ViewBuilder 5.1

User's Guide

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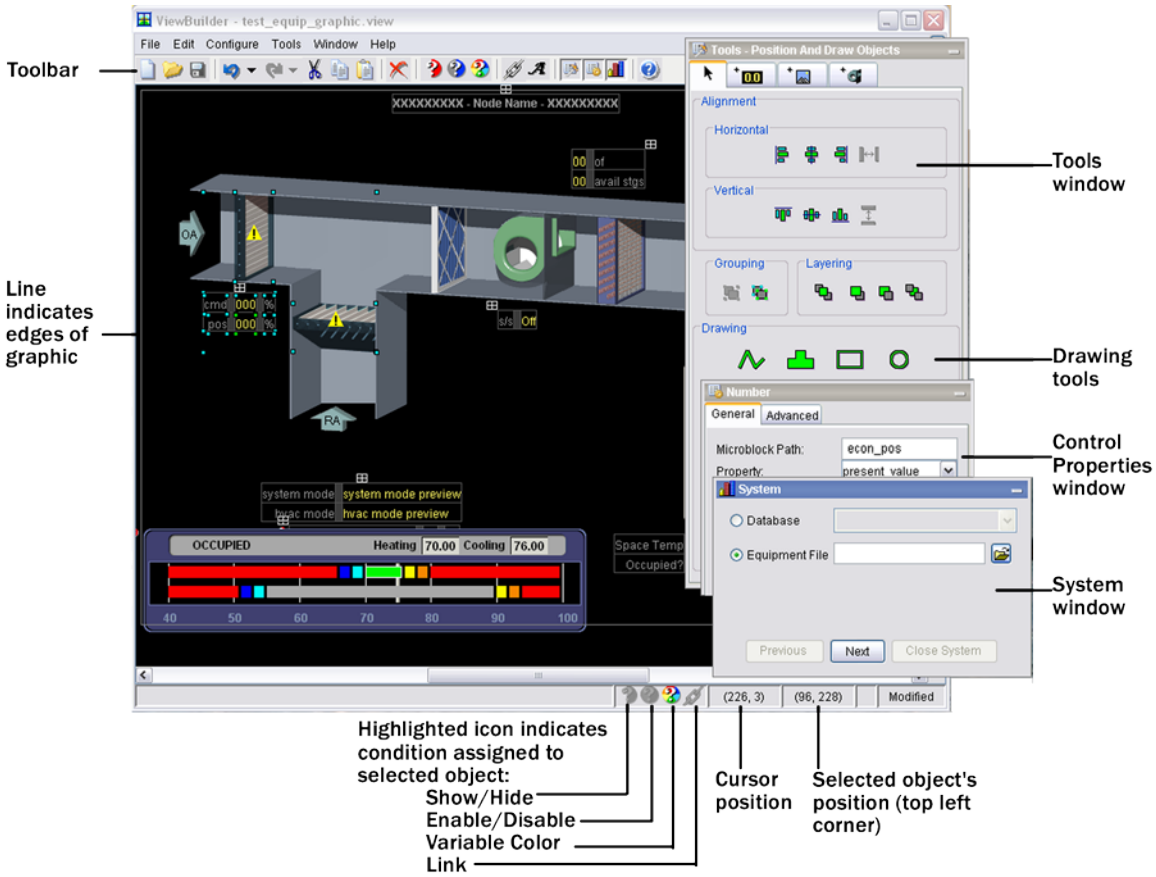
What is ViewBuilder?

ViewBuilder is the tool used as an adjunct to create graphics and drawings that i-Vu Open does not already have in its **Library**, or to change existing graphic views.

Operators can use these graphics to monitor and control their building automation system.

Getting to know ViewBuilder



TIPS

- ViewBuilder has a right-click menu that includes keyboard shortcuts for most commands.
- To show or hide the **Tools**, **Control Properties**, or **System** windows, click the toolbar button that matches the window's icon.
- To make the **Tools, Control Properties,** and **System** windows fade to transparent when not in use, select **Configure** > **Preferences**.
- Hold down the space bar and the left mouse button, then move the graphic around in the workspace using the hand tool.
- Press Home on the keyboard to align the top left corner of the graphic with the top left corner of the workspace.
- Hold down F9 to hide all handles and lock icons.

To select objects

You must select an object to perform any action on it.

- To select a single object, click it.
- To select multiple objects, hold down **Shift** while you click them.
  Or, click and drag a rectangle around the objects, then release the mouse button.
- To select every object, right-click and choose **Select All**.
- To clear all selections, right-click and choose **Deselect All** (**Ctrl**+**Shift**+**A**).

To move objects

To move a selected object(s):

- Click and drag the object to the new location. Hold down **Shift** as you drag an object to constrain its movement to horizontal or vertical.
- Use the arrow keys to nudge the selected object one pixel at a time, or hold down **Shift** while using the arrow keys to move the object ten pixels at a time.
- Select **Edit** > **Move** to move an object to specific coordinates in the workspace.

To align, group, or layer objects

Select the object(s) you want to align, group, ungroup, or reorder (front to back), then use the right-click menu commands or the options on the **Align Object** tab  in the **Tools** window.

NOTES

- Objects align in relationship to the last selected item, the one with the green handles.
- You can select an individual control in a group to edit its properties.

To copy an object

Click  to copy the selected object, then click  to paste the object in the existing view or a different view.
Or, hold Alt while dragging an object to create a duplicate object.

To lock or unlock objects

To lock a selected object(s) so you cannot select or move it, right-click the object, then select **Lock**.

To unlock an object, Ctrl+right-click the object, then select **Unlock**.

NOTES

- To unlock a table, Ctrl+right-click on the small grid above the table.
- To unlock all locked objects simultaneously, right-click anywhere in the workspace and select **Unlock All**.
- Hold down the **F9** key to hide the lock icons.

To undo or redo actions

Click  as many times as necessary to undo actions that you performed in the current session of ViewBuilder, beginning with the most recent action. Click  to redo the action.

You can also click the drop-down arrow to the right of the Undo or Redo button to select an action from a list that begins with the most recent action. Selecting an action will undo or redo that action, plus all actions above it in the list.

Working with graphics

You can use ViewBuilder to *edit existing graphics* (page 5) that were created in ViewBuilder, *edit graphics from the i-Vu Open Library* (page 5), or *create new graphics* (page 6).

Editing a graphic

To edit a graphic that was created in ViewBuilder, open the graphic file.

To edit...	
An image	See *Editing an image in a graphic* (page 8).
A drawing	Use the **Allgnment/Drawing** tab in the **Tools** window. See To draw vector shapes and lines.
A control	**1** Select the control. **2** Edit any properties in the **Control Properties** window. See Controls and their properties.
A link	**1** Right-click the control that is a link. **2** Select **Link**. **3** Edit the fields in the dialog box as needed. See *Adding links* (page 22) for a description of each field
A table	See Working with tables.

To edit a graphic from i-Vu Open in ViewBuilder

NOTE Only the **Installer** role has access to the following.

To edit a graphic from i-Vu Open in ViewBuilder:

1. Select the piece of equipment in i-Vu Open navigation tree.
2. Right click on the equipment name and select **Configure**.
3. Click **Edit** button under **Views.**
4. Click **Save** to desktop or other appropriate folder.
5. Open ViewBuilder.
6. Select **File** > **Open.** Browse to your saved graphic and click to open.
7. Edit as desired.
8. Save with a new name - the original system name is locked and cannot be used for an edited graphic.

   NOTE Names are case sensitive and should not have spaces and/or special characters.

To upload your graphic to i-Vu Open

1. Login to i-Vu Open. You must have **Installer** role to upload graphics.
2. Select the area or equipment in the navigation tree.
3. Right-click and select **Configure**.
4. Click the **Add** button under **Views.**
5. Browse to your .view graphic file that you created in ViewBuilder.
6. Click **Continue**.
7. Click **Close** when message appears **File added successfully**.
8. Click **Close** again. The graphic should appear on your i-Vu Open screen.

Creating a graphic

A graphic can be created to display the status of multiple zones or equipment from a single view. The area or floorplan graphics can be set up with **Equipment Color** controls  to provide a visual representation of the comfort level in each zone.

Values, text, and links can also be added to area and floorplan graphics. Clicking on a link zooms in on an individual zone or individual piece of equipment for closer examination.

To create a graphic:

1. In a graphics program, *prepare any custom image*s (page 7) such as floorplans.
2. In ViewBuilder, click  to start a new graphic file, or **File**>**New**.
3. Save the file as a .view in a folder you will remember or place on your desktop.

   NOTE Save your work often.
4. *Add a beginning image* (page 7), such as a duct or floorplan.
5. *Add image*s (page 7), *controls* (page 8), and *symbols* (page 23) as needed. Use the **Equipment Color** control  to display the temperature in a zone relative to the designated setpoints for that zone.

   NOTE Graphic objects must stay within the gray lines that indicate the edges of your graphic. If this is not possible at the current graphic size, see *To change the graphic size* (page 7) below.
6. Test your graphic in i-Vu Open.
7. Transfer the .view file to the end user's server.

NOTE To record notes or information about the graphic, select **Configure** > **View Properties**, then type your name and comments on the **Summary** tab. **Revision History** shows each time the graphic was saved and the workstation it was saved on.

TIP You can use ApplicationBuilder to generate a control program for the UC or CC.

To change the graphic size

The default size of a new graphic is **741 x 543** pixels. This size graphic fits in the i-Vu Open action pane when the navigation tree is displayed, the screen resolution is set at 1024 x 768, and Internet Explorer is maximized and in full-screen mode. A graphic that is **976 x 569** pixels fits the action pane when the tree is hidden.

To change the size of your graphic:

1 Select **Configure** > **View Properties**.

2 Under **General**, select the size you want or enter a custom size (in pixels).

3 Click **OK**.

NOTE ViewBuilder shows the borders of your graphic with a thin gray line.

To change a graphic's background color

1 Select **Configure** > **View Background Color**.

2 Select the color you want.

3 Click **OK**.

Working with images

You can add images, such as floorplans or site maps, to your graphic. Create your image in a graphics program and save it in a folder. Create a floorplan image as a .gif or .png; create any other image as a .gif, .png, or .jpg.

