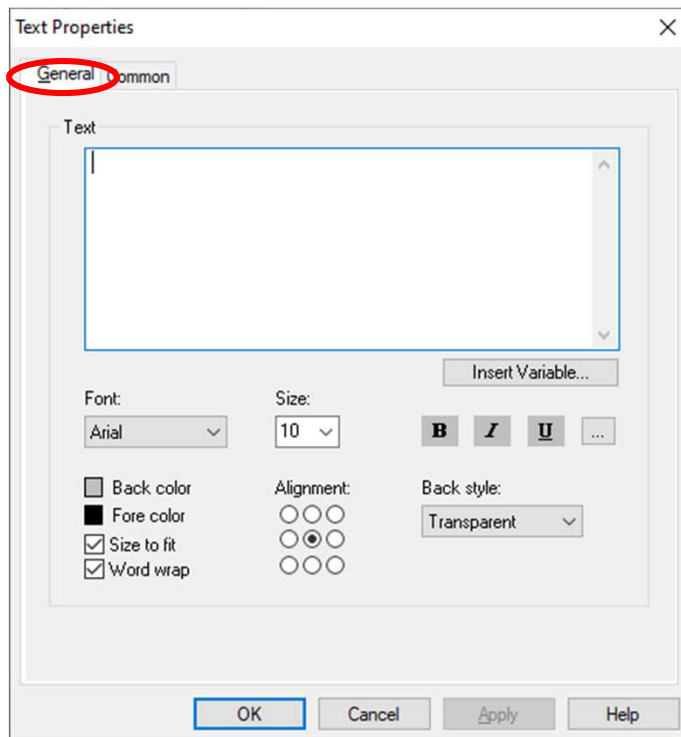
Drawing Objects

- Drawing objects are static objects used to illustrate your graphic displays. Create drawing objects on your graphic displays to help the operator understand how to use the display.
- All the objects on the **Object > Drawing** menu are (Static) drawing objects.



Create Text

1. In the **Graphics Display** editor, select **Objects > Drawing > Text** or click the icon on the toolbar.
2. Press the mouse button, drag the mouse diagonally to draw the object to the desired size, and release the button.
3. The **Text Properties** dialog box opens.
4. Enter the text and specify the options.



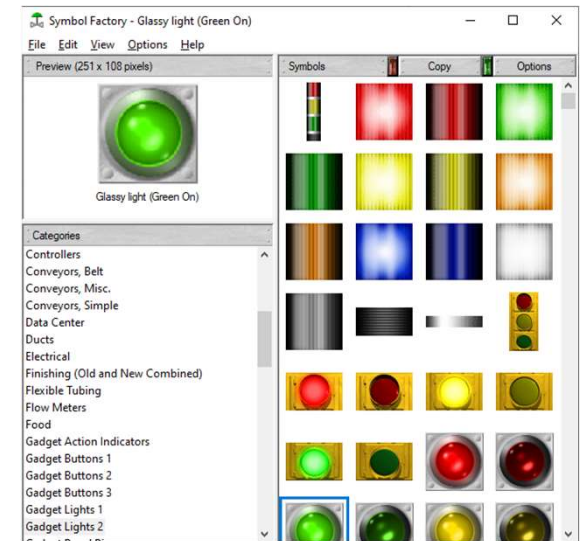
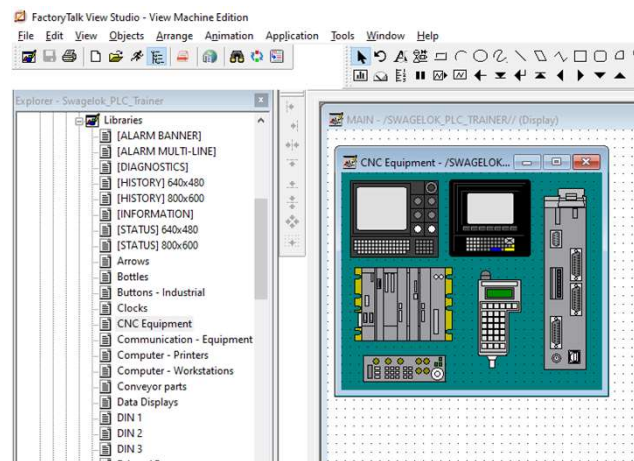
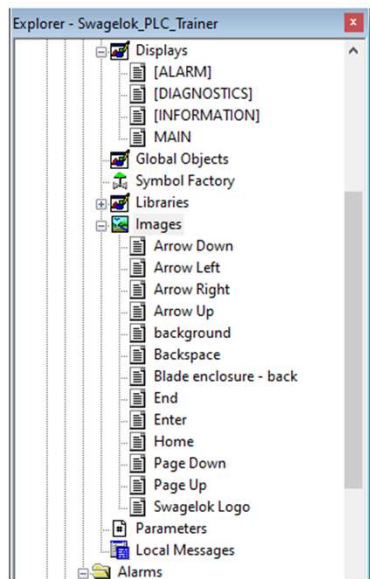
Notes about fonts



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- **TrueType** and **OpenType** fonts are recommended. These fonts can be resized easily, without losing text quality.
 - If you run an application on a computer that does not have the fonts you used when setting up the application, Windows substitutes with the fonts that most closely match the fonts you specified.
 - If you are going to use the application with multiple languages, use Microsoft Sans Serif or Tahoma. These fonts allow for font linking to support the character sets of other languages. PanelView Plus 7, PanelView Plus 6, PanelView Plus, PanelView Plus Compact, and PanelView Plus CE terminals are shipped with font linking turned on.

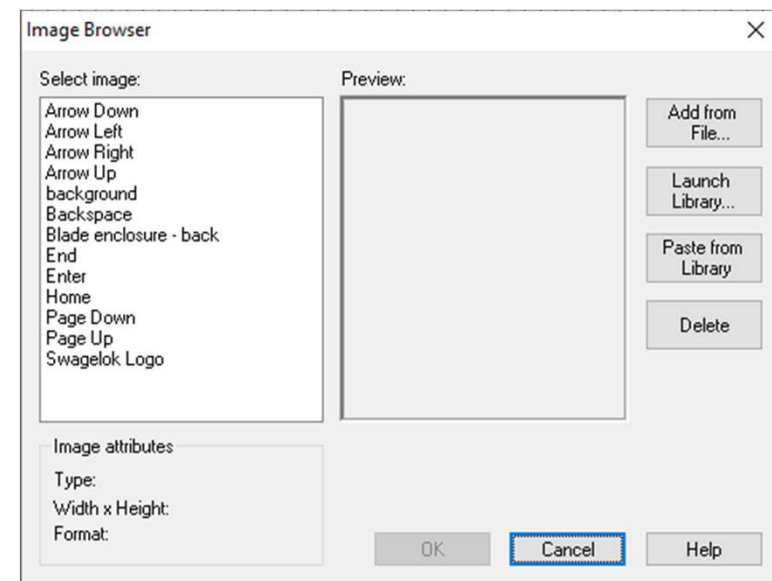
Creating Images

- Image graphic objects are used to place images on your graphic displays.
- You can use images already contained or imported into the *Images folder*, images from the *Graphic library files*, or use *Symbol Factory* to select and add a graphic to the display and the *Images folder*.
- For most image objects, an image graphic object is created and then an image is linked to it via the Properties dialog box.



