

OMC System Software

High-performanceHMI

Graphics Builder

User Manual

IM41S65-E

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Symbol Definition	
	WARNING: Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	RISK OF ELECTRICAL SHOCK: Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	ESD HAZARD: Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user.

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Graphics Builder

Section 1 Overview

VFDDraw is one of the important components of High-performanceHMI configuration software package, which has a good user interface and can provide a graphics drawing environment with maturity functions and convenient operations.

1.1 Function Feature of VFDDraw

- Support VBScript language.
- Support background template.
- Complete configuration functions: the line, circle, rectangle, polygon, curve and all kinds of characters can be drawn in the interface, and also complicated Graphics Drawing can be implemented with abundant drawing controls.
- Strong graphics edit function: include block cut, block copy, group/ungroup, etc., drawing in the form of vector.
- Provide complicated and various dynamic effects.
- Freely add and import bitmap, ICO, GIF, etc.
- Provide standard graphics library.
- Support the use of alias to efficiently invoke the same graphics.
- Support building the panel and symbol of global function block.
- Provide stable and reliable security setting
- Intuitional and realistic supervision operation, which reflects the scene factually and roundly.
- Support to export the tag and text used in graphics to CSV file.
- Support to modify CSV file and then import tag to graphics.

1.2 Start up

For specific methods of starting up the VFDDraw, please refer to the introductions in the section “Add Graphics” of “HMI Builder Manual”.

Section 2 Introduction to Interface

On the interface, user can draw static graphics, and set the dynamic effect of graphics object, etc. As shown in Figure 2-1

Figure 2-2, the interface includes title bar, menu bar, ordinary bar, operation bar, drawing area, line bar, property bar, status bar, common template bar etc.

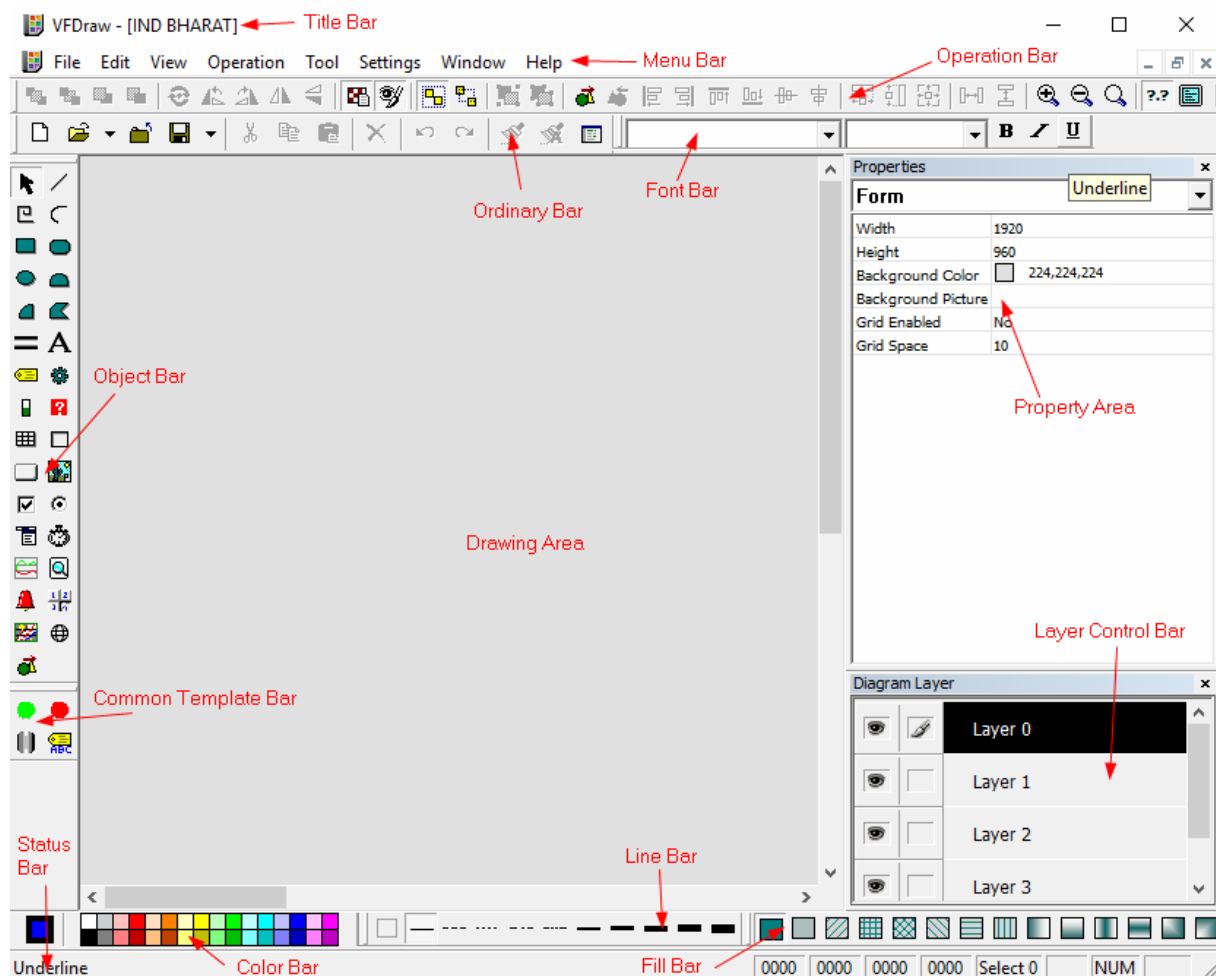


Figure 2-1

Figure 2-2 Graphics Editing Interface

Figure { SEQ Figure * ARABIC }

Figure { STYLEREf 1 \s } { SEQ Figure * ARABIC \s 1 }

- **Title Bar:** It displays the name of the current file.
- **Menu Bar:** The Menu Bar displays 8 menu items of File, Edit, View, Operation, Tool,

Settings, Window and Help, and each menu item contains a pull-down menu. The specific functions and usages will be introduced in detail in chapter 3.

- **Toolbar:** The Toolbar includes 9 items of Ordinary Bar, Font Bar, Operation Bar, Color Bar, Line Bar, Fill Bar, Object Bar, Property Bar and Layer Control Bar. By using the tool icons in the toolbar user can draw Lines, Circles, Rectangles and all kinds of industry devices, and input various characters and add common standard templates, and set color, filling mode, line-type and line-width, etc. The functions of all the icons in the toolbar will be introduced in detail in chapter 3.
- **Drawing Area:** The Drawing Area locates in the middle area of graphics window where all the static object drawing and dynamic property setting are implemented.
- **Status Bar:** The Status Bar locates at the bottom of the graphics window, which displays relevant operation promptings, the exact location of the cursor in the Drawing area, the coordinates of the left boundary point and top boundary point (the boundaries of its selection box for irregular figures) and the width, the height of the selected graphics object, etc. When no graphics object is selected, the values of the width, the height and the selected number are all 0, and the values of left boundary and top boundary display the value of where the cursor locates.

Section 3 Operation Instruction

The operation modes of Graphics Drawing include “Basic operation”, “Complicacy Function operation” and “Shortcut operation”, etc.


3.1 Basic Operation

The Basic operation includes build object, select object, move object and change object, etc.


3.1.1 Build Object


Select the graphics object icon from the Object Bar, and the selected object will be built when press and hold down the left mouse button to drag the pointer in the drawing area. The specific steps of building an object will be introduced in 3.3.9.

3.1.2 Select Object

Click on the icon , and then click the object to select it. If you want to select several objects that are not far away from each other, press and hold down the left mouse button and drag pointer to create a dash box that includes the needed figures; if want to select several objects that are far away from each other, you can just hold down the key “Ctrl” pressed, and select the needed objects one by one.

In addition, Select All can be implemented by the shortcut mode: Ctrl+A.

Include Selection icon : When the mode of selecting object is “Include Selection”, an object will be selected only when the dash box includes the whole object.

Intersect Selection icon : When the mode of selecting object is Intersect Selection, an object will be selected as long as the dash box intersects the object.

3.1.3 Paste to Same Coordinates

After copying the graph object, right-click the blank in graphics and select “Paste to Same Coordinates”, to paste the graph object to the same coordinates with the original graphics. This function is applicable for pasting graph objects in the position of different graphics file.

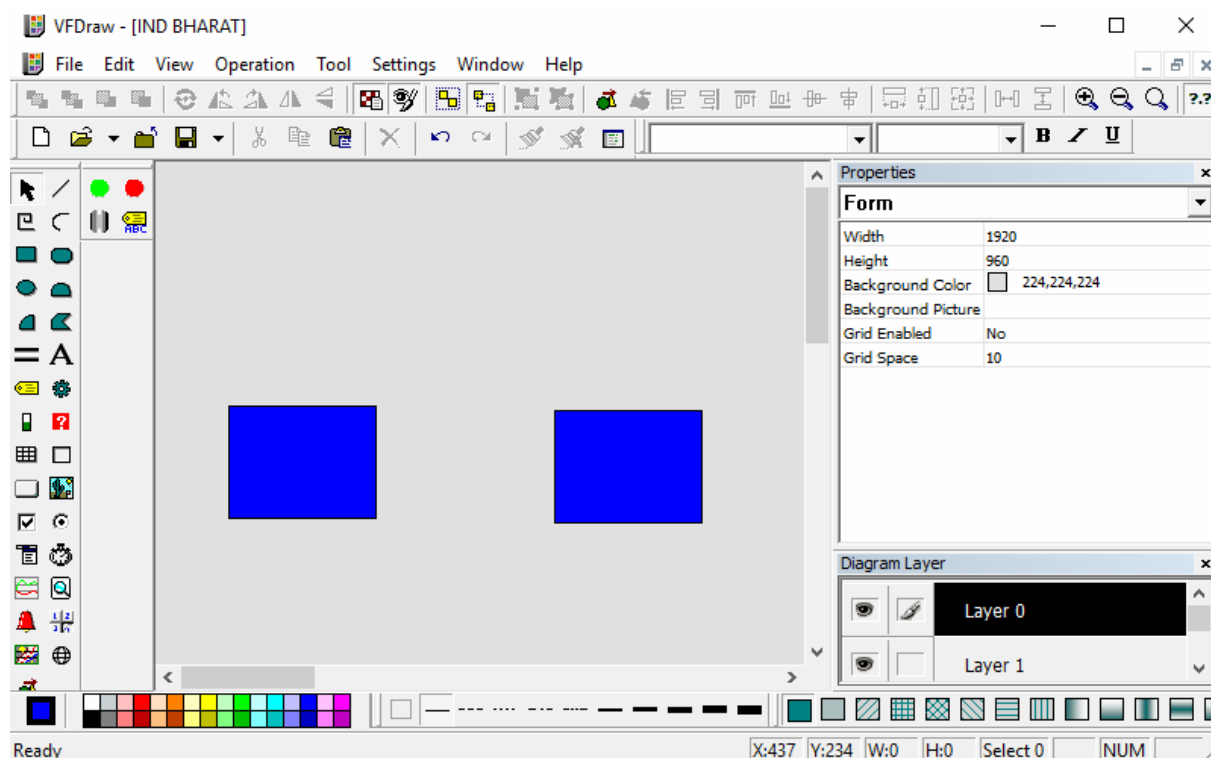


Figure 3-1 Paste to same coordinates


3.1.4 Move Object

Select an object to move, press and hold down the left mouse button on the object, and drag the object to the new location, then release the mouse button.

Using jog mode:

Select an object to move, click on one of the arrow keys on the keyboard (up, down, left or right). When the page property is in the status of "Align to Grid", the object will move one grid at a time by clicking the arrow key. When the status of the page property is not "Align to Grid", the object will move one pixel at a time by clicking the arrow key. Settings on page property will be introduced in detail in 4.1 section.

3.1.5 Object Change Size

Select the object to change size, and place the pointer on one of the eight handles of the object (the pointer will become ). Press and hold down the left mouse button, and drag the handle to the desired size then release the mouse button.

Using arrow key mode:

Select the object to change size, press and hold down the key "Shift", and click on one of the arrow keys on the keyboard (up, down, left or right) until the object is the desired size.

3.1.6 Object Change Shape

After Object has been built, its shape can be changed by selecting option "Change Shape" in their

right-click menus. Graphic Objects whose shape can be changed include Polyline, Arc, Chord, Pie, Polygon and Pipe. Graphics Objects that can add / delete control point include Polyline, Polygon and Pipe.

Example 1: how to improve the quality of a pie by changing the curvature.

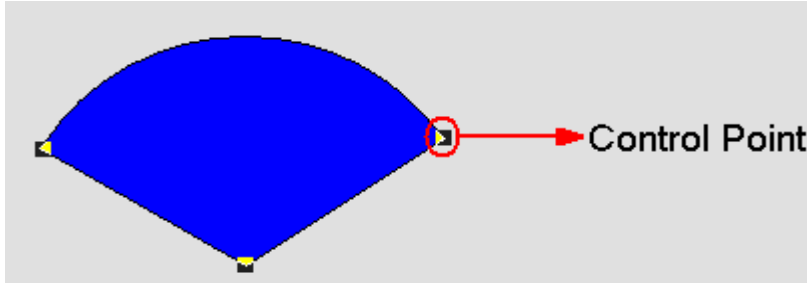


Figure 3-2 Change the shape of pie

1. Build a pie, right-click the graphics and select "Change Shape" in the right-click menu, and three control points will appear at the vertexes of the pie, as shown in Figure 3-2.
2. Change the shape of the pie by dragging the control point within the drawing area.

Example 2: how to adjust the shape of the Polygon by moving control point

Build a polygon, right-click the object and select "Change Shape" in the right-click menu, and several control points will appear at each vertex of the polygon, as shown in Figure 3-3. Select a certain control point, then drag the control point to desired location with left mouse button pressed down, and the shape of the Polygon will be changed simultaneously.

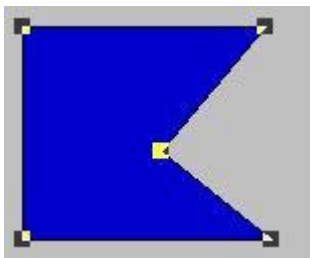



Figure 3-3 Change the shape of polygon

Example 3: Change the shape of Polygon, Polyline and Pipe by "Add/ Delete Control Point".

- Add Control Point

Right-click the object, and select "Add Control Point" in the right-click menu. The cursor will be shown as  when the cursor moves on the object, click the left mouse button and a control point is added.

- Delete Control Point

Select the item "Delete Control Point" in the right-click menu, and then a control point will be deleted by clicking this control point. Note: at least 2 control points should remain. (At

least 2 for Pipe; Polygon will turn to straight line when the number of control points is reduced to 2)

Example 4: A special function option for Pipe: modify endpoint shape.

3. Build a Pipe and click “Modify Endpoint Shape” in the its right-click menu, and will pop up a dialog box as Figure 3-4:

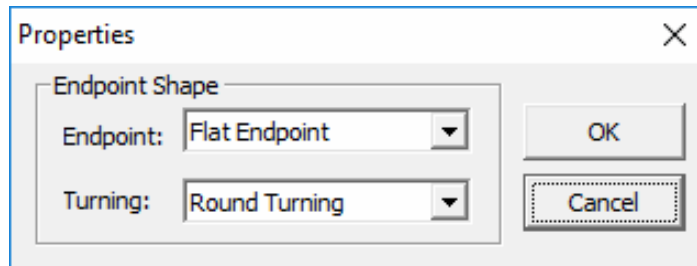


Figure 3-4 Dialog box “Properties”

4. Click “OK” after selecting the shape of Pipe's endpoint and turning. Pipe figure effects of different endpoints and turnings are displayed in Figure 3-5.

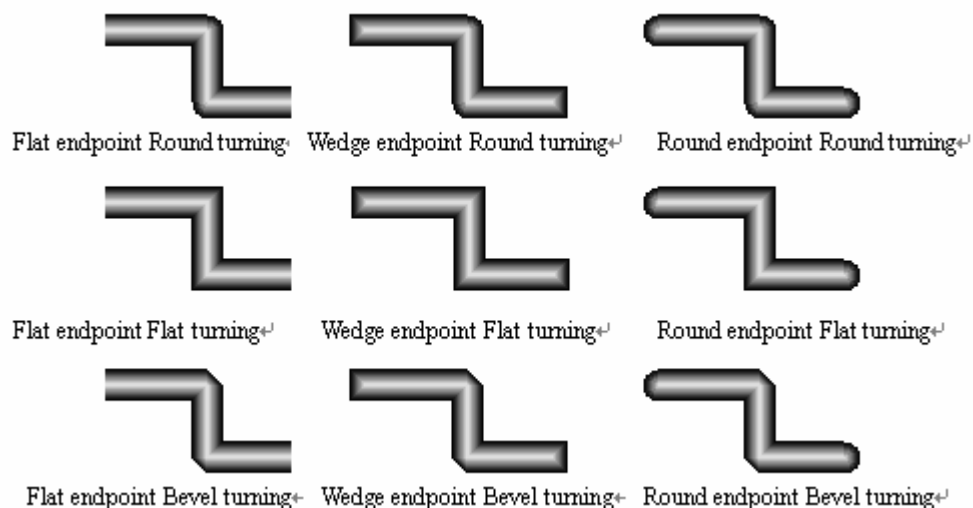


Figure 3-5 Pipe figure effects of different vertex shapes

3.1.7 Rotate Object

Rotation can change the figure and location of graphics object. Objects that can be rotated are Line, Polyline, Arc, Rectangle, RoundRect, Ellipse, Chord, Pie and Polygon. Generally, the rotation center is the centroid of the object except for Pie, whose rotation center is its center. However, users can freely set the rotation center if needed. The setting effect of rotation center here is the same as that of "Dynamic Property" setting for Rotation.

Example 1: how to rotate a Rectangle

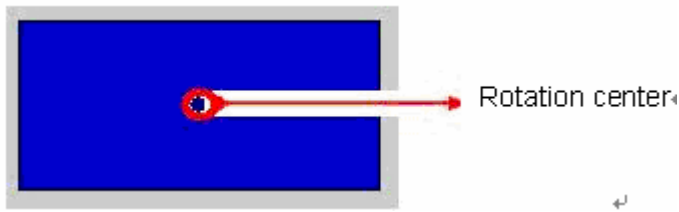


Figure 3-6 Rotation center of Rectangle

1. Build a Rectangle and right-click it. Select Rotate from its pop-up menu, then the Rectangle displays its rotation center shown in Figure 3-6.
2. Select the Rectangle and freely rotate with the left mouse button pressed, and the Rectangle will rotate around its rotation center.
3. Select the rotation center and move, and its location will change.

3.1.8 Group/Ungroup Object

A plurality of graphic objects can be grouped into one graphic object, and the grouped graphic objects can be edited in the form of single graphic object in VFDraw.

The following operations can be used to group, ungroup the graphic objects, and so on.

- Select the multiple graphic objects to be grouped and select "Group" in the right-click menu. The selected graphic objects will be grouped into one graphic object.
- Select the grouped graphic object and select "Ungroup" in its right-click menu. The selected grouped object will become the multiple graphic objects.
- Select the grouped graphic object and select "Enter Group" in its right-click menu to modify the graphic object inside the combined graphic object without ungrouping.
- Select the grouped graphic object and select "Edit Script" in its right-click menu to create a script function related to grouped object.

3.1.9 Modify the Objects' Property in Batch

VFDraw supports modifying the common properties of the multiple objects in batch. By following steps, the common properties of the multiple objects can be in batch.

- 1) Select the objects in the graphic.
- 2) The last selected object is the main object in all the selected objects. Its property will be shown in the property bar.
- 3) Modify the property, and all the selected objects' property will be modified at the same time.

The different objects have the different properties, and only the common properties can be modified in batch. Table 3-1 shows the Common Properties Supported Modification in Batch.

Table 3-1 Common Properties Supported Modification in Batch

Common Properties	Selected Objects
Whether left border, right border, top border, bottom border can be seen	All objects
Height, width	All objects apart from channel or timer
Angle, X coordinate of the center of a circle, Y coordinate of the center of a circle and line style(frame style-1)	Straight line, broken line, arc, rectangle, rounded rectangle, ellipse, chord, circular sector, polygon
Line width (frame width)	The line width of straight line, broken line, arc supports 1-6. the frame width of the rectangle, rounded rectangle, ellipse, chord, circular sector and polygon supports 0-6.
Line color	Straight line, broken line, arc, rectangle, rounded rectangle, ellipse, chord, circular sector, polygon, text, data connection, system variable and bar graphs
Font color	Text, data, connection, system variable, check box, combo box, menu, panel and button.
Background color	Rectangle, rounded rectangle, ellipse, circular sector, polygon, bar graphs, text, data connection, system variable, panel, button, check box, combo box and menu
Background style, gradient color, gradient step length, whether or not it is semitransparent	Rectangle, rounded rectangle, ellipse, chord, circular sector and polygon
Frame color, border style-2	Text, data connection and system variables
Whether or not it is transparent	Text, data connection, system variables, button and graph
External color, internal color, channel width	channel
X coordinate of the center of a circle, Y coordinate of the center of a circle	Ellipse and circular sector
font	Text, data connection, system variables, panel, button, check box, combo box and menu
tag	Data connection, bar graph, alarm icons, check box and combo box
text	Text, panel and buttons
Alignment style, whether or not to automatically zoom	Text and system variable
Whether it is effective	Data connection, button, check box, combo box, menu and timer
Alarm display, filling direction, filling color and border style-3	Bar graph
Panel style, border style-4	panel
Button style, graph location, operator button and whether or not it is a limited button	buttons
Graph, transparent colors	Buttons and graphs
Non-transparency degree	graphs
title	Check box, combo box, menu
value	Check box
The currently selected items	Combo box
Menu style	menu
period	timer

3.1.10 Shortcut Key

In the process of Graphics Drawing, shortcut modes can increase the configuration efficiency a lot. The functions of two shortcut modes “Shift” and “Ctrl” in specific applications are introduced below:

During drawing graphs, using Shift key can modify the shape and size of the objects as described in the following table.


Table 3-2 The Function Table of Shift Shortcuts

Function		Operational Description	Description
Drawing	Draw oblique lines	Straight line+shift	Press shift when using straight lines, you also can adjust the angle of the straight lines.
	Draw square	rectangle+Shift	Press shift when using rectangle, you also can adjust it to the square.
	Draw rounded squares	Rounded rectangle+Shift	Press shift when using rounded rectangle, you also can adjust it to the square.
	Draw circles	ellipse+shift	Press shift when using ellipse, you also can adjust it to the square.
	Draw semicircles	chord+Shift	Press shift when using chord, you also can adjust it to the semicircle.
	Draw semi-arcs	arc+Shift	Press shift when using arc, you also can adjust it to the semi-arc.
Adjust the size of the graphs		Graphics other than straight lines	Shift + left arrow: graph zooms out horizontally Shift + right arrow: graph zooms in horizontally Shift +down arrow: graph zooms in vertically Shift + up arrow: graph zooms out vertically
Multiple-selected graph objects		-	Selecting graphic objects and pressing shift, you can multiple select graphic objects.
Use format painter		-	Press shift when using format painter, you can use the format painter unceasingly.

To see the functions of Ctrl, please refer to Table 3-3

Table 3-3 Function table of shortcut mode with “Ctrl”

Function	Shortcut mode	Instructions
Copy and paste	Ctrl + D	Copy and paste after selecting the object
Copy	Ctrl + C	Copy the selected object to clipboard
Paste	Ctrl + V	Paste the latest content in clipboard to Drawing area
Cut	Ctrl + X	Copy the selected object to clipboard and delete the object
Undo	Ctrl + Z	Undo the previous action
Redo	Ctrl+Y	Restore the last step
Select all	Ctrl + A	Select all the objects in Drawing area
Group	Ctrl + G	Combine several selected objects to one object
Ungroup	Ctrl + U	Split a grouped object to several objects
Save	Ctrl + S	Save the current graphics

Function	Shortcut mode	Instructions
New	Ctrl + N	New flowchart
Find	Ctrl+F	Press these keys and the “find and replace” dialog box will pop up and find operation can be executed.
Replace	Ctrl+H	Press these keys and the “find and replace” dialog box will pop up and replace operation can be executed.
Rotate	Ctrl+R	Select graphics can be rotated and press these keys to rotate the graphics
Sticky display or bottom display	Ctrl+[Ctrl+]	Select the overlap graphics and press these keys, then the graphics will be displayed at top.
Clone	Ctrl+ left mouse button	It will be shown as  when move the mouse to the object with the key “Ctrl” pressed, and by dragging with the left mouse button pressed, the object will be cloned to the position wanted.

3.2 Introduction to Menu Bar

3.2.1 Overview

The Menu bar of VFDDraw includes eight items of File (E), Edit (E), View (V), Operation (A), Tool (I), Settings (S), Window (W) and Help (H).




The pull-down menu of certain menu item can be opened by clicking the menu item or using the shortcut mode “Alt+ ‘letter’ ”; the menu item can be closed by clicking the Esc key or clicking anywhere outside the menu.

The way to execute the command of pull-down menu can be determined: if the pull-down menu has been open, then click the command item, or use shortcut key (i.e. enter the first letter by keyboard.)

Some command items in the pull-down menu have ellipsis (...), which means that a sub-dialog box will pop up when running the command.

3.2.2 File

The File menu includes New, Open, Close, Save, Save as, Import, Export Tag Information, Import Tag Information, recent file paths and Exit.

1. New: It has the same function as the icon  in ordinary bar, which is used to build a new graphics file and enter the graphics drawing interface directly.
2. Open: It has the same function as the icon  in the ordinary bar, which is used to open graphics files existed. To edit the files, click the command or the icon  and a file option dialog box shown in Figure 3-7 will pop up. Select a file name and click “Open” to enter the editing interface.

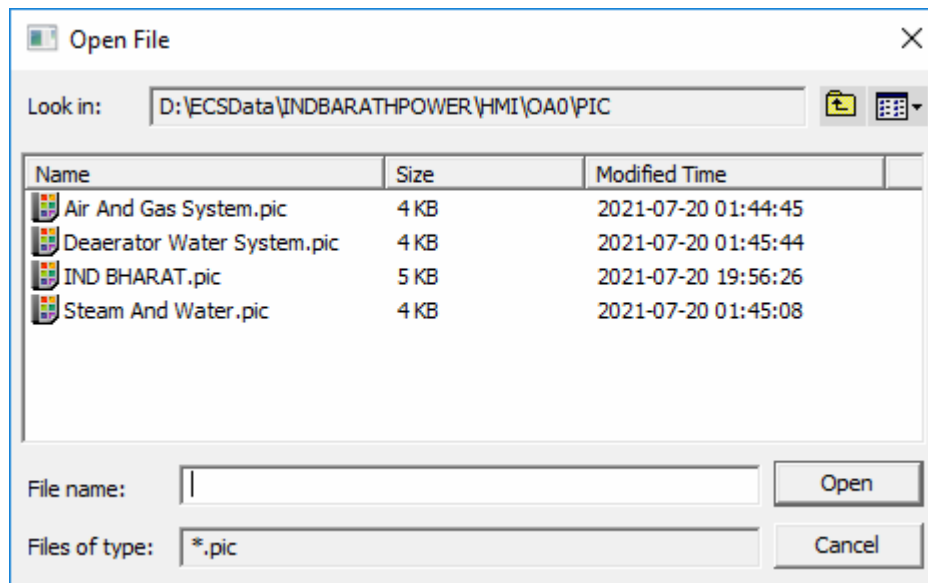






Figure 3-7 Dialog box “Open File”

3. Close: It has the same function as  on ordinary bar and  on the right of the menu bar, which is used to close the current graphics.
4. Save: It has the same function as  on ordinary bar, which is used to save the completed graphics to the hard disk. When saving a new graphics file, the “Save As” dialog box as shown in Figure 3-8 will pop-up after clicking this command or the icon , and the save directory is the PIC folder in the corresponding project of the configuration catalog (no other option), then input the file name and click “Save” (file name can’t contain the following characters: \ / : * ? ” < > | ! @ # \$ % ^ & =); when saving an existed file, you can click this command, and the edited file will cover the previous one.

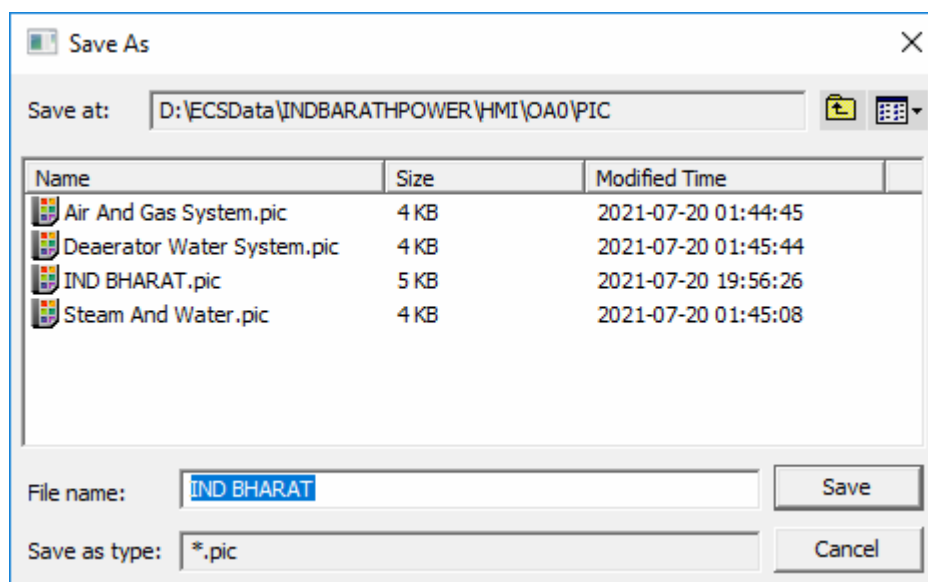


Figure 3-8 Dialog box “Save As”

5. Save As: by this command, user can save the current graphics as:
 - “General Graphics”. Select the command to avoid replacing the original graphics by the

edited one. Input a new file name in the pop up dialog to complete the operation.

- “Pop-up Graphics”. Select the command to save the current graphics as pop-up graphics to the folder “poppic” of current operation domain.
 - “Background Template”. Select the command to save the current graphics as background template to the folder “BGTemplate” of current operation domain.
6. Save as VF3.10.05.07 version

Through this command, the graphics under the designated path can be saved as “VF3.10.05.07 Version”. The specific operation is:

- a. In menu bar, select “File > Save as VF3.10.05.07 Version” command. The dialog box of “Degrade VFDraw File” will be popped up as shown below.

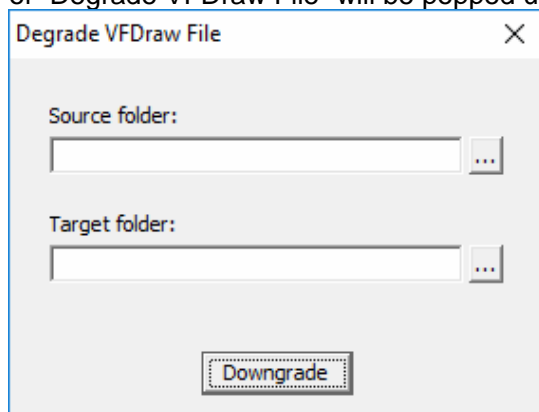


Figure 3-9 “Degrade VFDraw File” Dialog Box

- b. In “Source folder” document, input the directory that need degrade graphics. In “Target Folder”, input the path where the graphic saves after degradation.
- c. Click “Downgrade” to complete the degradation of the graphic.



Tips:

- All files of “Source Folder” will be degraded.
 - The object supported by graphic degradation operation includes graphic, popup graphic, background template, the icon of global function block and panel.
-







7. Import: in order to conveniently transplant graphics from other systems, user can export the graphics of other systems or the graphics that support XML format as XML files and then import to VFDraw to edit. Currently, the software only supports the import of graphics object, and the import of control and dynamic is not supported.
8. Export Tag Information: after opening the graphics, user can export the tag and text used in it to CSV file. The main scene applying this function is large-scale same graphics modifying tag names in batch.
9. Import Tag Information: after modifying csv file, user can import it to the graphics, tag and text in the graphics will be changed with the csv. The main scene applying this function is large-scale same graphics modifying tag names in batch.
10. Recent file paths: at most 4 graphics file paths recently opened can be remained in the

Graphics File menu, and user can directly open the corresponding graphics file by clicking any file path.

11. Exit: It is used to close the VFDraw.

3.2.3 Edit

The Edit menu includes menu items of Undo, Redo, Cut, Copy, Copy and Paste, Paste, Delete, Format Brush, Dynamic Format Brush, Find, Replace, Select All, Save As Template Object, Cancel the Selection.


- **Undo:** It has the same function as  in the Toolbar, which is used to recover the previous operation.
- **Redo:** It has the same function as  in the Toolbar, which is used to cancel the previous Undo operation.
- **Cut:** It has the same function as  in the Toolbar, which is used to copy the content of selected area in the Drawing area to clipboard, and delete the content of this area simultaneously. In detail, first select the graphics to be cut, and then click the command or the icon  to implement this operation.
- **Copy:** It has the same function as  in the Toolbar, which is used to copy the content of selected area in the Drawing area to clipboard, and the content of the selected area won't be deleted. Specific operation methods are the same as "Cut".
- **Copy and Paste:** It is used to copy the selected graphics object and paste it in its bottom right direction. This operation has no corresponding icon, yet the shortcut key "Ctrl+ D" is available.
- **Paste:** It has the same function as  in the Toolbar. Which is used to copy the latest content (that been newly cut or copied) from clipboard to the designated location in the Drawing area.