To add an image to your graphic

1 Click the **Add Image** tab  in the **Tools** window.

2 In the **Look in** field, browse to the folder that contains the image you want.

TIP Click one of the five buttons at the left of the file list to jump to a location quickly. Hold the cursor over a button to see its destination.

3 Select the image.

4 Click in the workspace to place the image.

TIP You can also double-click a file name in the **Tools** window to add the image to the workspace.

5 Enter an image in the **Mouseover Image** field in the **Control Properties** window if you want i-Vu Open to display a different image when the cursor is over the image.

NOTES

- The mouseover image must be the same size as the other image.
- To add the image multiple times, select the image, then hold down Shift and click the workspace for each image.
- You can set an image to show or hide in i-Vu Open based on the value of a microblock property. See *Setting objects to show/hide* (page 24).
- You can make an image link to another page in i-Vu Open or to the Internet. See *Adding links* (page 22).

To resize an image

To resize an image, you can type the desired **Width** and **Height** (in pixels) in the **Control Properties** window or do the following:

1 Select a single, ungrouped image.

2 Click and drag one of the green handles.

NOTE Hold down the Shift key as you drag to maintain the image's proportions.

Editing an image in a graphic

1 Edit the original image (.gif, .png, or .jpg) in a graphics program.

NOTE If you do not have the original image, follow the procedure below in “To export an image”.

2 If the image in your graphic has no functionality in ViewBuilder, such as linking, delete the image, then add the revised image.

3 If the image has functionality in ViewBuilder that you want to retain, follow the procedure in *To add an image* (page 7).

Working with controls

You can add controls to a graphic that can retrieve and allow editing of data in the system’s equipment, for example, status values, the date and time, trend graphs, or setpoint graphs.

NOTES

- You can make some controls link to other pages in i-Vu Open or to the Internet. See *Adding links* (page 22).
- Hold down F8 to see an indicator beside all controls that need to have a microblock path defined in the **Control Properties** window.

To add a control

1 Click the **Add Control** tab  in the **Tools** window.

2 Select the control you want to add. See Controls and their properties for a description of each control.

3 Click in the workspace where you want to add the control.

NOTE To cancel the action, press Esc before clicking the workspace.

4 Edit properties for the control in the **Control Properties** window. See Controls and their properties.

5 Click anywhere in the workspace to apply the properties.

TIPS

- To add a control multiple times, select the control, then hold down Shift and click the workspace for each copy.
- Hold Alt while dragging a control to create a copy of it.

Controls and their properties

When you add a control to a graphic, you define properties in the **Control Properties** window to define what data the control will retrieve or how the control will behave in i-Vu Open. Most controls have the following three properties.

Microblock Path The path to the microblock you want the control to read from or write to. See *To determine a microblock path to points* (page 25) to find out how to ascertain the path.

NOTE If this field is outlined in red, you entered invalid syntax or characters.

Property The microblock property you want to read from or write to. Click the down arrow to select a common property (usually present_value) or type the property you want.

Editable Select to make the control editable in i-Vu Open. The microblock must have editable properties.

The following table lists all the controls you can add to a graphic and any other properties besides the three described above.

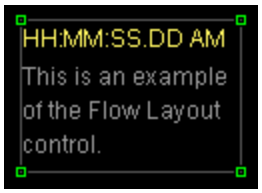
Use this control...	To...	Properties
Static Text	Display text that does not change. Example: A description of a control	**Text**—The text you want the control to display in i-Vu Open.

Use this control...	To...	Properties
Single-line Text	Display text from the character string field in a microblock. Example: Point name	**Preview Text**—Text that is displayed only in ViewBuilder to help you place the control. Type the preview text or select from the drop-down list. **NOTE** To display the Notes defined in i-Vu Open for an area or piece of equipment, enter the path to the area or piece of equipment in the **Microblock Path** field, then type `.notations` in the **Property** field.
Multi-line Text	Place a multi-line text box on a page. Example: Long text of an alarm	**Wrap text**—Wraps text from line to line inside the text area box. **Provide Scrolling**—Includes scrollbars. **Visible Row Count**—The number of rows the text area will display. **Visible Column Count**—The estimated number of characters a row will display. This estimate helps you avoid overlapping other page elements when positioning the control in ViewBuilder.
Text Toggle	Display active and inactive text values for a binary microblock. When editable, can be toggled between multiple states by clicking on it. Example: Chiller is enabled or disabled	**Preview Text-**Text that is displayed only in ViewBuilder to help you place the control. Type the preview text or select from the drop-down list.
Droplist	Display the text values for BACnet multi-state microblocks. A droplist can also display the active and inactive text values for a binary microblock. When editable, appears as a droplist with multiple options. Example: Units of measure (°F)	General **Preview Text-**Text that is displayed only in ViewBuilder to help you place the control. Type the preview text or select from the drop-down list. Advanced The fields on this tab provide a method of substituting the microblock property values with different text.

Use this control...	To...	Properties
Toggle Button	Display two different images to represent the on and off states of a microblock property. Example: The control reads a fan status value, then displays a static image of a fan to indicate the fan is off and an animated image to indicate it is on.	General **Images**—To use images other than a checkbox, click to locate the **On** and **Off** image files. Advanced If you want to display custom images for the following conditions, click to locate the image. **Mouseover Image**—The image to be displayed when the cursor is over the button to indicate a clickable link. **Pressed Images**—The images to be displayed when the cursor is on the button and the mouse button is pressed down, but not yet released. **Disabled Images**—The images to be displayed when buttons are not editable.
0.0 **Number**	Display any numerical value from an analog microblock. Example: Zone temperature	General **Max Right Digits**—The maximum number of digits to be displayed to the right of the decimal. Type `0` to display whole numbers. **Min Left Digits**—The minimum number of digits to be displayed to the left of the decimal (usually 1). **Expected Left Digits**—The number of digits that might appear to the left of the decimal. These digits are only displayed in ViewBuilder to help you position the control. **Create Units Control**—Adds a Droplist control to the right of the Number control. The microblock must have a units field that identifies the number (for example, RPM). The **Microblock Path** is the same as the Number control. Type or select a **Preview Text** option. This text is only displayed in ViewBuilder to help you place the control. Advanced **Scaling Factor**—To display a microblock property value in a different format, type the necessary multiplication factor. For example, to display watts as kilowatts, type .001 in this field. **Show plus sign**—Displays a plus sign when the value is positive. **NOTE** You can use the Number control to display the number of alarms pending a return-to-normal state for an area or equipment. To do this, enter the path to the area or equipment in the **Microblock Path** field, then type `.alarm_count` in the **Property** field.

Use this control...	To...	Properties
Image List	Show various states of an analog microblock using images. Example: A closed damper is shown when the analog value is 0; a half-open damper is shown when the value equals 50; and a fully open damper is shown when the analog values equals 100.	**Default Image**—Click to locate the image you want the control to display when a communication problem or error occurs. Use a different image from the others in the image list so that the i-Vu Open operator will know when an error occurs. For example, some symbols that use image lists have default images with in the center of the image. Click to add the images the control displays under normal conditions. Use and to reorder the list. Click to delete an image from the list. **Expression**—Enter an expression for each image (except the default image) to define the condition for displaying the image. See *Conditional expressions* (page 27). When the graphic is displayed in i-Vu Open, i-Vu Open evaluates each expression in the order of your list and displays the first image whose expression returns true. If no expression returns true, the default image is displayed.
Slider	Display a horizontal or vertical slider bar that can be used to adjust an editable point. Example: Editing a setpoint	General **Display Orientation**—Displays the slider horizontally or vertically. **Minimum Value**—The minimum value on the slider. **Maximum Value**—The maximum value on the slider. **Tick Interval**—The number of units from one tick to another. **NOTE** To have the slider divisions appear correctly, the slider range (maximum value minus minimum value) should be evenly divisible by the tick interval. **Slide By This Increment**—The number of units the slider jumps when you move it. Example of control properties and the results in iVu Slider Measurements Minimum Value: 65 Maximum Value: 85 Tick Interval: 5 Slide By This Increment: 1 65 75 85 Tick Scale numbers are Static Text controls Images To use custom images for the slider, click to locate the image files.

Use this control...	To...	Properties
 **Date**	Display a date, typically read from a History microblock. Example: Date of the highest zone temperature	**Show day of week**—Adds the day to the right of the date. **NOTE** To display a controller's current date on: • the equipment graphic, type `~device/driver/device/local_date` in the **Microblock Path** field. • an area graphic, type `<equipment_ref_name>/~device/driver/device/local_date` in the **Microblock Path** field. In either case, delete the text in the **Property** field.
 **Time**	Display a time of day, typically read from a History or Wire Lock microblock. Example: Time of the day's highest temperature	**Display Format**—Choose how to display time. **NOTE** To display a control module's current time on: • the equipment graphic, type `~device/driver/device/local_time` in the **Microblock Path** field. • an area graphic, type `<equipment_ref_name>/~device/driver/device/local_time` in the **Microblock Path** field. In either case, delete the text in the **Property** field.
 **Duration**	Display a time period. Example: Override time remaining	Select **Show Hours** and **Show Seconds** to display these with the minutes. **NOTE** This control expects an analog value expressed in seconds. If you want i-Vu Open to display hours, the duration control must read a microblock property that furnishes data in seconds.
 **Trend Graph**	Place a BACnet trend on a graphics page. Example: Trend graph of zone temperature	**Trend location—**To add a point or wire trend graph, type the microblock path. To add a trend graph that shows multiple points, type the reference name of the graph. To find the reference name, navigate to the graph in i-Vu Open, then click the **Configure** tab. The reference name appears at the top of the page. **Title Font Size**—Adjust the size of the graph's title. **Trend Font Size**—Adjust the size of the graph's numbers.
 **Panel**	Serve as a backdrop for other objects.	Move the handles to adjust the shape of the panel.
 **Table**	Align multiple controls in rows and columns. Example: Fan status table	See Working with tables.