To Create an image object

- **To create an image object**
 1. In the **Graphics Display** editor, select **Objects > Drawing > Image** or click the image icon on the toolbar.
 2. Press the mouse button, drag the mouse diagonally to draw the object to the desired size, and release the button. The **Image Browser** opens.
 3. From the **Select image** list, select the image to be shown on the object.
 4. Click **OK**.
- The image is placed where you drew the rectangle, but the actual size of the image is used, rather than the size of the rectangle you drew. To change the image's attributes, double-click the image to open the **Image Properties** dialog box and specify the options.



NOTE: If the image does not appear, try:

- Deleting the image object
- Closing the display
- Reopen the display
- Re-add the image object

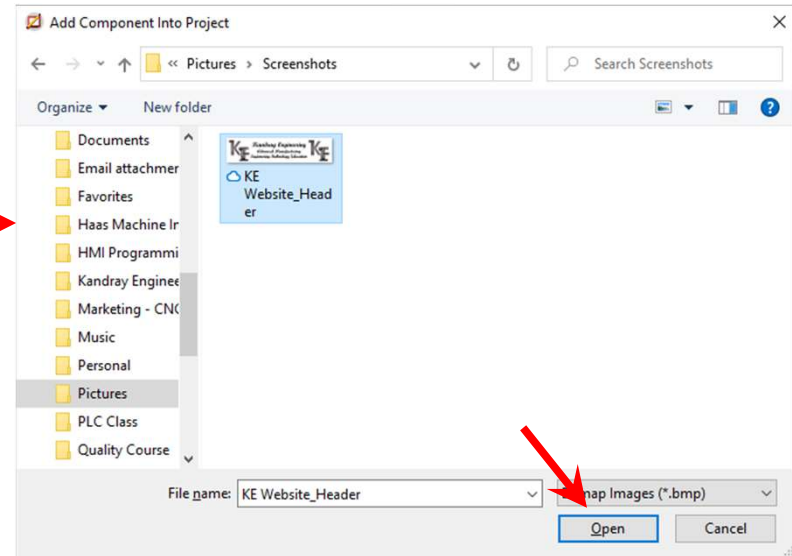
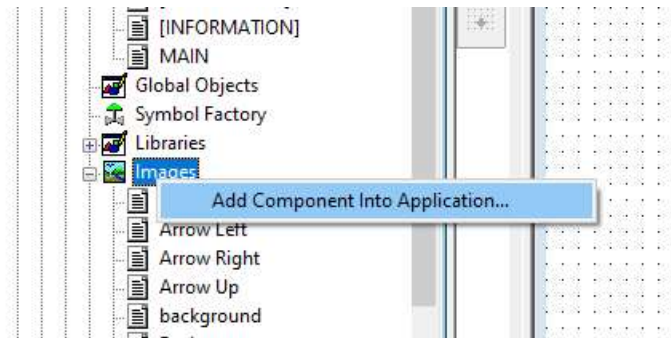
Importing Images

- Individual images files can be imported from the following file types:
 - Bitmap files (.BMP)
 - JPEG files (.JPG)
 - AutoCAD files (.DXF)
 - Window metafiles (.WMF)
- Use .BMP files whenever possible because the files remain a static size at runtime. Using compressed files (such as a .JPG) can result in unexpected memory use at runtime.



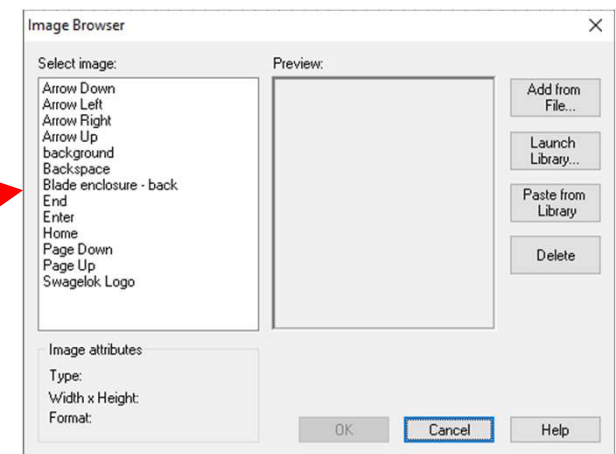
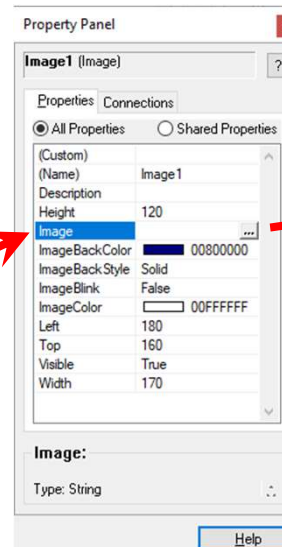
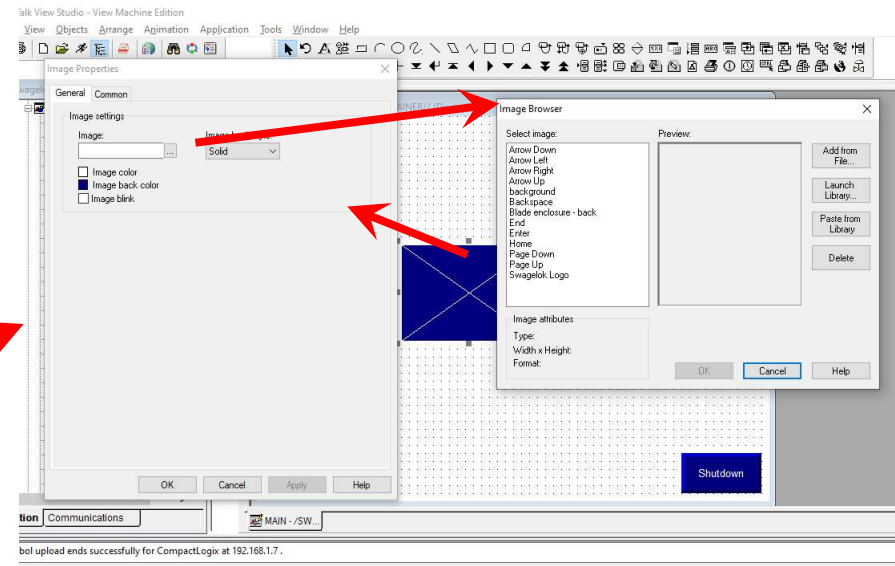
Import images into the Images Folder from Application Explorer

1. In the **Graphics** folder, right-click **Images** and then select **Add Component Into Application**.
2. In the **Files of type** box, select the type of image to add.
3. Navigate to the directory where the .bmp, .png, or .jpg file is stored, and then click the file name. Shift-click or Ctrl-click to select additional files.
4. Click **Open** to add the selected files to the list in the **Images** folder.