Note: Copy, Cut and Paste can be operated among different graphics interface, and users can paste for many times after copying. In addition, user can directly paste bitmap from outside to the High-performanceHMI Graphics working area, but the opposite operation is not allowed.



Tips:

- User can right-click the blank and select "Paste".
- Right-click menu include the command "Paste to Same Coordinates", to paste graph object according to the original coordinates in graphics, which is applicable for pasting graph file to same position in different graphics files.

- **Delete:** It has the same function as the icon  in the Toolbar, which is used to delete the selected graphics object in the Drawing area. In addition, the operation can also be

implemented by using the Delete key after selecting the object.



- **Format Brush:** It has the same function as the icon  in the Toolbar, which is used to copy the format property (which not including dynamic property) of the graphics object, i.e., apply the property format of one object (Frame width, Frame style, Edge color, Gradient color style, Gradient color, Background style, Background color, etc.) to other objects. The specific operation method: after selecting certain object with certain figure format as shown in Figure 3-10, click icon  or select the command, and then select another graphics object as shown Figure 3-11 to implement the effect as shown in Figure 3-12. Note: for objects of the same kind, all the self-contained special properties will be copied (not including the words on buttons); for objects of different kinds, only the public properties (like color, line style, filling effect, etc.) will be copied.



Figure 3-10 Scheduled graphics forma

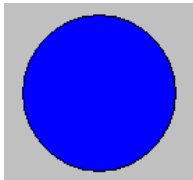


Figure 3-11 Operation object

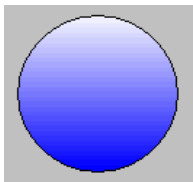


Figure 3-12 Effect achieved

- **Dynamic Format Brush:** It has similar functions as Format Brush, which is used to apply the dynamic properties of certain graphics object to other objects, i.e., the object which is operated with the function of Dynamic Format Brush will have the same dynamic properties as the original object. Note: Dynamic Format Brush can only be operated between objects of the same kind.
- **Find:** Find the Graphics Object in graphics, as shown in Figure 3-13.

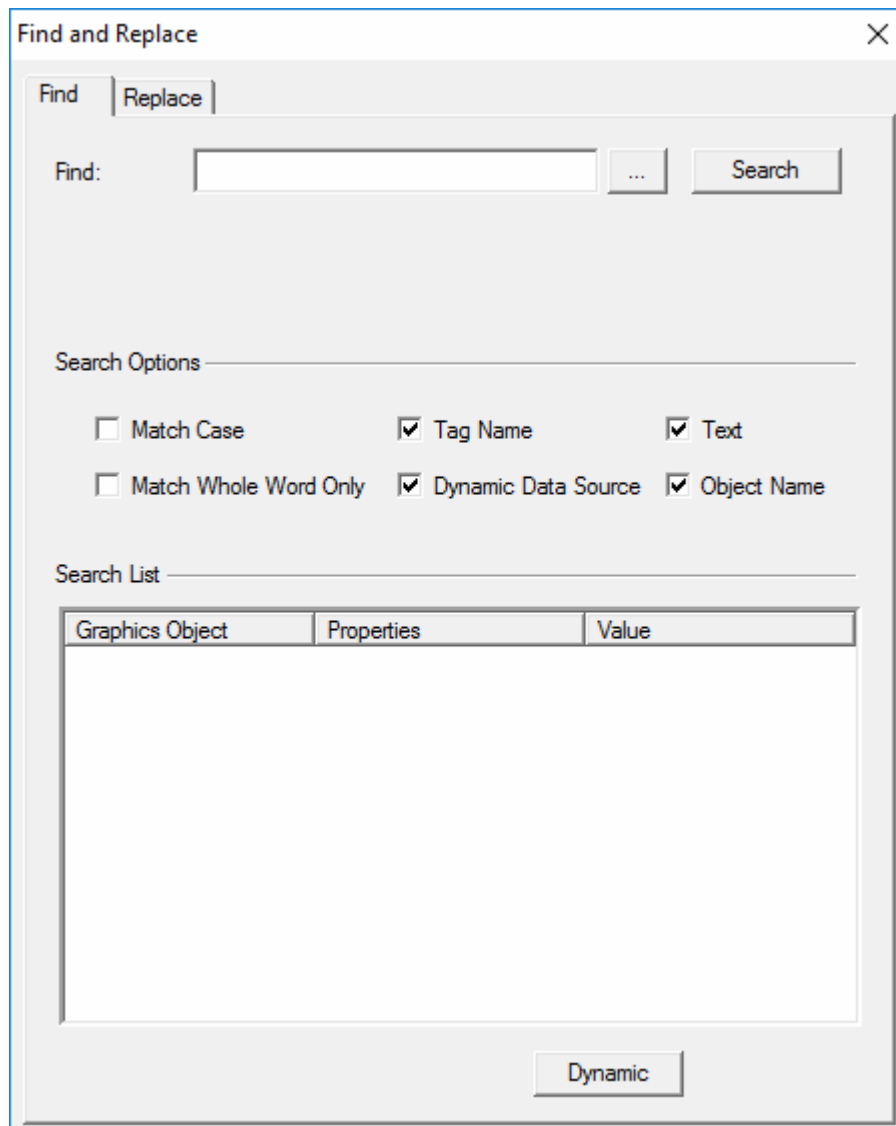


Figure 3-13 Dialog box “Find”

- Find: Input the content needed to find, in support of fuzzy search. All strings will be found out if the box is empty.
 - Search Options: Include options of Match Case, Tag Name, Text, etc., and cooperate with Find to limit the range of search content.
 - Search List: Display all the graphics objects that accord with the search conditions. The object will be automatically located when select an object in the Search List.
 - Dynamic: Select one object in the Search List, and a dynamic property setting dialog box of the object will pop up by clicking the button. Please refer to 0 Dynamic Property on the specific methods of dynamic property settings
- **Replace:** Replace the object in graphics, as shown in Figure 3-14.

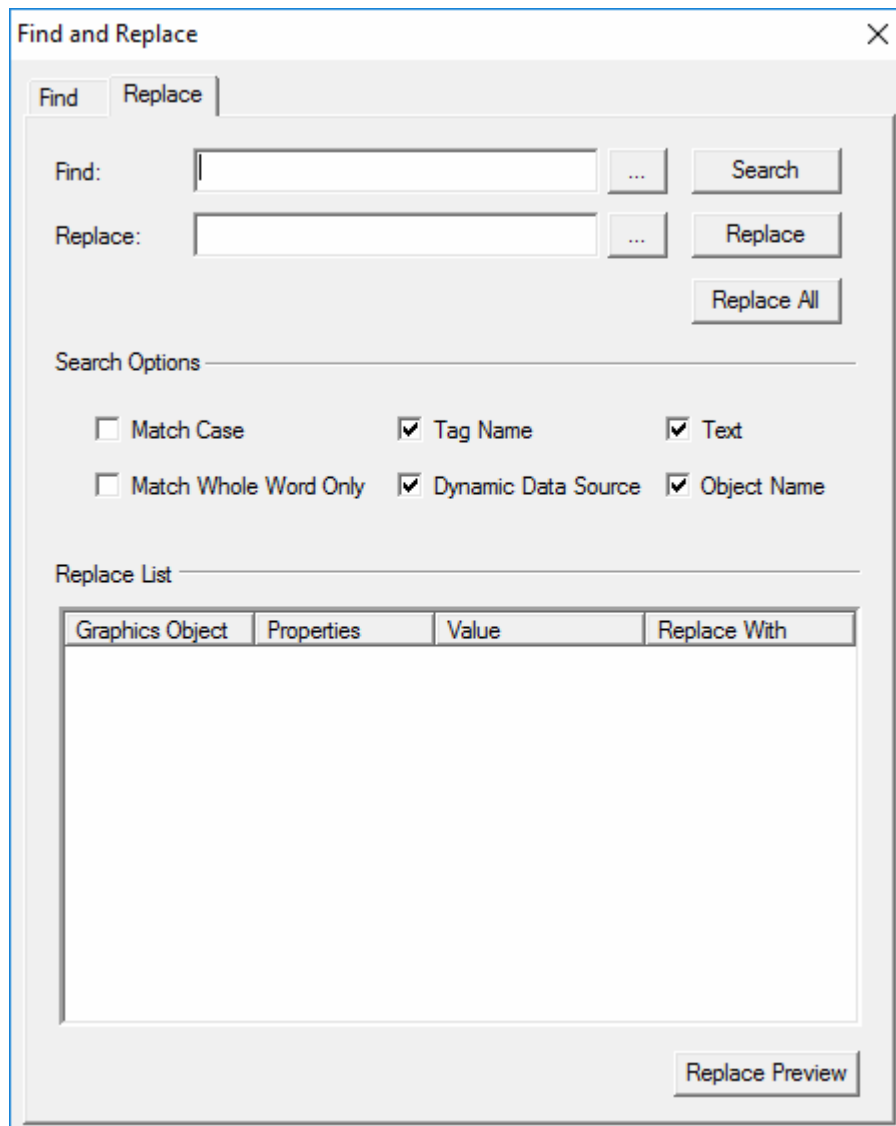



Figure 3-14 Dialog box “Replace”

- Find: Input the content needed to find, in support of fuzzy search.
 - Replace: The replacement.
 - Search Options: Include options of Match Case, Tag Name, Text, etc., and cooperate with the Find to limit the range of search content.
 - Replace List: Display all the objects that accord with the search conditions.
 - Replace Preview: Click the button and the value of “Replace” in the Replace List will display the value which users hope to replace with, but not yet replace in real.
 - Replace: Click the button and the selected object in the Replace List will be replaced.
 - Replace All: Click the button and all the objects that accord with the conditions will be replaced.
- **Select All:** Select all the contents of the Drawing area, and have the same effect as the shortcut key “Ctrl+ A”.
 - **Save as Template Object:** It has the same function as the icon  in the toolbar, which is used to save certain graphics object to Template Object. The “Save Template” setting

dialog box shown in 错误！未找到引用源。 will pop up after clicking the command, and the template will be saved when user designates a template library file name and inputs a name. When the template object contains dynamic and tag relevant properties, the list box on the right will display relevant “Tag Name”, and users can modify the tag to meet different requires when executing “Save” or “Export”. In addition, for special and complicated graphics objects, user can unite them before saving as Template Object. User can simply select the menu command **View/ Template Object** (or click the icon  in the toolbar) to pick up the needed template object.

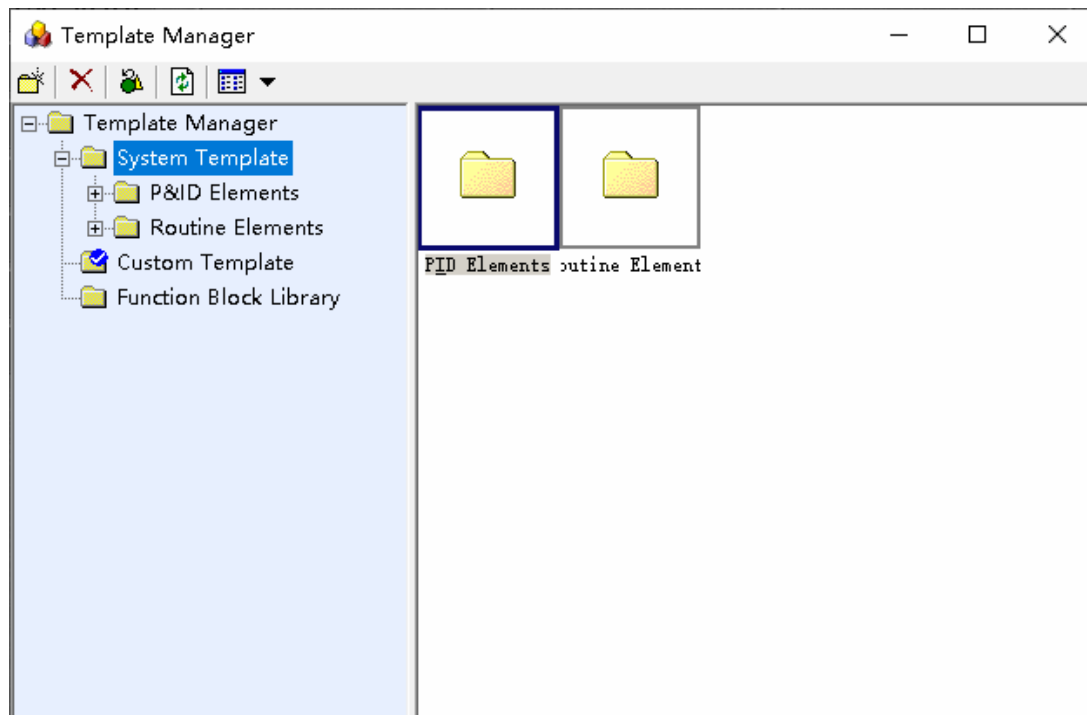


Figure 3-15 Save Template dialog box



Tip:

Before execute the “Save Template” command, open the VisualField Template Manager and select “Open from Configuration Server”.

- **Cancel the Selection:** Cancel the selected graphics object.

3.2.4 View



The View menu includes Show/ Hide 5 menu items of Toolbar, Status Bar, Template Library, Full Screen and Refresh.

3.2.5 Operate

The Operation menu includes menu items of “Include Selection”, “Intersect Selection”, “Group”, “Ungroup”, “Integrate Rotating Center”, “Split Rotating center”, “Bring to Front”, “Send to Back”, “Bring Forward”, “Send Backward”, “Align Left”, “Align Right”, “Align Up”, “Align Bottom”, “Align Horizontal”, “Align Vertical”, “Same Width”, “Same Height”, “Same Size”, “Same Horizontal Space”, “Same Vertical Space”, “Rotation”, “Dynamic”, “Control Properties” and “Merge Layer”. The functions such as Ungroup, Bring to Front, Send to Back will be ineffective when selecting several


objects.

The Toolbar lists most operation functions to make it easy to use, and please refer to 3.3 on the specific introductions to the functions of Toolbar icons.

- **Integrate Rotating Center:** Select a grouped object which is operated “Split Rotating center”, the rotating centers of every object in the grouped object will be the same when click the command **Operate/ Integrate Rotating Center**, and then the grouped object will rotate around the integrated rotation center after selecting **Operate/ Rotation** or clicking the icon  in the Operation Bar. The rotating center can be moved, and please refer to 3.1.7 Rotate Object for specific methods. Note: The rotating center of one grouped object is an Integrate Rotating Center by default.
- **Split Rotating Center:** Select a grouped object, and click the command **Operate/ Split Rotating Center**, then select **Operate/ Rotation** or click the button  in the Operation Bar, the objects in the grouped object will rotate around each rotating center. The location of the rotating center can't be moved.
- **Dynamic:** It is used to set the dynamic property of graphics objects, please refer to 0 Dynamic Property for specific methods.
- **Control Properties:** when there is timer and trend control in the graphics, user can set the Control Properties of timer after selecting the control object. Operation details refer to 3.5.1 and 3.5.2.
- **Merge Layer:** It is used to merge specified picture layers, please refer to 3.3.8 for specific methods.

3.2.6 Tool

The Tool menu includes menu items of Add DataLink in Batch, Object Browser, Statistic Information, Edit the Script, Quick Query and Check Tag.

- **Add DataLink in Batch:** It is used to rapidly add DataLink in batch. The database “Tag Selector” setting dialog box will pop up when executing the command. Select the tags in batch by using the key “Shift” or the key “Ctrl”, then the DataLink object will array in the Drawing area in the order of tags in Tag Selector after clicking on “OK”.
- **Object Browser:** It is used to view the list of all the graphics objects in current graphics. The “Objects” dialog box will pop up after executing the command, and the “Dynamic Property” dialog box will pop up when selecting one object and clicking on “Modify Dynamic”; Click “Unfold/Fold”, then only the object’s root directory of tree directory will display, and click the button again, all the graphics objects will display; Select a graphics object, click “Select”, and exit the Object Browser and jump to the Drawing area, in this case, the selected object is in the editing status.
- **Statistic Information:** Display “Statistics Information” and “Dynamic list”.
- **Edit the Script:** It has the same function as  on ordinary bar, which is used to edit the VBScript of the graphics. The script related to the graphics will run automatically by

running the graphics. User can enter the VFScript edit interface by executing the command. Please refer to *Script Editor User Manual* on the applications of Script Editor.

- Quick Query: It is used to quickly find and locate the graphics object in complicated graphics. The “Quick Query” interface will pop up when executing the command. Select a graphics object and click “Locate”, and the graphics will automatically select and go to the object. The “Refresh” button is used to refresh the graphics object list.
- Check Tag: It is used to check whether the tag exists and whether the dynamic data source expression is legal. Select the “Check Tag” command, VFDraw will check the tags automatically and the result displayed in the dialog box shown as figure below. After changed configurations, click “Check” to check the tags again.

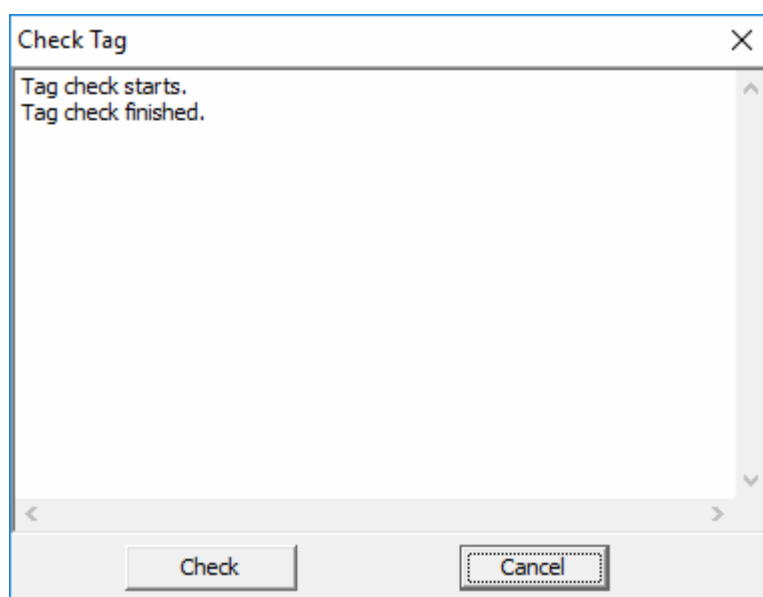


Figure 3-16 Dialog box “Tag Check”

User can locate the specific error in the graphic and modify according to the result of checking tags.

3.2.7 Setting

The Setting menu includes Background Template, Default Font, Page Properties and Options.

- Background Template: include two commands of “Apply Background Template” and “Remove Background Template”. The dialog box shown in Figure 3-17 will pop up when clicking “Apply Background Template”, and the default Search Range is the BG Template folder which can't be modified.

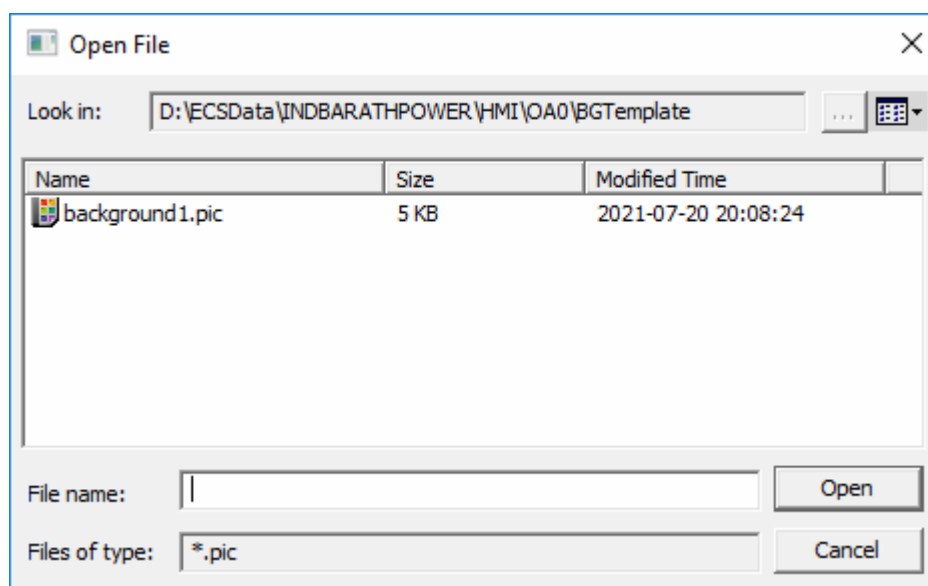


Figure 3-17 Dialog box “Apply Background Template”

- **Default Font:** It is used to set the common font style. Generally, the font is in “Tahoma”, “Regular”, “9”, without using Underline or strikethrough. User can modify current font according to specific needs.
- **Page Properties:** It is used to set all kinds of static properties in current graphics, please refer to 4.1 Graphics Property for specific settings.
- **Options:** It is used to set the page properties of newly built graphics. The settings include: Title Bar, Display Grid and Grid Space when editing, Align to Grid, Background Color and Graphics size. The setting interface is shown in Figure 3-18.

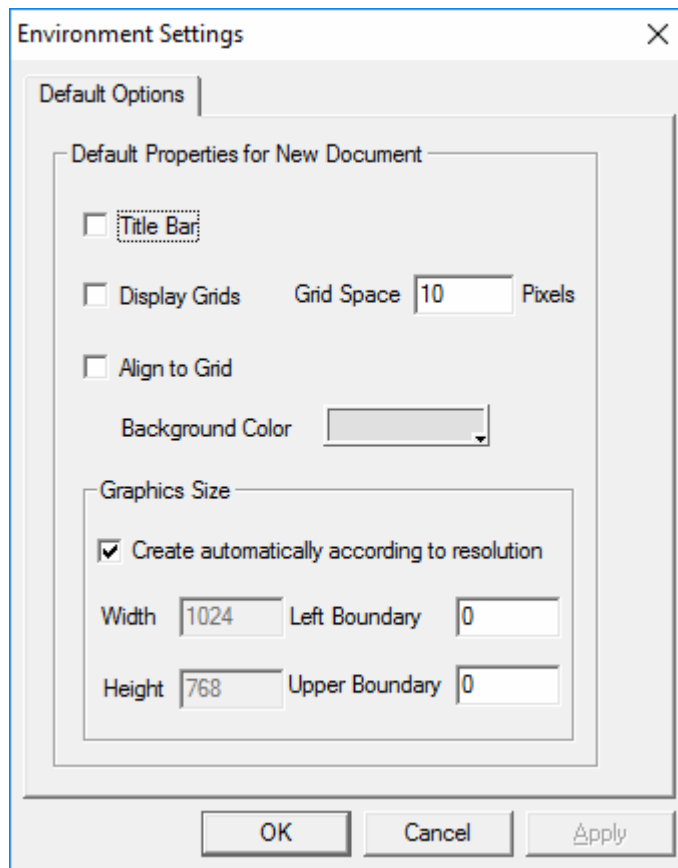


Figure 3-18 Options—Environment setup interface

3.2.8 Window

The Window menu includes Cascade, Tile, Arrange Icons, Close All Windows and names of the opened graphics files.

- Cascade: Array the several current graphics partially overlapped in different layers.
- Tile: Flatly stretch several current graphics.
- Arrange Icons: When all the graphics currently opened are displayed in minimum, using the command and all the graphics files currently opened will array at the bottom of the working area with the same height and same width, as shown in Figure 3-19.
- Close All Windows: Close all the graphics files currently opened.
- Names of the opened graphics files: Display all the names of the opened graphics files, and the graphics will be shifted as current graphics when clicking the name of the graphics file.



Figure 3-19 Effect after Arrange Icons



Tips:

- Maximum 10 graphics can be edited at the same time, otherwise the prompt dialog box "Edit 10 graphics at the same time at most. Please close some graphics and retry." will

pop up.

- It will display “Read Only” behind corresponding graphics name when the property of the graphics is “Read Only”.
-

3.2.9 Help

The Help menu provides users with relevant information on VFDDraw copyright, product access, etc.

3.3 Detailed Introduction to The Functions of Toolbar Icons

3.3.1 Ordinary Bar

The contents of Ordinary Bar is shown in Figure 3-20 which in turn from left to right are: New, Open, Close, Save, Cut, Copy, Paste, Delete, Undo, Redo, Format Brush, Dynamic Format Brush and Edit Script. Select **View/ Toolbar/ Ordinary Bar** to decide whether to show this bar or not.



Figure 3-20 Ordinary Bar

3.3.2 Font Bar

User can set the font of DataLink and Text objects by using Font Bar which supports a uniform setting to several objects. The Font Bar is shown in Figure 3-21.

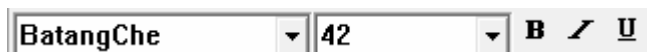


Figure 3-21 Font Bar

3.3.3 Line Bar

It is used to set the line type and thickness of frames and Line objects. The contents in Figure 3-22 in turn from left to right are: No line, Real Line, Broken Line, Dotted Line, Dash-Dot Line, Double Dot-Dash Line and five line types in bold. Select **View/ Toolbar/ Line Bar** to decide whether to show this toolbar or not.

After drawing or selecting a graphics object in Graphics Drawing Area, the relevant properties of the object can be set by selecting the needed line type and thickness. The default type of new line object is: Real Line.

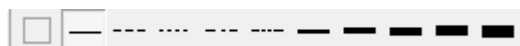


Figure 3-22 Line Bar

3.3.4 Fill Bar

It is used to the background filling and the transition filling of graphics objects. There are 8 background fillings and 11 gradient fillings, as shown in Figure 3-23. Select **View/ Toolbar/ Fill Bar** to decide whether to show this toolbar.



Figure 3-23 Fill Bar

Background filling:



---Solid filling: Fill the whole object with filling color. (Solid filling can be treated as gradient filling by selecting the items in gradient-color style settings of Object Property Bar.)



--- No Filling: Object is transparent.



---Left Diagonal filling: Fill the object with diagonals from the left bottom corner to the right top corner, and the color of the lines is the defined filling color.



--- Cross Grid filling: Fill the object with horizontal and vertical grids, and the color of the lines is the defined filling color.



--- Diagonal Grid filling: Fill the object with left and right diagonals, and the color of the lines is the defined filling color.



--- Right Diagonal filling: Fill the object with diagonals from the left top corner to the right bottom corner, and the color of the lines is the defined filling color.



--- Horizontal filling: Fill the object with horizontal lines, and the color of the lines is the defined filling color.



--- Vertical filling: Fill the object with vertical lines, and the color of the lines is the defined filling color.

Transition filling:



--- Horizontal Transition filling: Fill from left to right.



--- Vertical Transition filling: Fill from top to bottom.



--- Horizontal Center Transition filling: Fill from middle to left and right.



--- Vertical Center Transition filling: Fill from middle to top and bottom.



--- Left-upper/ Left-lower/ Right-lower/ Right-upper Radial Transition filling: Fill in right-angle direction.



--- Left-lower/ Right-upper Transition filling: Fill in round-angle direction.



--- Center Transition filling: Fill from center to all directions.

**Tip:**

User can combine Fill Bar with Color Bar when operating.

3.3.5 Operation Bar

As shown in Figure 3-24, the contents of the Operation Bar in turn from left to right are: Bring to Front, Send to Back, Bring Forward, Send Backward, Rotate, Rotate 90° CCW, Rotate 90° CW, Flip Horizontal, Flip Vertical, Show/ Hide Property Bar, Show/ Hide Layer Control Bar, Include Selection, Intersect Selection, Group, Ungroup, Show/ Hide Template Object Browser, Save As Template, Align Left, Align Right, Align Top, Align Bottom, Align Vertical, Align Horizontal, Same Width, Same Height, Same Size, Same Horizontal Space, Same Vertical Space, Zoom In, Zoom Out, Original Size, Datalink Placeholder downer Mode, Full Screen, Refresh.



Figure 3-24 Operation Bar

Group and Ungroup



---**Group**: It is used to assemble two or more selected graphics objects into one integer. In detail, first use the check box to select the objects to be grouped, and then click the icon or use the shortcut key “Ctrl+G” to implement the operation. The Group operation cannot only conveniently move several objects simultaneously, but also save the grouped object as template.



---**Ungroup**: It is used to disassemble the grouped object into originally several basic figures. In detail, first select a grouped object to be Ungrouped, and then click the icon or use the shortcut key “Ctrl+U” to implement the operation.

Display Mode:



--- **Bring to Front**: Move the selected object to the top of figures layers.



--- **Send to Back**: Move the selected object to the bottom of figures layers.



--- **Bring Forward**: Move the selected object one layer forward.



--- **Send Backward**: Move the selected object one layer backward.

Template Management



--- **Show/Hide Template Object Browser**: template objects include System Template, Custom Template, and the Panel and Symbol of Global Function Block.

It is used to find the graphics objects to be exported by selecting the folder type of graphics objects. For example, if the type of a graphics object is “Agitator”, and user can view the specific graphics

object by double clicking the system tree in the left pane as show Figure 3-25 or the “Agitator” folder in the right display area. The objects that exported from the template library can be treated as both an integer and a common grouped object. If the panel and symbol of global function block are invoked in the graphics, select “Release Reference” in the right-click menu to release the grouped object to common graphics object, this operation cannot be restored.

Panel and symbol of global function block are created in VFExplorer.EXE, operation details see *Config Explorer User Manual section 3.2 Global Function Block Configuration*.

Custom template can be added (refer to “Save As Template Object” function) or deleted after selecting “Open from Configuration Server” in the right-click menu, or only the existed template can be used.



--- **Save As Template:** Please refer to the **Edit/ Save As Template Object** item in 3.2.3 for specific introductions.

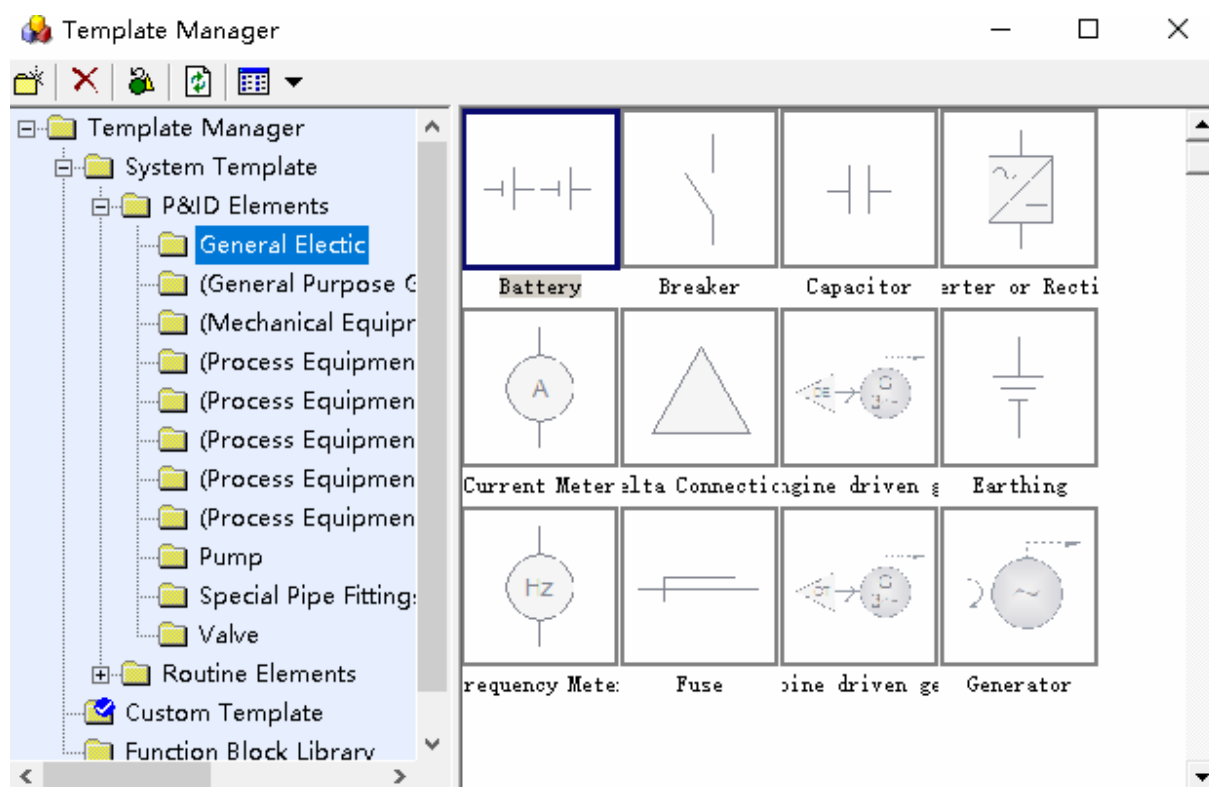


Figure 3-25 Template Object Manager

Alignment

When selecting several graph objects, the base graph are shown different from others. Other graph objects will move and change according to the base object.

When several graph objects, the base graph are circled by blue dotted line frame, while others are circled by white.