Use this control...	To...	Properties
Flow Layout	Add text, controls, or images to a resizable container that wraps the objects to fit the container.	To add content to the Flow Layout control: • Double-click it to type text. **NOTE** Press Esc to exit the control without saving the text. • Drag and drop other controls or images into it. **NOTE** You cannot insert a Panel, Table, HTML, or another Flow Layout control. Click and drag the Flow Layout's handles to resize it. Use the options in the **Control Properties** window to: • Align the contents in the Flow Layout control • Wrap the text • Change the border's thickness • Change the border or background color 
On-Off-Auto	Provide a method to lock a piece of equipment on, lock it off, or let the control program control it (Auto). Example: To control fans or pumps	**Microblock Path**—Type the path in this field only if this control is to read one microblock. **Type:** / **Select...** / **To display...** **Dial**  **Vertical Panel**  **Horizontal Panel**  **Order**—Select the order of the control labels. The order is left to right for Dial and Horizontal Panel, or top to bottom for Vertical Panel. **Use State Text**—Enable this field to use the binary microblock's Active text and Inactive text instead of the control's defaults. **Use Advanced Path**—Enable this field if you want this control to read two microblocks, one for Auto and one for On/Off (Hand/Off). Enter the microblocks in the following fields. **Automatic Microblock Path and Property**—The microblock that contains the Auto values. **Manual Microblock Path and Property**—The microblock that contains the On/Off values.

Use this control...	To...	Properties
Radio Button	A set of radio buttons provide a method to view or edit the various states of a microblock property. Example: Manual and Auto	Enter the same **Microblock path** and **Property** for each radio button in the set. **Radio Button Value**—If the button is not editable, type the value that will turn the button on. If the button is editable, type the value that the property will change to if an operator selects the button. For an analog microblock, type the specific value the button is to represent. For a binary microblock, type `true` or `1` (depending on the property) for one button's value and `false` or `0` for the other button's value. The remaining fields for this control are the same as those for the Toggle Button.
Setpoint	Provide a method to view or edit setpoints.	**Setpoint Type—** **Select...** / **To display...** **Actual**  Occupied and unoccupied setpoints programmed into the setpoint microblock **Effective**  Effects of factors such as overrides, adjustments, and hysteresis.
Interactive Thermostat	Provide a method to adjust or override a temperature setpoint	**Microblock Path—** This control defaults to **Istat**, the default **RefName** for the RS microblock when you create your control program in Snap. In a control program generated in i-Vu or ApplicationBuilder, the **RefName** defaults to **zone_temp**. You can verify your **RefName** in the RS microblock.
BACnet Object ID	Place a BACnet object ID on a graphics page.	**Instance Number Only**—Select to allow an operator to edit only the instance number of the BACnet object ID on a graphic.
HTML	Add any HTML to the graphic. Example: To embed a flash movie.	Move the handles to adjust the shape of the HTML control. General **Preview Image**—Click  to locate an image that will display only in ViewBuilder. **Insert HTML**—Enter any HTML and resource file references that are acceptable within the HTML <body> tag. Add any resource file on the Resources tab. In the HTML, type the file path as **resources/**<filename.extension>. Resources Click  to add files to the Resources list. Click  to delete files from the list.

Use this control...	To...	Properties
Equipment color	To view the state of the Prime Variable	In i-Vu Open, the oval will display colors to indicate the status of the equipment in relation to its prime variable (for example, ideal, warm, occupied, etc.). **Equipment Path -** To determine equipment path: 1. Open i-Vu Open. 2. Right-click on equipment in navigation tree and click **Copy Path**. 3. Open ViewBuilder. 4. Paste. **Size** - Choose the size of the oval that you wish to appear on your graphic. **Show Prime Variable -** Displays the prime variable. For more information, See *To use an Equipment Color control* (page 16).

TIPS

- The symbol library contains preconfigured, commonly used controls. See Working with symbols.
- Several controls let you select images in the **Control Properties** window. You can quickly select an image that you previously added to your graphic by clicking the browse button, then clicking the **Resources** tab in the file selection dialog box. You do not need access to the original image because images are stored in your graphic. This does not apply to images from the **_common** folder.
- To change the font, size, color, or style for any control that displays alphanumeric characters, click . In the **Font Size** field, you can select or type the size you want.

  NOTE If you change the font, use the same font for adjacent controls to avoid alignment problems.

To use an Equipment Color control

When you add an **Equipment Color** control to a graphic, you link the oval to the equipment, choose the size of the oval, and select the Prime Variable in the **Control Properties** window in ViewBuilder. In i-Vu Open, the oval will display colors to indicate the status of the equipment (for example, ideal, warm, occupied, etc.).

1 Open i-Vu Open.

2 Right-click the controller in the navigation tree and select **Copy Path** from the drop down menu.

3 Open ViewBuilder. Create a new view or open an existing one.

NOTE To place an **Equipment Color** control in your graphic, open the **Add Control** tab in the **Tools** window. Click on the and then click in the view to place it.

4 Open the Control Properties window (**Window**>**Show Control Properties**).

5 Paste (Ctrl+V) in the **Equipment Path** field.

6 Select a large or small oval to appear on your graphic.

NOTE You must choose a large oval to display the Prime Variable.

7 Optional: Check **Show Prime Variable** to display the prime variable in i-Vu Open.

8 Save your view.

9 In i-Vu Open, right-click on the site or area in the navigation tree and select **Configure** from the drop-down menu.

10 Select your view and click **Add.**

To add variable color to a text control

For any control that displays alphanumeric characters, you can enter an expression that causes the text to change color in i-Vu Open based on the value of a microblock property.

1 Select the control.

2 Click  on the toolbar.

3 Enter the expression. See Conditional expressions and examples below.

NOTE To add a color to your expression, click the color in the **Color Insertion Tool** box. A color's hexadecimal value is inserted in the expression.

4 Click **OK**.

NOTE To remove the conditional expression, delete the text in the **Expression** field.

EXAMPLES:

To...	Enter the expression...
Add a Text Toggle control that will determine a filter status and show the word Clean in green or Dirty in red	(($filter/present_value$==true)?'#FF0000':'#00FF00')
Add a Static Text control that displays red text to indicate an alarm or white text to indicate a normal condition	(($alarm/present_value$==true)?'#FF0000':'#FFFFFF')

To set a control to enable/disable

You can enter a conditional expression that determines whether i-Vu Open enables or disables a control based on another control's microblock property value.

1 Select the control that you want to enable/disable.

2 Click  on the toolbar.

3 Enter the expression. See Conditional expressions and example below.

4 Select the **Enable** or **Disable when the expression is true** option.

5 Click **OK**.

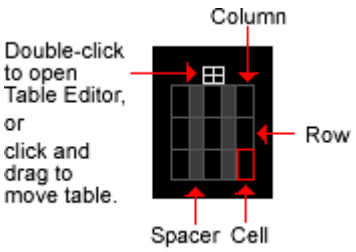
NOTE To remove the conditional expression, delete the text in the **Expression** field.

TIP You can simultaneously set multiple controls to enable/disable using the same conditional expression. Each of the controls must have enable/disable capability. Select the controls, then click  .

EXAMPLE:	
To...	**Enter the expression...**
Add an editable Number control after ☑ **Lock value at:** that will be enabled only when an operator clicks the checkbox	$m006/locked$==true and select **Show when Expression is True** to enable when true.

Working with tables

You can add a table to a graphic and then add controls or images in the table cells. The table maintains the alignment of the objects in the cells.



To add a table

1. Click the **Add Control** tab  in the **Tools** window.
2. Select the **Table** control.
3. Click in the workspace where you want to add the table.
4. Do one of the following:
   Select **Pre-Defined Table**, then select the style you want to add.
   Select **Custom Table**, then enter the number of rows and columns.
5. Click **OK**.

To add a symbol to your graphic

1. Click the **Add Symbol** tab  in the **Tools** window.
2. In the **Look In** field, browse to the folder that contains the symbol you want.

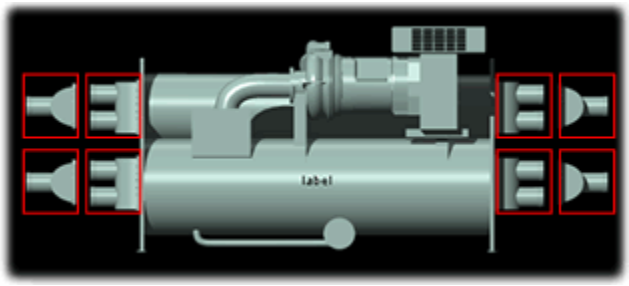
   TIP Click one of the five buttons at the left of the file list to jump to a location quickly. Hold the cursor over a button to see its destination. Click the last button to jump to the symbol library.
3. Select the symbol and then click in the workspace where you want to add the symbol.

   TIP You can also double-click a symbol's name in the **Tools** window to add it to the workspace.
4. In the **Control Properties** window, edit properties as needed for the individual controls in the symbol.

   TIP To add a symbol multiple times, select the symbol, then hold down Shift and click the workspace for each symbol.

NOTES

- Symbols with extra objects
  Many symbols, such as the chiller shown below, include extra objects so you can create the configuration you need. Ungroup the symbol, then delete the unnecessary pieces. Reposition the remaining pieces if necessary.



- Dampers
  If a single microblock controls two dampers and one should be the opposite of the other, use a regular symbol for one damper and a reversed symbol for the other. For example, use **Horizontal_Open-Closed** and **Reversed_Horizontal_Open-Closed**.

To add text to a table

1. Double-click a table cell.
2. Type text.
3. Optional: Double-click the table icon at the top of the table to open the **Table Editor**, then align the text.

To add a control to a table cell

1. Click the control in the **Tools** window.
2. Click the cell where you want to add the control.
3. Enter the control's properties.

NOTE You can add multiple objects to a table cell, then click and drag an object to rearrange them.

TIP To prevent a table from overlapping nearby objects as its content expands in i-Vu Open, set preview text or expected digits for each control in the table to be as wide as the widest value i-Vu Open might display. Then position your table. Or, set a minimum row height or a minimum column width for the table.