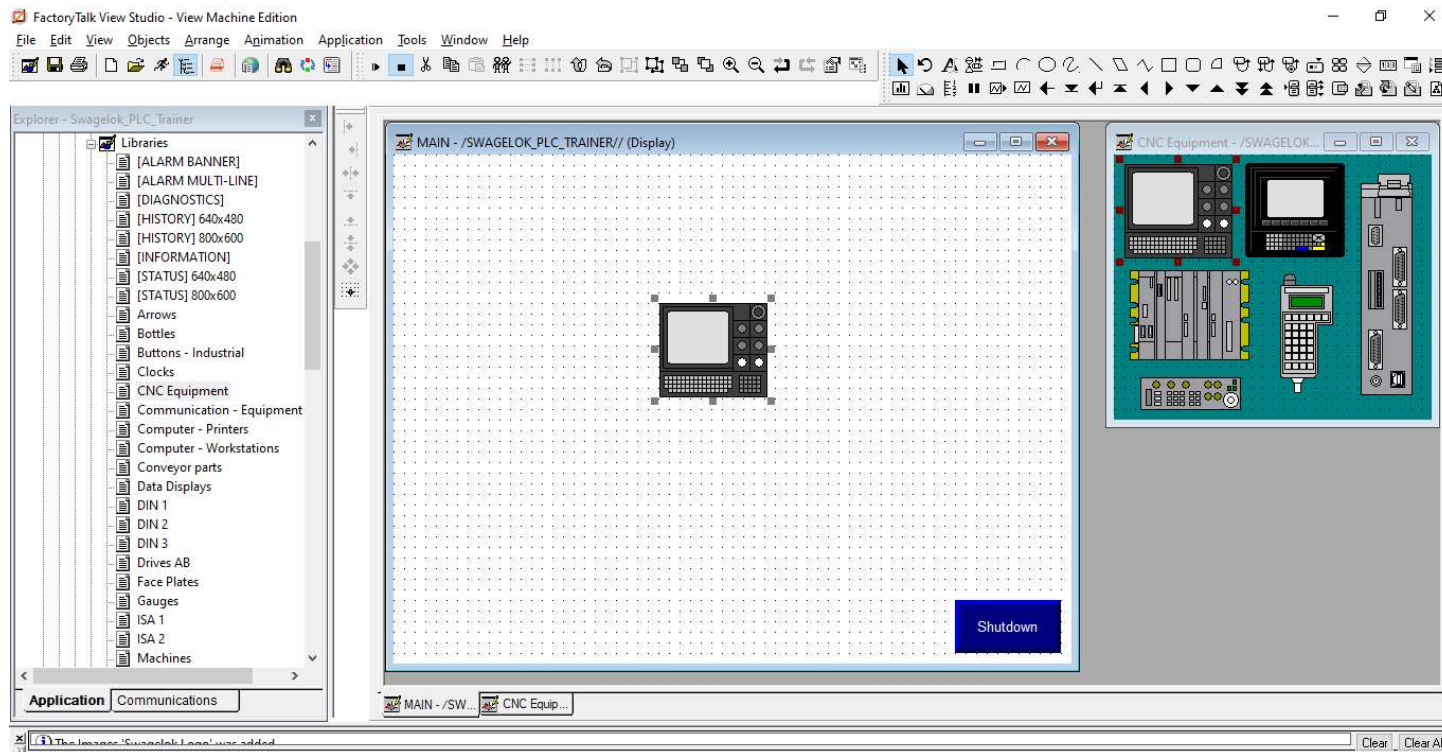
Import images using the Image Browser

- In the **Image Browser** you can:
 - Import images into the application
 - Select the image to use on a graphic object
 - Delete images from the application
- To open the **Image Browser**, use one of these methods
 - Double-click on Object
 - In an object's **Properties** dialog box, click the **Browse** button next to the **Image** box.
 - Depending on the type of object, the **Image** box could be located on the **General** tab, **Label** tab, or **States** tab.
 - **OR**
 - With one or more objects selected, in the **Property Panel**, click the **Image** property, and then click the **Browse** button.



Graphic Library Objects

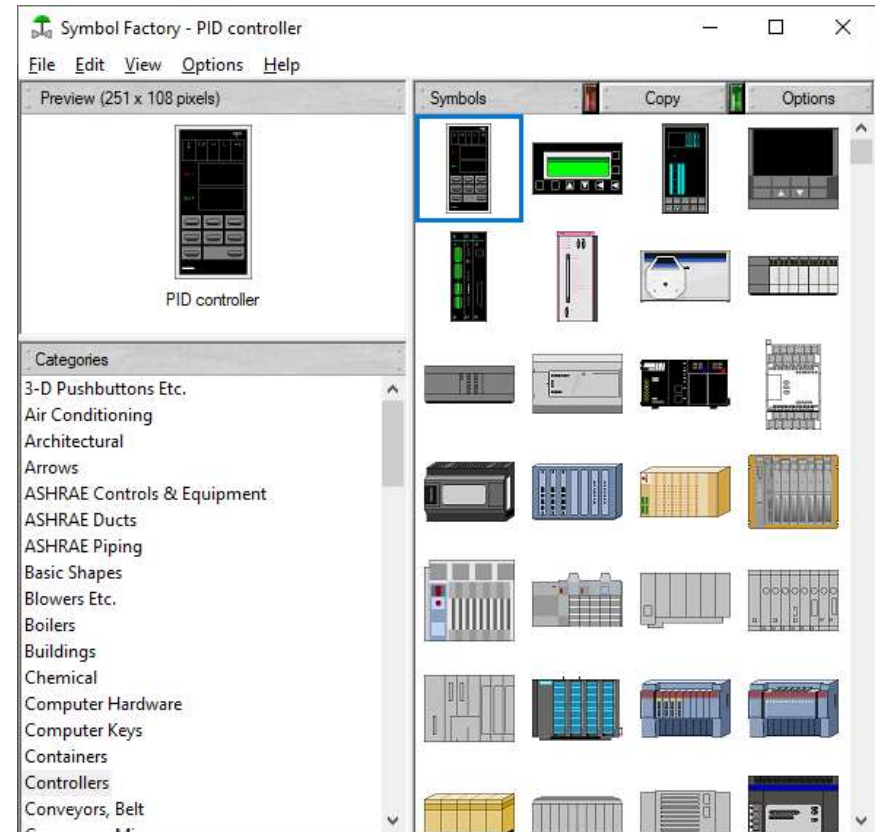
- Graphic library files can be accessed from the Application Explorer window
- Objects from an open library file can be dragged (or copy and pasted) to a graphic display and get placed as an Image Graphic Object