--- **Align Left:** Select two or more graphics objects and click the button, and objects are

aligned to the left edge



--- **Align Right:** Select two or more graphics objects and click the button, and objects are aligned to the right edge



--- **Align Top:** Select two or more graphics objects and click the button, and Align objects to the top edge.



--- **Align Bottom:** Select two or more graphics objects and click the button, and objects are aligned to the bottom edge.



--- **Align Vertical:** Select two or more graphics objects and click the button, and objects are aligned to each other according to the vertical center line of base graph.



--- **Align Horizontal:** Select two or more graphics objects and click the button, and objects are aligned to each other according to the horizontal center line of base graph.



--- **Same Width:** Select two or more graphics objects, (which can be selected by check box or the key “shift”), then click the button and the objects selected will have the same width with the base graph.



--- **Same Height:** Select two or more graphics objects, (which can be selected by check box or the key “shift”), then click the button and the objects selected will have the same height with the base graph.



--- **Same Size:** Select two or more graphics objects, (which can be selected by check box or the key “shift”), then click the button and the objects selected will have the same size with the width of base graph (both the length and the width are the same as the benchmark object).



--- **Same Horizontal Space:** Select two or more graphics objects and click the button, the selected objects will horizontally array with same space between each other. (The vertical location of the objects is fixed.) Specific effect is in Figure 3-26.



Figure 3-26 the comparison before and after “Same Horizontal Space”



--- **Same Vertical Space:** Select two or more graphics objects and click the button, the selected objects will vertically array with same space between each other. (The horizontal location of the objects is fixed.) Specific effect is in Figure 3-27.



Figure 3-27 the comparison before and after “Same Vertical Space”

Rotate



---Rotation: Please refer to 3.1.7 for Rotating Objects. The selected Rotation center is as shown in Figure 3-28.

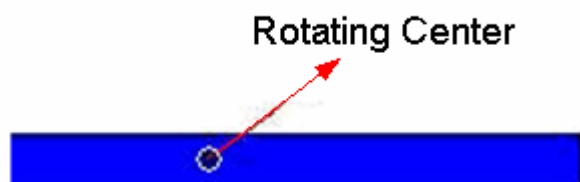


Figure 3-28 Rotation center



--- Rotate 90° CCW: Select one or more graphics objects, click the button and the selected object will rotate 90° counter-clockwise around the rotating center. User can move the rotating center before the operation.



--- Rotate 90° CW: Select one or more graphics objects, click the button and the selected object will rotate 90° clockwise around the rotating center. User can move the rotating center before the operation.



---Flip Horizontal: Select one or more graphics objects and click the button, the selected object will flip with the vertical midline of the selection box as the axis.



--- Flip Vertical: Select one or more graphics objects and click the button, the selected object will flip with the horizontal midline of the selection box as the axis.

Zoom



---Zoom In: Click the button and the Drawing area is magnified.



---Zoom Out: Click the button and the Drawing area is lessened.



---Original Size: Click the button and the Drawing area recovers to its original size.

Selection Mode



--- Include Selection: Click the button and the object will be selected only when the whole object is encircled in the dashed box produced by dragging.



--- Intersect Selection: Click the button and the object will be selected as long as the object is intersected the dashed box produced by dragging.

Others



---Show/ Hide Property Bar: Click the button and the Property Bar will be shown; click it again and the Property Bar will be hidden.



---Show/ Hide Layer Control Bar: Click the button and the Layer Control Bar will be shown; click it again and the Layer Control Bar will be hidden.



---Datalink Placeholder downner Mode: In the Datalink Placeholder downner Mode, DataLink objects will be displayed with the placeholder downner “?”, whose length depends on the configuration format; in the Non-placeholder downner Mode, DataLink objects display the real tag names.



---Full Screen: Display the graphics in full screen.



---Refresh: refresh the graphics configuration window.

3.3.6 Property Bar

The Property Bar usually locates at the top right corner of the graphics interface, and is one of the common tools of setting static property of graphics objects in VFDDraw. In order to set a property user can simply input the corresponding values in the Property Bar and press Enter. The setting results will display directly in the Drawing interface after setting. For example, select a RoundRect and the name and the property information of the graphics object will be displayed in the Property Bar, as shown in Figure 3-29.

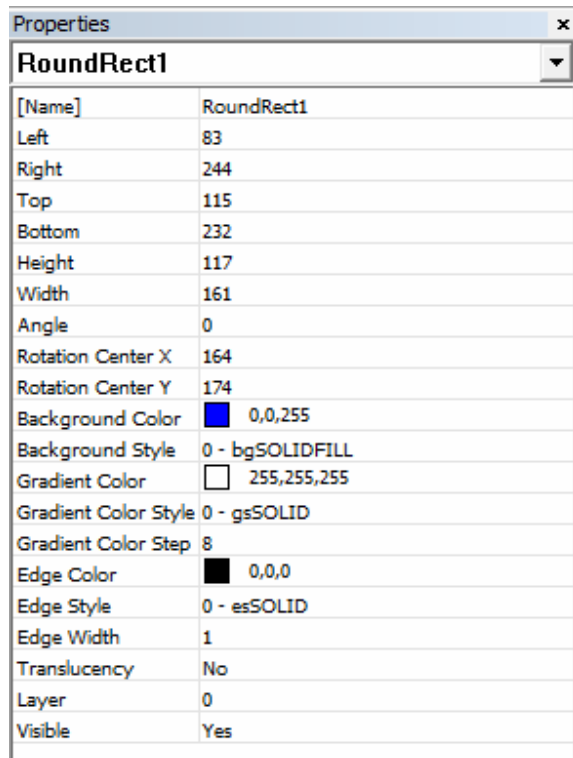


Figure 3-29 Property Bar

- **Borderline:** The coordinate origin of the Drawing area as shown in Figure 3-30. Set the left, right, top and bottom borderline of the object with the coordinate origin. Left and top borderlines are limited between -4096 and 4096, upper and bottom borderlines should make sure that the left and top borderlines are in the limitation.



Figure 3-30 the coordinate origin

- **Height/ Width:** It is used to set the height and width of the graphics object.
- **Angle:** The angle value that the object rotates clockwise around the rotation center. For example, if input "30" as the angle value, press Enter and the graphics object will rotate 30° clockwise; if input "-30" as the angle value, the graphics object will rotate 30° counter-clockwise.
- **Rotating center:** The rotating center can be moved or its location can be set in the Property Bar. Please refer to "Borderline" setting for setting methods. Both the value of the X and Y coordinate are limited between -4096 and 4096.
- **Background Style/ Gradient color Style:** Please refer to the "Background Filling" and "Transition Filling" in the Fill Bar in 3.3.4.
- **Gradient color Step:** It is used to improve the resolution effect of Transition Filling. Effective step range is 1~16. The smaller the step is, the finer the transition is and the more slowly the screen displays; the bigger the step is, the coarser the transition is and

the more quickly the screen displays. The default value is 8.

- **Frame Style/ Width:** The setting range of Frame Style is 0~ 5 and the setting range of Frame Width is 1~6.
- **Translucency:** Only effective to figures that are operated “Solid Filling”.
- **Layer:** Maximum 4 different drawing layers can be set in the Drawing area. Setting range is 0~3.
- **Visible:** Set as “Yes”, then the object is visible on the graphics during supervision; set as “No”, then the object is not visible on the graphics during supervision.



Tip:

Upwards lists out only some basic properties of the graphics object, but different objects have its special property settings and please refer to 3.3.9 for specific introductions.

3.3.7 Color Bar

It is used to set the frame color and filling color of the graphics object and the color of text font, etc. The Color Bar locates originally in the left bottom corner of the graphics, and user can drag the boundary of the Color Bar with the left mouse button pressed and move it to the Drawing area, as shown in Figure 3-31 Select **View/ Toolbar/ Color Bar** to decide whether to show this toolbar or not.




There are 32 different default color blocks in the Color Bar. In addition, user can select other more colors in the pop-up “More Color” selection dialog box shown in Figure 3-31 by double-clicking the icon .



Figure 3-31 Color Bar

1. Click certain color to set the inner color of a closed graphics object (including the solid filling color, the background color of the background filling and the transition filling, etc.) and the color of the text. The color in the icon  will become the color currently selected.
2. Right-click certain color to set the border color of object and transition filling color and color of opened object (such as Line, Polyline and Arc). The border color of the icon  will become the selected color.

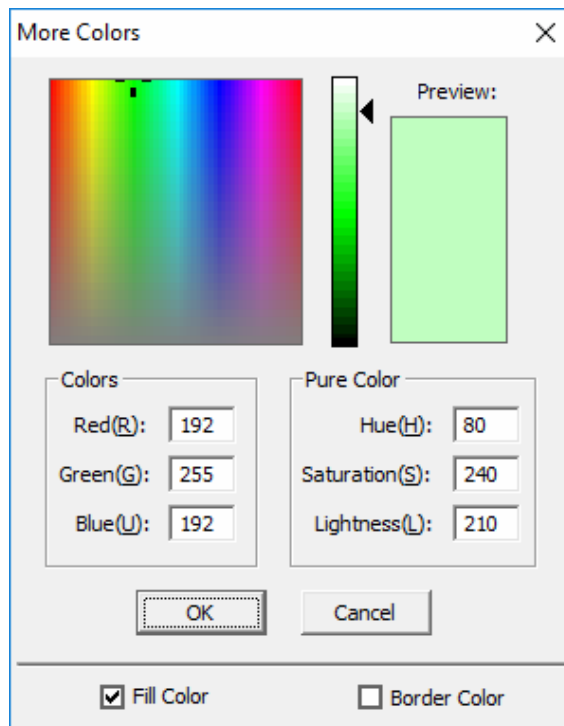




Figure 3-32 Dialog box “More Colors”

3.3.8 Layer Control Bar

During the configuration of graphics, setting graphics objects in different layers makes it convenient to modify the graphics objects. Whether the layer is visible can be separately set in the Layer Control Bar. The layers include layer 0, layer 1, layer 2, and layer 3;  is the paintbrush icon which indicates the current layer;  is the visibility icon which indicates whether the layer is visible (set by clicking the first square box of the layer). The Figure 3-33 indicates that layer 1 is visible and can be edited, while layer 2 is not visible and can't be edited.

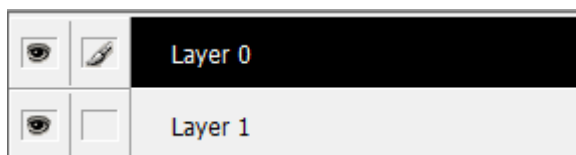


Figure 3-33 Layer selection

After the configuration of the graphics objects in all the layers, user can merge different layers by selecting the **Operation/ Merge Layer** in the menu bar. The Figure 3-34 indicates that all graphics objects in Layer 0~3 will be merged to Layer 0.

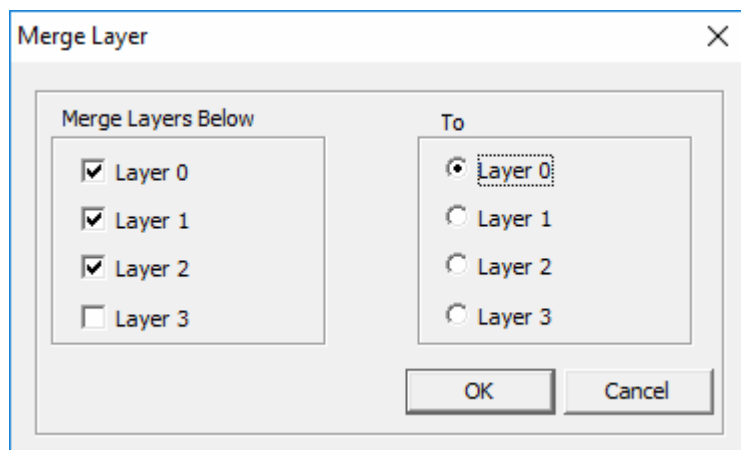


Figure 3-34 Merge Layers

In addition, user can input new layer names or delete layer names (layer name can be null) when the cursor displays the status of waiting to input by selecting the “Modify Name” item in the right-click menu after right-clicking one layer. User can also modify the layer name simply by double-clicking the layer.

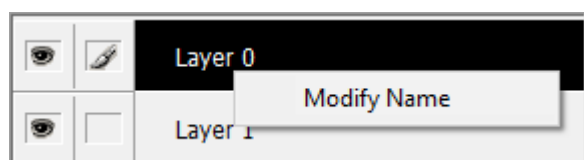


Figure 3-35 Modify Layer Name

3.3.9 Common Template Bar

Common Template Bar is shown as below.



Figure 3-36 Common Template Bar


Operation way:

- Invoke the object in Common Template Bar directly in the graphics, and bind the object with tag.
- Add template, symbol and panel to the Common Template Bar to realize the fast use of common template.

Select **View/ Toolbar/ Common Template** to display or hide this bar.

Invoke the object in Common Template Bar

Steps of invoking the object in Common Template Bar:

1. Click the object to be invoked in Common Template Bar.
2. Pop-out the interface as below, select  in Tag name pane, and pop-out the Tag Selector.

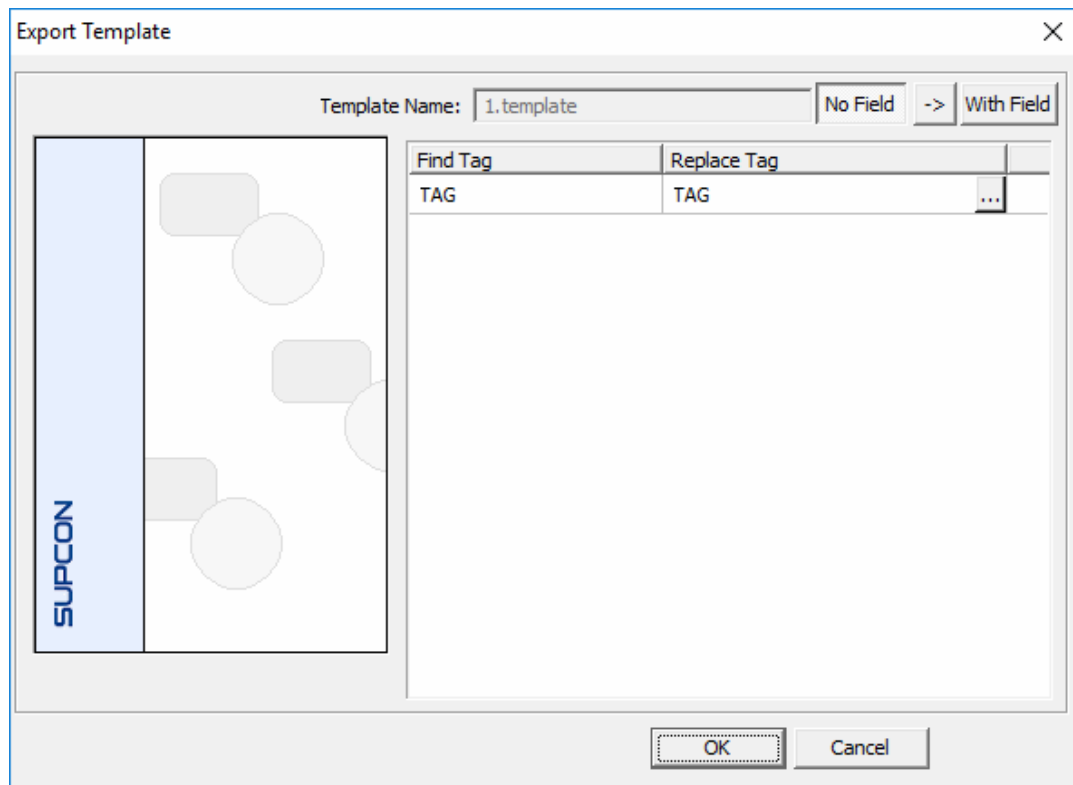


Figure 3-37 The interface of object to be invoked in Common Template Bar

Tag in Figure 3-37 can be shown in 2 ways below:

- No field, tag list will show the original tag and replace tag, as shown below.

Find Tag	Replace Tag
TAG	TAG

- With field, tag list will show tag type, original tag and replace tag, as shown below.

Type	Find	Replace with
Tag	TAG	TAG

3. Select the specified tag and click **OK** in the Tag Selector interface, as shown in Figure 3-38.

Tag Selector

Filter

Operation Domain: OA2640 - Operation Don

Control Domain: All Visible Control Domain

Control Station: All Visible Control Station

Tag Group: All Tag Group

System Type: i-OMC

Tag Type: All Types

FunctionBlock Type: All Types

Tag Name Filter:

Tag Desc Filter:

☒ Trend Tag ☒ Non-trend Tag

☐ Case Sensitive

Search >>

Clear Filter Condition

Soft Keyboard

Tag Name	Tag Description	Tag Type
AI00020000	Standby	Analog Input
AI00020001	Standby	Analog Input
AI00020002	Standby	Analog Input
AI00020003	Standby	Analog Input
AI00020004	Standby	Analog Input
AI00020005	Standby	Analog Input
AI00020006	Standby	Analog Input
AI00020007	Standby	Analog Input
AI00020008	Standby	Analog Input
AI00020009	Standby	Analog Input
AI00020010	Standby	Analog Input
AI00020011	Standby	Analog Input
AI00020012	Standby	Analog Input
AI00020013	Standby	Analog Input

Field	Field Description
DESC	Tag Description
SUP	Tag Alarm Suppress Status
L_B	L Limit Alarm
LPRI	L Alarm Priority
HSUP	H Alarm Suppress Status
HHSUP	HH Alarm Suppress Status
AOF	Suppress Alarm
ACKED	Alarm ACK Status
ERRPRI	ERR Alarm Priority
HHH_B	HHH Limit Alarm
DPVSUP	DPV Alarm Suppress Status
LLSUP	LL Alarm Suppress Status
HPRI	H Alarm Priority

Tag 40

Reload OK Cancel

Figure 3-38 The interface of binding object in Common Template Bar with tag

- After selecting tag, click **OK** to invoke the object in Common Template Bar in the graphics, as shown in Figure 3-39.

Add object to Common Template Bar

Steps of adding object to Common Template Bar:

- Select **View/ Template Library** in the Menu Bar, pop-out the VisualField Template Manager interface, as shown below.

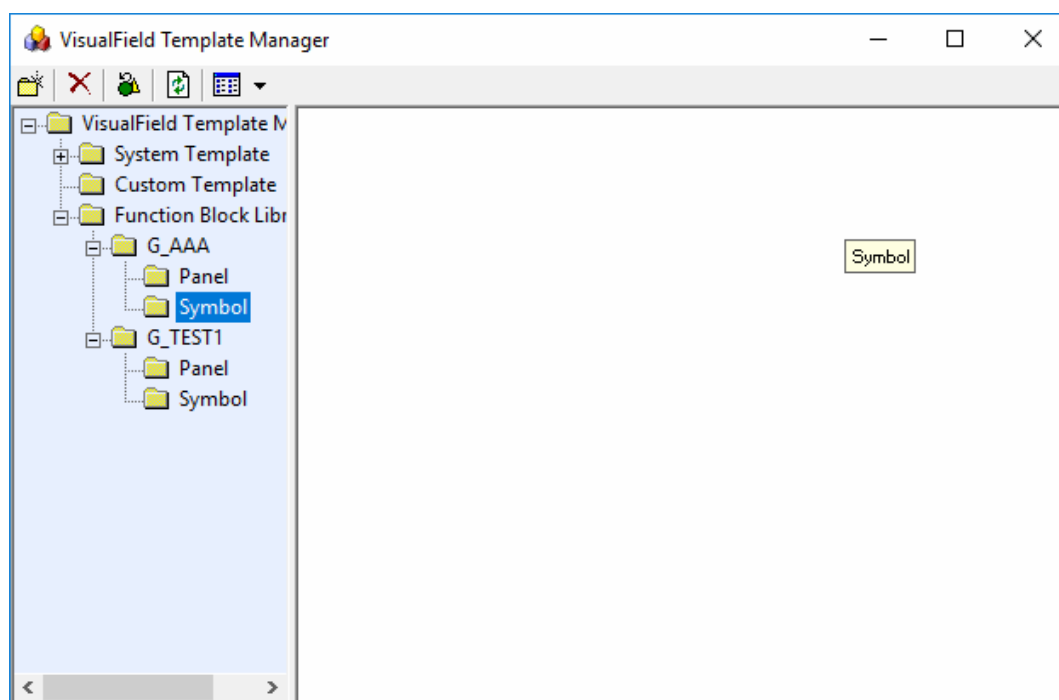


Figure 3-39 Dialog box of binding object in Common Template Bar with tag

2. Select the object to be added to the Common Template Bar and select **Add to Toolbar** in the right-click menu.

The new added object will be shown in the Common Template Bar.

3.4 Object Bar

The Object Bar provides the basic graphics and controls. Select **View/ Toolbar/ Object Bar** to decide whether to show this toolbar or not.

The Object Bar consists of “Static Objects” and “Dynamic Objects”. The setting effect of the static object can be seen in the Drawing area immediately, while the running status of dynamic object can be viewed only in the supervision environment.


































The static objects include Select, Line, Polyline, Arc, Rectangle, RoundRect, Ellipse, Chord, Pie, Polygon, Pipe and Text.

The dynamic objects include DataLink, System Variable (SysVar), Button, Panel, Image, Menu, Check Box, Radio Box, Timer and Trend Control.

The Timer and trend control is an ActiveX control, and the others are the inner-built graphics objects of the graphics.

3.4.1 Graphics Object and Control Collection




Table 3-4 Comparison table of the name and the content of the graphics objects and controls

Name	Shape	Name	Shape	Name	Shape
Select		Line		Polyline	
Arc		Rectangle		RoundRect	
Ellipse		Chord		Pie	
Polygon		Pipe		Text	
Data Link		SysVar		Panel	
Button		Image		Check Box	
Check Box		Menu		Timer	
Trend Control		Bar Chart		Template Browser	
Alarm Icon		Alarm Count Control		Log Control	
Realtime Alarm Control		Surge Curve Control		HP Bar	
Radar Plot		Profile		Table	

**Tip:**


When building Arc, Rectangle, RoundRect, Ellipse, Chord, Panel, Picture, Radio Box, Button, Check Box, Text, Data Link, SysVar and Menu, click to build in the default size.

3.4.2 Line

- **Drawing:** Click the button  and move the cursor to the Drawing area and the cursor will be in the  status. Drag with the left mouse button pressed from the scheduled starting point of the line to the end point and release the button. When the cursor is in the  status, with the Shift key pressed, a line in any degrees can be drawn by dragging the mouse. Otherwise, a line whose degree is a multiple of 45° can be drawn by dragging the mouse.
- **Select, Move, Change Size:** Please refer to 3.1 Basic Operation.
- **Settings:** Select the color of the line with the right mouse button in the Color Bar; select the line type and line width of the line in the Line Bar; rotate the line through the Operation Bar. All the settings can also be done in the corresponding Property Bar of the line.
- **Special settings in the Property Bar of the line:** “Line Color, Line Style, Line Width, Arrow Type and Arrow Size”.
 - The “Line Style” settings include Real line, Broken line, Dot Line, Dash-Dot line, Double Dot-Dash line, No line.
 - The “Line Width” is only effective to the Real Line, and the max effective value is 6.
 - The “Arrow Size” and “Arrow Type” are used to set whether the line needs an arrow, the size and direction of the arrow.

- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Line, Rotation and Action. Please refer to 0 Dynamic Property for specific introductions.



3.4.3 Rectangle

- Drawing: A rectangle object of default size can be drawn if select the icon  in the Object Bar and click in the Drawing area.
- Select, Move, Rotate, Change Size, and Change Shape: Please refer to 3.1 Basic Operation.
- Settings: Set the border color and the inner filling color of the rectangle by the Color Bar; set the grid filling and the transition filling by the Fill Bar; set the line type and line width of the border in the Line Bar; rotate the rectangle by the Operation Bar. All the settings can also be done in the corresponding Property Bar of the rectangle.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Fill, Line, Rotation, Flash, Color and Action. Please refer to 0 Dynamic Property for specific introductions.

3.4.4 RoundRect, Ellipse, Pie, Chord

- Drawing: The drawing method is similar to that of Rectangle, and the graphics objects are drawn in default size if select the icon of RoundRect, Ellipse and Chord and click in the Drawing area.
- Select, Move, Rotate: Please refer to 3.1 Basic Operation.
- Settings: Similar to that of Rectangle.
- Change Shape: Select the "Change Shape" function item in the right-click menu of RoundRect, Pie and Chord, and please refer to 3.1.5 Change Shape for specific introductions.
- Change Size: select the "Change Size" function item in the right-click menu, and please refer to 3.1.5 for specific introductions.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom (no such property for Pies), Fill, Line, Rotation, Flash, Color and Action. To pop it up, select the "Dynamic" option in the right-click menu of RoundRect, Ellipse, Pie and Chord. Please refer to 0 Dynamic Property for specific introductions.

3.4.5 Polygon

- Drawing: Click the button  and move the cursor to the Drawing area and the cursor will be in the  status. Click at the scheduled starting point of the polygon then release and move the mouse to the next vertex of the polygon, and click then release again, and then continue to move the mouse to the next vertex, repeat the operations upwards until the last vertex, and double-click to finish the drawing.
- Select, Move, Change Shape: Please refer to 3.1 Basic Operation.
- Settings: Similar to that of Rectangle.


- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Fill, Line, Rotation, Flash, Color and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Polygon. Please refer to 0 Dynamic Property for specific introductions.

3.4.6 Polyline, Arc

- Drawing: Similar to that of Polygon.



Tips:

- An arc of default size can be drawn by selecting the icon  and clicking in the Drawing area.
 - Polyline can be pulled into straight line with the Shift key pressed when drawing the polyline.
 - Polyline supports the configuration of arrow property, including whether arrow, arrow direction and size are included. Please refer to Line for details.
-

- Select, Move, Change Shape, Rotate, Change Size, for Polyline also includes Add Control Point, /Delete Control Point. Please refer to 3.1 Basic Operation.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Line, Rotation and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Polyline and Arc. Please refer to 0 Dynamic Property for specific introductions.

3.4.7 Pipe



1. Drawing: Similar to that of Polygon.
2. Select, Move, Change Shape, Change Size, Add Control Point, Delete Control Point, Modify Endpoint Shape. Please refer to 3.1 Basic Operation.
3. Special settings in the Property Bar of the Pipe: Include "Inside color", "Outside color" and "Pipe Width". Color setting is the same as other graphics objects settings; the thickness of the pipe can be set only by inputting a proper width value in the "Pipe Width" column of the Property Bar, the maximum width of the pipe is 64.
4. Dynamic Property settings: Include Flow, Visibility, Horizontal Movement, Vertical Movement, Flash, Color and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Pipe. Please refer to 0 Dynamic Property for specific introductions.



When drawing Polyline, Polygon or Pipe, right-click the mouse and a right-click menu will pop up, and users can choose "Complete Drawing" or "Continue Drawing".

3.4.8 Text

It is used to input text content in the graphics, and any character can be input.

- Text Input: Click the icon  and move the cursor to the Drawing area and the cursor will be in the  status, and then click at the location to input text. And input the words in the pop-up “Text” dialog box as shown in Figure 3-40 and click “Yes” to finish the operation. Right-click the input box to perform operations like copy, cut and paste, etc.
- Text Modify: Double-click on the text graphics object, and modify or re-input text content in the pop-up “Text” dialog box; or modify directly in the “Text” column of the Text Property Bar.
- Change Font and Size: The font and size of the text can be changed in the font toolbar of the “Text” dialog box or the Font Bar or the Property Bar.
- Move Text: Move text object by dragging with the left mouse button pressed after selecting the object.
- Transparent Background: Select the item and the text background will be the background color of the graphics, and the background color of the text can be modified by modifying that of the graphics in the Page Property of the graphics; not select the item and the background color of the text will be the configured color.
- Border Setting: It is used to set the 3D effects of the text border, including six display modes of NULL, UP, DOWN, ETCH, SHADOW, FRAME
- Text Sort: set the text sorting, user can select to sort text as vertical or horizontal by selecting commands “General”, “Rotate Left for 90°” or “Rotate Right for 90°”.
- Special Settings in the Text Property Bar: Include “Frame style, Align (mode), AutoSize, Transparency”, etc. There are corresponding setting options for them in the “Text” dialog box. If familiar with the operation, complete the corresponding settings simply by the Property Bar to increase the operation speed. The default option of “AutoSize” is “Yes”, i.e., the text content will change its size with the change of the border as an integer; when the option is “No”, and the size of the text won’t change with the change of the border. “Align (Mode)” is effective only when the option of the “AutoSize” is “No”.

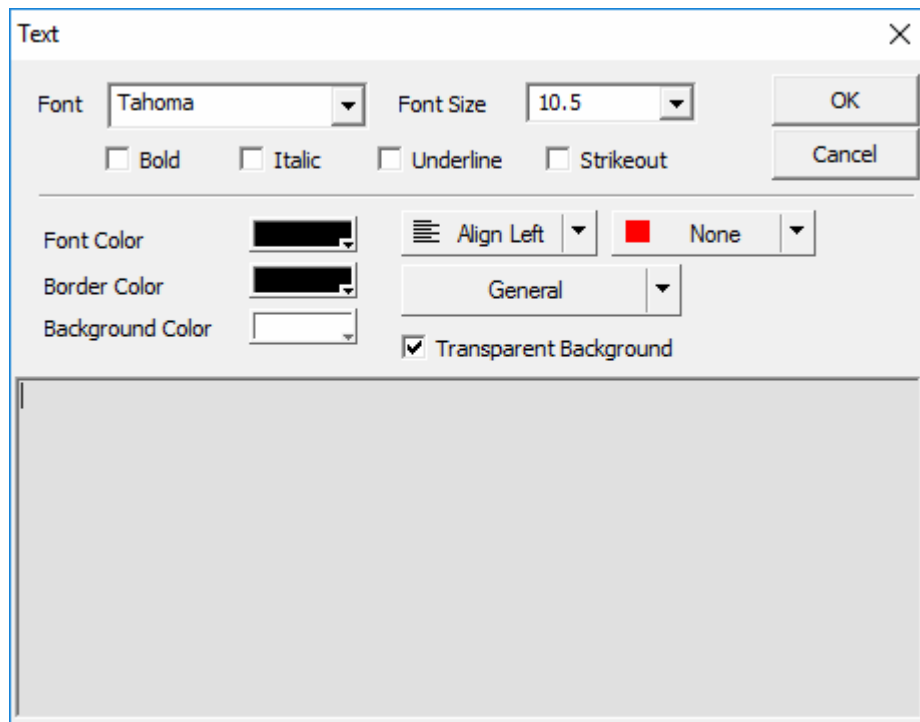


Figure 3-40 Dialog box "Text"

- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Text, Text Display, Analog Display, Digital Display and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Text object. Please refer to 0 Dynamic Property for specific introductions.

3.4.9 SysVar

It is used to display relevant information of system operation, including Time, Current Operation domain, Current User, etc. Only the time and date can be displayed at the same time, other content can only be displayed alone. In detail, select the icon and move the cursor to the Drawing area, click the mouse and click the button "Advanced" in the pop-up "Properties" dialog box, and complete the settings in pop-up Property dialog box as shown in Figure 3-41.

1. The display format of Time:
 - Time: $\times \times : \times \times : \times \times$
 - Date: Day-Mon-Year or $\times \times - \times \times - \times \times \times \times$
 - Startup Time: Startup Time: $\times \times - \times \times - \times \times \times \times \times \times : \times \times : \times \times$
 - Continuous Runtime: Continuous run: $\times \times \times \times$ day(s) $\times \times$ hour(s) $\times \times$ min (s) $\times \times$ second(s)
2. Current User, Current Team: The information of current user and operation team of system supervision.
3. Current Project: It displays the saving path of current project configuration file running in system supervision.
4. Current Operation Domain: It displays the name operation domain running in system

supervision.



Tip:

Current User, Current Team, Current Project and Current Operation Domain can be displayed only in the supervision.

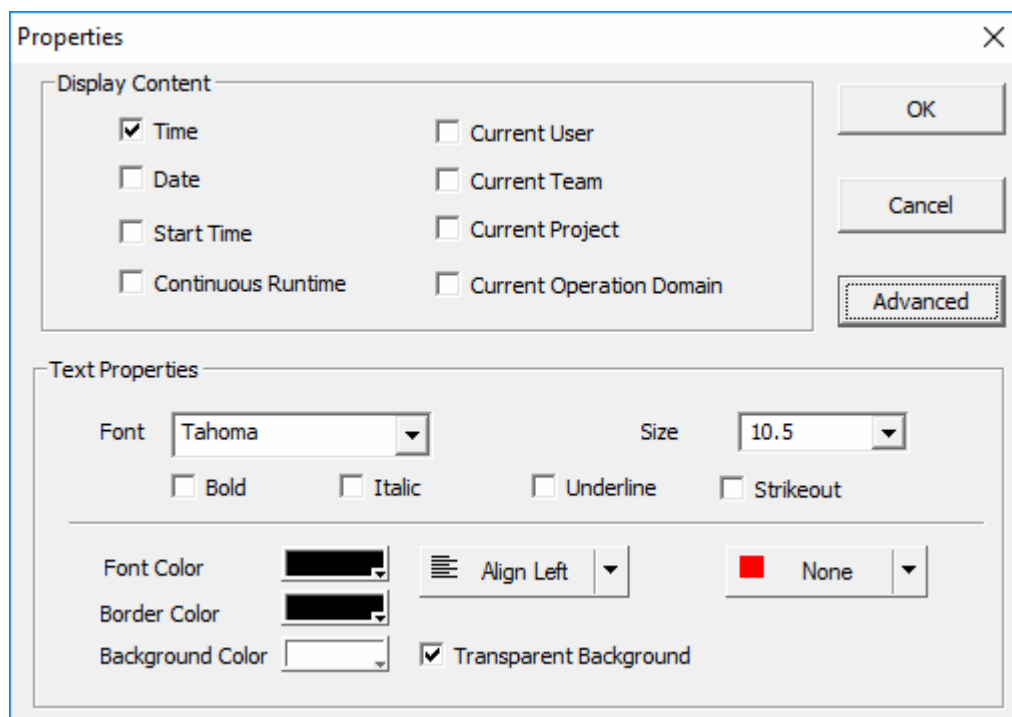


Figure 3-41 Properties Dialog box of SysVar

- Text Properties: User can embellish the displayed content in the Text Properties dialog box by clicking “Advanced”. Please refer to 3.4.8 instructions to relevant settings of Text.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement. To pop it up, select the "Dynamic" option in the right-click menu of the SysVar. Please refer to 0 Dynamic Property for specific introductions.