Using the Table Editor

Use the **Table Editor** tools to:

- Insert and delete columns and rows
- Split and merge cells
- Align cell contents
- Align the entire table. A table can expand or shrink in i-Vu Open based on the values in its cells. You can align a table so that the left, right, or center of the table remains in a fixed position, regardless of the cell contents.
- Set a table row to show or hide in i-Vu Open based on the value of a microblock property. See Setting objects to show/hide.
- Change the background for one or more selected cells from transparent to a color.
- Add a border to one or more selected cells. Set the border width between 1 and 10; 0 equals no border.
- Set minimum column width and minimum row height.
- Use column spacers to maintain a fixed amount of unused space between each column. To increase or decrease the amount of space, turn off the **Table** > **Use Automatic Column Spacers** option, add a column as a spacer, then set a minimum column width.

Drawing lines and shapes

ViewBuilder's drawing tools let you draw vector lines and shapes. These tools are on the  tab in the **Tools** window.

To define drawing attributes

On the  tab, set the following **Default Attributes** that ViewBuilder will use for each new line or shape. After you draw the line or shape, you can change its attributes in the **Control Properties** window.

Select any of the following checkboxes:

- **Line Thickness** if drawing a line or giving a shape a border.
  Select the thickness and **Line Color**.
- **Background Fill Color** to fill a shape with a color.
  Select the color.
- **Fill Pattern** to fill a shape with a pattern.
  Select the pattern.
  The **Background Fill Color** is the pattern's first color. Select a **Fill Pattern Color** as the second color.

To draw a line

1. Select  .
2. Click in the workspace, but do not release the left mouse button. Drag the cursor to draw.

   NOTE Hold down the Ctrl key as you draw to restrict the line to vertical or horizontal.
3. Optional–To add a line segment: While still holding the left mouse button, click and release the right mouse button, then drag in a new direction.
4. Release the left mouse button to complete the drawing.
5. If needed, change the line's *attributes* (page 20) in the **Control Properties** window.

To draw a polygon

1. Select  .
2. Click in the workspace, but do not release the left mouse button. Drag the cursor to draw the first side of the polygon.
3. While still holding the left mouse button, click and release the right mouse button, then drag in a new direction to draw the next side of the polygon.

   NOTE Hold down the Ctrl key as you draw to restrict angles to right angles.
4. Repeat step 3 as many times as needed.
5. Release the left mouse button to complete the shape.
6. If needed, change the shape's *attributes* (page 20) in the **Control Properties** window.

To draw a rectangle, square, ellipse, or circle

1. Select  to draw a rectangle or square, or select  to draw an ellipse or circle.
2. Click in the workspace, but do not release the left mouse button. Drag the cursor to draw.

   NOTE Hold down the Ctrl key as you draw to form a square or circle.
3. Release the left mouse button to complete the shape.
4. If needed, change the shape's *attributes* (page 20) in the **Control Properties** window.

To resize or reshape a drawing

1. Select the line or shape in the workspace.
2. Click **Edit Drawing** button in the **Control Properties** window. The drawing's points change from  to  .
3. Edit the line or shape.

- To resize a rectangle, square, ellipse, or circle, click a corner point and drag it.
  NOTE To maintain a circle or square, hold down Ctrl while dragging.
- To reshape a line or polygon:
  - To move a point, click it and drag it.
  - To delete a point, right-click it.
  - To add a point, move the cursor on top of a line or border until the cursor changes to +, then right-click.

NOTE You can press Esc to remove your edits.

4 Left-click in the workspace to save edits.

Adding links

You can make images link to other pages in i-Vu Open or to the Internet.

To add a link

1 Select the object that is to be a link.

NOTE You can select multiple objects if you want to link them to the same destination. All of the selected objects must have linking capability.

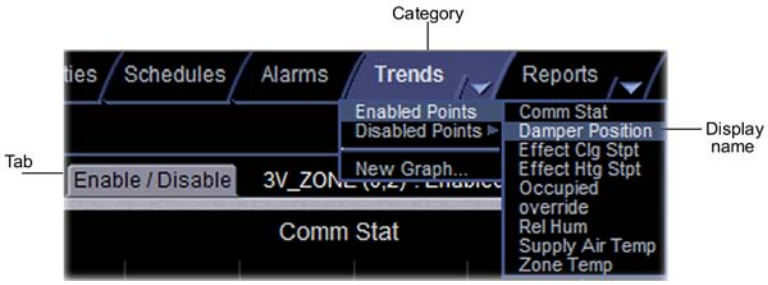
2 Click  on the toolbar.

3 Enter the requested information. See table below.

4 Click **OK**.

NOTE To remove the link from the control, delete the text in the **Link** field.

Field	Notes
General tab	
Link	Enter the path to an item in the navigation tree, or enter a URL to link to an Internet web page.
Scope	Select • **system** to link to another page in i-Vu Open. • **external** to link to a URL address or an external document, such as a .pdf file. An external link will open in a separate window from i-Vu Open.
Action Button	Choose the action button to be selected when the operator clicks the link.

Advanced tab	Enter the reference name for the **Tab**, **Category**, and **Instance** to be displayed when the i-Vu Open operator clicks on the link.  **NOTE** To find the reference names, go to the location in i-Vu Open that you want to link to and use the `whereami` manual command. See "Manual Commands" in i-Vu Open Help.
Type	**Navigation**—links to an item in the navigation tree. **Interactive-popup**—opens a pop-up window such as a microblock pop-up.
Underline Link	Select to have link underlined. Clear the checkbox to remove the underline.

Working with symbols

Symbols are commonly used combinations of images, controls, and text that have been preconfigured and grouped. You can also create your own symbols.

To create a symbol in ViewBuilder

1. Click  on the toolbar.
2. Add the objects to the workspace that you want to include in your symbol.
3. Enter control properties, if needed.
4. Select **File** > **Save As**. Save your symbol in a folder.
5. Under **Files of Type**, select **View Symbol** files.
6. Type the name of the symbol in the **File Name** field.
7. Click **Save**. Use the **Look in** field on the **Add Symbol** tab to browse to your symbol.

TIP When adding a symbol you created, double-click the symbol in the **Tools** window to have it added at the same location it was in when you created it.

Setting objects to show/hide

You can set images, most controls, and table rows to show or hide in i-Vu Open based on the value of a microblock property.

To set an image or control to show/hide

1 Select the image or control.

2 Click  on the toolbar.

3 Enter a conditional expression. See Conditional expressions and examples below.

4 Select the **Show** or **Hide when expression is true** option.

5 Click **OK**.

NOTE To remove the conditional expression, delete the text in the **Expression** field.

EXAMPLES:

To...	Enter the expression...
Add a Static Text control that shows "freezestat" when freezestat is in alarm	$air_flow/full_open$==true and select **Show when Expression is True**
Add a Toggle Button control that shows an alarm reset button (up and down image) only when an alarm occurs	$alarm/present_value$==true and select **Show when Expression is True**

TIPS

- If you do not see an object when you test your graphic in i-Vu Open, look for the show/hide icon to the left of the object in ViewBuilder. This icon helps you quickly determine that the object is hidden, not missing.

  NOTE ViewBuilder does not display the icon when you set an object inside a table cell to show/hide.

- To simultaneously set multiple objects to show/hide using the same conditional expression, select the objects, then click  .

  NOTE Each of the objects must have show/hide capability.

To set a table row to show/hide

1 Open the **Table Editor**. See Working with tables.

2 Click in the row.

3 Select **Row** > **Show/Hide**.

4 Enter a conditional expression. See Conditional expressions.

5 Select the **Show** or **Hide when expression is true** option.

6 Click **OK**.

NOTE To remove the conditional expression, delete the text in the **Expression** field.

To determine a microblock path to points

In ViewBuilder, you enter paths in links, controls, and conditional expressions. A path tells i-Vu Open the route through the system hierarchy to an item in the system. For example, a path tells i-Vu Open where to find a value to display on a graphic or where to jump to when the operator clicks a link. You must assign a **Microblock Path** in the **Control Properties** window to associate the graphic element with the point.

NOTES

- If the graphic is associated with a single controller, the **RefName** is used as the path
- If the point is to be displayed on a floorplan, or other graphical element that is not directly related to a controller, the geographic path is used

To determine the microblock property path

1 Open i-Vu Open.

2 Click on the controller in the navigation tree.

3 Select **Properties** page > **Network Points** tab to view the mapped points.

4 Click on the desired point to open the dialog box and select the **Summary** tab.

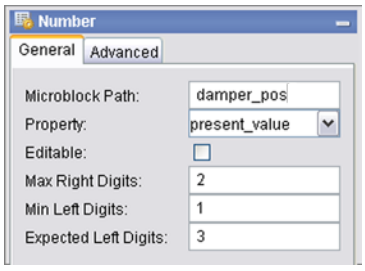
5 Drag your cursor across the path next to **RefName** (In the example, "damper_pos_ai")and CTRL-C to copy the path to the Windows clipboard.

6 Open ViewBuilder and click the point you are mapping.

7 Click **Window** > **Show Control Properties** to open the **Control Properties** dialog box.

8 Place your cursor in the **Microblock Path** field.

9 CTRL-V to paste the path from your clipboard.



10 Verify that Property is present-value.

11 Save your graphic.

12 Upload to i-Vu Open.

To determine the geographic path

1 Open i-Vu Open.

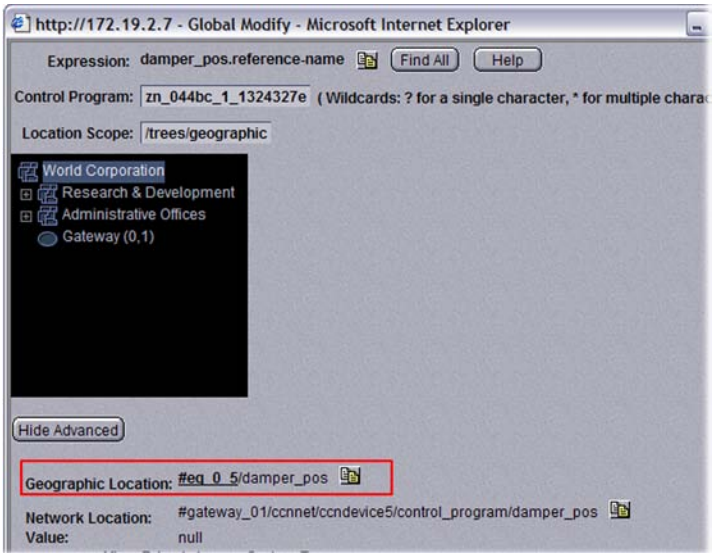
2 Click on the controller in the navigation tree.