Symbol Factory



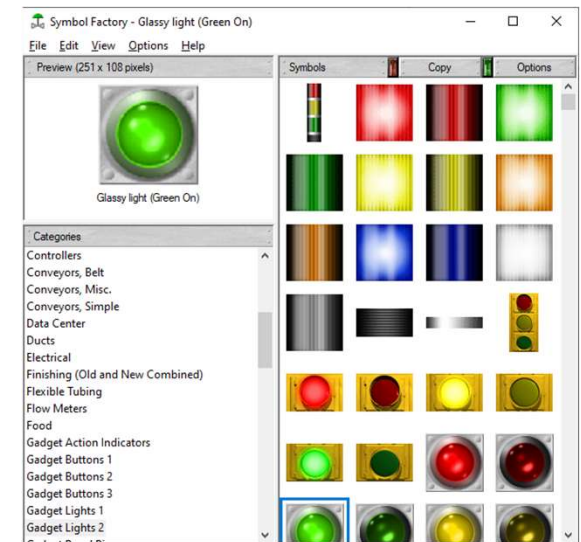
- Provides an expanded set of graphics
- Graphics are organized into categories
- Objects are available as line drawings of multilayered graphics
- Users can modify stock objects
- Custom graphics can be added to the Symbol Factory



Add an image from Symbol Factory to a graphic object using the image browser:

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1. In the graphic display, draw the graphic object you are going to import an image for. The **Image Browser** will open.
 2. In the **Image Browser**, click **Launch Library...** Symbol Factory will open as a new window.
 3. Browse the **Categories** frame, click a category to see the symbols in the right frame.
 4. Click the graphic to select it for the Graphic Display.
 5. Click **Copy**, the Symbol Factory minimizes, returning to the **Image Browser**.
 6. Click the **Paste from Library** button. A dialog box **Image Name Entry** will open.
 7. Type a unique name for the image and click the **OK** button.
 8. The graphic will now be shown in the **Preview** window. The graphic has been added to the list in the **Image Browser**. This also adds the image to the **Images** folder in the **Explorer** window.
 9. Click **OK** to close the **Image Browser**. The image will be in the Graphic Display.
- Symbol Factory objects imported by the **Image Browser** will be saved in the **Images** folder as a bitmap.

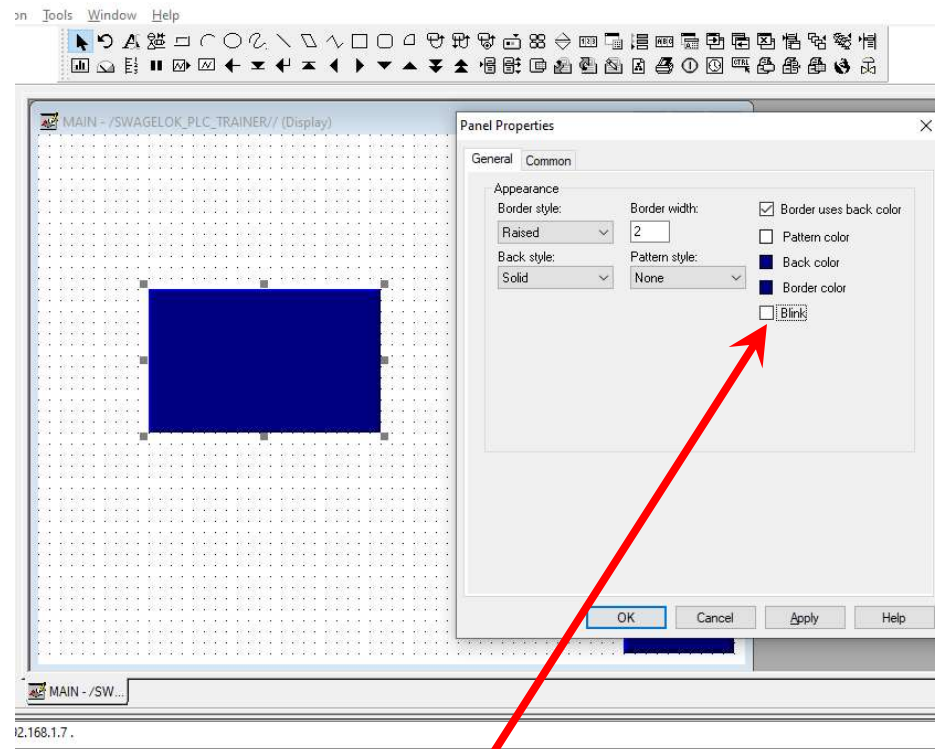


Creating panels

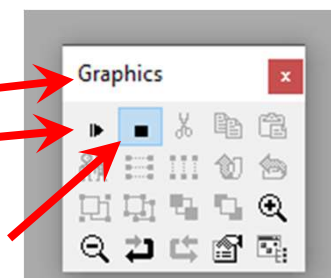
- Use the panel tool to draw rectangles and squares that have borders.
- You can set up panel objects to blink at run time.
- The panel object only supports visibility animation.

To create a panel object

1. In the **Graphics Display** editor, select **Objects > Drawing > Panel** or click on the toolbar.
 2. Press the mouse button, drag the mouse diagonally to draw the object to the desired size, and release the button.
- **Tip:**
 - Press **Ctrl** as you drag the mouse to draw a square panel.



- To test blinking, click on the Blink option, hit Apply & OK.
- Open the Graphics Toolbar and press the “Test Display” button
- Press the “Edit Display” button to return to Edit mode.



Other Graphic Objects

- **Arc** - Draw an arc (a segment of an ellipse or circle's perimeter).
- **Ellipse** - Draw ellipses and circles.
- **Freehand** - Draw freehand shapes as you would with a pen on paper.
- **Line** - Draw straight diagonal, horizontal, and vertical lines.
- **Polygon** - Draw a series of connected straight lines forming a closed shape.
- **Polyline** - Draw a series of connected straight lines.
- **Rectangle** - Draw rectangles and squares..
- **Rounded rectangle** - Draw rectangles and squares with rounded corners.
- **Wedge** - Draw a filled segment of an ellipse or circle.