3.4.10 Bar Chart

Add bar chart in graphics. Select the object and click in draw area to add it. Double-click the bar chart or right-click it and select “Modify” to pop up the “Properties” dialog, in which user can set details.

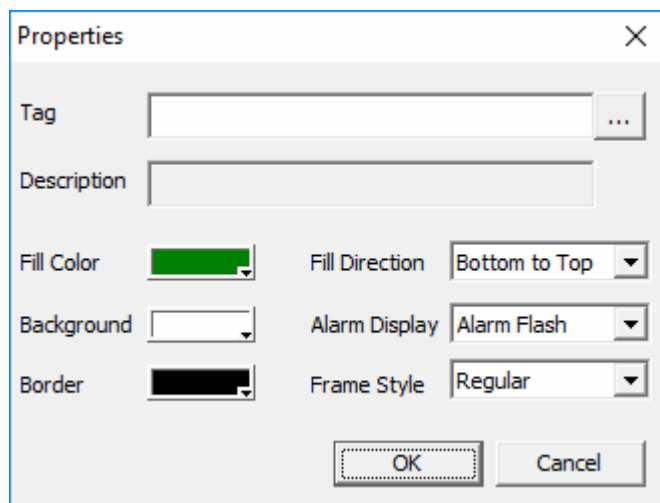



Figure 3-42 Properties of bar chart

- Tag: Set the tag of the value to be displayed. Input directly or click  to select the database tag. (Mark the flag field of the tag, for example, the data field is .Value.)
- Fill Direction: there are 4 options, "From Bottom to Top", "From Top to Bottom", "From Left to Right" and "From Right to Left". "Alarm Display" can select "Alarm Flash", "Alarm Discolor", which can be processed as "DataLink". "Frame Style" of "Alarm Flash" can select "None", "Regular", "Sink", "Heave".

3.4.11 DataLink

It is used to display the real-time value of tags. In detail, select the icon and move the mouse to the drawing area and click, and click on "Advanced" in the pop-up Properties dialog box, then user can complete all the specific settings in the pop-up Properties dialog box shown in Figure 3-43. In addition, the DataLink box can be moved by dragging the selected box to adjust its location, and its size can also be adjusted by dragging the 8 Control Points around the object.

Figure 3-43 Dialog box “Properties” of DataLink

Set Basic Properties

- 1) Tag: Set the tag of the value to be displayed. Input directly or click to select the data library tag. (Mark the flag field of the tag, for example, the data field is .Value)
- 2) Show Data: Select it to show the tag data in monitoring software.
- 3) Display Unit: Select the item and the unit of the tag will display in supervision operation.
- 4) Name Interception Length: Select it to set the interception length of name from left to right, in the range of 0~50 characters. As shown in above figure, the tag name is AI_1_4_1.VALUE, the interception length is 3, so the tag name intercepted will be shown as 1_4_1.VALUE in the monitoring software, the tag name intercepted can be valid in configuration.
- 5) Display Name: Select the item and the name of the tag will display in supervision operation.
- 6) Display Status: Select the item and the status of the tag will display in supervision operation.
- 7) Display Prompts: Select the item, and in supervision operation, the field and description of the tag will display when the mouse moves on the DataLink; not select the item, and the field and description of the tag will not display when the mouse moves on the Data Link.
- 8) Integer Digits: Display the integer digits in configuration, and the range is 1~40.
- 9) Decimal Digits: Display the decimal digits in configuration, and the range is 0~5.
- 10) Write Mode

- NULL: select this option, and there will be no reaction after running supervision operation.
- Meter Panel: select this option, and click the Datalink after running supervision operation, then the meter panel corresponding to the tag pops up.
- Write Panel: select this option, and click the Datalink after running supervision operation, then the write panel pops up, as shown in Figure 3-44.

Figure 3-44 Writing panel

- Write Directly: select this option, and click the Datalink after running supervision operation, then an edit box pops up. If it is an important tag, select it, and edit the data tag after running supervision operation, an important tag reconfirm dialog box pops up, as show in Figure 3-45.



Tip:

After selecting the corresponding “Need Confirm” checkbox of the Tag Level in the “Security” of the System Builder, tags of this Tag Level will become important tags.

Figure 3-44 Reconfirm to Important Tag Dialog box

- 11) Alarm Display: In supervision operation, Datalink will flash automatically according to configuration when the associated tag of Datalink is in alarm status. (Including “Background Flash”, “Text Flash” (default) and “Not Display”. When the alarm is acknowledged, the flash effect will disappear but the alarm color will remain. In the status of “Text Flash”, the color of Datalink will use the color in the alarm configuration and overlook the designated color when configuring the graphics. In the status of “Not Display”, there will be no flash and no prominent alarm color display when the tag alarms, and the alarm can’t be acknowledged by the right-click menu of Datalink.
- 12) Text Properties: User can embellish the displayed content of the DataLink. Please refer to 3.4.8 instructions to relevant settings of the “Text” object. And only when the option of Border setting is FRAME, its color in the interface can be set.


Set Dynamic Properties

Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Flash, Color, Read Only and Action. To pop it up, select the **Dynamic** in the right-click menu of the DataLink. Please refer to 4.3 Dynamic Property for specific introductions.

Default Settings

Set the default settings of datalink in its “Properties” settings dialog:

- Save As Default: Click the button and the Property settings of current DataLink will be saved as default settings.
- Reset default settings: Click the button to set the datalink property back to system default after executing Save As Default.

Each Datalink supports to show tag name, tag value and tag unit independently. Following engineering graph can be achieved by grouping 3 Datalinks. User can click  in common template toolbar to group Datalink conveniently.

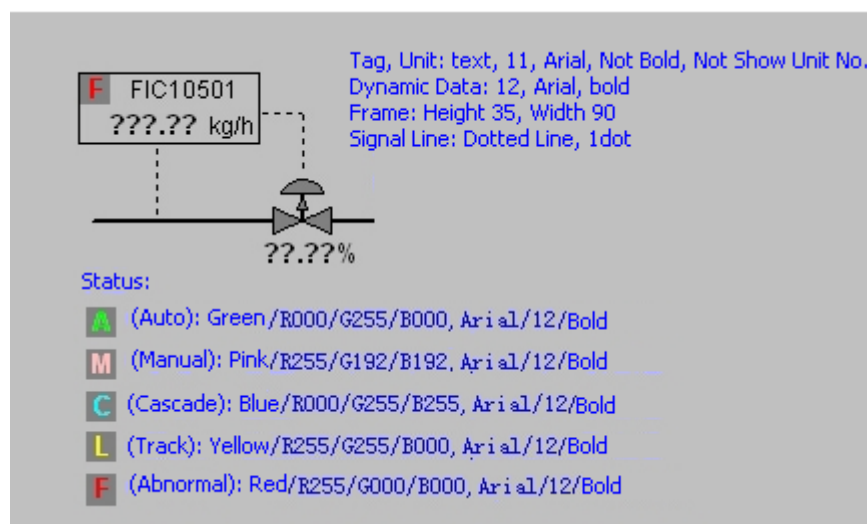



Figure 3-45 Engineering graph grouping 3 Datalinks

Use Dynamic Template

Set the tag in graphics to be shown by its alarm icon via object “DataLinkFlash” in “VisualField Template Manager”, steps are shown below:

1. Select **System Template/ Data Link/ DataLinkFlash** in “Template Browser” and add to the graphics.
2. The DataLinkFlash added in graphics is marked by , right-click it and select “Tag Information” and the dialog below pops up, in which tag associated with DataLinkFlash can be set.

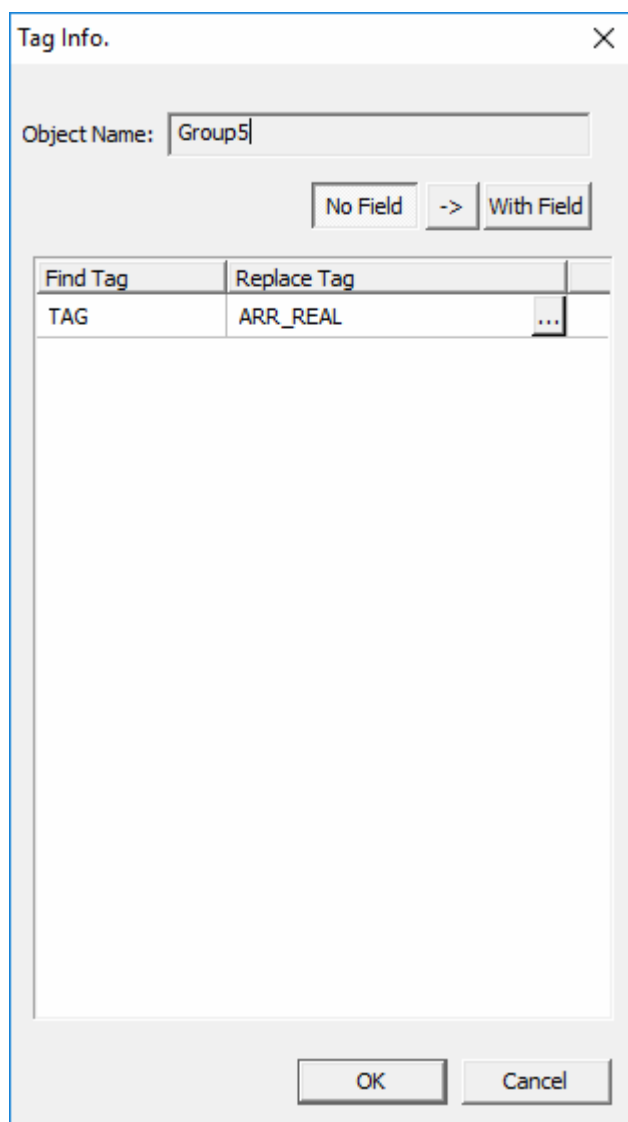



Figure 3-46 Tag Information


Only after setting the associated tag, DataLinkFlash can flash with the highest alarm priority icon of tag after alarm of the associated tag raising.

3. Click  in the first line of “Tag Information” and select the tag in tag selector popped up.
4. Click “OK” to save the current configuration.

3.4.12 Panel

It is used to enhance the display effect in the supervision interface of VFDraw. The special effects of Panel of High-performanceHMI VFDraw are mainly shown in the settings of Dynamic Properties and Panel style, etc. 3D effect displayed can be enhanced by setting the “Panel Style” and “Frame Style” in the Panel Property Bar. Panel has more abundant dynamic setting contents compared to Button.

Drawing

Select the icon  and a panel object of default size will be drawn by clicking in the Drawing area. And its size can be changed by dragging the Control Points of the selected object.

Special settings in the Panel Property Bar

Include Panel style, Frame style and Text.

3D effect displayed can be enhanced by setting the “Panel style” (10 kinds) and “Frame style” (3 kinds).

The text can be added to the panel by editing text in the “Text” column. The text in the panel can only be center displayed.

Dynamic Property settings

Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Text Display, Text, Analog Display, Digital Display and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Panel.

Please refer to 0 Dynamic Property for specific introductions.

3.4.13 Button

It is used to make it easy to execute the dynamic functions and to support scripts to implement the execution in specific operation domain. The drawing method of Button is the same as that of Panel.

Configure the Property of Button by Types

Buttons of different types support different functions.

Right-click the button added to the graphic and select “Settings” in its right-click menu. The dialog box of “Settings” will be popped up as shown below.

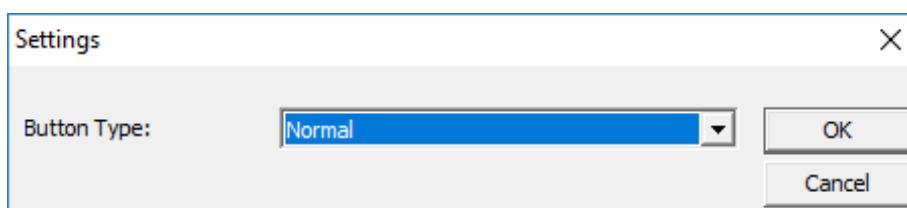


Figure 3-47 Dialog Box of Button Type Settings

Select in the dropdown list of Button Type". Buttons of different types need conduct different property settings.

- Select "Switch". The dialog box will be displayed as shown below.

The screenshot shows a 'Settings' dialog box with a title bar containing a close button (X). The dialog contains the following fields and controls:

- Button Type:** A dropdown menu with 'Switch' selected.
- Tag:** A text input field followed by a button with three dots (ellipsis).
- Confirm info. when down:** A text input field.
- Confirm info. when up:** A text input field.
- Show Reverse:** A checkbox, currently unchecked.
- Read Only:** A checkbox, currently unchecked.
- OK** and **Cancel** buttons are located in the top right corner.

"Tag" text box and the button behind are used to configure "Tag" related to selecting this button.

"Confirm info. when down" text box is used to configure the content displayed when pressing the button.

"Confirm info. when up" text box is used to configure the content display when the button pops up.

"Show Reverse" combo box is used to configure whether the button supports reverse. By default, don't display reverse, namely ON is concave and OFF is convex. After checking "Display Reserve", ON is convex and OFF is concave.

"Read only" combo box is used to configure whether this button is read only button.

- Select "Inching". The dialog box will be popped up as shown below.

The screenshot shows a 'Settings' dialog box with a title bar containing a close button (X). The dialog contains the following fields and controls:

- Button Type:** A dropdown menu with 'Inching' selected.
- Tag:** A text input field followed by a button with three dots (ellipsis).
- Confirm info. when down:** A text input field.
- Down value:** A text input field containing the value '1'.
- Delay time of reset:** A text input field containing the value '2', followed by a unit 's'.
- Up value:** A text input field containing the value '0'.
- OK** and **Cancel** buttons are located in the top right corner.

"Tag" text box and the button behind are used to configure "Tag" related to selecting this button.

"Confirm info. when down" text box is used to configure the content displayed when pressing the button.

Down value, Up value and Delay time of reset are executed through the following description. Click button, then "Up value" will be inputted to the relative tag. When the mouse pops up and "Delay time of reset" ends, "Up value" will be inputted to the relative tag.

Configuring of Button Property Bar

Instructions to the special settings of Button Property Bar:

- Image: Right-click the button object, select "Upload Image" and then select the picture in the pop-up dialog box. User can also directly input the path in the "Picture" column of the Button Property Bar.
- Image Position: Include three placement modes of Left Align, Center Align and Right Align.
- Transparency: Implement the filter effect of color by setting certain the color as the transparent color of a picture. In detail, when the option is "Yes", select the color to be filtered in the option "Use Transparent Color". The effect of white transparent color as shown in Figure 3-48.



Before



After

Figure 3-48 Color filter of Button Image

- Text: Input the name of the button in the Text column of the Property Bar.
- Button style: Provide 12 different kinds of button styles.
- Switch Button: When the option is "Yes", the button will be in concave status after clicking the button which is in convex status, until click the button again to recover to the convex status.
- Valid: Set the validity of button operation. When the option "No", any operation to the button is ineffective in supervision.
- Limited Button: When the option is "Yes", only the users who own the "Limited Button authority" can operate the button.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom, Text, Color and Action. To pop it up, select the "Dynamic" option in the right-click menu of the Button. Please refer to 4.3Dynamic Property for specific introductions.
- Operator Key

It is used to configure the key with the related button in the operator keyboard.



Tips:

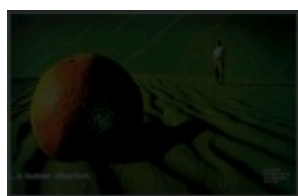
Only when "Operator Key" configured for buttons in popup graphic, the function can be valid in monitoring.

3.4.14 Image

It is used to import images outside the system. Select the icon and double-click in the Drawing area, a "Load Image" dialog box will pop up, and the image can be imported by double-clicking the file name or selecting the file name and clicking "Open".

Instructions to the special settings of Image Property Bar:

- Transparency: Set whether the transparent color filter is effective. When the option is "Yes", the selected transparent color will be filtered away from the image.
- Transparent Color: Set the color to be filtered away from the picture, and the color area will directly display the background color after setting.
- Opacity: The operation is effective when the option of "Transparency" is "No". The effective parameter range of Opacity is 0~255. When the parameter is 0, the image is invisible (i.e., the picture is completely transparent and the background content will be displayed); when the parameter is the maximum (255), the picture will display factually (i.e., the Opacity reaches the maximum). Please refer to Figure 3-49 (the background color is black) for the transition situation.



The Opacity is 50



The Opacity is 100

Figure 3-49 Setting of the picture's Opacity

- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement, Zoom and Action. To pop it up, select the "Dynamic" option in the right-click menu of the image. Please refer to 4.3Dynamic Property for specific introductions.

3.4.15 Check Box

The Check Box can be linked to the digital tag in Data Library. The digital tag value will be 1 when select the Check Box in the supervision of graphics; and the value will be 0 when it is not ticked off.

- Drawing: Click in the Drawing area after selecting the icon, and a checkbox will be drawn. Select the check box and change its size by stretching it. The "Settings" dialog box shown in Figure 3-50 will pop up after double-clicking the check box. User can change the title of the check box in the title box. The check box will be unable to operate in supervision when select "Read Only".

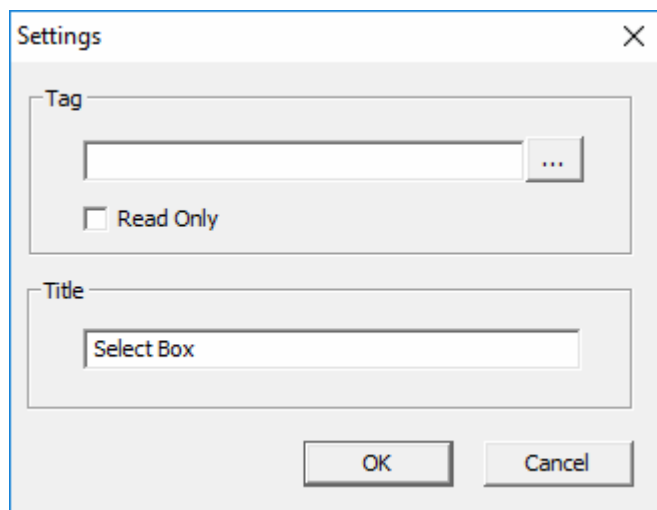


Figure 3-50 Check Box settings

- Special settings in the Check Box Property Bar: include “Title” and “Tag”. The “Title” option can help to change the title of the check box; the “Tag” option can help to view and modify the tag name of the linked digital; the “Value” option can help to set the initial value of the digital tag.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement and Enable. To pop it up, select the "Dynamic" option in the right-click menu of the check box. Please refer to 4.3Dynamic Property for specific introductions.

3.4.16 Radio Box

The Radio Box can be linked to the analog and integer tag in Data Library. The tag value will be in turn set as 0, 1, 2, 3, ..., (for digital tags, the first item is 0, and others is non-zero) if click the option button in the Radio Box in turn from top to bottom in the supervision of graphics.

- Drawing: Select the button and click in the Drawing area, and a radio box will be drawn. User can change its size by stretching the radio box after selecting it. Double-click the radio box and a dialog box as shown in Figure 3-49 will pop up.

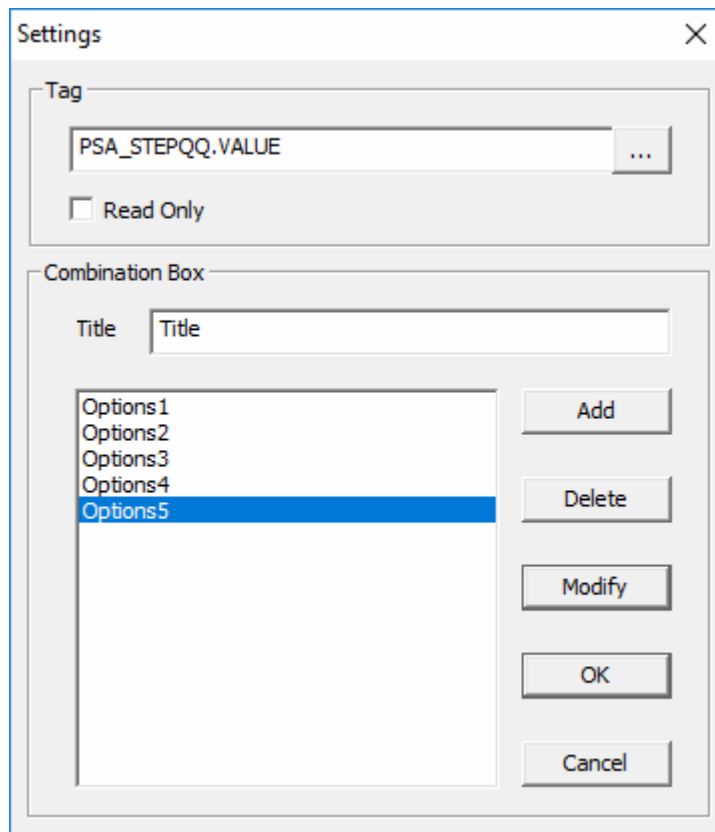


Figure 3-49 Radio Box setting

- Special settings in the Radio Box Property Bar: Similar to the settings of Check Box Property Bar. According to the characteristic of the Check Box, user can set the location of initial option in the Property Bar. Input the option address value (as default as 0) in “Current selected item”. For example, when input 3, then the initial option is the fourth item, as shown in Figure 3-51.

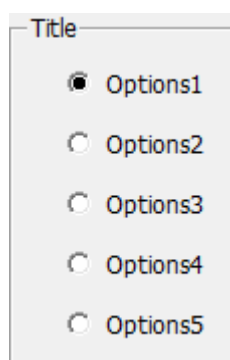


Figure 3-51 Radio Box Title setting

- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement and Enable. To pop it up, select the "Dynamic" option in the right-click menu of the Radio Box. Please refer to 4.3Dynamic Property for specific introductions.

3.4.17 Menu

“Menu”, which can implement dynamic functions of several groups, can be treated as a multifunction button. Select the icon and click in the Drawing area, a “Menu Editor” setting

interface will pop up, as shown in Figure 3-51.

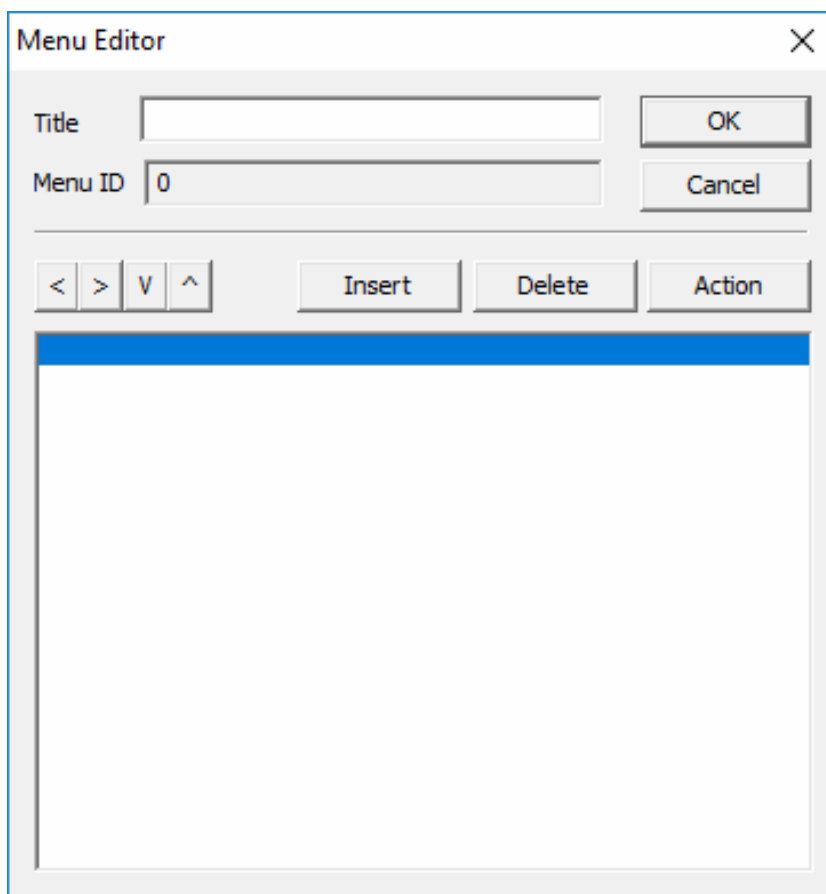










Figure 3-51 Menu Editor

- Title: Display the name of the pull-down menu and user can directly input the title content from the keyboard.
- Menu ID: the ID content will be incorporated automatically by the system with the adding of the title content.
-  : It is used to Set/ Cancel the content of submenu. Click  and the selected submenu will be canceled; click  and the selected menu item will become submenu.
-  : It is used to adjust the order of the title content. Click  and the menu bar will shift down; click  and the menu bar will shift up.
- Insert: It is used to add a title at the non-bottom layer. In detail, select a menu title and a blank line will add automatically above the selected line after clicking the “Insert” button.
- Delete: Selected the non-needed content and click “Delete”.
- Action: It is used to set the dynamic property of menu title bar. The dynamic setting of the menu merely refers to action dynamic setting (please refer to the “Action” setting in 0 for specific information of action dynamic). After completing, an “(a)” will be added behind the set title bar as an indication.

- Special settings in Menu Property Bar: The setting and modification of the Title of menu graphics object, Menu style, Visible, etc. can also be implemented in the Menu Property Bar. Please refer to relevant setting introductions of graphics objects like Button, Panel, etc.
- Dynamic Property settings: Include Visibility, Horizontal Movement, Vertical Movement and Enable. To pop it up, select the "Dynamic" option in the right-click menu of the Menu. Please refer to "Dynamic Property" for specific instructions.





Tips:

- System defaults the first line of menu as the main menu, and it cannot be set as a submenu.
 - The menus of the following first line can be set as submenus by "Move Right" and also can cancel the setting by "Move Left".
-

3.4.18 Table

This function is used to draw a table. Through a table object, you can create a table where you can plan the layout of the flow diagram, you can also combine this control with text, Datalink and radar map to create a custom table, where you can display and analyze the tag parameters associated with the flow diagram.

Table drawing and property configuration are described as follows:

- 1) Select  in the "Graphics object" and, the cursor will be displayed as . At this point, hold down the cursor to drag and release it, and then property dialog box will pop up as shown below.

Properties

Settings

Rows: 3 Height: 25

Columns: 3 Width: 40

Edges

Line Width: 1 Color: [Black]

Inside Borders

Line Width: 1 Color: [Black]

Preview And modification

Cell Color: [Light Gray] Transparent: ☒

	A	B	C
1			
2			
3			

Figure 3-52 Table Property Dialog Box

2) Configure the table display properties as the description in the table below. The preview of the table is displayed below the parameter item, and the header item with letters and numbers is for configuration use only and will not appear in the completed table.

Parameters	Parameter Description	Configuration Description
Rows/Columns	Set row and column numbers of the table. The default configuration is 3*3, and the maximum is 100*100.	Input the row number and column number in the text box. It should be noted that Rows*Height<=4096 and Columns*Width<=4096.
Height/Width	Set the row height and column width of the cell. The unit is pixel.	Input the height and width in the text box, or drag the table in the graphics to fine-tune the height and width..
Borders (line width and color)	Set the width and color of the outside borders.	Line width: Click the text box and enter the number, then click the Enter key.
Inside Borders (line width and color)	Set the width and color of the inside borders.	Color: Click the color box to select the color.

Parameters	Parameter Description	Configuration Description
Cell	Sets the shading color of the selected cell.	Select the cell in the preview area below (hold down the Shift key to select multiple contiguous cells, hold down the Ctrl key to select multiple non-contiguous cells), and click the color box next to "Cell Color" to select the color; If "Transparent" is checked, the cell color is the same as the background color of the flow diagram..

3) After the configuration is completed, click the "OK" button and the table configured will be displayed in the flow diagram. Click the table selection icon to select the entire table to adjust its position.

3.4.19 Template Browser

As the figure below, template browser is used to view, select, import template object and simplify the drawing for graphics.

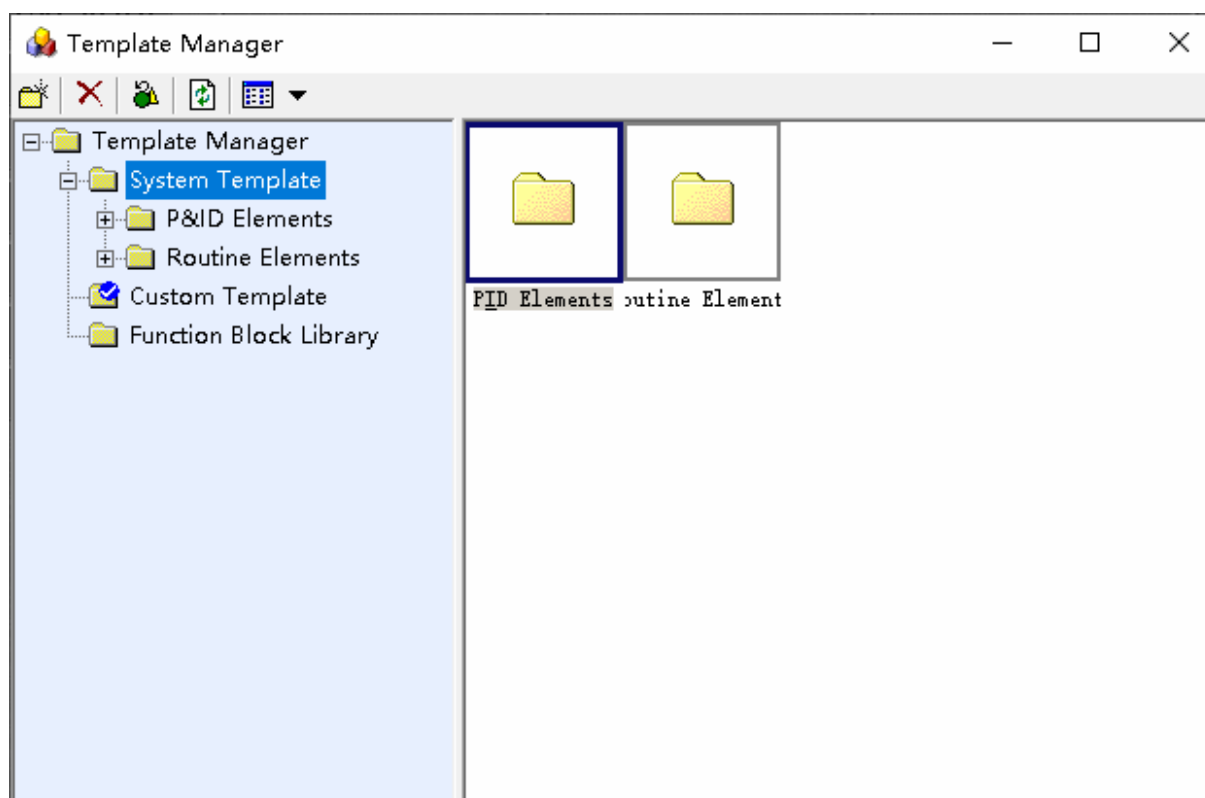


Figure 3-53 "VisualField Template Manager" Dialog Box

As the figure above, template manager mainly contains the following parts:

- The left is navigation bar, including system template, user template and function block library according to the template type.
- The right is template display area, displaying the sub-library of module library and the

specific template.

Apply Objects in Template

By following steps, the objects in the template can be added to the graphics.

- 1) Select the object type in the navigation of the template manager.
- 2) Double click the objects to be added or select its right menu command "Export", and the dialog box popup shown as figure below.