3 Select **Properties** page > **BACnet Points** tab to view the mapped points.

4 Alt+Click on the **Reference name** of the point, or right-click and select **Global Modify**.

5 Click the **Show Advanced** button.

6 Click the **Copy Path** button to copy the path to the Windows clipboard.



7 Open ViewBuilder and click the point you are mapping.

8 Click **Window** > **Show Control Properties** to open the **Control Properties** dialog box.

9 Place your cursor in the **Microblock Path** field.

10 CTRL-V to paste the path from your clipboard.

11 Verify that Property is present-value.

12 Save your graphic.

13 Upload to i-Vu Open.

Miscellaneous ViewBuilder menu commands

Menu command	Notes
Tools > Configure	Use this command if directed by Technical Support to install an added ViewBuilder feature.
Help > **Apply Update**	Use this command to install service packs or patches.

Conditional expressions

You can type a conditional expression in ViewBuilder to show or hide an object, to enable or disable an object, or to display an object in variable colors based on a microblock property value.

Show/hide or enable/disable expressions

The following scenario shows how you could use an expression to show or hide a control on a graphic. Enable/disable works the same way.

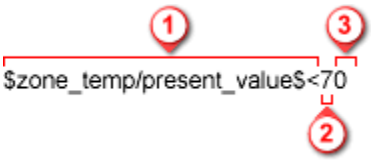
1 In ViewBuilder, you right-click a control, select **Show/Hide**, then type the following expression in the **Show/Hide** dialog box.

Expression: $zone_temp/present_value$<70
Translation: The present value of the zone temperature is less than 70.

2 You select **Show when Expression is True**.

3 When the graphic is displayed in i-Vu Open, the actual zone temperature is 75. Because the expression is false, i-Vu Open hides the control.

Breakdown of the above expression



1 **A path to a microblock property** (enclosed in dollar signs) Example: $zone_temp/present_value$
The path can be relative, absolute, or global. See Defining i-Vu Open paths.

NOTE You can select the microblock in ViewBuilder's **System** window to display the path, which you can then copy and paste into your conditional expression. To use a relative path, right-click the area or piece of equipment whose graphic you are creating, then select **Set Base Path**.

2 **An operator** Example: <

A character that represents the relationship between the value of 1 the microblock property and 3 the literal value. See *Operators* (page 30) for a complete list of operators.

③ **A literal value** Example: 70
Either a number, as in the above example, or true or false, as in $zone_temp/locked$==true.

Variable color expressions

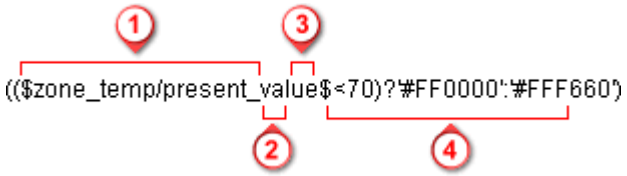
The following scenario shows how you could enter an expression to cause a text control to change color in i-Vu Open based on the value of a microblock property.

1 In ViewBuilder, you right-click a control that displays alphanumeric characters, select **Variable Color**, then type the following expression in the **Variable Color** dialog box.

Expression:	(($zone_temp/present_value$<70)?'#FF0000':'#FFF660')
Translation:	If the statement "The zone temperature's present value is less than 70" is true, show red (#FF0000). If false, show yellow (#FFF660).

2 When the graphic is displayed in i-Vu Open, the actual zone temperature is 75. Because the expression is false, i-Vu Open displays the control in yellow.

Breakdown of the above expression



① **A path to a microblock property** (enclosed in dollar signs) Example: $zone_temp/present_value$
The path can be relative, absolute, or global. See Defining i-Vu Open paths.

NOTE You can select the microblock in ViewBuilder's **System** window to display the path, which you can then copy and paste into your conditional expression. To use a relative path, right-click the area or piece of equipment whose graphic you are creating, then select **Set Base Path**.

② **An operator** Example: <

A character that represents the relationship between the value of ① the microblock property and ③ the literal value. See *Operators* (page 30) for a complete list of operators.

③ **A literal value** Example: 70
Either a number, as in the above example, or true or false, as in $zone_temp/locked$==true.

④ **A result** Example: ?'#FF0000':'#FFF660'
Variable color expressions include a color if the expression is true (#FF0000) and another color if the expression is false (#FFF660). The format of this part of the equation is ?'true color':'false color'.

NOTE In a variable color expression, you enter a hexadecimal value for a color, such as #FF0000 for the color red. Color values must be enclosed in single quotation marks. For example, '#FF0000'.

To find the hexadecimal value of a color

1. Right-click on any text control and select **Variable Color**.
2. Click **Custom**.
3. Select the color you want.
4. Click **OK**.
5. Copy the hexadecimal value in the **Expression** field.

Combining expressions

Below are three methods, with examples, that you can use to combine expressions.

Method 1: Use the And (&&) or the Or (||) operator

Expression using the And operator:	$zone_temp/locked$==false &&$zone_temp/present_value$>75 ?#FF0000:#FFF660
Translation:	The zone temperature is not locked and the current value of the zone temperature is greater than 75. If both of these statements are true, show red (#FF0000); if either is false, show yellow (#FFF660).

Method 2: Use the Ternary (? :) operators

Expression:	$zone/M001/present_value$==1 ?'FF0000':$zone/M001/present_value$==2 ?'#FFF660':$zone/M001/present_value$==3 ?'#FFFFFF':'#FF00FF'
Translation:	The present value of M001 is 1. If this is true, show red. If false, evaluate the next statement. The present value of M001 is 2. If this is true, show yellow. If false, evaluate the next statement. The present value of M001 is 3. If this is true, show white. If false, show magenta.

Method 3: Nest expressions

Expression:	$zone_temp/locked$==true ?($zone_temp/locked_value$>75?#FF0000:#FFF660) :#00FF00
Translation:	The zone temperature is locked. If this statement is false, show green (#00FF00). If true, evaluate the nested statement that the locked value is greater than 75. If this statement is true, show red (#FF0000); if false, show yellow (#FFF660).

Operators

An operator compares or performs an action between the value of a microblock property, a literal value, or the result of an expression. The following table lists operators that can be used in expressions.

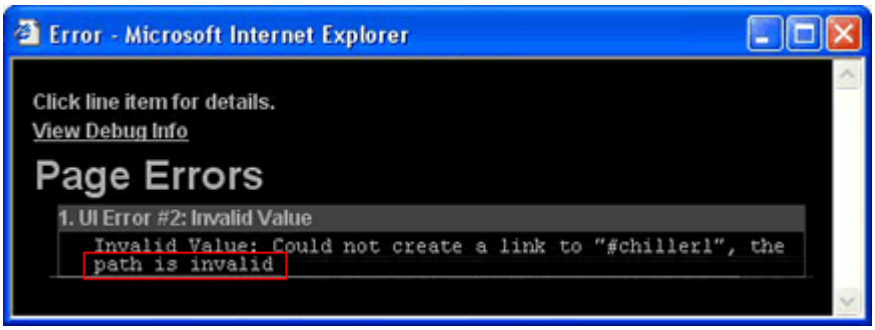
Operators that return true/false		
<	Less than	Compares numeric data. Returns true if the value to the left of the operator is smaller than the value to the right.
>	Greater than	Compares numeric data. Returns true if the value to the left of the operator is larger than the value to the right.
<=	Less than or equal to	Compares numeric data. Returns true if the value to the left of the operator is smaller than or equal to the value to the right.
>=	Greater than or equal to	Compares numeric data. Returns true if the value to the left of the operator is larger than or equal to the value to the right.
!	Not	Evaluates the expression and returns the opposite. Example: !$zone_temp/locked$ If zone_temp/locked is true, the expression is false. If zone_temp/locked is false, the expression is true.
==	Equal to	Compares data. Returns true if the value on both sides of the operator are equal.
!=	Not equal to	Compares data. Returns true if the value to the left of the operator does not match the value to the right.
&&	And	Combines expressions. Returns true if the expressions on both sides of && result in true.
||	Or	Combines expressions. Returns true if the expression on either side or both sides of the operator results in true.
Operators that return a numeric value		
+	Add	Adds numeric data, expressions, or values.
-	Subtract	Subtracts numeric data, expressions, or values.
*	Multiply	Multiplies numeric data, expressions, or values.
/	Divide	Divides numeric data, expressions, or values.
%	Modulus	Finds the remainder in the division of numeric data, expressions, or values.
Other operators		
? :	Ternary	The expression results in one of two values. If the left side of the question mark returns true, the value to the left of the colon is used. If the left side of the question mark returns false, the value to the right of the colon is used.
( )	Parentheses	Use to nest expressions. Operations in parentheses are evaluated before those outside parentheses.

Troubleshooting graphics

Graphic errors are displayed when running i-Vu Open. The error may be indicated by a small red triangle in the lower right corner of the i-Vu Open action pane. Click the triangle to see the error.

Common errors and their solutions are listed below.

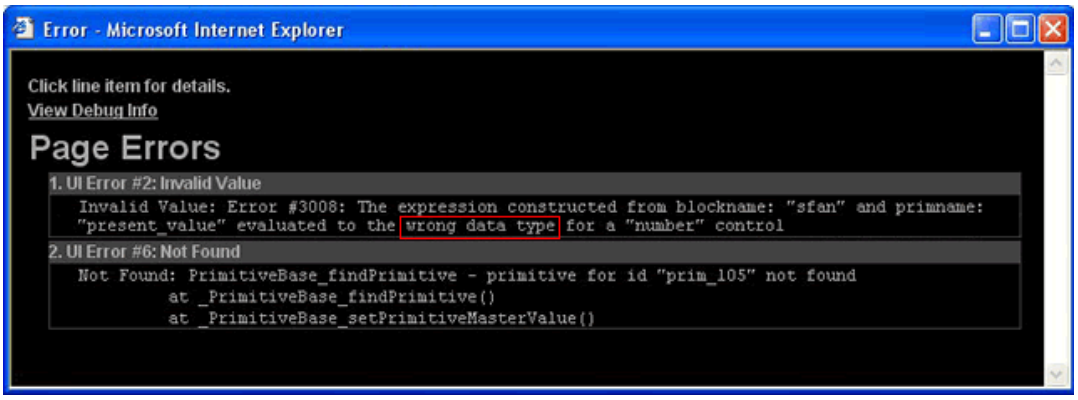
Error: Path is invalid



Indicates that a path in the **Link** dialog box is invalid.