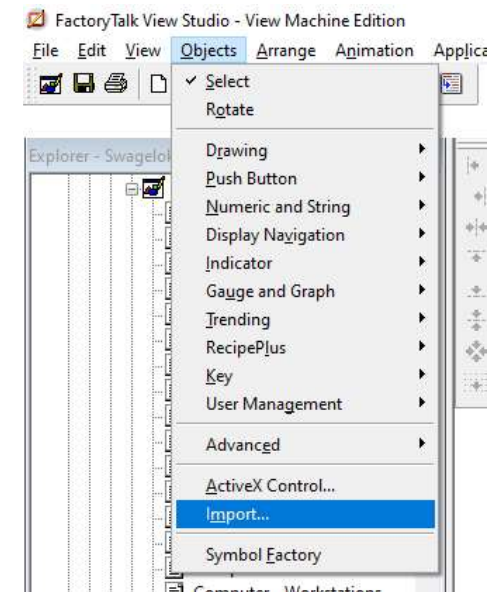


Use of .wmf and .dxf files

- Windows metafiles (.wmf) and AutoCAD (.dxf) files are converted to drawing objects (such as lines, ellipses, and polygons) when you import them.
 - You can edit the drawing objects the same way you edit drawing objects that you create in FactoryTalk View.
- Depending on the complexity of the metafile or AutoCAD file, the converted image could consist of 500 or more drawing objects.
 - This would lead to long display load times.
 - In this case, it would be better to convert the .wmf or .dxf file to a bitmap, and then show the bitmap in an image object.

To place a .wmf or .dxf file in a display

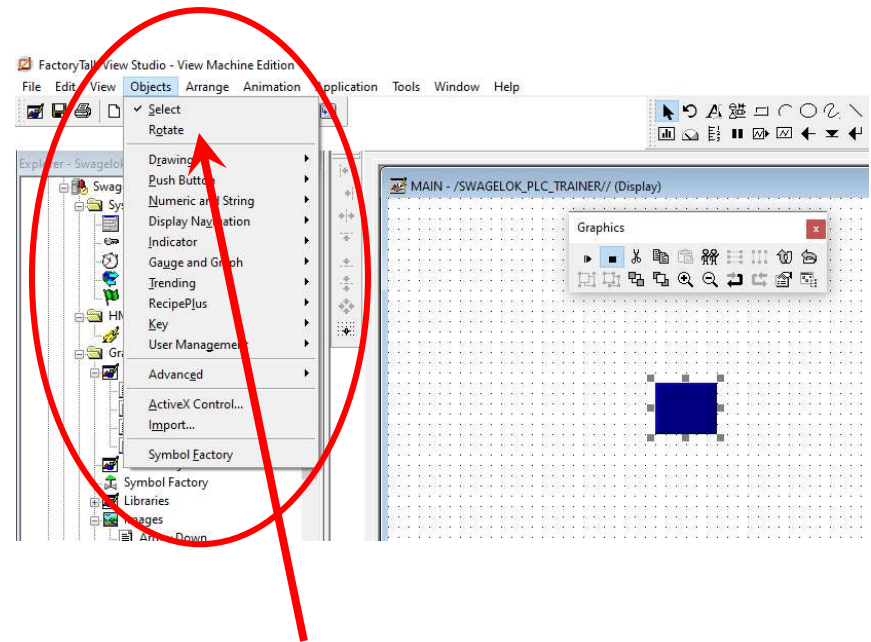
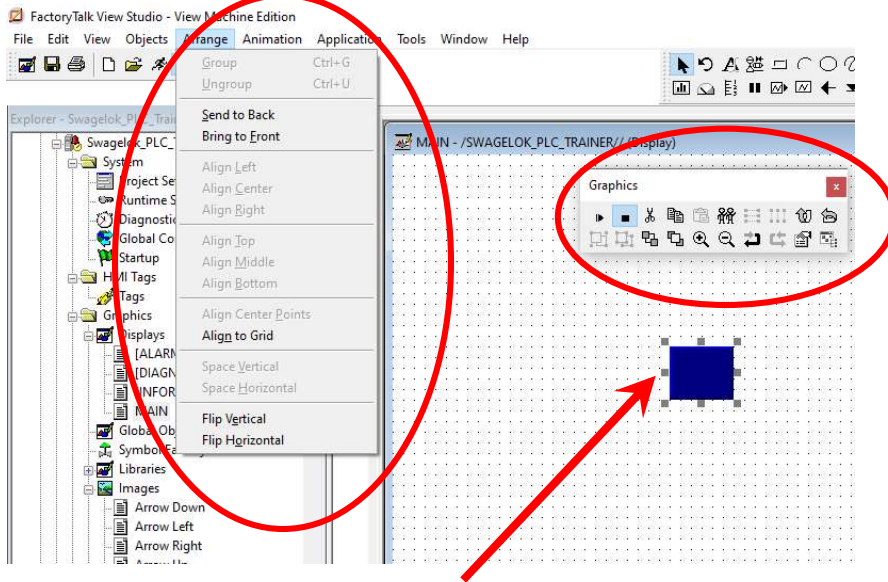
1. From the **Objects** menu, select **Import**.
2. Click the mouse where you want to position the file, and then drag to draw a rectangle.
3. In the **Files of type** box, select the type of file to import.
4. Navigate to the directory where the file is stored, and then click the file to import.
5. Click **Open**.