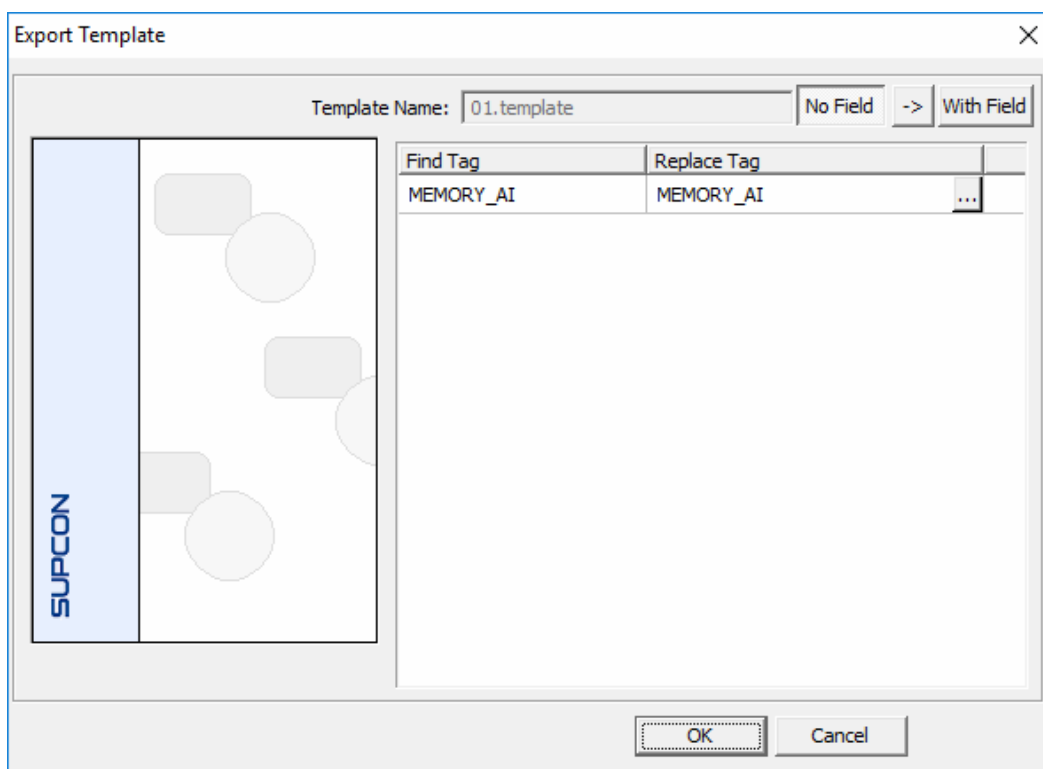


Figure 3-54 "Export Template" Dialog Box

- 3) Replace the tag by requirement and click "OK".

After applying the template object, the dynamics of the actions executed in real-time monitoring are determined by whether the objects in the template are combined objects and whether the template contains the dynamics of actions.

- 4) Table 3-6 lists the dynamic execution of the objects in the template as non-combined objects,

Table 3-5 The dynamic execution conditions of the template objectives as non-combined objectives

Referenced Template with Dynamics	Internal Objectives with Dynamics	Executed Dynamics
√	√	Internal objective's dynamics
√	×	Referenced template's dynamics

Referenced Template with Dynamics	Internal Objectives with Dynamics	Executed Dynamics
×	√	Internal objective's dynamics

Save User Template

High-performanceHMI supports to export the common controls used in graphics as user template to reuse. The operation steps are as follows:

1. Select "User Template" in the navigation tree and select "Open from Configuration Server" in its right-click menu.
2. In graphics, select the drawn graphic element and select "Save as Template" command in its right menu. The dialog box of "Save Template" will be popped up.

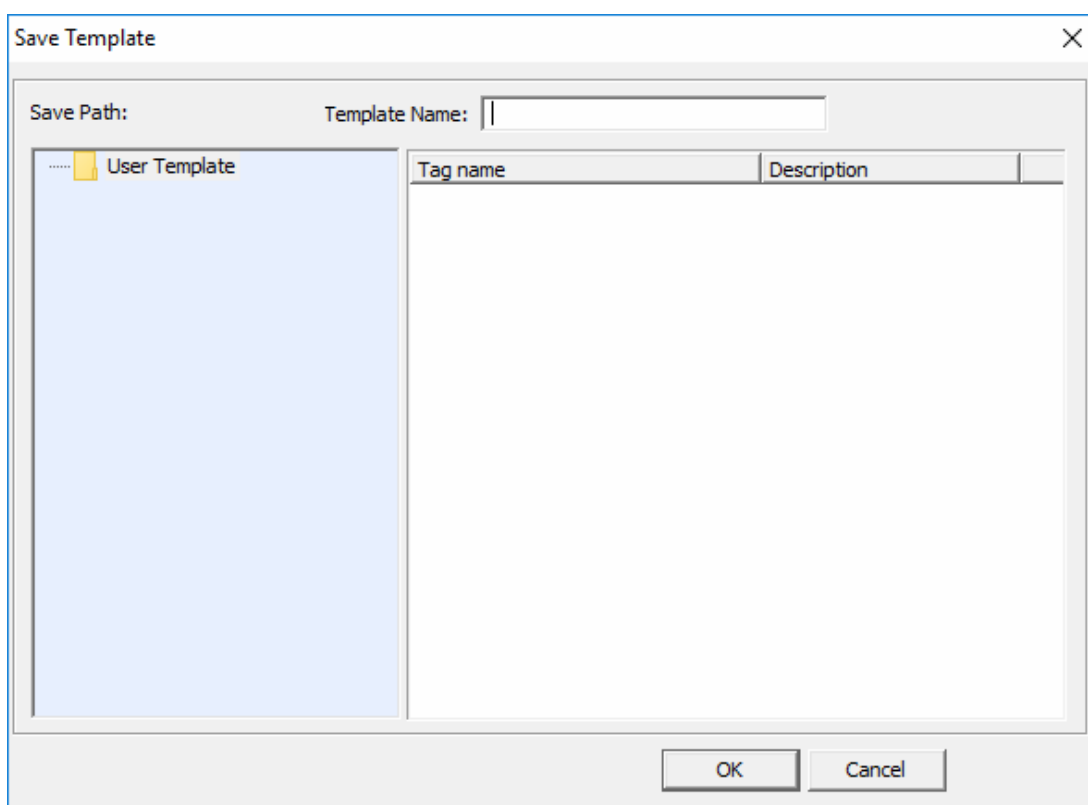


Figure 3-55 "Save Template" Dialog Box

3. In "Template Name" text box, input the name of exported template. And click "OK" to complete the export of user template.

Import/Update User Template

User template of High-performanceHMI graphic supports the operations like import and update to realize reusing user template. The specific operation steps are as follows.

1. In navigation tree, select "Custom Template". And in right-click menu, select "Open from Configuration Server" as shown in 错误！未找到引用源。.

2. In right-click menu of "Custom Template", select "Import". The dialog box of "Browse Folder" will be popped up.
3. In "Browse Folder" dialog box, select the path where the template need be imported. Click "OK" to complete the import of user template.
4. In right-click menu of "User Template", select "Save to Configuration Server" to complete the import of user template.

Modify User Template

After modified the user template in graphic, the modification will be automatically updated to the referenced graphics. The specific steps are as follows:


1. Select user template and click to add it to graphic.
2. Select the added user template in graphic and select "Release Reference" in its right-click menu. The user template will be converted into common group object.
3. Modify the user template, and overwrite it with the original name of the user template.
4. Select user template and select "Save to Configuration Server" or "Save to Configuration Server (Locked)" in its right-click menu.
5. Reopen the graphic referenced the user template, which will be updated to the latest user template.





Tips:

- After updated the user template and published the configurations, the latest user template can be displayed after the page switched in real-time monitoring.
- When the user template used in the graphics of the reference domain, the user template in the reference domain will also be updated synchronously after the configuration is published by the reference domain.

3.4.20 Alarm Icon

Add the alarm icon  in graphics to monitor the alarm of specific tag, the steps are shown below:

- 1) Select  in "Graph Object" and the cursor will become  in the page. Press the mouse left button and set the alarm icon size, then release it to show the alarm icon below.

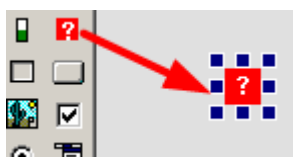


Figure 3-56 Alarm icon

- 2) Double-click the alarm icon to pop up the "Properties" dialog below.

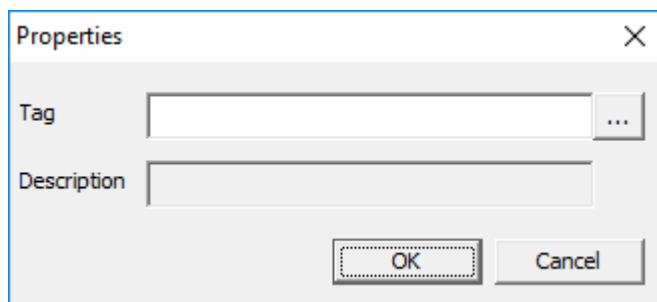



Figure 3-57 Set alarm icon properties

- 3) Click  after "Tag" box to pop up the tag selector.
- 4) Select the tag to be shown by alarm tag from tag selector, and click "OK".
- 5) Back to "Properties" dialog and click "OK" to save the configuration for alarm icon.




Tip:

- If the tag with alarm icon raises alarm, the alarm icon in graphics will be shown as the icon, color and text color configured in VFSysBuilder by alarm priority.
- Configuration details of alarm priority please refer to section "Alarm Priority" in System Builder User Manual.

3.5 Control

3.5.1 Timer

Click the Timer button and move the cursor to the Drawing area, making the cursor in the  status, then a timer graphics object will appear after dragging with the left mouse button pressed and releasing later. Double-click the graphics object and the "Timer Property" setting dialog box as shown in Figure 3-58 will pop up, and user can set the timing by inputting "Interval Cycle". When selecting "Start Timer When Running", the timer will be started up by default when opening the graphics and periodically trigger On Time event for script to use; On the contrary, timer needs to be started up through the script interface. The timer can be used as calculagraph when editing scripts.

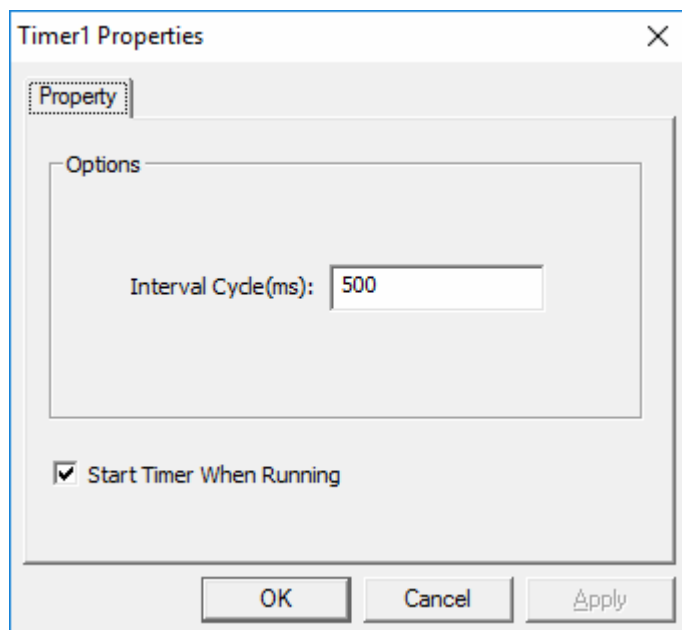


Figure 3-58 Dialog box “Timer Properties”

Special settings in the Timer Property Bar include Cycle and Valid.

- Cycle: It is used to set the interval between last trigger and current trigger.
- Valid: Whether the timer is started up when start up supervision running.

3.5.2 Trend Control

Trend control can be inserted into graphics, and user can view the trend via graphics display in supervision.

Add and Configure Trend Control

1. Click Trend Control button, move the cursor to the Drawing area, making the cursor in the status, after dragging with the left mouse button pressed and releasing later, a trend control graphic object will appear as shown in Figure 3-59:



Figure 3-59 Trend Control

2. Set Tag

Double-click “trend control “object, a trend control configuration dialog box will pop up shown in the figure below.

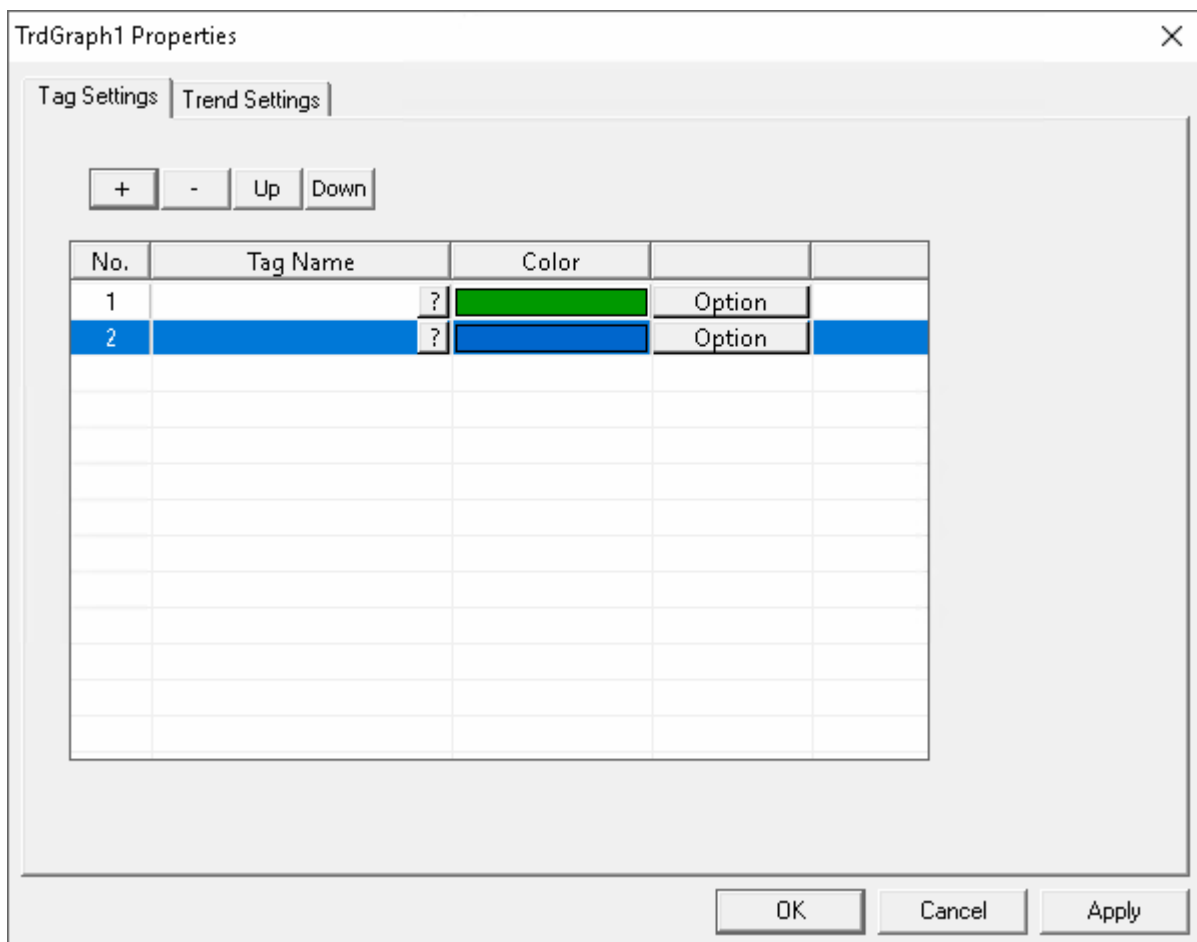



Figure 3-60 Trend Control Configuration Dialog Box (Tag Settings)

- Click  to choose tag in the pop-up “Tag selector”.
- Select the color of trend curve for the tag. Click Color frame to open the color plate and select suitable color.
- Click “Option” button, and set maximum and minimum (type of percentage) of the coordinate and the desirable area in the pop-up dialog box.

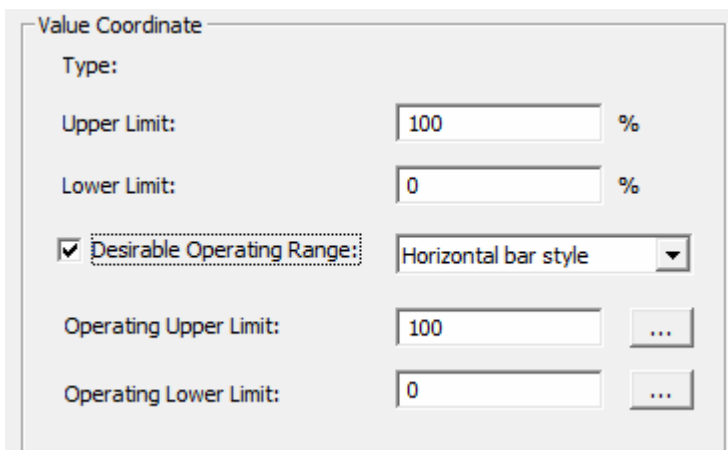

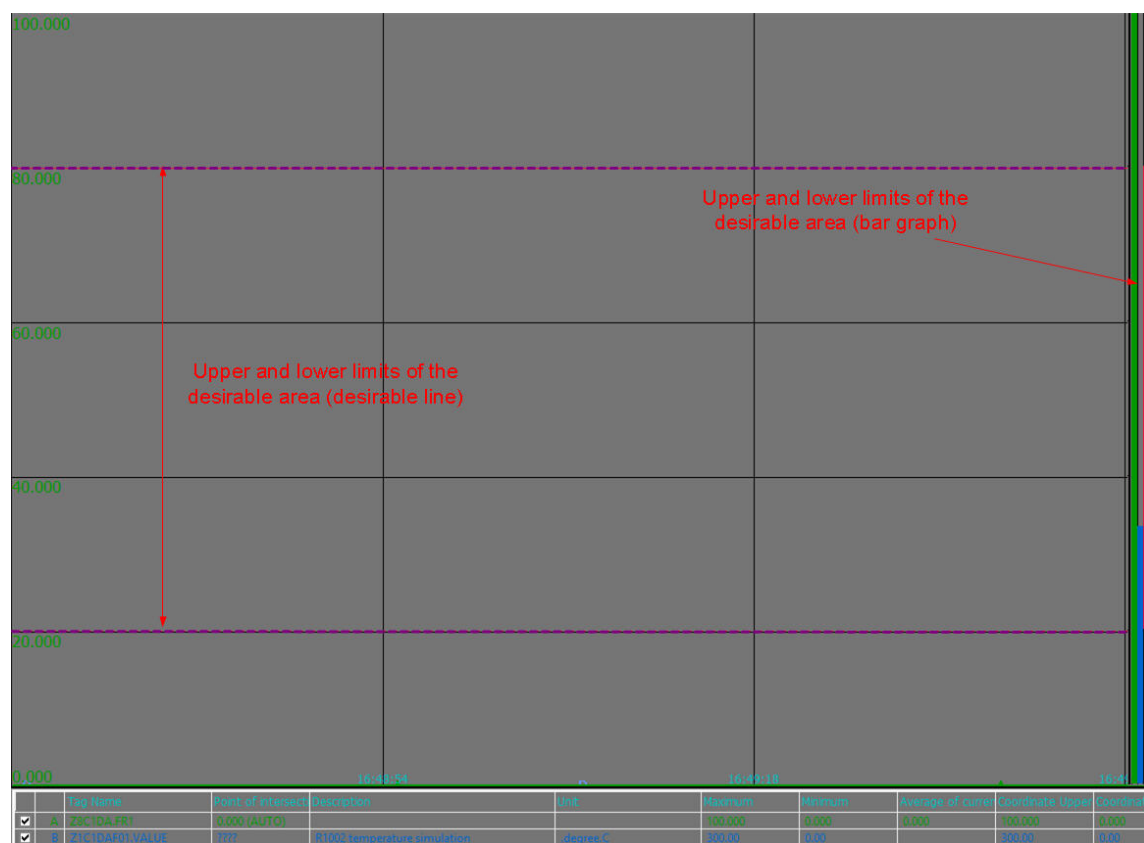


Figure 3-61 Advanced settings of tags in the trend control

According to the table below, you can configure the maximum and minimum limits of the coordinates and the desirable area property in the trend control.

Table 3-6 Tag coordinates and desirable area property configuration description

Configuration items	Configuration description
Upper / Lower Limit	It is used to assign the upper and lower limits of the trend curve such as configuring the upper limit as 80% and the lower limit as 20%. Then the trend curve of this tag is displayed within the range from 20% to 80% as shown in the figure below.
Desirable Operating Range	It is used to configure whether or not to display the desirable area of this tag and its display style. If it is selected, the desirable area will be displayed. Otherwise, it won't. By default, this item is not selected. After you install HP HMI software, it will be selected by default. After enable "Desirable Operating Range", the display style of "Desirable Operating Range" can be select: <ul style="list-style-type: none"> ● Select the desirable line, the desirable operating range will be shown by the Upper Limit and Lower Limit, as the purple line in the figure below. ● Select the Horizontal Bar, the desirable operating range will be shown by the Upper Limit and Lower Limit, as the green bar in the figure below.
Operating Upper Limit/ Operating Lower Limit	It is used to assign the upper and lower limits of the desirable area of the trend curve of the tag. The setting supports numbers and tags: <ul style="list-style-type: none"> ● Numbers: input in the text box. ● Tags: click  and select tags in the pop-up “tag selector”, or input the tag's name. Note: if the tag name is only consisted by numbers, input the tag with its field, such as input 123.pv.



3. Set Trend

Select “trend setting” page in the “trend control” dialog box and the configuration below will be shown in the following figure.

TrdGraph1 Properties

Tag Settings | **Trend Settings**

☐ Display Full Screen ☒ Display Curve Label

☒ Display Toolbar ☒ Display Time Coordinate

☒ Display Value Coordinate Engineering

☐ Show Multi Y Axis ☒ Show BarLine

☒ Show Grid [Dropdown]

Font Color [Color Picker]

Background Color [Color Picker]

Trend Settings

☒ Display Tag Information

Display Position: List

Tags in Each Row: 1

Information in Each Row: 4

☒ Display Tag Name ☒ Display Tag Value

☒ Display Tag Description ☒ Display Range

Trend Time Span

0 Day(s) 0 Hour(s)

2 Min(s) 0 Sec(s)

Recent History Setting

☐ Show Recent History 10 minutes

(Recent history display is superior than desirable operating range display)

Restore Configuration Settings

OK Cancel Apply

Figure 3-62 configuration dialog box of trend control (trend settings)

You can configure the attributes of the trend page and the trend data according to the following table.

Table 3-7 Parameter configuration in “Trend Setting”

Configured Items	Function Description	Configuration Methods
Display Full Screen	Whether or not the trend page shows in full screen	If ticked, trend page will show in full screen, otherwise show in the current configured size
Display Curve Label	Whether or not to display the number markers in the curves	If ticked, it is displayed in the second column, otherwise, it isn't displayed
Display Toolbar	Whether or not to show the tool bars in the trend page	If ticked, it is displayed otherwise, it isn't displayed
Display Time Coordinates	Whether or not display time at the bottom of the trend page	If ticked, it is displayed otherwise, it isn't displayed
Display Value Coordinates	Whether or not to display the value coordinate on the left of the trend page	If ticked, it is displayed, otherwise it isn't displayed. After being ticked, the display format is configured as “percent” or “project volume” in the drop-down list.
Display Multi Y Axis	Whether or not to display Y coordinate for each tag in the trend page	If ticked, it is displayed otherwise, it isn't displayed
Display BarLine	Whether or not display slider in the trend page	If ticked, it is displayed otherwise, it isn't displayed

Configured Items		Function Description	Configuration Methods
Display Grid		Whether or not display grid in the trend page	If ticked, it is displayed otherwise, it isn't displayed. After being ticked, it has multiple options and can be configured in the drop-down list.
Font Color		The text color used to configure tag information and time	Click color box and select colors.
Background Color		It is used to configure the background of the trend page	Click color box and select colors.
Display Tag Information	Display Position	It is used to appoint the display method and location of the tag information and display method	By default,, if the "display location" is "list", it includes tag name, the value of the point of the intersection, the upper and lower limit and statistics information. When "display location" is not "list", the display information of tags only includes tag top, tag bottom and medium part of tags. When "display location" is not "list", the display content only includes tag name, description, the current value and the upper and the lower limits.
	Tags in Each Row	It is used to appoint the number of displaying tag each row	When the display location is "top", "bottom" and "medium", it can appoint the tag number each row displays.
	Information in Each Row	It is used to appoint the number of displaying information each row	When the display location is "top", "bottom" and "medium", it can appoint the tag information number each row displays. Tag information includes tag name, description and measuring range. Whether to display can be configured by the following configuration.
	Display Tag Name	It is used to appoint whether or not to display the tag name	If ticked, the tag name is displayed in the tag information. Otherwise, it isn't.
	Display Tag Description	It is used to appoint whether or not to display the tag information	If ticked, the tag description is displayed in the tag information. Otherwise, it isn't.
	Display Tag Value	It is used to appoint whether or not to display the tag value	Cannot configure
	Display Range	It is used to appoint whether or not to display the tag measuring range	If ticked, the tag measuring range is displayed in the tag information. Otherwise, it isn't.
Trend Time Span		It is used to appoint the time range of the trend page	Input in the text box
Recent History Setting		It is used to specify the display method of the statistics of history value range	The drop-down list displays the time width of the width of the history statistics.
Restore Configuration Settings		It is used to restore the setting of the trend control to the default initial state.	Click it to restore the configuration.

Use controls in Supervision

Operations are available in the trend display of supervision. For more operation details, refer to < Real-time Supervision Software User Manual>.

After page switching, Settings in trend display will turn back to the default. If users want to save the settings done before, please do as follows:

1) Saving the configuration

Add a button named "Button1" in graphics shown in Figure 3-59, name the button text as "Save Settings", right click the button, select "Edit the Script" in Right-click menu to open VFScript, then edit script shown as follows:

```
Sub Button1_OnLButtonUp(nFlag, x, y)
TrdGraph1.SaveTrdParamToFile("D:\ECSRUN\INDBARATHPOWER\HMI\OA0\Run\Local_Settings\AdvTrend\Tred Control_TrldGraph1.draw")
End Sub
```

In the script above, "Button1" is the name of the button, TrdGraph1 is the name of the trend control, "INDBARATHPOWER" is the name of the project, "Tred Control" is the name of the graphics. "Tred Control_TrldGraph1.draw" is the name of the configuration file, it shall be named like the way of "[Graphics Name]_[Trend Control Object Name].draw".

"SaveTrdParamToFile" is the interface to save configuration, parameter (content in the brackets) is the path of the configuration file. If the file doesn't exist, a new one will be created automatically, otherwise the original one will be covered. If there are several trend controls, user needs to edit script for each one.

2) Reading the configuration

● Auto Read

Auto Read is to read settings saved automatically when switching to the graphics page in supervision.

Right-click In blank of the graphics page, select "Edit the Script" in Right-click menu to open VFScript, then edit script shown as follows:

```
TrdGraph1.LoadTrdParamFromFile("D:\ECSRUN\INDBARATHPOWER\HMI\OA0\Run\Local_Settings\AdvTrend\Tred Control_TrldGraph1.draw")
TrdGraph1.UpdateTrend
```

In the script above, "TrdGraph1" is the name of the trend control, "INDBARATHPOWER" is the name of the project, "Tred Control" is the name of the graphics. "Tred Control_TrldGraph1" is the name of the configuration file, it shall be named like the way of "[Graphics Name]_[Control Object Name].draw".

"LoadTrdParamFromFile" is the interface to load configuration, parameter (content in the brackets) is the path of the saved configuration file. "UpdateTrend" is used for updating trend.

● Manual Read

User needs to click the button, configured in Graphics, to read settings saved.

Add a new button named "Button 2" in graphics shown in Figure 3-59, name the button text as "Read Setting", Right-click the button, select "Edit the Script" in Right-click menu

to open VFScript, then edit script shown as follows:

```
Sub Button2_OnLButtonUp(nFlag, x, y)
```

```
TrdGraph1.LoadTrdParamFromFile("D:\ECSRUN\NDBARATHPOWER\HM\OA0\Run\Local_Settings\AdvTrend\PRO_TrGraph1.draw")
```

```
TrdGraph1.UpdateTrend
```

```
End Sub
```

The instruction is the same as 'Auto Read'.

3) View the monitoring images

The Graphics of Trend control in supervision is shown in Figure 3-63, click "Save Setting" after modifying settings. When switching to the Graphics of Trend control next time, click "Read Setting", the trend display is shown with the settings saved. (If it is set as "Auto Read", when switching to the Graphics of Trend control, the trend display is shown with the settings saved without any operation)

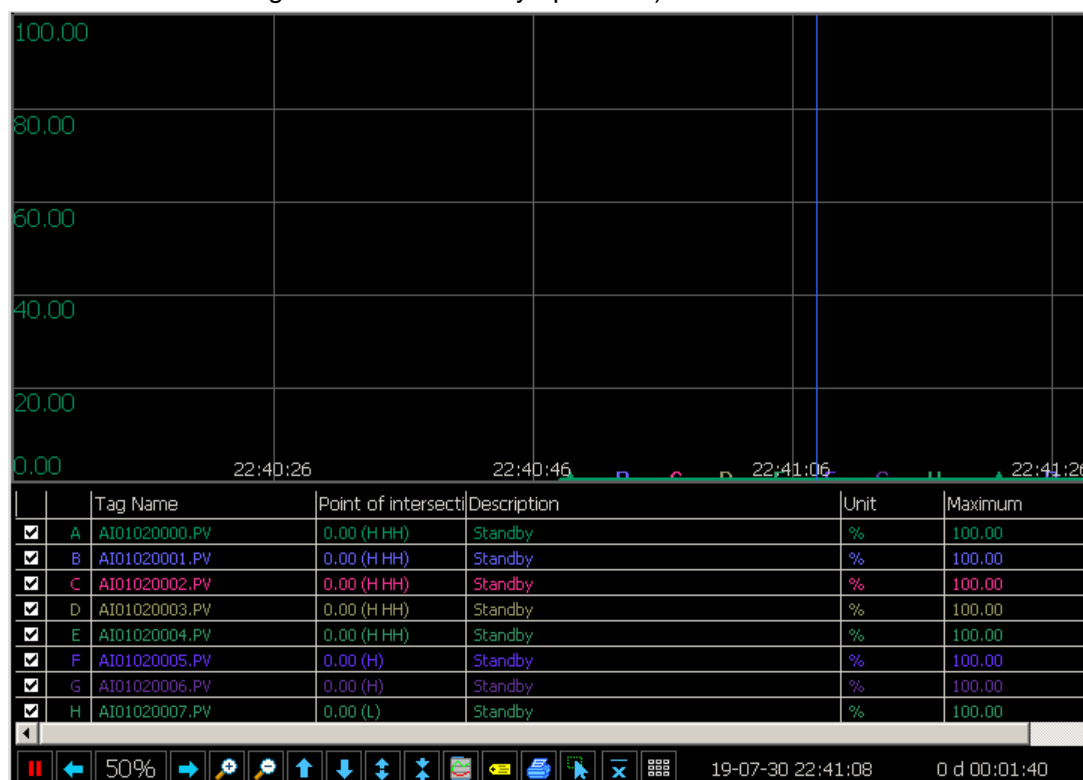



Figure 3-63 The Graphics of Trend control

3.5.3 Video Player Control


If the third-party video monitoring device is equipped in DCS field, the player of video monitoring device can be connected via graphics, such as video player of HIKVISION.

Install the third-party video player software before adding in graphics. The installation program of HIKVISION video player software is shown below.

 [NetVideoActiveX23_20130415.cab](#)

Insert Video Player Control

After installing the video player software, add player control in graphics below.

1. Click  in graph objects and the dialog below pops up.

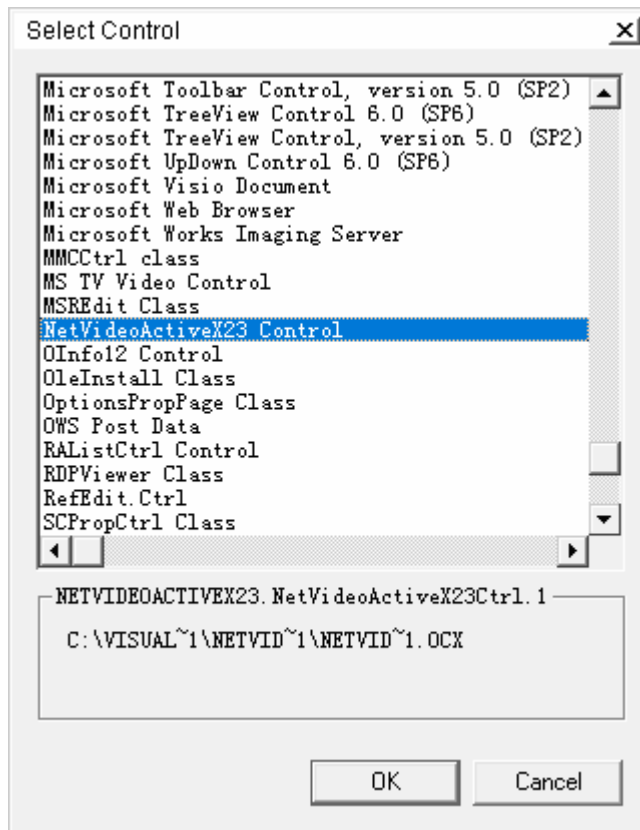



Figure 3-64 Select control

- 6) Select the player control in list, such as “NetVideoActiveX23 Control” in above.
- 7) Click “OK” to go back to graphics interface. The cursor will become  in graphics, drag the mouse to resize the control. Please resize the control properly to display the video normally in the monitoring window.
- 8) Following player properties dialog will be pop up after adjusting control.