Solution: Correct the path. See To To determine a microblock path to points.

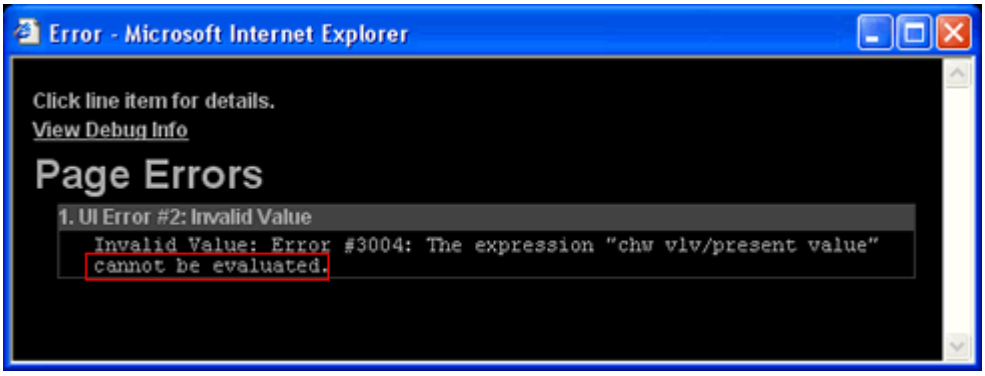
Error: Wrong data type



Indicates that you used a non-binary control to read a binary value. For example, a number control to read a binary value.

Solution: Determine if you need to change the control or the microblock property value.

Error: Cannot be evaluated



Indicates the microblock path for a control is incorrect.

Solution: Correct the path. See To Determine a microblock path to points.

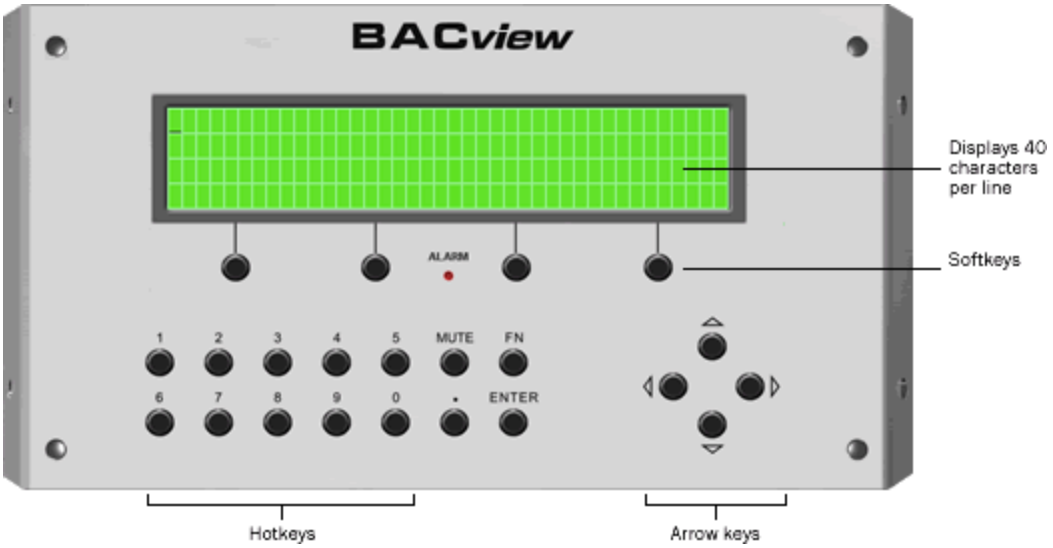
Working with BACview screens

A BACview is a combination keypad/display unit that you can attach to a controller to view or change its property values or its real-time clock without having to access the system's server. BACviews are available in the two sizes shown below.

Virtual BACview is a software version of the large BACview shown below. The Virtual BACview runs on a laptop connected to a controller's Local Access port, and it has the same functionality as the BACview hardware.

In ViewBuilder, you:

- Create the screens that a BACview or the Virtual BACview will display
- Test the navigation between screens
- Save the screens in a single .bacview file



Follow the process below to create screens.

1. Make a new BACview file or open an existing file.
2. Make the BACview screens.
3. Add text, controls, headers, and footers.
4. Add navigation.
5. Password-protect the screens.
6. Set up alarms.
7. *Save, assign, and download the BACview file* (page 47).

To make a new BACview file or open an existing file

1 Do one of the following:

To...	Select...
Make a new BACview file	**File** > **New**, then select one of the following: • **BACview (4x40)** to make screens for a large BACview • **BACview (2x16)** to make screens for a small BACview
Open an existing BACview file created in ViewBuilder	**File** > **Open**, then select the file. **NOTE** If the file is not listed, verify that the **Files of Type** selection lists BACview files.

1 Select **File** > **Save As**.

2 Browse to a convenient location on your PC.

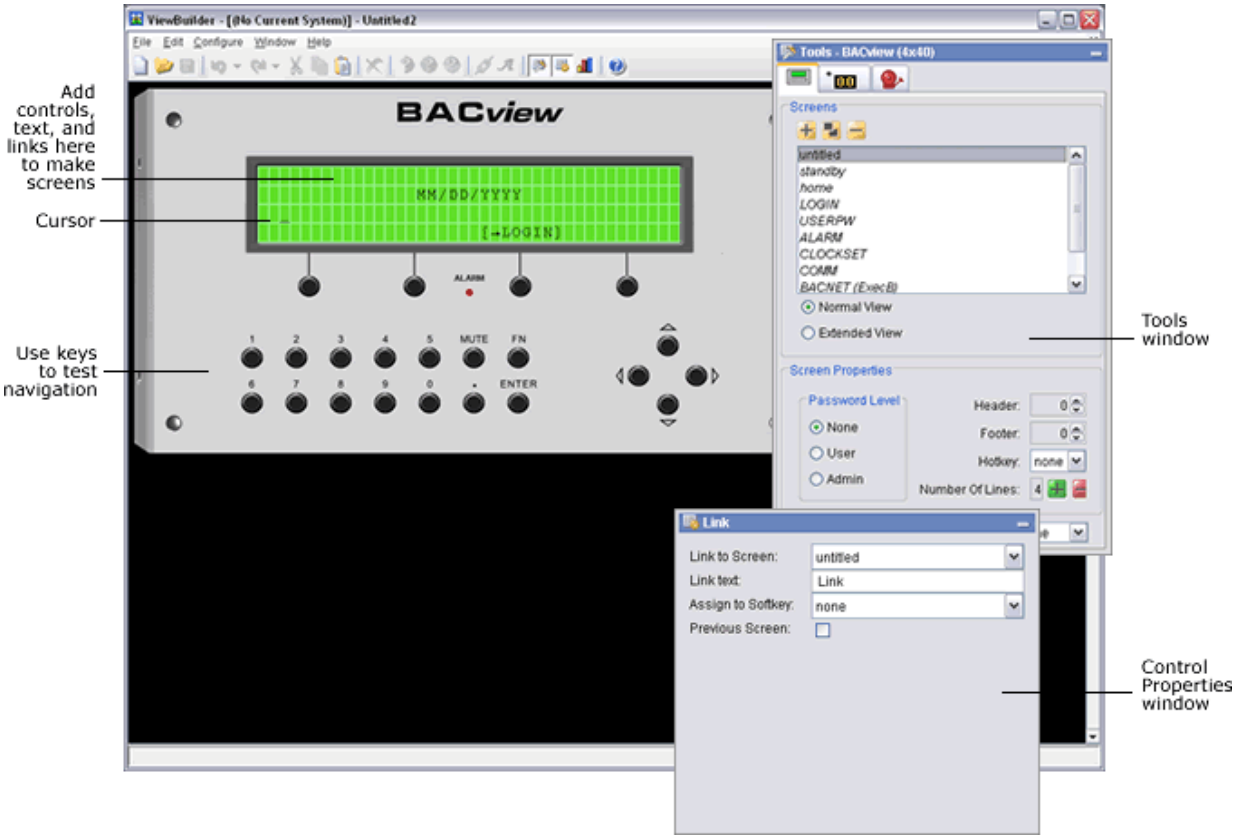
3 Type a **File Name**, then click **Save**. ViewBuilder adds the **.bacview** extension to your filename.

NOTES

-  in the lower right corner of ViewBuilder indicates import errors or warnings. Click the triangle to see details. These details are available until you save the file.
- To record information about the file, select **Configure** > **View Properties**, then type your name and comments on the **Summary** tab. **Revision History** shows each time the file was saved and the workstation it was saved on.

Getting to know ViewBuilder's BACview workspace

When you make a BACview file in ViewBuilder, ViewBuilder displays a simulation of a BACview. You make your screens directly in the simulation's display, and you click the simulation's keys to test the navigation between screens.



To move the cursor in a screen

Use your keyboard's arrow keys to move the cursor in the screen. You can also use the following keys on your keyboard.

Press...	To jump to...
Home	The first cell of the line the cursor is in
End	The last cell of the line the cursor is in
Ctrl+Home	The first cell of the screen's first line
Ctrl+End	The last cell of the screen's last line

NOTE Hold down **Shift** while pressing the above keys to select everything from the cursor's current position to the new position.

To add lines to a screen

1 Click the **Screens** tab  in the **Tools** window.

2 In the **Number Of Lines** field, click  to add a line below the line the cursor is in.

NOTES

- Click  to delete the line the cursor is in.
- To see all of a screen that exceeds the length of the BACview's display, select **Extended View**.

To select or move objects

Objects in a screen are either text that you typed in the screen or controls that you added to the screen. See Adding text, controls, headers, and footers.

You must select an object to perform any action on it.

- Click a control to select it.
- Click and drag across text to select it.
- Click and drag across multiple objects in a screen to select the objects.