MANIPULATING GRAPHIC OBJECTS

Manipulating Graphics Objects

- The Graphics Toolbar, the Arrange Menu and the Objects menu all perform specific tasks when manipulating graphic objects



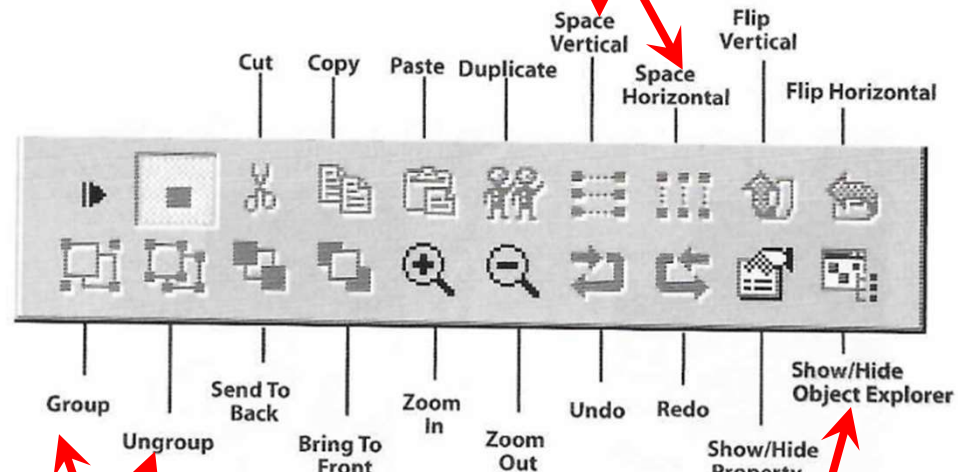
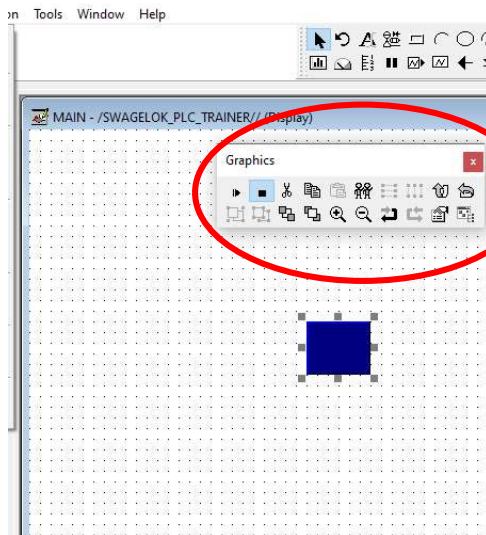
Graphic Objects can be resized by:

- Changing the pixel measurements in the object's Properties dialog box
- Dragging the handles
 - Holding **Shift** while dragging keeps shape proportions
 - Holding **CTRL** while dragging forms a perfect square

Rotate tool works with all drawing objects EXCEPT text, images, panels, and rounded rectangles

Manipulating Graphics Objects

- **Graphics toolbar** provides shortcuts to performing the following graphic manipulations:



Provide uniform distancing between two or more objects

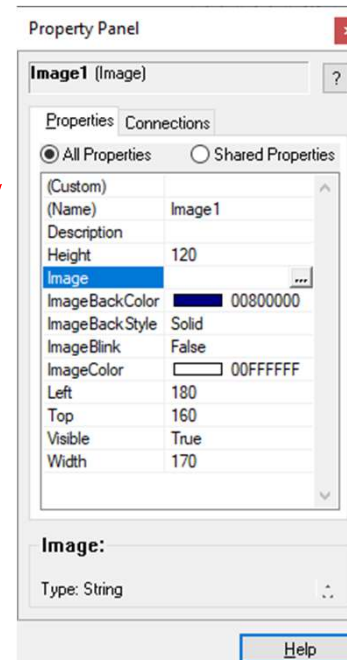
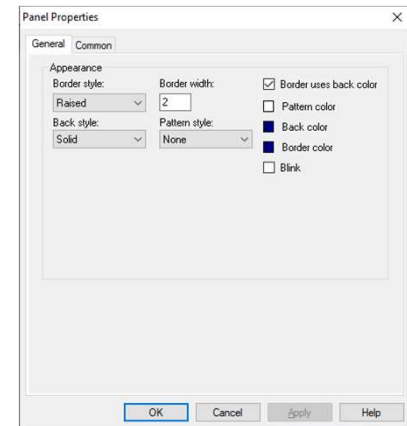
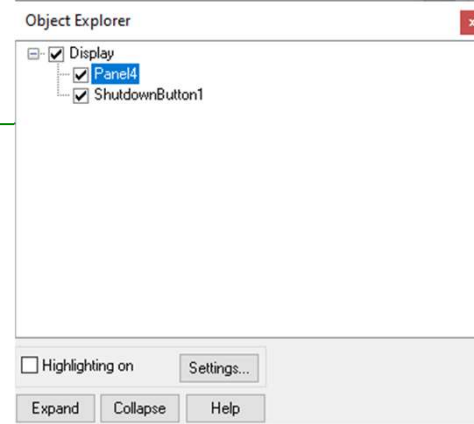
Group and Ungroup help combine individual graphic objects into a single unit (or break a previously grouped object into its individual components)

Property Panel and Object Explorer provide advanced graphics modification and troubleshooting techniques

Tools and tips for working with graphic objects

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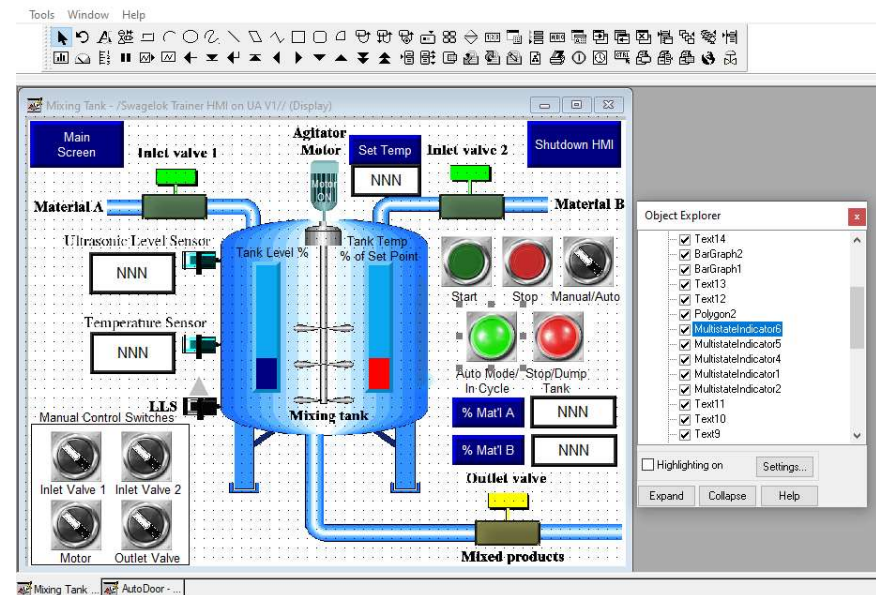
- Use the **Object Explorer** to view and select objects. (open from Graphics Toolbar)
- Use an object's **Properties** dialog box to set up the object's properties and assign tags and expressions to its connections.
- Use the **Property Panel** to set up individual and group object properties, and to assign tags and expressions to individual objects' connections.