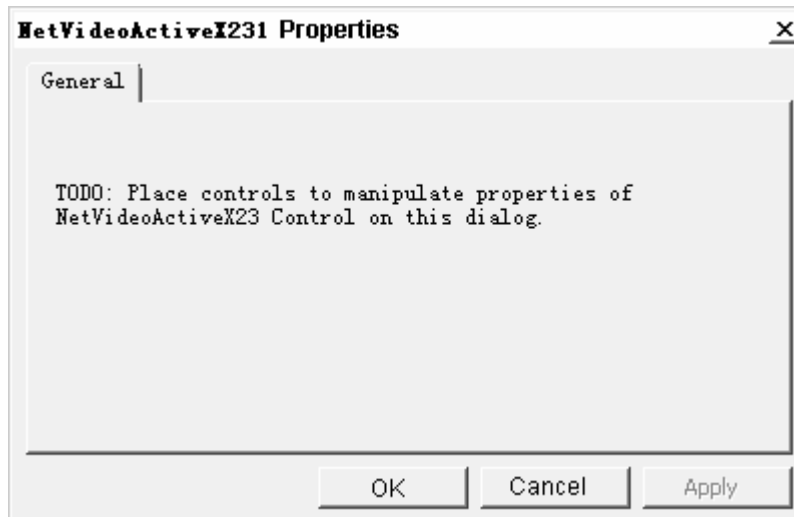


Figure 3-65 Player properties



Tip:

Different players correspond to different controls, some players can set the properties, some have no need, as shown above.

- 9) Click **OK** to complete adding video player in graphics. The monitoring window of video player control in real-time monitoring software is shown below.



Figure 3-66 Video player control monitoring

Apply Video Player Control

After inserting the video player control, it can be applied by script according to the method provided by supplier, as shown below:

```

'-----
' SUPCON
'-----
' Created:2015-05-15 Creator:
'-----

DefaultIP = "172.30.3.199"
Dim lUserID

Sub login(IP)
    'lUserID = NetVideoActiveX231.Login("172.30.3.199", 8000, "admin", "12345")
    lUserID = NetVideoActiveX231.Login(IP, 8000, "admin", "12345")
    If lUserID < 0 Then
        MsgBox("Login Failed")
    End If
    NetVideoActiveX231.StartRealPlay 1, 0, 0
End Sub

'-----

Sub Form_OnClosePic()
    NetVideoActiveX231.StopRealPlay
    NetVideoActiveX231.Logout
    NetVideoActiveX231.ClearOCX
End Sub

'-----

Sub Form_OnOpenPic()
    login DefaultIP
End Sub

'-----

Sub Button2_OnLButtonUp(nFlag, x, y)
    login DefaultIP
End Sub

'-----

Sub Button3_OnLButtonUp(nFlag, x, y)
    NetVideoActiveX231.StopRealPlay
    NetVideoActiveX231.Logout
    NetVideoActiveX231.ClearOCX
End Sub

```

Figure 3-67 Apply video player control by script

3.5.4 Batch Control

Batch control software VxBatch can manage the recipes of production line in fine chemistry industry together and in batch, to facilitate the management of technical flow.

Batch control can be added in High-performanceHMI graphics software, to achieve the monitoring configuration for functions such as batch log, history batch and batch process management, etc.

Preconditions

Install VxBatch in engineer station of High-performanceHMI system before performing monitoring configuration in VxBatch.

Operation Steps

Perform monitoring configuration of VxBatch in graphics by following steps:

1. Select  in graph objects and the prompt of whether save current graphics before

inserting control pops up.

- 10) Select “Yes” and the “Control Selection” dialog below pops up.

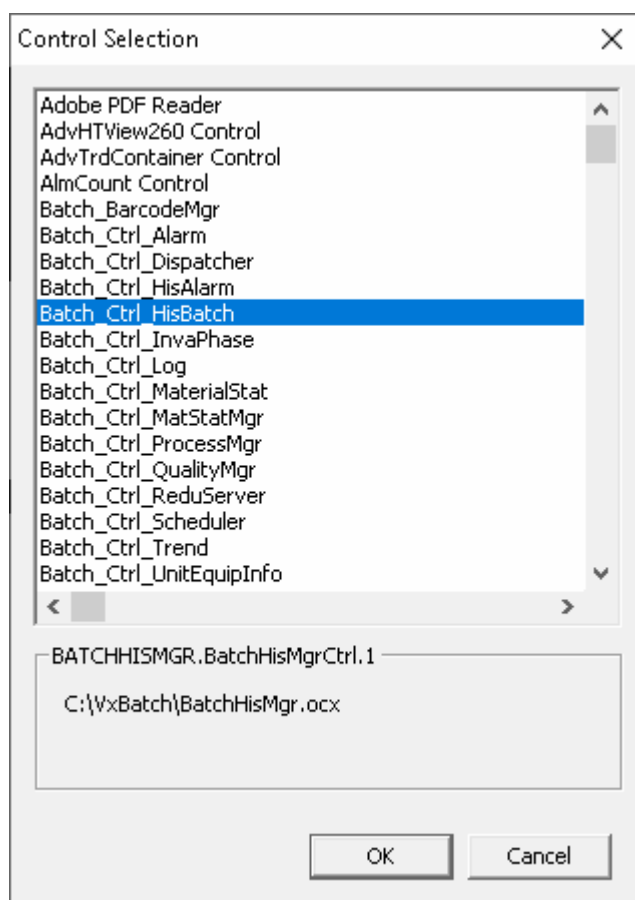


Figure 3-68 Select VxBatch control


- 11) Select the control to be added to graphics and click “OK”. Main functions of controls are shown below.

Control	Function
Batch_Ctrl_Log	View the operation log of batch management.
Batch_Ctrl_HisBatch	View history batch.
Batch_Ctrl_ProcessMgr	Manage process for batch and device.
Batch_Ctrl_Dispatcher	Create and edit batch and send order.
Batch_Ctrl_Trend	View batch curve and material information.
Batch_Ctrl_Scheduler	Manage batch schedule and plan.
Batch_Ctrl_QualityMgr	Manage the batch quality by inputting quality data.



Attention:

- It is recommended that only add one batch management control in a graphics and set graphics name as control name to make sure the normal display of batch management control in monitoring window.
- No need to configure the inserted control in configuration, it can be operated in monitoring. Please refer to *VxBatch User Manual* for details.

- 12) The cursor in graphics will become , drag the mouse to resize the new control. It is recommended that only add one batch management control in a graphics to make sure the normal display of batch management control.



Tips:



- After completing the monitoring configuration of VxBatch in VFDraw, user should configure batch management data in VFHMICfg Domain Configuration/ Batch Configuration. Please refer to *Domain Variable Config Software User Manual* for details.
- After configuring monitoring configuration and batch management database in VxBatch, the batch management can be monitored in VFLaunch after publishing configuration.

3.5.5 Alarm Count Control

Alarms can be counted by alarm region, graphics picture, tag and tag alarm type via alarm count control.

Configure Control Attribute

Add and configure alarm count control by following steps:

1. Click  in graph controls, and the cursor will show as . Press the left button and drag to set the size of alarm count control, then release it, the alarm count control will show as below.

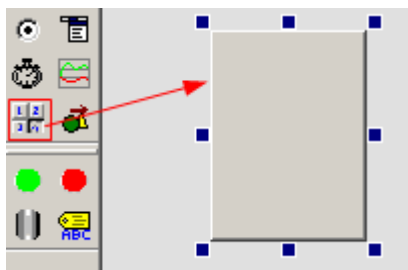




Figure 3-69 Alarm count control

- 2) Double-click the added alarm count control to pop up its properties configuration dialog below.

Figure 3-70 AlmCountCtrl Properties

3) Configure alarm count control by the table below.

Control	Function	Configuration
Name	Control name.	Input in text box.
Flash	Flashing mode of control when contents counted by control raising alarm.	Select from drop-down list: Background Flashing: only background flashes when alarm raising. Graph Flashing: alarm raised will show with the icon of highest priority alarm. Customized flashing, and set the alarm color, sleep color and background color as needed. Sleep color refers to the display color of doze alarm.
Background Color	The background color of the control in the normal state.	Click "Background Color" and select the color in the behind color frame.
Font	Font of control name.	Click  and select in the "Font" dialog popped up.

Control	Function	Configuration
Action	Executed action when alarm value changing.	Select from drop-down list: <ul style="list-style-type: none"> ● Open Alarm List: click this control to open alarm list. ● Open Picture: click this control to open the specified graphics picture. ● Pop-up Picture: similar with open picture, pop up the pop-up graphics.
Picture Name	If "Action" is "Open Picture" or "Pop-up Picture", specify the picture in "Picture Name".	Click  and select in the "Open File" dialog popped up.
Circle	The shape used to set the alarm count control is circle.	Check and the alarm count control displays as circle. On the contrary, it will display as rectangle.
Alarm Region	Set the specified alarm region as count alarm range.	Select the specified alarm group and region.
Graphics	Set the specified graphics as count alarm range.	Select the type of graphic (general graphic or pop-up graphic), and then select the specific graphic.
Tag	Set the specified tag as count alarm range.	Select the specified tag in the right pane.
Tag Alarm Type	Set the specified tag alarm as count alarm range.	Select the specified tag alarm in the right pane.
Alarm Count Tag	Use to specify the count alarm.	Select the specified alarm count in the area on the right. Please refer to <i>Domain Variable Configuration Software User Manual</i> for detailed configuration of alarm count.

4) Click "OK" to save the configuration for alarm count control.



Tip:

Alarm statistics control only supports the statistics of the local domain alarms. Adding cross domain tags in the graphics is not allowed. Alarm statistics control in the cross-domain referenced graphics doesn't count the cross-domain tag alarms.

Usage in the real-time monitor

After configuring the alarm statistics control of the flowchart, the color of the alarm statistics control will be changeable as per the alarm condition below:

- Not flash, it means the alarms included in the alarm statistics control are not generated at all. If the alarm statistics type is "permissible alarm area", and all the alarms in this area are not generated, the control doesn't flash.
- Flash, it means any alarm included in the alarm statistics control generates. The flashing color is the color of which the alarm with the highest level. If the alarm statistics type is "permissible alarm area", and the 1 level and 2 level alarms generate at the same time, then the display rule conforms to the 2 level alarm display rule. The alarm display feature is configured in the VFExplorer. For details, please refer to *VFSysBuilder User Manual*.



3.5.6 Log Control

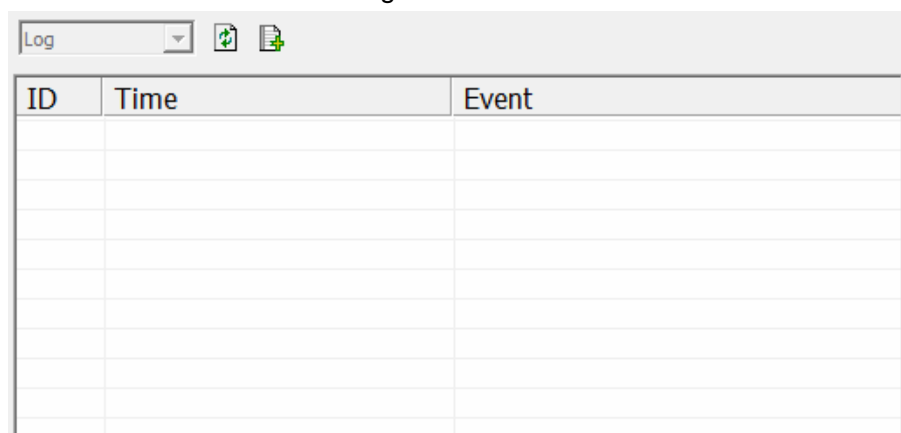
User can add tags to control as needed by the log control, therefore adding specific tags' operation log during the real-time monitoring, and then save the operation log into the log server.

Configure Control Property

User can configure log control by following steps.

1. Add log control to graphic

Click the log control button  from the graphic object toolbar and the mouse will display as . Then hold down the left mouse button to drag and set the size of log control. Release the mouse and the log control is shown below.



ID	Time	Event

Figure 3-71 Log control

2. Add tags to log control

Double click the added control to bring up the dialog, as shown below.

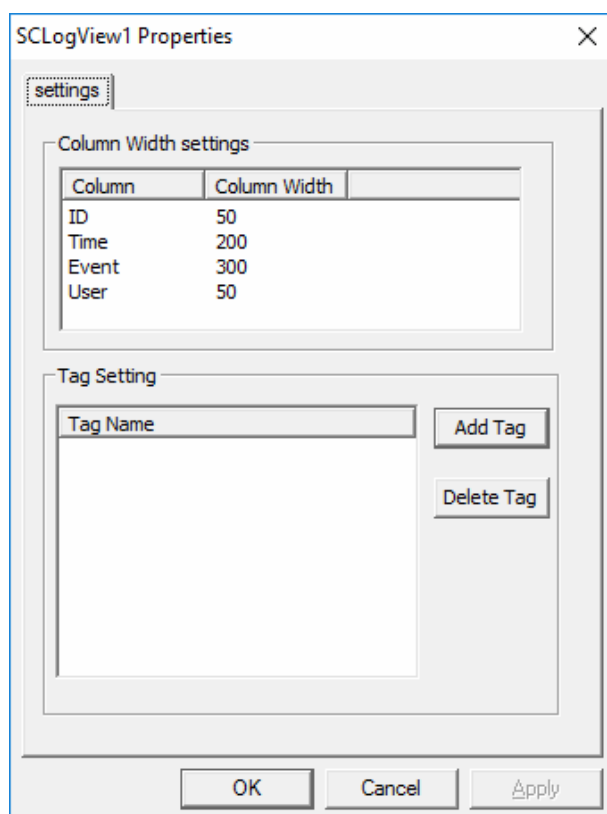


Figure 3-72 Add tag to log control



Click "Add Tag" and select the needed tag in "Tag Selector".

After adding tags one by one, click "OK" to complete the configuration of log control. It should be noted that a log control supports up to 8 tags.

Usage in the Real-time Monitor

Before viewing the operational log control in the real-time monitor, you need to confirm the operational authority of the current login users. If the "view log" authority is configured, you can view all the operational log of the tags in the control. If the authority is not configured, only the operational log of the current user can be viewed.

After adding the log control to graphic, user can view the control in real-time monitoring and operate as following steps:

- Select "Log" in the drop-down list box and the log information will only display in the control.
- Select "Maintenance" in the drop-down list box and maintenance information will only display in the control. The maintenance information can be added to log list by clicking "Add Maintenance Information".
- Click  to bring up the dialog box of "Add Maintenance Information" to specify the tag's maintenance information.
- Click  to refresh to the current log.



3.5.7 Real-time Alarm Control

Add tag to real-time control as needed to realize the highlighting of real-time alarm of the specified tag during the real-time monitoring.

Configure Control Property

Configure the real-time control by following steps:

1. Add real-time control to graphic

Click on the real-time alarm control button , move the cursor to the drawing area and the cursor will be . Hold down the left mouse button to drag, release the mouse and a real-time alarm graphic object will appear. Double-click the graphic object, the "Alarm Properties" dialog shown as below pop.

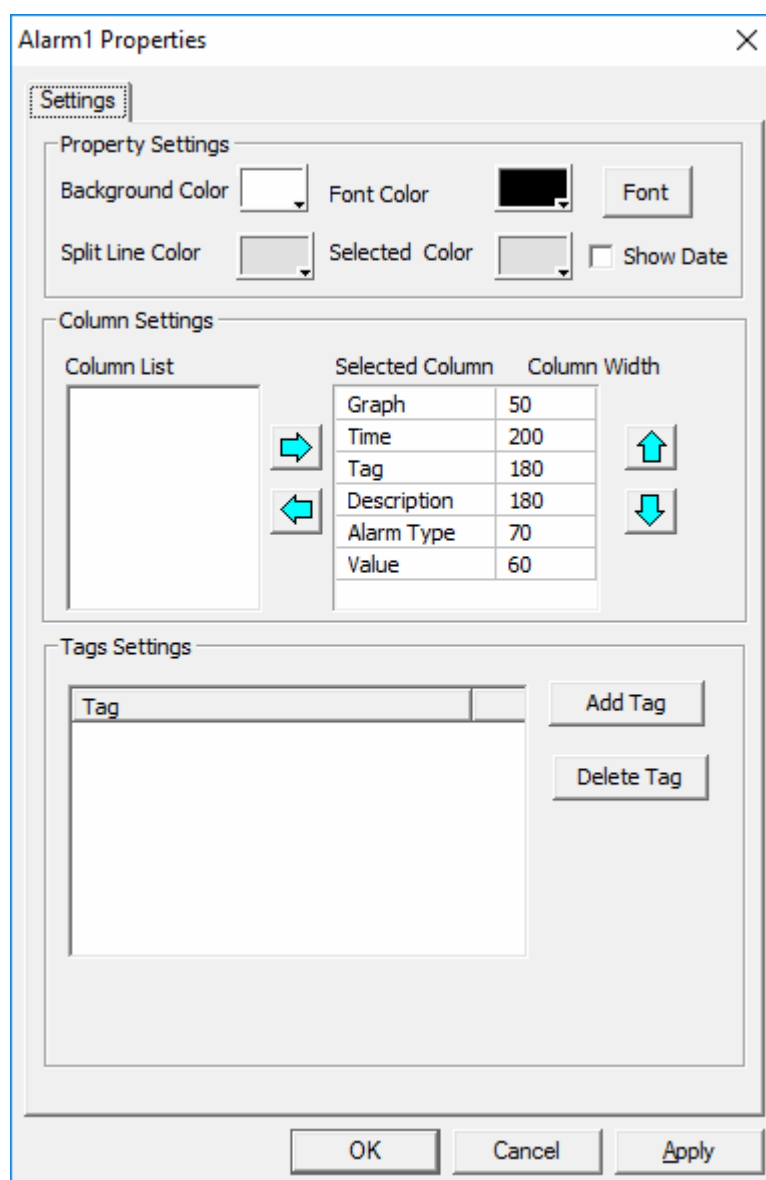




Figure 3-73 Alarm properties



3. Property Settings

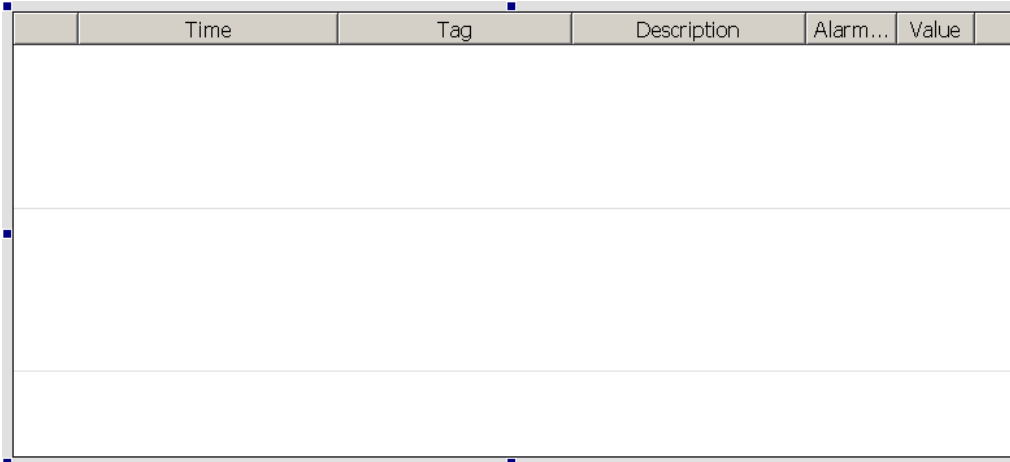
The "Property Settings" allows user to set the background color, font color, font, select font color, color of split line, and show date of real-time alarm object. If "Show Date" is checked, the "Time" column in the real-time alarm list will be display as "Date-Time".

4. Row and Column Settings

The "Row and Column Settings" can be used to set the items included in real-time alarm graphic object, as shown in Figure 3-74.

Select the item in "Column List" and click button  to add the item to the "Selected Column". Click "OK" to add this item to real-time alarm graphic object. Click button  to add the selected item in "Selected Column" to "Column List". Click "OK" and this item will no longer be included in real-time alarm graphic object.

Click on buttons  and  to adjust the ordering of items in the real-time alarm graphic object.



The image shows a window titled "Real-time alarm graphic object" with a table. The table has six columns: "Time", "Tag", "Description", "Alarm...", "Value", and an empty column. The table is currently empty of data rows.

	Time	Tag	Description	Alarm...	Value	

Figure 3-74 Real-time alarm graphic object

The first column of real-time alarm graphic object shows the alarm legend, and the order and content cannot be set. The content and order of other columns are determined according to the "Row and Column Settings". Take Figure 3-74 as example. The second column of graphic object is "Time" and used to displayed the time when the alarm is generated. The third column is "Tag". The fourth column is description item, which is used to describe the real-time alarm of the tag and can be edited. The fifth column is the alarm type. The sixth column is the real-time value of tag.

5. Tags Settings

Click "Add Tag" to popup "Tag Selector" to select the tags added to the real-time alarm control. And click "Delete Tag" to delete the added tags from the real-time alarm control.

6. Click "OK" to save the current configuration.

Usage in the real-time monitor

After adding the real-time alarm control to the flowchart, the monitoring interface will be displayed below when you view the control in the real-time monitor.

	Time	Tag	Description	Alarm Type	Value	
	23:21:56	DI00020000	Standby	OFF	OFF	

Figure 3-75 The case figure of real-time alarm control

The alarm information displayed in the real-time alarm control is related to the configured alarm level and the operations in the monitor.

- The displayed graphics and color is related to the alarm levels
- The flashing effect and the graphics display features are related to the alarm management operation. For example, the alarms with are re-triggered alarms.

For the alarm configuration and monitor display effect, please refer to 《High-performanceHMI alarm management user manual》.

3.5.8 Surge Curve Control

When the High-performanceHMI software needs to access the unit information in the system such as TCS-900 for surge monitoring, it is necessary to add relevant driver and import relevant function block tag. After the above operations are completed, user can add "Surge Curve Control" and configure surge control line, track point, etc. in the graphic.

Configure Control Property

The configuration of surge curve control can be completed by the following operations.

Click on "Surge Curve Control", move the cursor to drawing area, and the cursor is in the shape of . Hold down the left mouse button to drag, release the mouse button and a surge curve graphic object will appear, as shown in Figure 3-76.

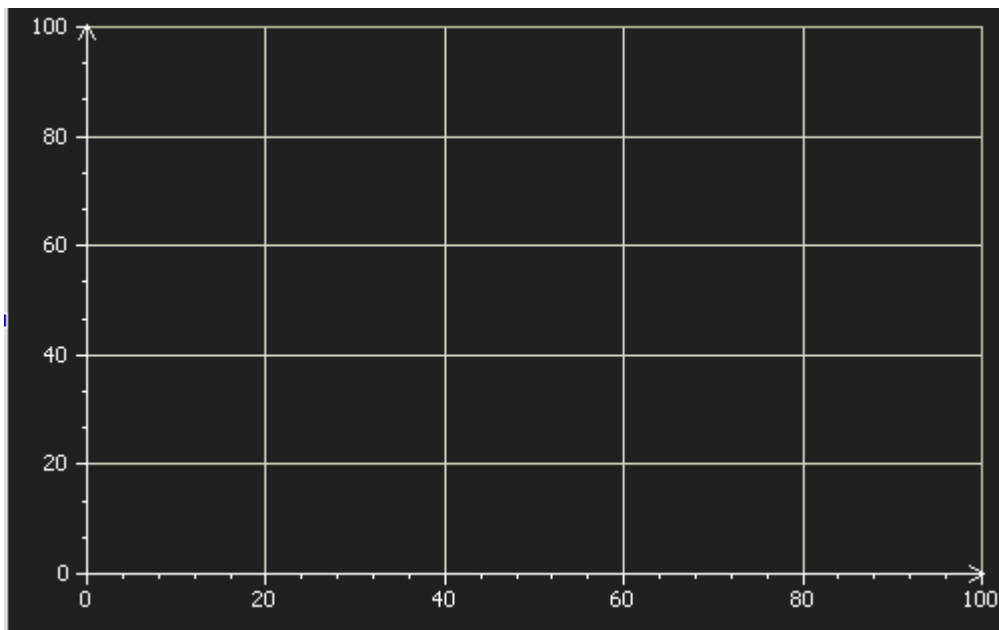


Figure 3-76 Surge curve control

Double click the control, or click on the control property in its right-click menu to bring up the interface shown in Figure 3-77.

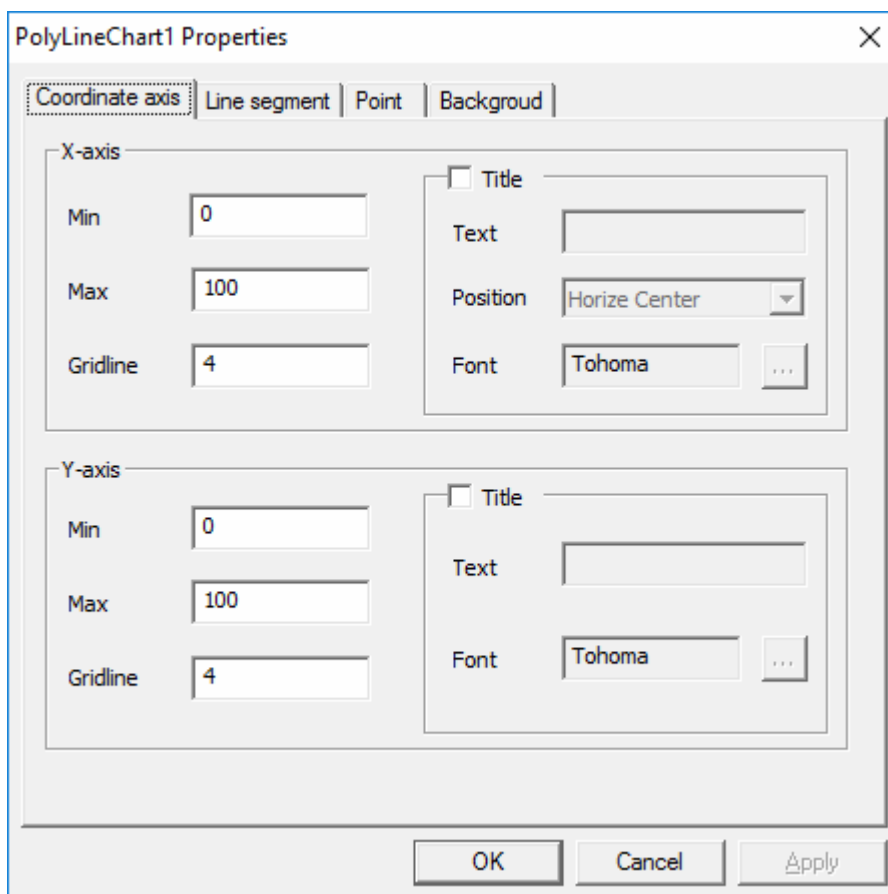


Figure 3-77 PolyLineChart properties

"Coordinate axis" Tab

As shown in the figure above, user can set the minimum and maximum coordinates, the gridline size, and whether to set the axis title for X or Y axis. If the title is set, user can set the title text, position and font.

"Line segment" Tab

The line segment tab is as shown in the following figure. User need to add a line segment and configure it, then add and configure the endpoints that make up the line segment.

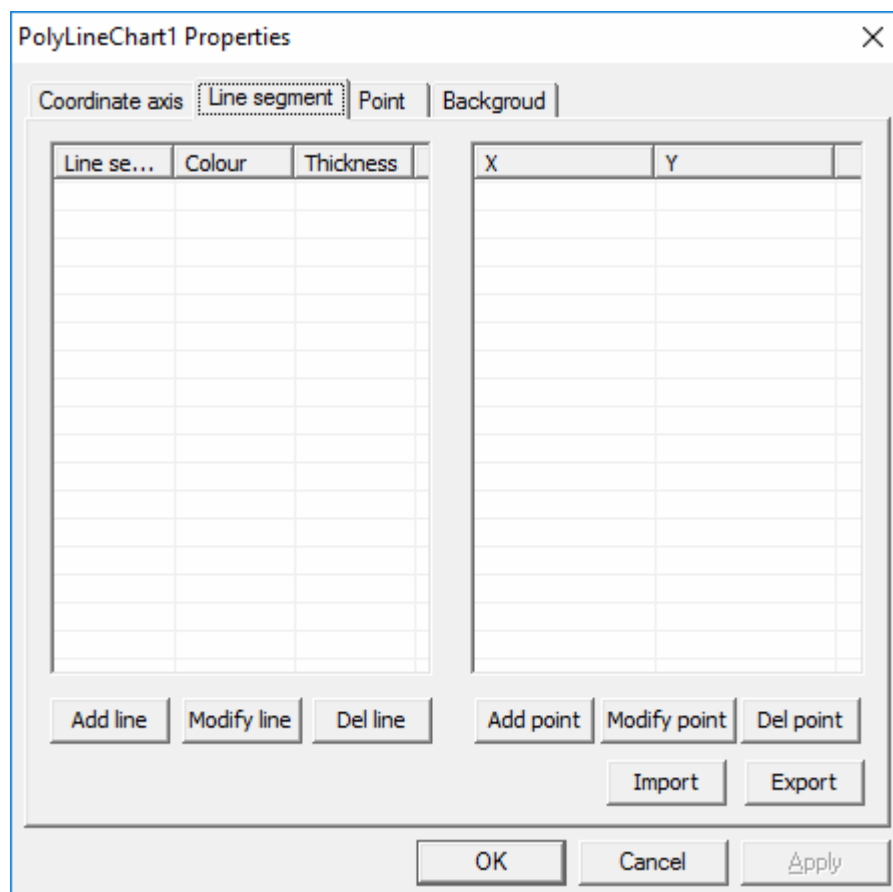




Figure 3-78 The interface of adding line segment

The steps are as follows:

- Click "Add line" to add a line segment to the line segment list.
- Double click the line information, or select the line and click the button "Modify line".
- The "Modify line" interface will display. After configuring the color and width of line, click "OK".
- Select the line segment and click "Add point" to pop up the following interface. User can operate as following steps.
 - Enter the value directly.
 - Click  to pop up tag selector and select the tag.
 - Click  to pop up expression and define the endpoint in the expression editor.

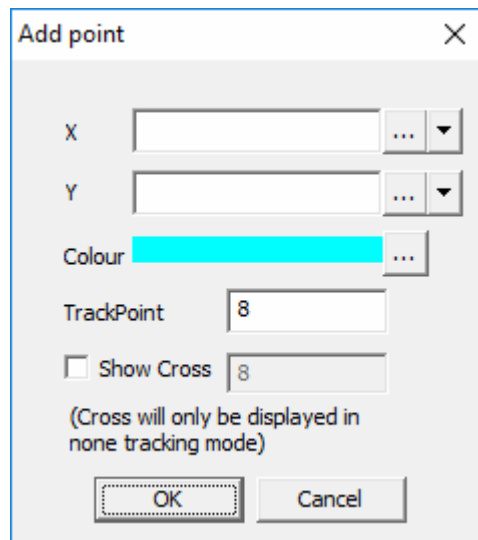


Figure 3-79 The interface of adding point

The instructions of import and export functions of line segment are as follows:

- The import and export file format is .CSV, and the format of imported file content must conform to the software specifications, otherwise it cannot be imported. It is recommended to export a file first and refer to its format.
- The .CSV file format is as shown in the figure below. User can only change the parameters of color column (Color), line width column (Width) and point coordinates (Points). Other contents and layout cannot be changed, otherwise it will not be imported. The point coordinates are distinguished by commas, which are respectively the first set of endpoints (X1, Y1), and the second set of endpoints (X2, Y2) and so on.
- The line width must be integer and in the range [1, 4].

PolyLine Line		
Color	width	Points
255	2	0, 0, 10, 20, 40, 80, 50, 100
255	1	0, 0, 20, 30, 60, 90
65280	1	0, 40, 25, 45, 50, 32, 60, 25, 65, 15, 70, 0, 35, 42, 42, 38, 55, 27
0	1	
0	1	X1 Y1 X2 Y2 X3 Y3

Figure 3-80 The file format of file

"Point" Tab

Set the X and Y axis values of track point coordinates, the color and size of track point, whether to display the cross, size of cross, and so on.