To move a selected object, click and drag it to a new location in the screen.

To copy an object

Alt+click and drag a control or selected text to create a copy of it in the same screen.

To copy a selected object(s) from one screen to another:

1 Select the object(s), then click  .

2 In the new screen, click  , then click in the screen where you want the object.

To undo or redo actions

Click  on the toolbar as many times as necessary to undo actions that you performed, beginning with the most recent action. Click  to redo the action.

You can also click the drop-down arrow to the right of the Undo or Redo button to select an action from a list that begins with the most recent action. Selecting an action will undo or redo that action, plus all actions above it in the list.

Making BACview screens

A .bacview file includes the default screens listed below and any screens that you create in ViewBuilder.

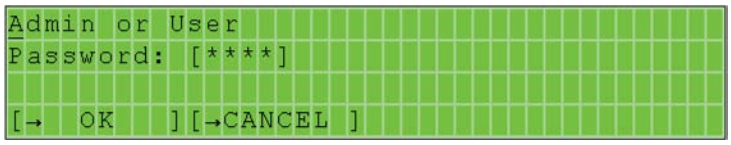
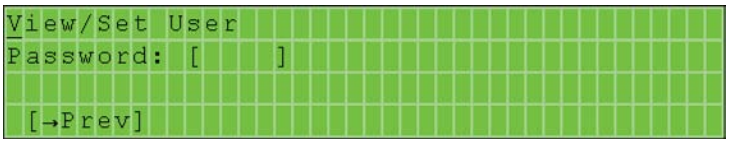
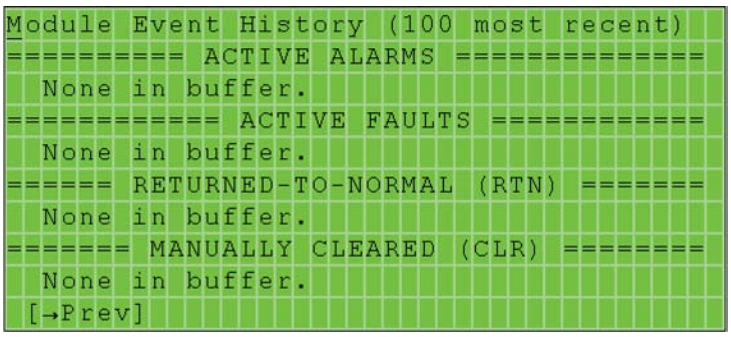
Default screens

[Every BACview file contains the screens listed below. The *standby* and *home* screens automatically display in the BACview, but you must provide navigation to a system screen to have it display. See Adding navigation. The *home* and *standby* screens are editable; system screens are not editable.

NOTE The *Clockset* and *Comm* screens contain links to other screens that are not listed in the **Tools** window in ViewBuilder because you do not edit them or provide navigation to them. These linked screens are also shown below.

Screen name	Description
standby	Displays when the BACview has had no operator activity for the time specified in the **Keypad inactivity timeout** field in the controller driver. Leave this screen blank or add controls or text to display information such as the date and time. Do not add lines to the standby screen.
home	Displays when an operator presses a key while the BACview is in standby mode. **CAUTION** Because this is the first screen that you see when the BACview is activated, you must add navigation to other screens in the system.

System screens

LOGIN	Displays if the screen the operator selected requires a password. 
USERPW	Lets the administrator set the user-level password. 
ALARM	Displays alarms received by the controller. You must define the alarms in ViewBuilder to have them display. See Setting up alarms. 

CLOCKSET Lets an operator adjust the current time and date in the controller's real time clock.

```
Set Current Time/Date (24 hr clock)
Time (hh:mm:ss):   [22]: 02 : 12
Date (dd-mmm-yy):   01 - Nov - 09
[→Prev]    [→DST]
```

The **[–>DST]** link jumps to the following screen where an operator can adjust the beginning and ending dates for daylight savings time.

```
DST  Start Time:[02]: 00   Amount: 060
 Entry#  Beg (mm-dd-yy) End (mm-dd-yy)
    0    Mar  08  2009  Nov  01  2009
    1    Mar  14  2010  Nov  07  2010
    2    Mar  13  2011  Nov  06  2011
    3    Mar  11  2012  Nov  04  2012
    4    Mar  10  2013  Nov  03  2013
    5    Mar  09  2014  Nov  02  2014
    6    Mar  08  2015  Nov  01  2015
    7    Mar  13  2016  Nov  06  2016
    8    Mar  12  2017  Nov  05  2017
    9    Mar  11  2018  Nov  04  2018_
[→Prev]
```

KEYPAD (Large BACview only)—Lets an operator define:

- The amount of time of inactivity before the *standby* screen is displayed

NOTE This time can also be defined in the controller driver.

- The priority (1–16) the BACview uses to write to BACnet properties. 1 is the highest priority, 16 is the default.

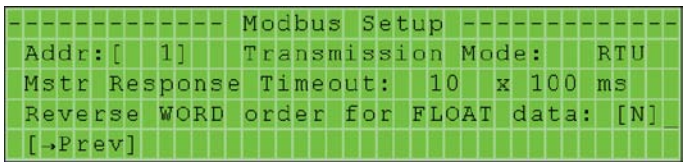
```
---------- Keypad Configuration ----------
  Inactivity Timeout:[ 10]  minutes
  BACnet Write Priority:  0
[→Prev]
```

BACNET (Exec 6) (Large BACview only)—Displays the controller's BACnet device name and ID.

```
------ BACnet Device Configuration -----
 BACnet Device Name: LG0CM01
 BACnet Device ID  :  240001
[→Prev]
```

COMM (Large BACview only)—Lets an operator set the protocol and communication parameters for the port that a third-party device is connected to.

```
------- Open Protocol Port Setup -------
Protocol:[BACnet]  Type: 485   Data: 8
 Stop: 1   Parity: None    Baud: 38400
[→Prev]    [→Protocol Setup]
```

If the operator sets the Protocol to...	And Type to...	The Protocol Setup link jumps to...
BACnet	485	
Modbus	--	
N2	--	

NOTE BACnet MS/TP Setup is the only Protocol Setup screen that is visible in ViewBuilder.

NOTE System screens are a part of the BACview's firmware. If a screen in the firmware is changed between releases of ViewBuilder, the ViewBuilder screen may look different than the actual BACview screen.

To add new screens

1. Click the **Screens** tab  in the **Tools** window.
2. Do one of the following:
   - In the screen list, double-click "untitled", then type a descriptive name.
   - Click  to add a new blank screen, then change its name.
   - Select an existing screen, click  to make a copy of it, then change the copy's name. You cannot copy a system screen.

NOTE To delete a screen, select the screen name, then click  . You cannot delete any default screen.

Adding text, controls, headers, and footers

You can add text, controls, headers, and footers to a BACview screen. If needed, you can increase the size of a screen by adding up to 100 lines.

CAUTION Typing text or placing a control on top of an existing control deletes the existing control.

To add text

Click in the cell where you want the text, then begin typing.

You can also copy text from another application and then paste it into a BACview screen.

To delete text, click and drag across the text to select it, then click  or press **Delete**.

To add a BACview control

1 Click the **Add Control** tab  in the **Tools** window.

2 Select a control. See *BACview controls and their properties* (page 40) for a description of each control.

3 Click in the screen where you want the control.

NOTE If you select a control and then decide you do not want to add it to the screen, press **Esc**.

4 Edit properties for the control in the **Control Properties** window. See *BACview controls and their properties* (page 40).

5 Click in the screen or press **Enter** on your keyboard to apply the properties.

NOTE To copy a control or text:

- Press **Ctrl+c** to copy the item and **Ctrl+v** to paste it into the same screen or a different screen.
- Press **Alt** as you drag the item to a new location in the same screen.

BACview controls and their properties

Each control, its usage, and the properties you define are described in the table below.

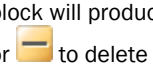
The first three controls have the following properties in common.

Object Name Use ViewBuilder's **System** window to *insert the Object Name* (page 42) in this field. Or, you can find the point's Object Name in i-Vu Open on the point's **Properties** page > **Details** tab, under BACnet Configuration.
NOTES

- You must enable the point's Network Visible checkbox on the **Details** tab.
- For a legacy .KPD file, use the point's display name.

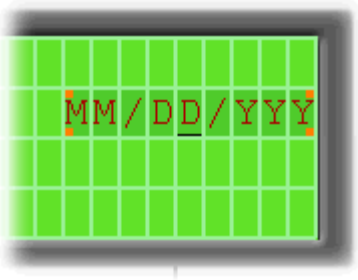
Editable Select to make the control editable in the BACview.

Use this control...	To...	Properties
0.0 Number	Display any numerical value from an analog microblock.	**Digits Left (or Right) of Decimal** - Type the maximum number of digits that can appear to the left (or right) of the decimal. **Show Degree Symbol** - Select to display with a temperature. **Range for Value** - Type a **Minimum** and **Maximum Value** to define the acceptable range of values for the control.

Use this control...		To...	Properties
	Multi-State Control	Display the status of a microblock.	**Field Width** - Select **Use the length of the longest display value** to have the full text from the **Display** column shown in the BACview, or select **Use the following value** and then type a number to have ViewBuilder truncate the displayed text to that number of characters. In the **Value-Display** table, edit the entries in the **Value** column to show the actual values that the microblock will produce. Click  to add a row to the table or  to delete a row. For each value, change the **Display** column text to what you want that value to display in the BACview. **NOTE** If this control is used in a large BACview, it is editable, and the operator has selected it, the softkeys give him the following options: OK, CANCEL, DECR(EMENT), INCR(EMENT).
	Advanced Multi-State Control (Large BACview only)	Display the status of a microblock and assign point values to softkeys.	**Field Width** - Select **Use the length of the longest display value** to have the full text from the **Display** column shown in the BACview, or select **Use the following value** and then type a number to have ViewBuilder truncate the displayed text to that number of characters. In the **Value-Display-Softkey** table, edit the entries in the **Value** column to show the actual values that the microblock will produce. Click  to add a row to the table or  to delete a row. For each value, change the **Display** column text to what you want that value to display in the BACview. **NOTE** The last value, NOP, gives the operator a means to cancel editing the control. You cannot delete this row. If you make the control editable, you can assign values to softkeys that the BACview operator can use to edit the point's value. To do this, select a **Softkey** in the table for each value. Click  to add values to the table, or  to delete values.
	Date	Display the date in the controller's real time clock.	**Date Format** - Choose how to display the date.
	Time	Display the time in the controller's real time clock.	**Time Format** - Choose how to display the time.
	Link	Add a link to another screen.	See *To add a link to a screen* (page 44).