Using Object Explorer



- **Object Explorer** provides a tree-list naming all the objects on the graphic display and allows you to select, hide, and highlight objects from the list. Groups are listed as expandable items in the tree, with a + icon.
- You can use the **Object Explorer** to:
 - Select an object that is hidden behind other objects on the graphic display, without bringing the object to the front. Objects are listed in front-to-back order. The object you created most recently is at the front, unless you move it back using the **Send to Back** option.
 - Show or hide an object on the graphic display by selecting or clearing the check box in front of the object in the **Object Explorer**.
 - Highlight objects by object type, highlight objects that have animation attached, and to highlight objects with specific tag or expression assignments.



- **To open Object Explorer**
 - On the **Graphics** toolbar, click the icon
 - From the **View** menu, select **Object Explorer**
 - Right-click an object and select **Object Explorer**.

Using Object Explorer

Right-click an object to open its context menu.

Click the + icon to view the objects and groups within a group.

Select the check box to show the graphic object on the graphic display.

Object Explorer

- Display
 - Group15
 - GotoDisplayButton10
 - Text18
 - ReturntoDislayButton
 - GotoD
 - Image
 - Polygc
 - Text15
 - Polygon67
 - Group44
 - Text1
 - Group
 - Pc
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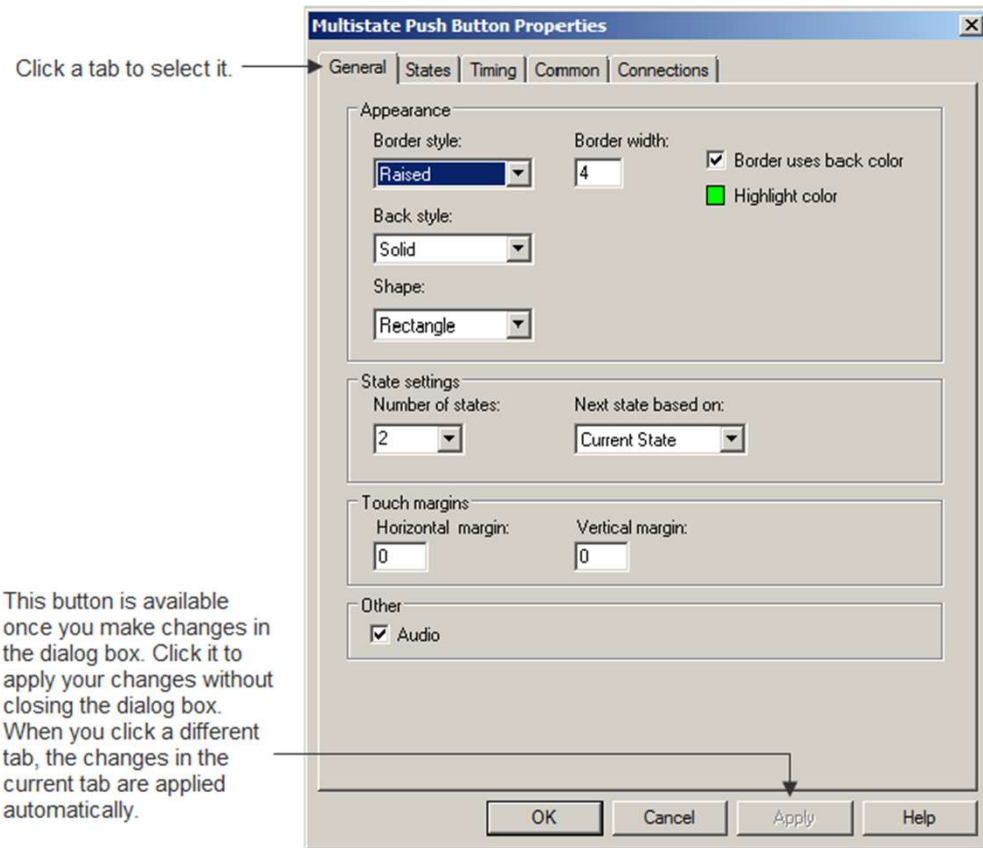
Highlighting on

Expand Collaps

Properties
Connections...
Key Assignments...
Arrange
Animation
Convert to Wallpaper
Tag Substitution...
Property Panel
Cut
Copy
Paste
Paste without localized strings
Delete
Duplicate
Copy Animation
Paste Animation
Global Object Defaults
Global Object Parameter Values
Global Object Parameter Definitions
Edit Base Object
Break Link

Properties Dialog Box

- Every graphic object has a Properties dialog box that you can use to set up the object.
- Users can access a graphic object's Properties dialog box to modify an object's size, color, position on the display, and other features.
- The options available from the dialog box change based on the graphic object one is working with:



Properties dialog box tabs

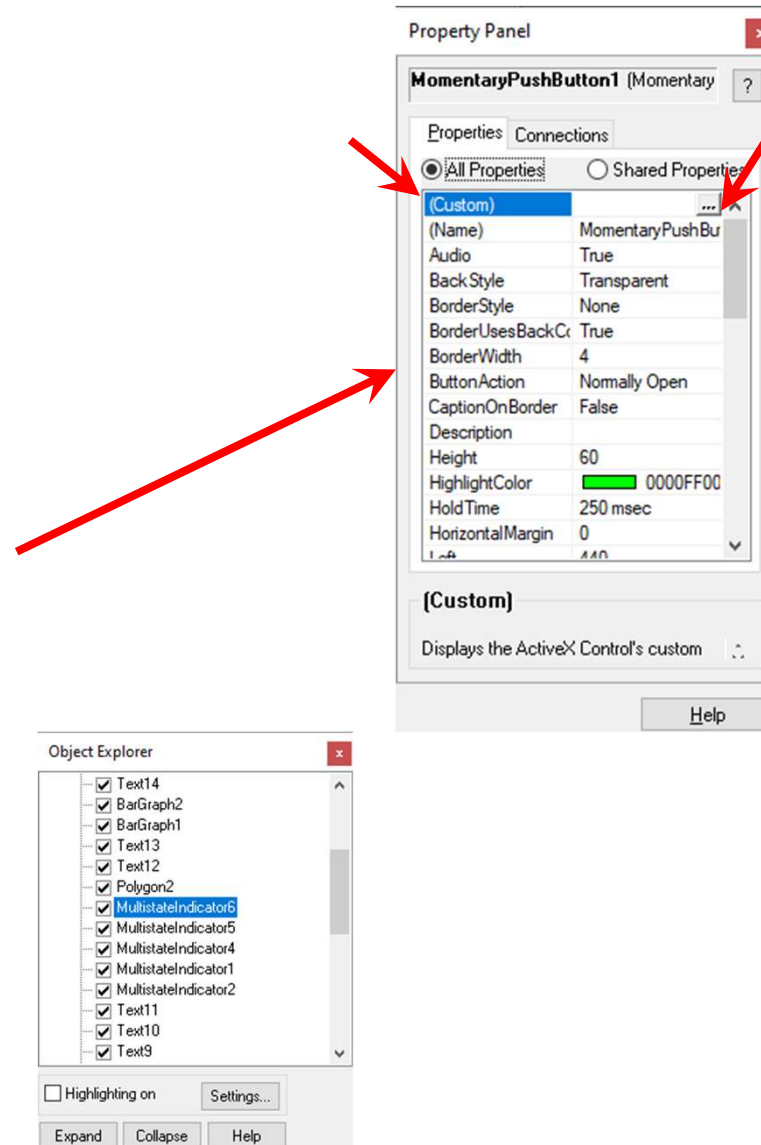


In this tab	Do this
General	Set up the object's appearance, audio indicator, and touch margins (for buttons), and settings that are unique to the object, such as the button action for a push button, whether to use key navigation to select the object, or whether to link a button to a specific object.
States	Set up the states for the object, including the value for each state and whether to show a caption or image for the state.
Label	For objects that don't have multiple states, specify whether to use a caption or image on the object.
Timing	Set up the object's auto repeat settings
Common	Set up the object's spatial properties, name, and visibility.
Connections	Assign tags and expressions to the object's connections.

Opening an object's Properties Dialog Box

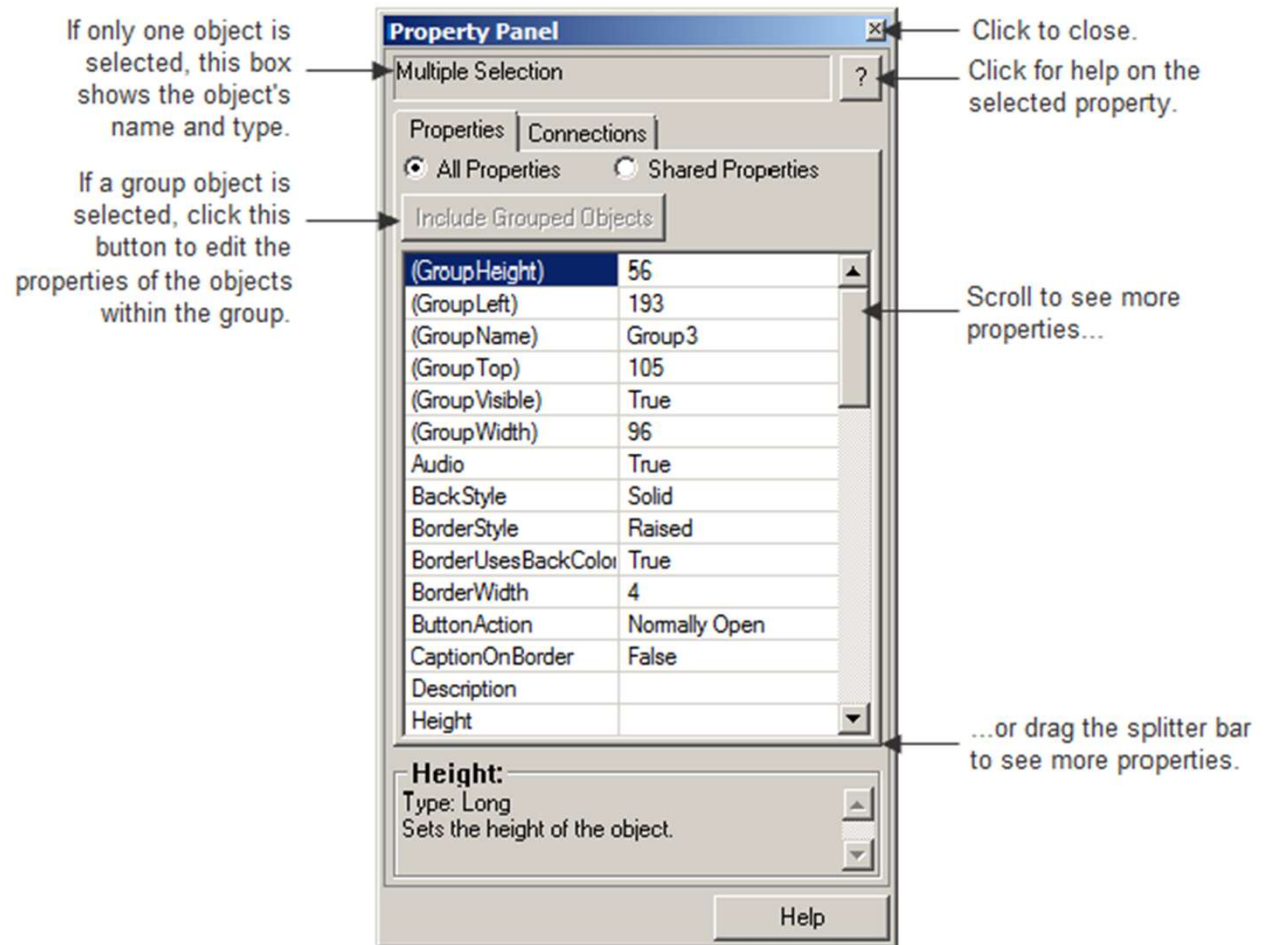
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- Double-click the object.
- Right-click the object and select **Properties**.
- Select the object, and then from the **Edit** menu, select **Properties**.
- In the **Property Panel**, with the object selected, click the **(Custom)** property and then click the **Browse** button .
- In the **Property Panel**, with the object selected, double-click the **(Custom)** property.
- In the **Object Explorer**, double-click the object.



Manipulating Graphics Objects

- Property panel can be used as an alternative to an individual graphic object's Properties dialog box, OR it can be used to modify properties of multiple graphic objects at the same time.



Manipulating Graphics Objects

- You can create a background for your graphic display by converting graphic objects to wallpaper.
- When objects are converted to wallpaper, they are locked into position and become an unchanging background for the other objects on the display.
- Convert objects that do not need to be animated or updated with tag values can significantly improve the runtime performance of a graphic display.
- Objects that have been converted to wallpaper cannot be selected or edited until you unlock the wallpaper.
- Also, animations attached to the wallpaper objects are not in effect. However, animations are restored when you unlock the wallpaper.



Converting graphic objects to wallpaper. *Swagelok*

1. Select the object or group you want to convert to wallpaper.
2. Do one of the following:
 - Select Edit > Wallpaper > Convert to Wallpaper.
 - Right-click the selected object or group and select Convert to Wallpaper.
 - To unlock the wallpaper objects, right-click any empty area of the display and select Unlock All Wallpaper. Alternatively, select Edit > Wallpaper > Unlock All Wallpaper.