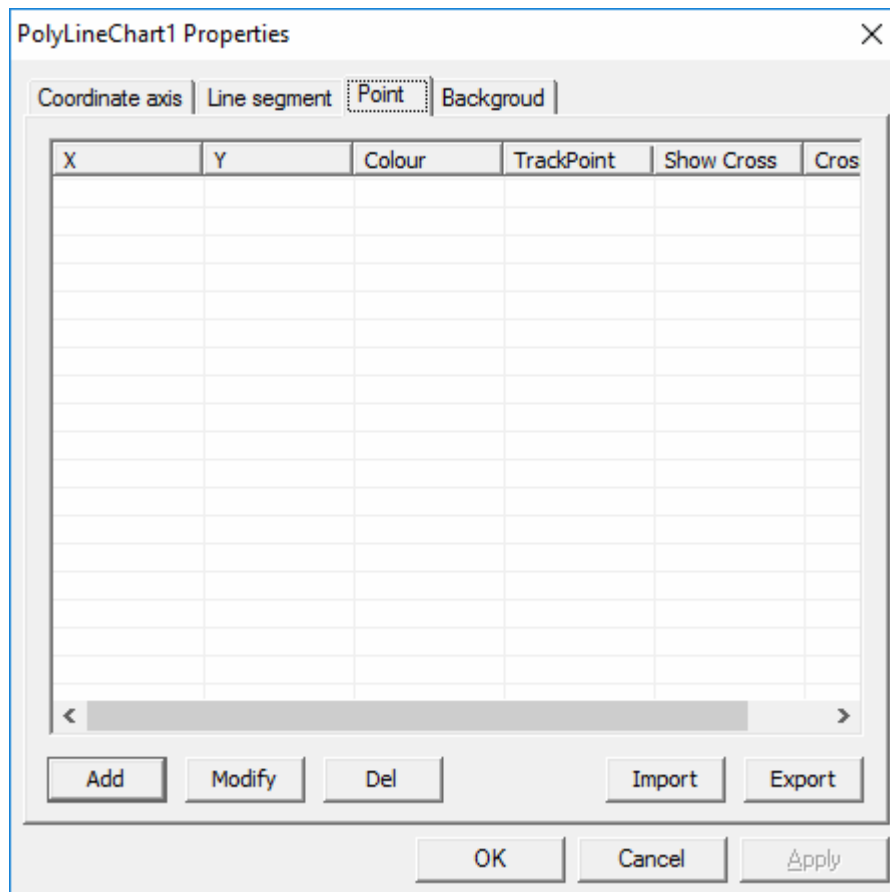


Figure 3-81 The point tab

The way to add and modify points is as follows:

- Click "Add" to set the X, Y coordinate values, colors, and track point size in the "Add point" interface. When the cross is checked, the running time is in the non-track recording mode, and the track points are displayed in a cross shape, otherwise it will be dot. Coordinate values also support expressions and so on.
- Select a point in the point list, click "Modify" and all parameters can be modified in the "Modify" interface. Click "OK" after the setting is completed.

The instructions of import and export functions of point are as follows:

- The import and export file format is .CSV, and the format of imported file content must conform to the software specifications, otherwise it cannot be imported. It is recommended to export a file first and refer to its format.
- The .CSV file format is as shown in the figure below. User can only change the X-axis coordinate column (X), the Y-axis coordinate column (Y), the color column (Color), the track point size (Size), whether to display the cross column (Cross), and cross size parameters (Cross size). Other content and layout cannot be changed, otherwise they will not be imported.
- If the track point needs to be displayed as a cross, the parameter corresponding to Cross is 1, otherwise it is 0. The track point size and cross size range are all integers

of [2, 20].

PolyLine	Point				
X	Y	Color	Size	Cross	Crosssize
AFT11	AFT12	0	8	0	8

Figure 3-82 The file format of track point



Tips:

- If the string type tag is used as the coordinate of port or end port, the coordinate will be 0 in the real-time monitoring.
- If the string type tag is used in expression of the port coordinate or end port coordinate, the port will be invisible in the real-time monitoring.

"Background" Tab

Set "Control Background Color", background style and color of chart.

The configuration and display of control background color, chart style and color are as shown in the figure below. When the background style is "Alternating Color", user needs to set the color 2.

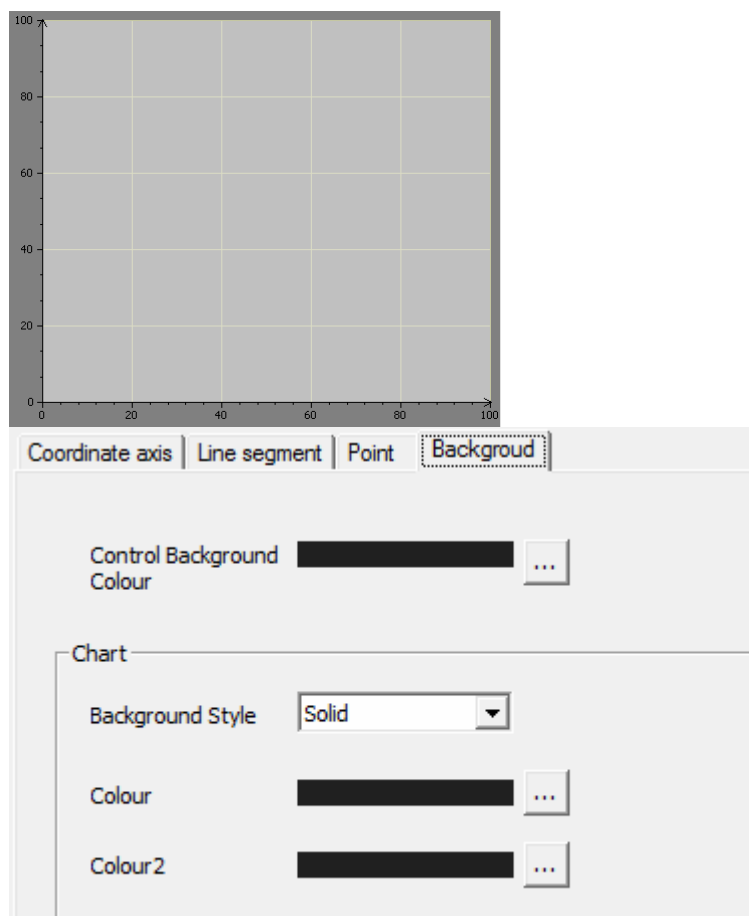
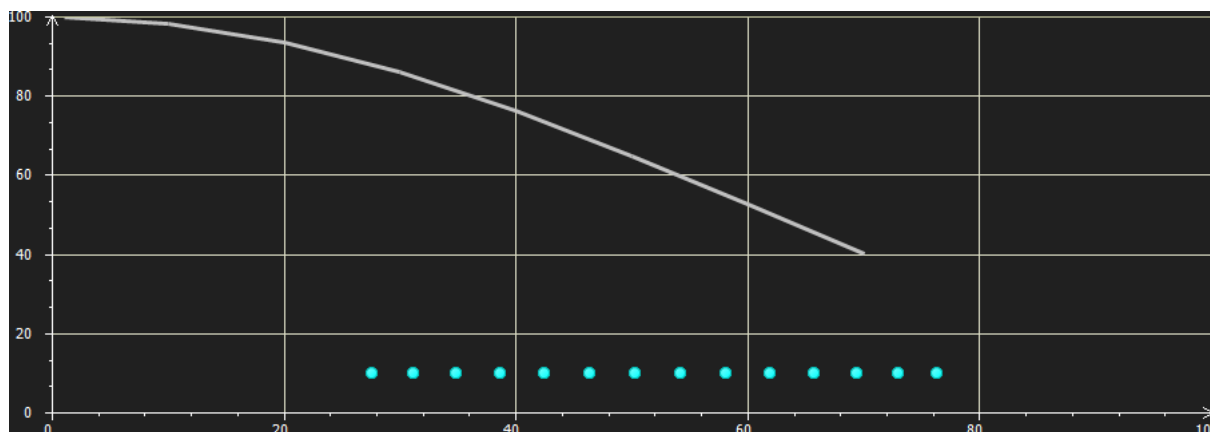


Figure 3-83 Background settings**Usage in the real-time monitor**

After configuring the antisurge control of the flowchart, the antisurge control will be displayed as per the values of the configured line segment and the points, as shown in the figure below.


**Figure 3-84 The monitor case of the antisurge curve**

- Line segment, it will display the line segment as per the configured endpoints
- Point, it will display the point as per the configured point. It can display the trajectory of the point by the command “display the trajectory” in the right-click menu.

3.5.9 Web Browser Control

It supports inserting Web browser control in High-performanceHMI Graphics. Through this control, you can view the web page content of the URL address associated with the Web control in real-time monitoring.

Add and configure controls

- 1) Click the Web control, move the cursor  to the drawing area, and the cursor is in shape.
- 2) Press and hold the left mouse button to drag, and release the mouse after drawing the size of the Web control according to actual needs.
- 3) Double-click the drawn Web control, and the Web control configuration dialog box shown in the figure below pops up.

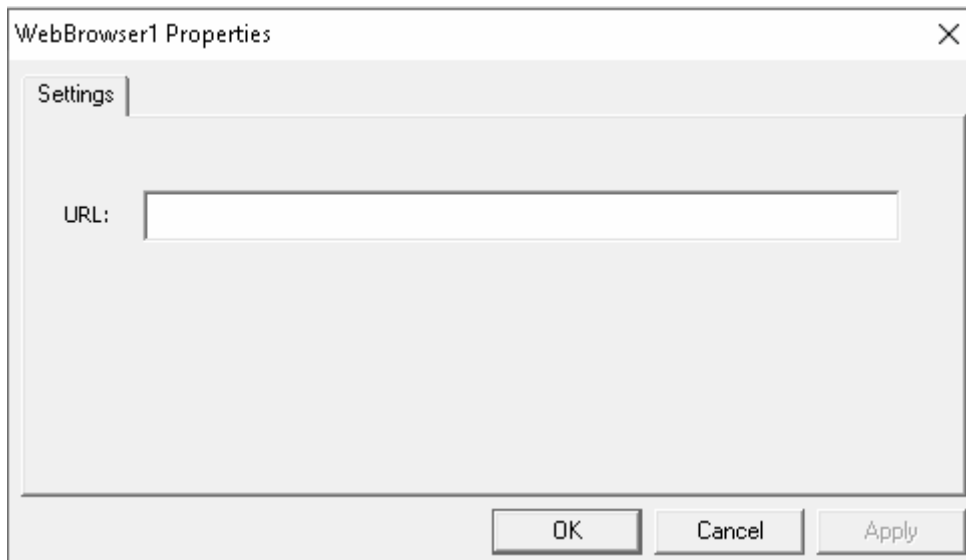


Figure 3-85 Web control configuration dialog box

- 4) In "URL", enter the web page address that needs to be opened in real-time monitoring.

Configure the script of the control

After adding a Web control, you can also specify its associated URL address for the Web control through a script.

- 1) Right-click the control and select "Edit Script" from its pop-up menu.
- 2) In the script editing interface, enter the following code. (Assuming that the button Button1 and the web control WebBrowser3 have been added to the flowchart).

```
Sub Button1_OnLButtonUp(nFlag, x, y)
WebBrowser3.URL="http://www.supcon.com/"
End Sub
```

In real-time monitoring, clicking "Button1" will display the web page content in the URL "http://www.supcon.com/" in the WebBrowser3 control.

Section 4 Instruction to the Right-click Menus of Graphics Object

In order to improve the efficiency of operating the graphics, every graphics object in the graphics of High-performanceHMI Builder has the right-click function. The corresponding right-click menu will pop up when right-clicking certain graphics object.

4.1 Graphics Property

Select the menu bar of **Settings/ Page Properties** or right-click in the blank of the Drawing area and select **Page Properties**, the Page Properties dialog box as shown in Figure 4-1 will pop up.

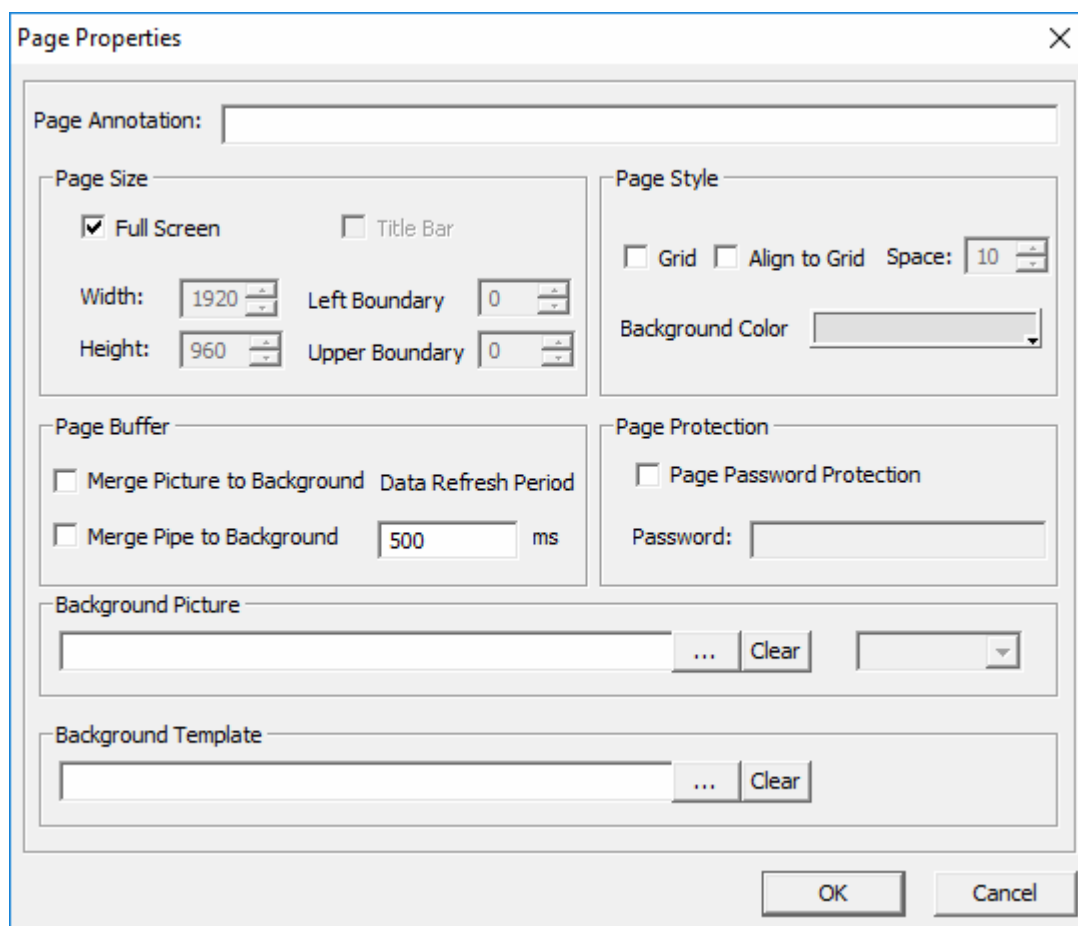



Figure 4-1 Dialog box “Page Properties”

- Page Annotation: Input the annotation to describe the properties of current drawing area interface.
- Page Size: Set the width and height of current drawing area interface of the graphics, and the default value (width 1280, height 964) is full-screen.

- **Page Style:** It is used to set Grid, Grid to Align and Space (its unit is pixel). The figure distribution will be clarified by setting the Grid; Grid to align and Interval are mainly for setting fine tuning when moving the graphics object--- fine tuning by using the arrow keys, and the distance is the value of Space.
- **Background Picture:** Designate the background picture of the graphics. Click the icon  and select one background picture and the display mode of background picture which includes 3 modes of Center, Tile and Stretch. The picture will be saved and embedded in the graphics after selecting, making it no need to release the graphics configuration together with the original picture.
- **Background Template:** Designate another graphics as the background of current graphics. The background template can't be operated in the editing status; the objects in both the background template and the graphics can be operated in the supervision status.
- **Page Protection:** User can type in page password by selecting the option of "Page Password Protection". Save the option, and the system will allow user to view and set the interface (when the security authority permitted) only after typing in the correct password in the supervision status.
- **Title Bar:** It is used to show or hide the title of the pop-up window. The window will pop up together with its title when choose the option. Besides, the figure box below the option "Title Bar" is used to set the display area (effective only when it is a pop-up window) of the window, which is not full screen. "Left Boundary" is the horizontal coordinate value in the top left corner, and "Upper" is the vertical coordinate value in the top left corner.
- **Merge Picture to Background:** Display pictures as background, which improves the system performance. User can view the effect when running, i.e., all the pictures are displayed at the bottom. However, the position order of all graphics objects keeps unchanged in the environments of HMI Builder (e.g., in the environment of Graphics Editor Environment). If the graphics object has dynamic effects like Zoom, the dynamic will be ineffective when switching to the graphics in the supervision status (if the size of the picture is 50% of original size when switching to the interface, then the size will keep unchanged; if the size of the picture is 10% of original size when switching to other interface and then switching back again, the size will keep 10%). The action of the picture is still effective in supervision.
- **Merge Pipe to Background:** It has the same function as "Merge Pipe to Background".
- **Data Refresh Period:** The period of refreshing the real-time data of current graphics. Setting range is 500ms~30000ms.



Tip:

The two functions of both Merger Pictures and Merge Pipes are merely for improving the system performance. The real position of picture and pipe won't change (including the layer on which the picture and pipe is, the position order relative to other objects, etc.) when their display status is changed. Generally, when there are less pictures and less complicated

pipe settings which may have little influence on the system performance, user can ignore the two settings of Merge Pictures and Merge Pipes.

4.2 Script Editor

Script Editor, which can implement much more functions by applying flexible scripts to a wider field, and it is a unique component of High-performanceHMI Software. Please refer to *Script Editor User Manual* for specific introductions.



Attention:

Edit the script to save the current flow chart.

4.3 Dynamic Property

All the dynamic properties will be viewed in HMI Builder. Dynamic Property is used to set the dynamic properties of graphics object, i.e., connect graphics objects to dynamic tags and implement the effect of interface dynamic supervision. Different graphics objects have different dynamic properties.

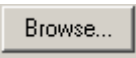
The open methods of Dynamic Property dialog box are a little bit different for different graphics objects. Generally open the “Dynamic Property setting” dialog box by double-clicking the graphics object. However, for objects like “Check Box”, “Text”, etc., right-click the object and select “Dynamic” in the pop-up menu.

4.3.1 Visibility

It uses digital information to control the visibility of graphics object, and the “Dynamic Property” setting interface for Visibility is shown in Figure 4-2

Figure 4-2 “Dynamic Property” setting interface for Visibility

Specific setting methods:

- Data Source: Input the tag name directly (tag field can't be left out, e.g., PV), or select tag in the pop-up “Tag Selector” by clicking the button. . 如上图所示，位号 AI02020000 或位号 AI02020001 产生报警后，图形控件将显示。反之，不显示。
- Data Type: Select the data type of tags in Data Source. Data Type includes analog and digital. “Add, Modify and Delete” threshold down are effective for Analog, while “True, False” are only effective for Digital.
- Value Type: Value Type includes Actual Value and Percentage, when selecting Actual Type, the Min and Max correspond to the Data Source directly. When selecting Percentage, the Min and Max correspond to the percentage of Data Source.
- Parameter setting: if select “Analog” in Data Type, fill in the Maximum/Minimum of parameters and select the Visible option in the pop-up dialog box after clicking the “Add” button. Repeating the operation can set multiple fields. To modify certain parameter, select the parameter and click the “Modify” button or double-clicking Maximum/Minimum,

and refill in the Maximum/Minimum of parameters and select the visible option in the pop-up dialog box. To delete certain parameter, select the parameter and click the “Delete” button. If select “digital” in data type, only need to select the Visible option when the digital is “True” or “False”.

- Reset: Users can reset the “Visibility” after clearing Data Source and parameters set previously (when Data Type is Analog).



Tips:

- **The relationship between threshold down and Visibility property (when Data Type is Analog):** When the value of data source is equal to or more than the threshold down, the object will be displayed according to designated Visibility property. For example, threshold down is 20 and the Visibility Property is “Visible”, the corresponding graphics object will be visible when the value of data source is equal to or more than 20.
- **When the name of certain tag selected as Data Source includes “-”, i.e. AI00-1, it should be written as tag (“AI00-1”).**

4.3.2 Horizontal Movement




It uses digital information to control the dynamic horizontal movement of graphics object, and the “Dynamic Property” setting interface for Horizontal Movement is shown in Figure 4-3.

The screenshot shows the "Dynamic Properties" dialog box with the "Horizontal Movement" tab selected. The dialog has several sections:

- Navigation Tabs:** Rotation, Flash, Color, Action, Visibility, Horizontal Movement (selected), Vertical Movement, Zoom, Fill, Line.
- Data Source:** A text field with a "Browse..." button.
- Positioning:** Radio buttons for "Relative" and "Absolute" (selected).
- Value Type:** Radio buttons for "Actual Value" (selected) and "Percentage".
- Min/Max Settings:**
 - Min: 0, Max: 0
 - Min Position: 0, Max Position: 0 (both with up/down arrows)
 - Units: Pixels
- Corresponding Position:**
 - Min: 0, Corresponding Position: [text field] [circular icon] 0
 - Max: 0, Corresponding Position: [text field] [circular icon] 0
- Buttons:** Reset, OK, Cancel.

Figure 4-3 “Dynamic Property” setting interface for Horizontal Movement**Relative Horizontal Movement**

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Positioning: select “Relative”.
- Max/Min: means the value range (of Data Source) for effectively controlling the horizontal movement of graphics object relative to selected border.
- Corresponding Position: refers to the horizontal movement scale of graphics object, select relative position of horizontal movement in the drawing area by dragging .
- The reference object selected is encircled by a blue frame, and the selected reference line is shown in green. After selecting, it shows in the Corresponding Positions of Max and Min in the interface displayed in Figure 4-3.
-  : used for setting the shift range of relative position.
- Reset: Users can reset the dynamic property of “Horizontal Movement” after clearing Data Source and resetting parameters to original settings.

Absolute Horizontal Movement

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Parameter setting: “Maximum & Minimum” means the scale (of Data Source) for effectively controlling the horizontal movement of graphics object. “Maximum & Minimum Position” means the range of horizontal movement.
- Reset: Users can reset the dynamic property of “Horizontal Movement” after clearing Data Source and resetting parameters to original settings.

4.3.3 Vertical Movement

It is similar to Horizontal Movement and users can refer to 0.

**Tip:**

When the value of movement is more than the maximum, it is limited at the maximum, and when the value is less than the minimum, it is limited at the minimum.

4.3.4 Zoom

It uses digital information to control the scaling of graphics object, and the “Dynamic Property” setting interface for Zoom is shown in Figure 4-4.

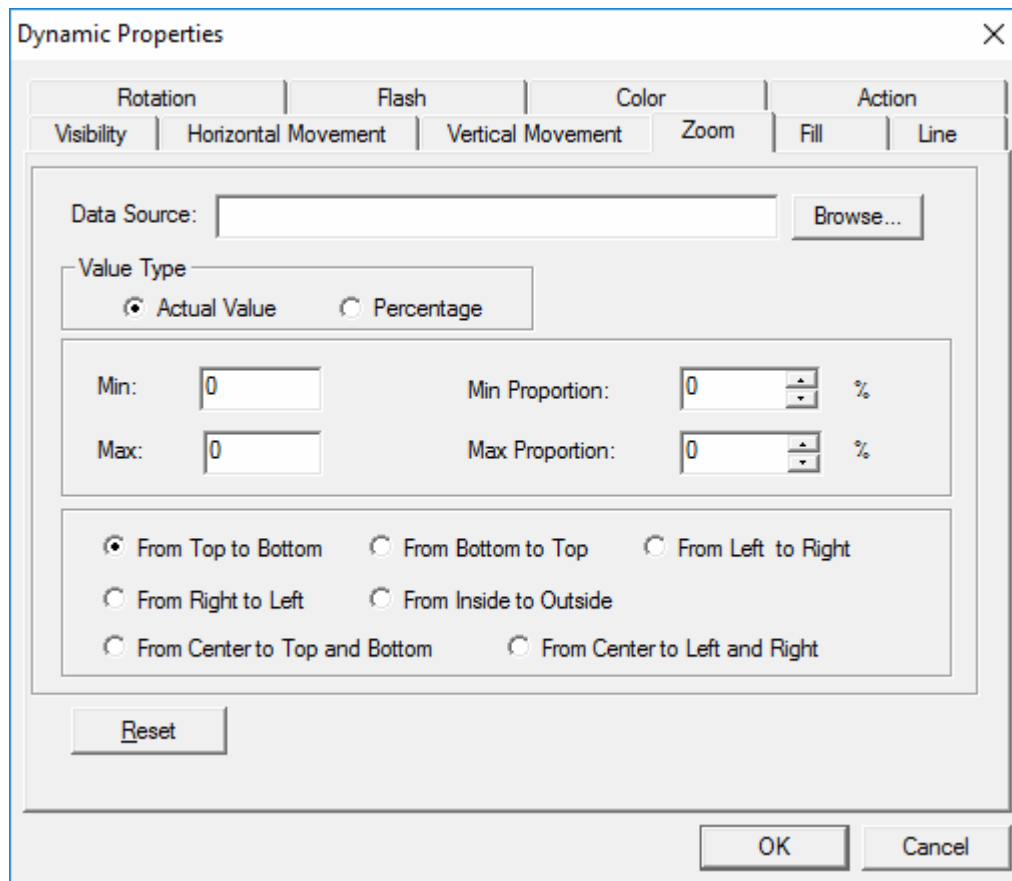


Figure 4-4 “Dynamic Property” setting interface for Zoom

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Value Type: When selecting “Actual Value”, threshold down corresponds to the value of Data Source directly; when selecting “Percentage”, threshold down corresponds to the percentage of the value of Data Source.
- Parameter settings: “Max &Min” means the scale (the parameter input generally is in the range) for effectively Zoom controlling of graphics object. “Max &Min Proportion” means the range of Zoom.
- Zoom Direction: Select the zoom direction. There are 7 modes of “From Top to Bottom, From Bottom to Top, From Left to Right, From Center to Top and Bottom, From Right to Left, From Inside to Outside and From Center to Left and Right”.
- Reset: Users can reset the dynamic property of “Zoom” after clearing Data Source and resetting parameters to original settings.

4.3.5 Fill

It uses digital information to control the auto-filling property of background color of graphics object, and the “Dynamic Property” setting interface for Fill is shown in Figure 4-5.

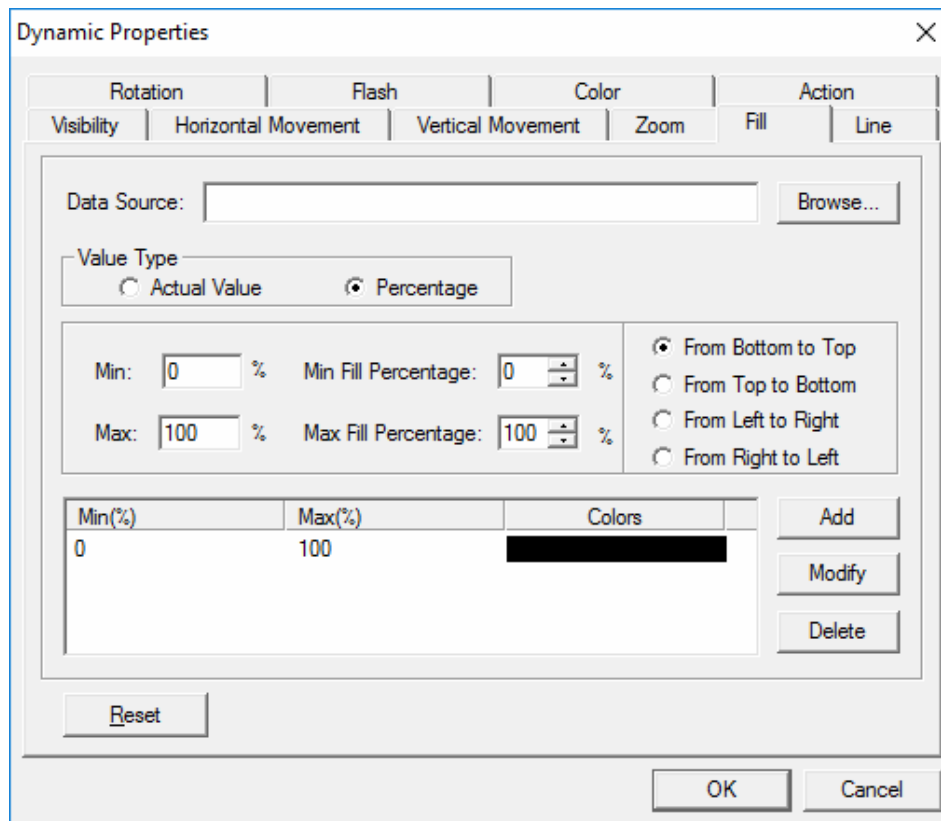


Figure 4-5 “Dynamic Property” setting interface for Fill

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Value Type: When selecting “Actual Value”, threshold down corresponds to the value of Data Source directly; when selecting “Percentage”, threshold down corresponds to the percentage of the value of Data Source.
- Fill Parameters: “Max &Min” means the scale (the parameter input is generally in the range) for effectively controlling the background color fill of graphics object. “Max &Min Fill Proportion” means the range (0~100) of the percentage that the fill color covers the background color.
- Fill Direction: Select the fill direction. There are 4 modes of "From Top to Bottom, From Bottom to Top, From Left to Right, From Right to Left".
- Parameter setting: Strengthen the fill effects by setting Max/Min of different threshold downs. Generally, the digital data source is not used in fill settings. Click the button “Add”, input Max/Min and select the color scheme (repeating the operation can set multiple colors); to modify certain parameter, select the parameter and click the “Modify” button or double-clicking Max/Min, and refill in Max/Min and select color scheme in the pop-up dialog box; to delete certain parameter, select the parameter and click the “Delete” button.
- Reset: Users can reset the dynamic property of “Fill” after clearing Data Source and resetting parameters to original settings.

**Tips:**

- The control mode of multiple colors can improve the caution effect. For example: it is a normal signal when the data signal range of the control point is between 0~60, and the fill color can set as green; it may cause danger when it exceeds 60, and the fill color can be set as red.
- In supervision, it will be filled with color of the closer side when the value of data source exceeds the range set.
- When the value exceeds the maximum, it is limited at the maximum; when the value is less than the minimum, it is limited at the minimum.

4.3.6 Line

It uses digital information to control the line (non-close type) color or border (closed type) color of graphics object, and the “Dynamic Property” setting interface for Line is shown in Figure 4-6.

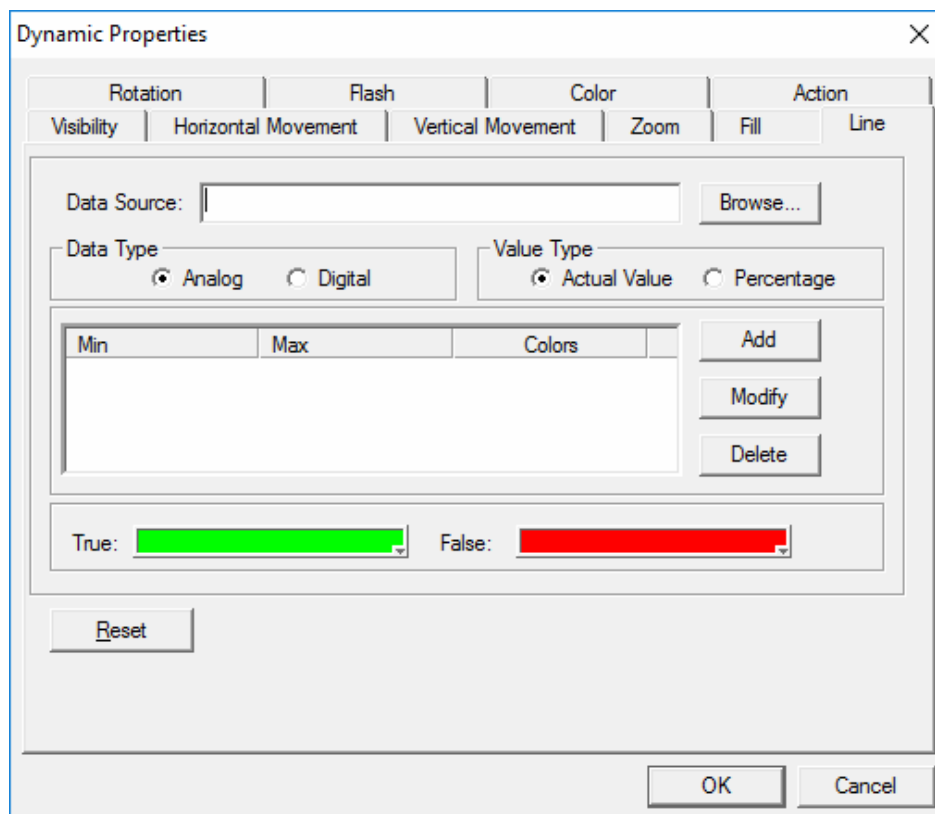


Figure 4-6 “Dynamic Property” setting interface for Line

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Data Type: Please refer to 4.3.1 Visibility.
- Value Type: Please refer to 4.3.1 Visibility.
- Parameter settings: Please refer to that of “Fill”.

- Reset: Users can reset the dynamic property of “Line” after clearing Data Source and parameters previously set.

4.3.7 Line Width

By default, the width of lines (straight line, poly line) is fixed. To adjust the line width, set the "Line Width" property in the corresponding Dynamic Properties window.

In VFDraw, draw a line and right-click on it. Select **Dynamic**.