NOTE If editing a control's property causes the control to overlap another control or to expand past the edge of the screen, the control appears in red to indicate the error. Drag the control to a new location.

EXAMPLE In the figure below, the date format was changed from MM/YYYY to MM/DD/YYYY.



To have ViewBuilder insert object names

Use the **System** window to insert the **Object Name** in the **Control Properties** window.

1. If you do not see the **System** window, click on the toolbar.
2. In the **System** window, select the system you want from the drop-down list.
3. Click **Next**.
4. In the **Name** field, select your user name from the drop-down list.
5. Type your **Password**.
6. Click **Next**.
7. In the system tree, select the point for the control you want to program.
8. Do one of the following:
   - Right-click the **Object Name** field in the **Control Properties** window, then select **Set Object Name**.
   - Select **Edit** > **Set Object Name** in ViewBuilder's menu.

To add headers and footers

A header is an area at the top of a screen that does not scroll; a footer is at the bottom.

1. Click the **Screens** tab in the **Tools** window.
2. Set the number of rows for a header or footer in the **Header** or **Footer** field.

   EXAMPLE Set the **Header** field to 1 to have the first row be a header; set the **Footer** field to 2 to have the last 2 rows of the screen be a footer.

   NOTE The total number of lines you can use for a header and footer are 3 on large BACview and 1 on a small BACview.

Setting items to show/hide

You can set controls, text, or complete rows to show or hide based on one of the following:

- The value of a microblock property
- The password level of the user

EXAMPLE You want to create a single control program and screen file that can be used in multiple applications. In the control program, you enable a microblock for one application, but disable it for another application. In the screen file, you set information that applies to that microblock to show when the microblock is enabled and hide when it is disabled.

To set items to show/hide

Based on a microblock property's value

1 Select the item(s) you want to show/hide.

2 Click  on the toolbar.

3 In the **Object Name** field, type the microblock property's object name or select it from the drop-down list. You can use ViewBuilder's **System** window to *find the object name* (page 42).

4 In the **Show When** field, select:

- **True** to show the information when the value of a binary microblock is 1 or the value of an analog microblock is anything other than 0.
- **False** to show the selection when the value is 0.

5 Click **OK**.

Based on the user's password level

1 Select the item(s) you want to show/hide.

2 Click  on the toolbar.

3 In the **Object Name** field, select one of the following from the drop-down list:

- **Sys.Exec.IsAdminLevel** to show/hide the selected items to a user logged in with the Admin password
- **Sys.Exec.IsUserLevel** to show/hide the selected items to a user logged in with the User password

NOTE See Password-protecting a BACview screen for information on the Admin and User passwords.

4 In the **Show When** field, select **True**.

5 Click **OK**.

NOTES

- The cells that you assigned the show/hide condition to are highlighted by a color. A different color is used for each unique condition.
- To move an item and its condition, hold down **Ctrl** as you drag the item.
- To copy an item and its condition, hold down **Alt** as you drag the item.
- Items moved or added into cells that have a show/high condition may or may not assume the condition. If you do not get the results you want, change the show/hide condition or click to undo the action.
- If you hide part of a row, the cells will be blank when the screen is viewed in a BACview. If you hide an entire row, the row will be completely removed from the screen. Design your screen so that a large BACview will never have less than 4 rows and a small BACview will never have less than 2 rows.

To edit or remove a show/hide condition

1. Select the cells whose condition you want to edit or remove.
2. Click  on the toolbar.
3. Do one of the following:
   - To edit a condition, change the **Object Name** or **Show When** field.
   - To remove a condition, delete the text in the **Object Name** field.
4. In the **Apply To** field, select:
   - **Selections only** to have the changes apply only to the selected cells.
   - **Wherever Used** to have the changes apply everywhere that the condition is used.
5. Click **OK**.

Adding navigation to the screens

You can give an operator the following methods of moving from one screen to another:

When you provide a...	The operator...
Link	Uses the arrow keys to select the link, then presses **Enter** to go to the linked screen
Softkey link (Large BACview only)	Presses the softkey below the link
Hotkey (Large BACview only)	Presses **FN** plus the number key assigned to a particular screen

To add a link

If you place a link on a screen, the operator can use the arrow keys to select the link, and then press **Enter** to go to the linked screen.

To add a link:

1. Click the **Add Control** tab  in the **Tools** window.
2. Select **Link**.
3. Click in the screen where you want the link.
4. In the **Control Properties** window, do one of the following:

If you want the link to go to...	Then...
A specific screen	In the **Link to Screen** field, select the screen the link will jump to.
The previous screen	Select the **Previous Screen** checkbox.

5 In the **Link text** field, type the text that you want your screen to show for the link.

NOTE This field is not editable if you link to a system screen.

To add a softkey link

If you assign a softkey number to the link directly above the softkey, the operator can press that softkey to jump to the linked screen.

To add a softkey link:

1 Click the **Add Control** tab  in the **Tools** window.

2 Select **Link**.

3 Click in the screen directly above the softkey that you want to be the link. See figure below.

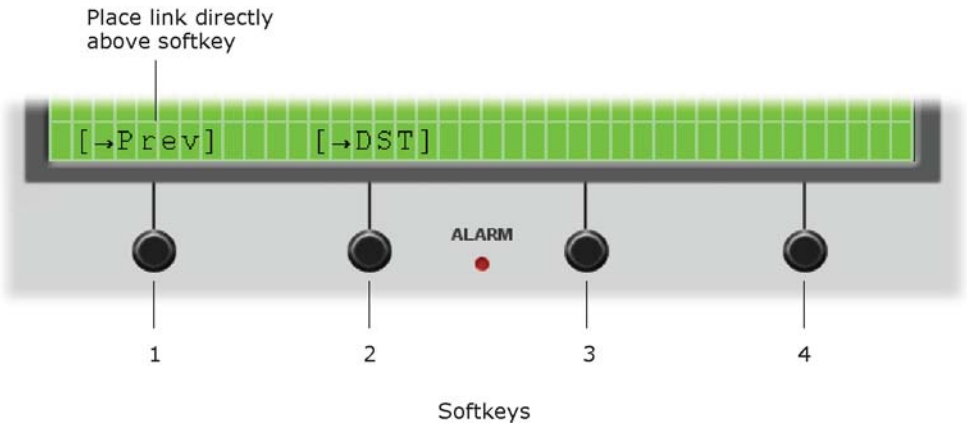
4 In the **Control Properties** window, do one of the following:

If you want the link to go to...	**Then...**
A specific screen	In the **Link to Screen** field, select the screen the link will jump to.
The previous screen	Select the **Previous Screen** checkbox.

5 In the **Link text** field, type the text that you want your screen to show for the link.

NOTE This field is not editable if you link to a system screen.

6 Select the softkey number in the **Assign to Softkey** field.



To assign a hotkey to a screen

If you assign a hotkey number to a screen, an operator can press **FN** plus that number to jump to the screen.

If you want a hotkey to go to...	Then...
A specific screen	1 Click the **Screens** tab  in the **Tools** window. 2 Select the screen name. 3 Select the hotkey number in the **Hotkey** field.
The previous screen	Select a hotkey number in the **Previous Screen Hotkey** field.

TIP Create a screen that shows all the hotkeys and their destinations.

To test the navigation

To test a...	Click anywhere outside the BACview screen and then click...
Link	The arrow keys to select the link (the link will have brackets around it). Then click **Enter**.
Softkey link (Large BACview only)	The softkey below the link.
Hotkey link (Large BACview only)	**FN** and then the hotkey number assigned to a screen.

Password-protecting a BACview screen

To provide security for your i-Vu Open system, you can assign a password level to a screen on the **Screens** tab  in the **Tools** window.

A screen with this password level...	Can be accessed by...
None	Anyone, but to edit a field in this screen, the operator must log in with either the User or Admin password.
User	An operator logged in with the User or Admin password.
Admin	An operator logged in with the Admin password.

Create the 4-digit Admin and User passwords using the instructions below.

To create the Admin password

1. In ViewBuilder's menu, select **Configure** > **View Properties**.
2. Type any 4-digit number in the **Admin Password** field.

To create the User password

The BACview has a single User password shared by its operators. You do not create this password in ViewBuilder. The person with the Admin password creates the User password on the BACview after the .bacview file has been downloaded to the controller.

To create the User password:

1. Navigate to the *USERPW* screen on the BACview.
2. Log in with the Admin password.
3. Type any 4-digit number as the User password.

Setting up alarms for a BACview

The BACview Alarm LED turns on (and the BACview horn may sound) when its controller receives a BACnet alarm that you set up on the **Alarms** tab in the **Tools** window. An operator can view the alarm description on the *ALARM* screen.

To set up an alarm:

1. Click the **Alarms** tab  in the **Tools** window.
2. Click the  to add an alarm.
3. Double-click that alarm's **Alarm Name** cell, then change the existing text to the alarm's BACnet Object Name.
4. Double-click the alarm's **Description** cell, then change the existing text to the description that you want to appear on the *ALARM* screen.
5. Select the **Use Horn?** checkbox to have the BACview audibly notify an operator when it receives an alarm.

NOTES

- To delete an alarm, select the alarm, then click  .
- Click a column heading on the **Alarms** tab to sort the alarms.
- You should enable each alarm's **Return to Normal** field in i-Vu Open to prevent the Alarm LED and horn from remaining on until an operator can clear the alarm.

To save, assign, and download the BACview file

1. Save the .bacview file in **i-Vu Open#\webroot**<system_name>**\views\bacviews**.
2. In i-Vu Open, download the control program into the controller. See "Downloading system changes to controllers" in i-Vu Open Help.

NOTE If the controller has an **Enhanced Access Port** DIP switch, make sure that this DIP switch is off when connecting a BACview.

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