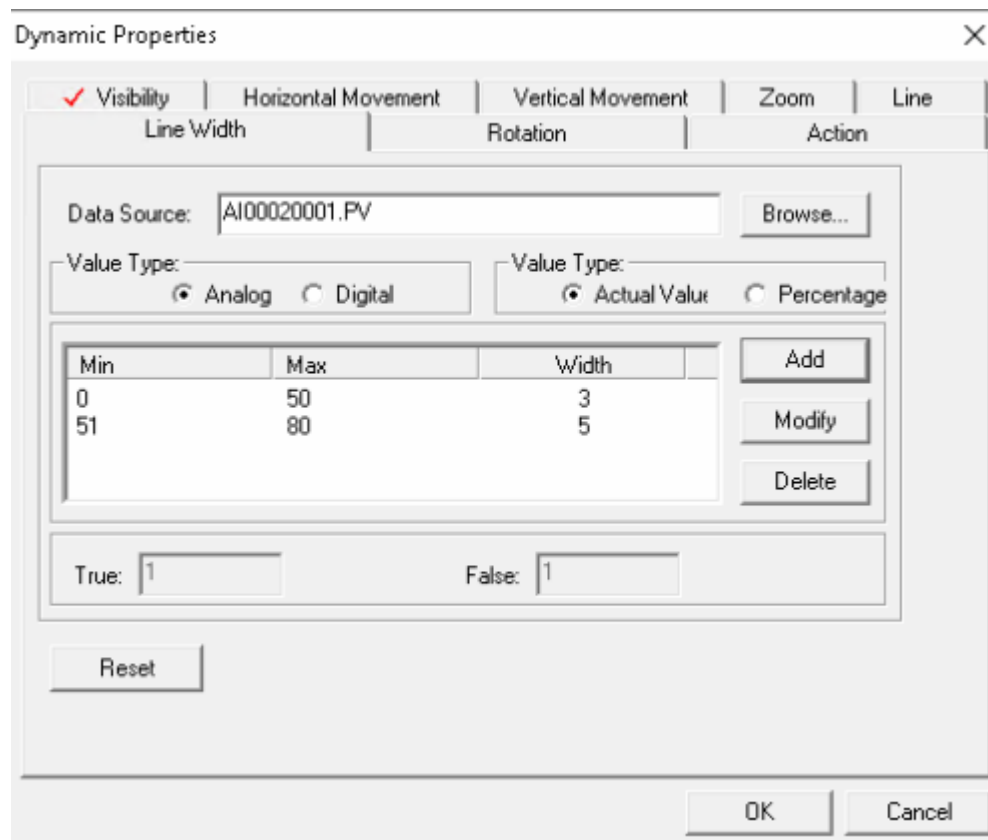


Figure 4-7 Set line width

Set up the properties according to the following hints.

- Data Source: refer to the descriptions in "Visibility". For example, in the figure above, when the real-time value of AI00020001.PV falls into the range from 0 to 50, the line width is 3 px. When it falls into the range from 51 to 80, the width is 5 px.
- Value Type: refer to the descriptions in "Visibility".
- Parameters: refer to the descriptions in "Fill".
- Reset: reset the data source and parameters.

4.3.8 Rotation

It uses digital information to control the rotation of graphics object, and the “Dynamic Property” setting interface for Rotation is shown in Figure 4-8

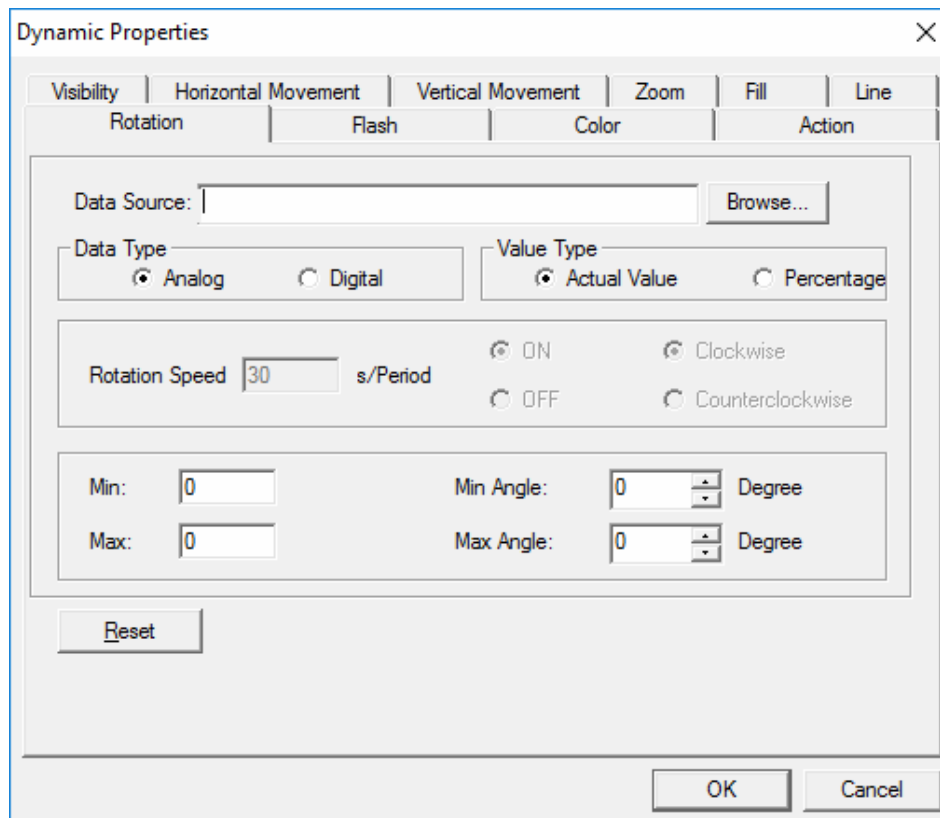


Figure 4-8 “Dynamic Property” setting interface for Rotation

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Data Type: Please refer to 4.3.1 Visibility.
- Value Type: Please refer to 4.3.1 Visibility.
- Parameter settings: For Analog data type, “Min &Max” means the scale for effectively rotation controlling of graphics object, “Max &Min Angle” means the absolute angle which graphics rotates clockwise around the center; For Digital data type, the status of rotation can be set: On or Off, Clockwise or Counterclockwise, and Rotation Speed (S/Period), which is the time for rotating one round.
- Reset: Users can reset the dynamic property of “Rotation” after clearing Data Source and resetting parameters to original settings.



Tip:

“Rotation” and “Zoom” are not available at the same time.

4.3.9 Flash

It uses digital information to control the color flash property of graphics object, and the “Dynamic Property” setting interface for Flash is shown in Figure 4-9. The following objects support flash and have their own flash characteristics:

- The flash dynamics of buttons, rectangles, rounded rectangles, ellipses, chord, sectors and polygons are the flash of background color.
- The flash dynamics of pipe are the flash of internal color.
- The flash dynamics of text and datalink are the flash of font color.
- The grouped object displays the flash dynamics by its sub-objects.

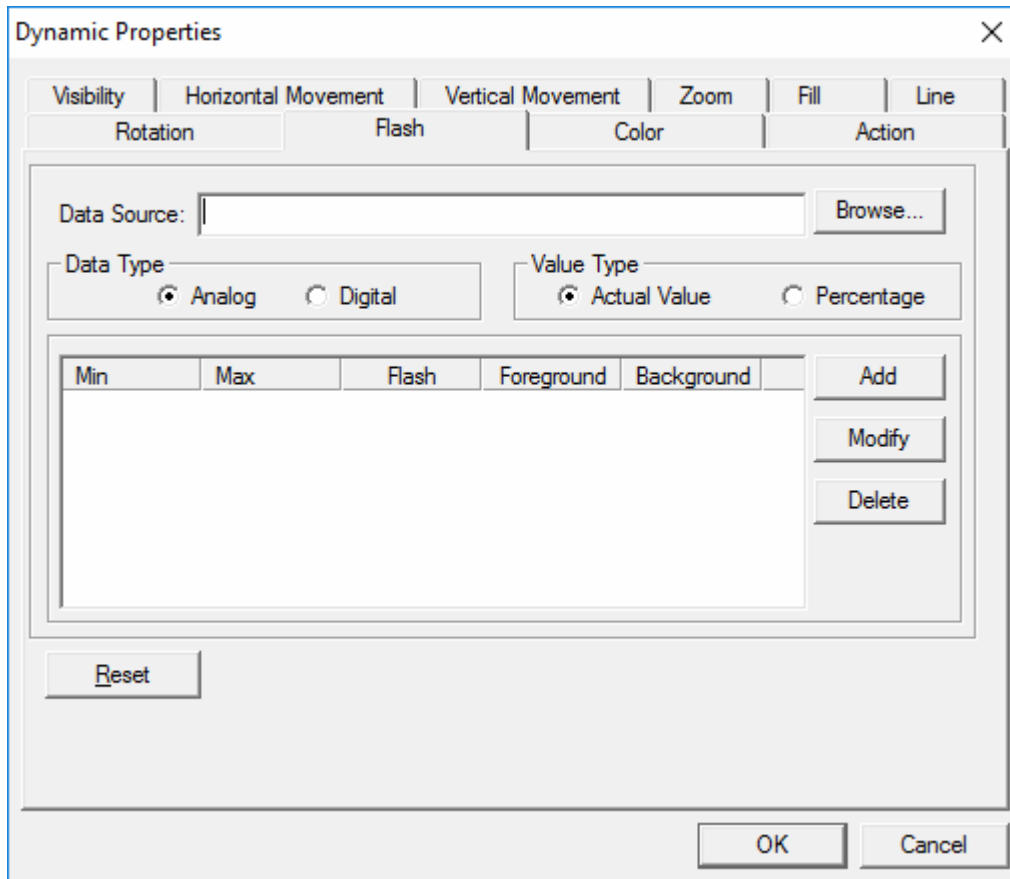


Figure 4-9 “Dynamic Property” setting interface for Flash

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility. As shown in the figure above, When the tag AI0202000 generates HH and H alarms, the figure control will blink between red and blue.
- Data Type: Please refer to 4.3.1 Visibility.
- Value Type: Please refer to 4.3.1 Visibility.
- Parameter setting: Click the button “Add” and input Max/Min of different threshold downs, select color scheme and Yes/No for Flash (repeating the operation can set multiple colors); to modify certain parameter, select the parameter and click the “Modify” button or double-clicking Max/Min, and refill in Max/Min, select color scheme and Yes/No for Flash in the pop-up dialog box; to delete certain parameter, select the parameter and click the “Delete” button.
- Reset: Users can reset the dynamic property of “Flash” after clearing Data Source and

parameters previously set.

4.3.10 Read Only

It is used to control the read and write authorities of tag in graphics under supervision. The interface of Read Only Dynamic Properties Settings is shown below.

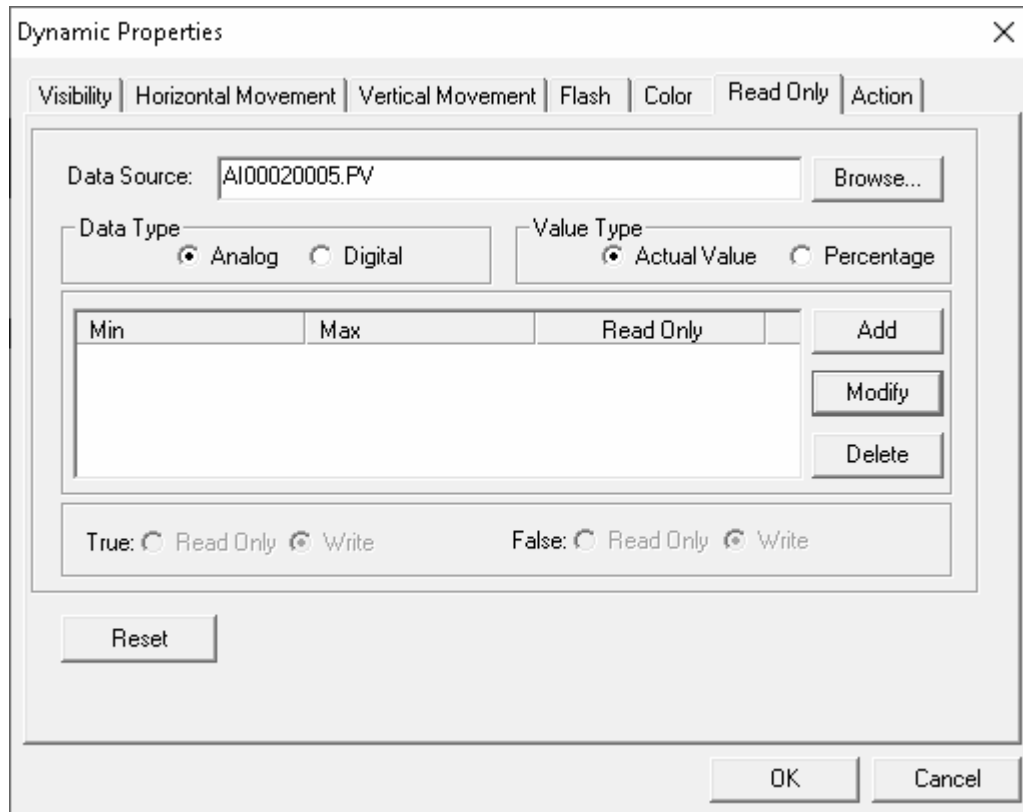


Figure 4-10 Read Only Dynamic Properties Settings dialog box

Specific setting methods:

- Data Source: Enter tag name directly (tag field like .PV. cannot be omitted), or click **Browse** and select tag in the pop-up Tag Selector.
- Data Type: Please refer to 4.3.1 Visibility.
- Value Type: Please refer to 4.3.1 Visibility.

Parameter setting:


- Click **Add** and enter Max/Min of different threshold downs, set the read and write authorities of this range (Read Only or Write).
- Repeating the operation can set the read and write authorities of many value ranges.
- To modify certain parameter, select the parameter and click **Modify** or double-clicking **Max/Min**, and refill in Max/Min, select the read and write authorities of tag value in this range in the pop-up dialog box.
- To delete certain parameter, select the parameter and click **Delete**.

Reset:

Users can reset the dynamic property of Read Only after clearing Data Source and parameters set previously.

4.3.11 Action

It is used to set the dynamic functions of certain graphics object and implement action by clicking it in supervision. The “Dynamic Property” setting interface for Action is shown in Figure 4-11

“Action” means the corresponding action executed when clicking the object as trigger condition in supervision. As shown in Figure 4-11, click  beside “Action” to open the pull-down menu, which includes action options of “No, Open Picture, Pop-up Picture, Previous Page, Next Page, Run Program, Write Tag Value, Reverse Tag, Display Layers, Hide layers, Reverse Layers, Print Screen, Login, Logout, Exit Graphics, Alarm Silence, Close Page, Pop-up Panel and Acknowledge Alarm”. To implement the operation, users should click the graphics object after completing the Action Dynamic Property settings.

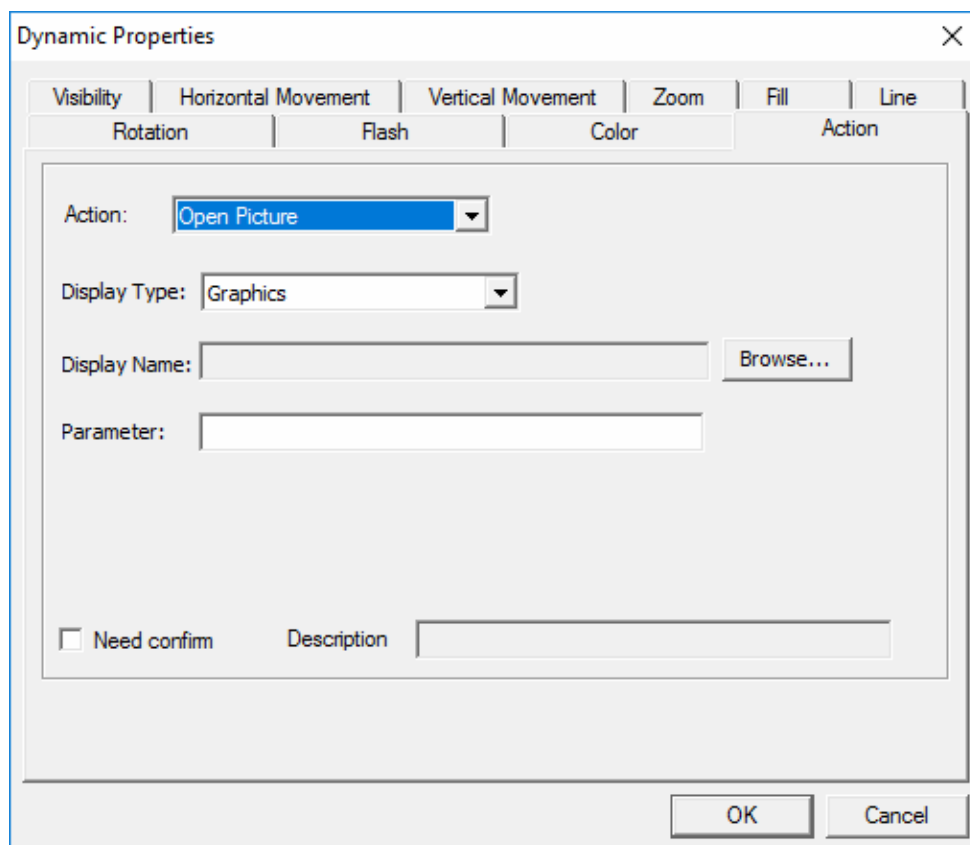


Figure 4-11 “Dynamic Property” setting interface of Action

Specific information on actions:

- Open Picture: It is used to switch interfaces among Graphics, Data View, Overview, Tuning Group, etc. The “Open Picture” setting interface is shown in Figure 4-11. First select the Picture type (choose one from Graphics, Alarm Viewer, Overview, Tuning Group, Trend, Data Viewer, System Status, System Alarm and System Introduction) to open, and then click the “Browse” button beside “Screen” and select the picture to be switched to. Select “Confirm Dialog Box” and input the confirmation

descriptions (which can be null), and a confirmation dialog box will pop up when running the “Open Picture” command in supervision, select “OK” and it will switch to the picture set; select “Cancel” and it won’t switch.

- **Pop-up Picture:** It is used to pop up another graphics picture in the form of dialog box when not switching current graphics in supervision. The “Pop-up Picture” setting interface is shown in Figure 4-12, click the “Browse” button beside “Screen” to select graphics to be popped up, and the “Tag Groups” function is available in the “Parameter” section. Users can select the needed “Tag Groups” file in the “Open File” dialog box by clicking “Browse” button, or edit Tag Groups by clicking “Edit” button. In the Tag Groups editor, Symbols are alias for tags, which start and end with @ existed in graphics; “Tag” means the corresponding tag of alias; “Description” is used to input relevant instructions. Tag Groups replacement is available for character strings, including tags and descriptions. Please refer to 4.3.18 for the usage of Tag Groups and alias) In “Popup Coordinates”, the pop-up position of pop-up picture can be set, including the pop-up screen, x coordinate and y coordinate. In “Confirm Dialog Box”, configure whether to pop up confirming prompt box and the its information before pop-uping picture in monitoring. In prompt box, select “Yes” to pop up the designated picture, select “No” to not display the pop-up picture.

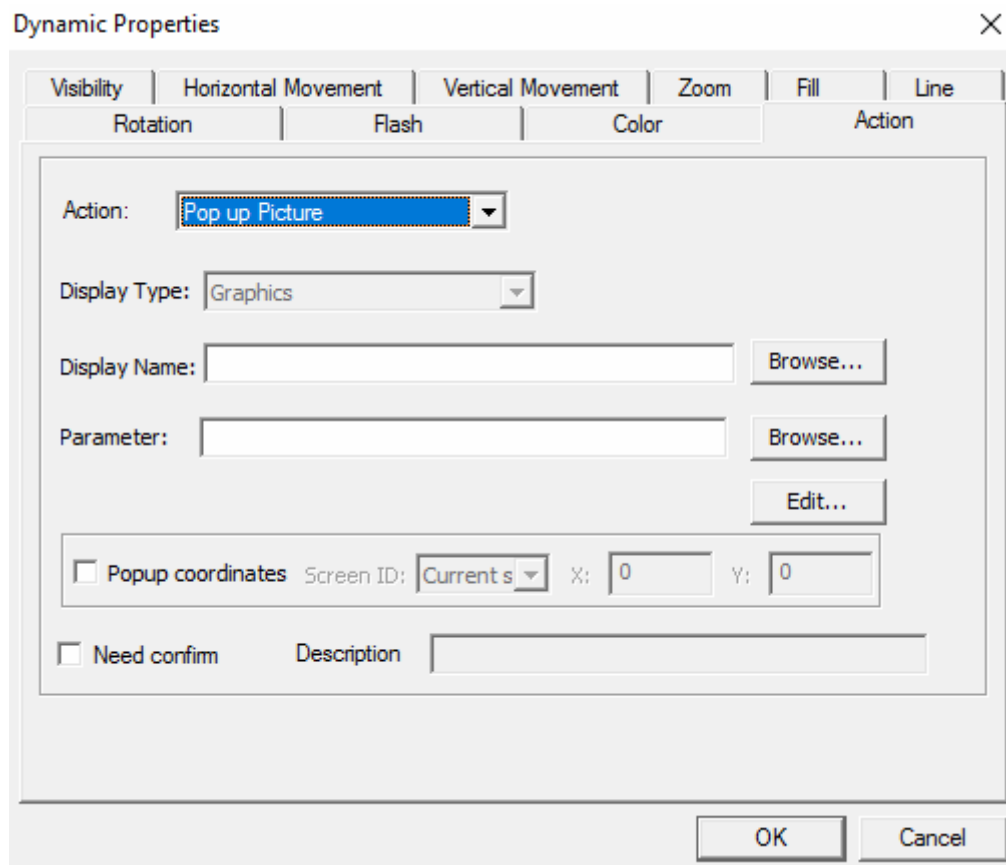



Figure 4-12 Action is Pop-up Picture

- **Previous Page:** Switch the graphics picture to the previous page.
- **Next Page:** Switch the graphics picture to the next page.

- **Run Program:** Execute program file as set, and support file types of *.EXE, *.COM and *.BAT.
- **Write Tag Value:** It is used to input values to several tags at one time, and the “Write Tag Value” dialog box is shown in Figure 4-13. Click the  button and select the tag name to be written value and corresponding “Value” type (including Digital and Analog) of the tag. When it is Digital, the setting is achieved by clicking the ON/OFF button on the right; when it is Analog, the value to be set can be written in directly. Values of these tags will be modified after clicking the graphics object in supervision.

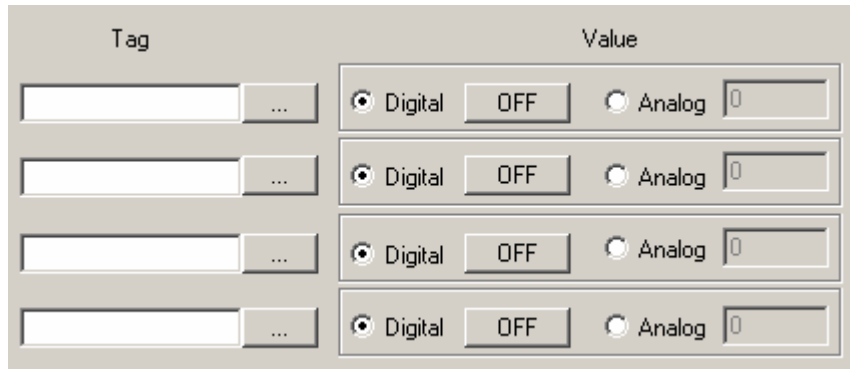


Figure 4-13 Dialog box “Write Tag Value”

- **Reverse Tag:** It is used to negate several tags simultaneously. The value of the tag will be switch between the 0 and 1 when it is analog.
- **Print Screen:** It is used to save current graphics interface and directly print by default printer.

When printing the screen, a selection prompt appears, selecting to output to a file, or to a printer.

Select export to file to save the current screen as a BMP file to the D: \screenprinting folder. Note that the screenprinting folder is located on the disk where the local configuration root directory is located“ The local configuration root directory is configured in the Configuration Options tab of system global options. For detailed configuration instructions, please refer to "configuration monitoring options" in High-performanceHMI software installation specification.

Select output to printer, and then use the printer configured by the other monitor printing item in the print Options tab of the system global Options tab. For the configuration method of system global options, refer to the description of "configure print options" in High-performanceHMI software installation specification.

- **Login:** It is used to login the system in designated identity. The “Login” dialog box shown in Figure 4-14 will pop up when clicking the graphics object, the switch of login window is completed after the validation of “User Name” and “Password”.

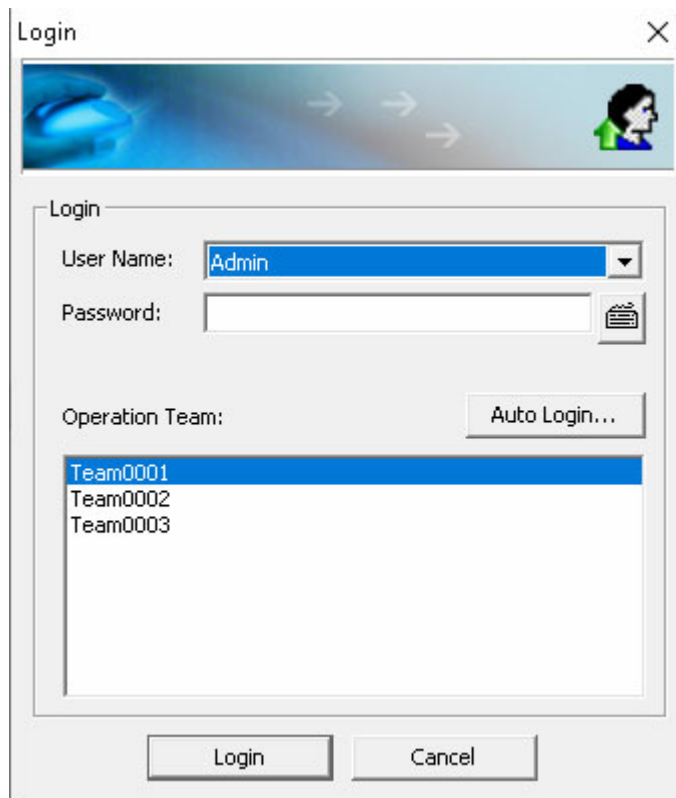


Figure 4-14 Login

- Logout: It is used to logout current user and switch to observation status.
- Exit Graphics: It is used to close the VFView software and exit the supervision interface.
- Alarm Silence: It is used to switch the sound alarm status. The default setting of system is alarm with sound, and when the action setting is effective, the alarm horn will be silenced when clicking the graphics object, and when clicking the graphics object again, the alarm horn will be recovered if alarm information exists at the moment.
- Close Page: The operation is only effective to "Pop-up Picture". When the graphics is opened as "Pop-up Picture" in supervision, the pop-up picture will be closed by clicking the graphics object.
- Pop-up Panel: It is used to pop up Panel or Write Panel for setting tag.
- Acknowledge Alarm: It is used to acknowledge the alarms generated by all the DATALINK tags of graphics in current page.
- Fast Increase/ Decrease: set 1~4 tags through plus, Minus, Plus Percent and Minus Percent.

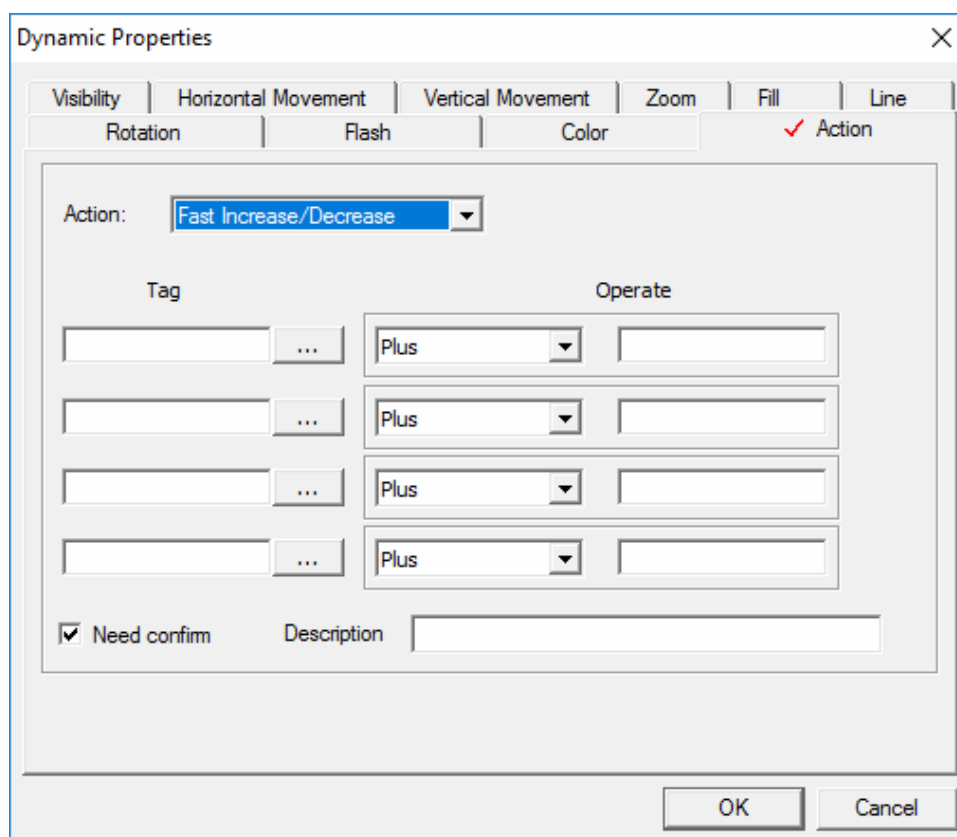


Figure 4-15 Fast Increase/ Decrease

Select Fast Increase/ Decrease in Action, and set Tags in the interface above, select operation mode and enter operation value into the edit box. Click the object in supervision, and set value for the tag according to its settings in the configuration.

Tag and operation value in this action support Alias (Tag Group), i.e. enter “@NAME@” as tag name and enter “@VALUE” as operation value (operation details of Alias and Tag Group refer to "Alias"). In Tag Group configuration, @NAME@ corresponds to the actual tag and @VALUE corresponds to operation value (values can be entered in corresponding boxes).

- Associated Jump: used to jump to the Graphics, Trend and Alarm associated with the specified tag. The interface is shown below.

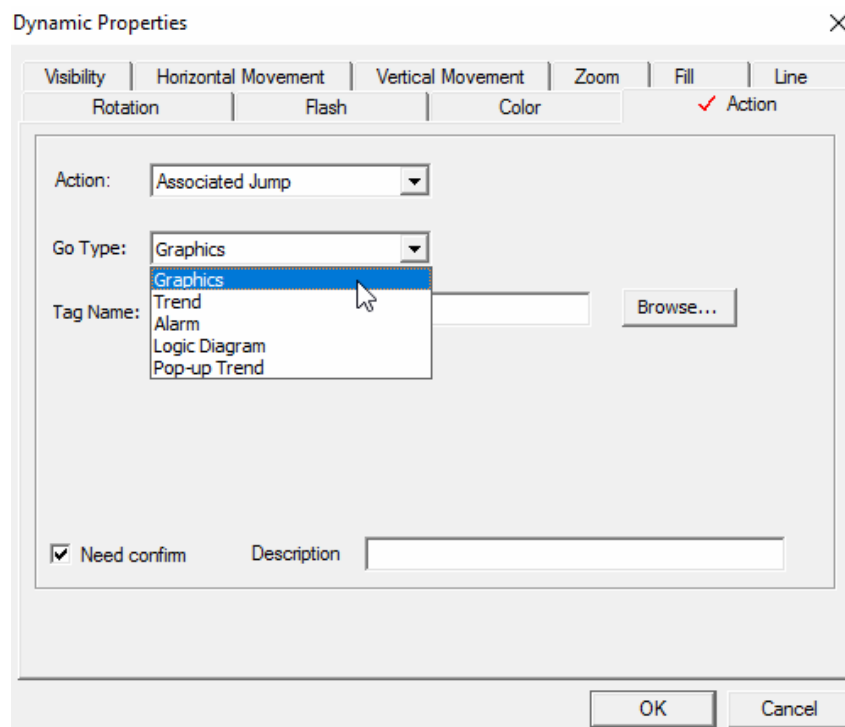


Figure 4-16 Associated Jump

As show in Figure 4-16, Specific configuration steps:

1. Select Associated Jump in Action.
2. Select Graphics, Trend, Alarm, single point trend Logic in the Jump Type.
3. Input tag names in the “tag name” and then click “View” to select tags. Dynamically, it brings up the corresponding logic diagrams of the tag during the running period, If a tag relates to several logic diagrams, a menu will be shown, and only one logic diagram will pop up.

The tag name formats include:

- “tag name.feild”, for example. “Tag1.PV”
- “Reference domain.tag name.field”, for example, “OA132. Tag1. PV”
- Alias format, for example “@NAME@”. when you use alias, you should configure the tags corresponded to the “@NAME@” in the tag groups.



Attention:

The associated jump can be performed when the “Tag Associated Graphics” and “Tag Associated Trend” of @NAME@ have been configured in VFHMICFG. Refer to the *HMI Config Software User Manual*.

- ACK Tag Alarm: used to confirm the alarm of single tag, its interface is shown below.

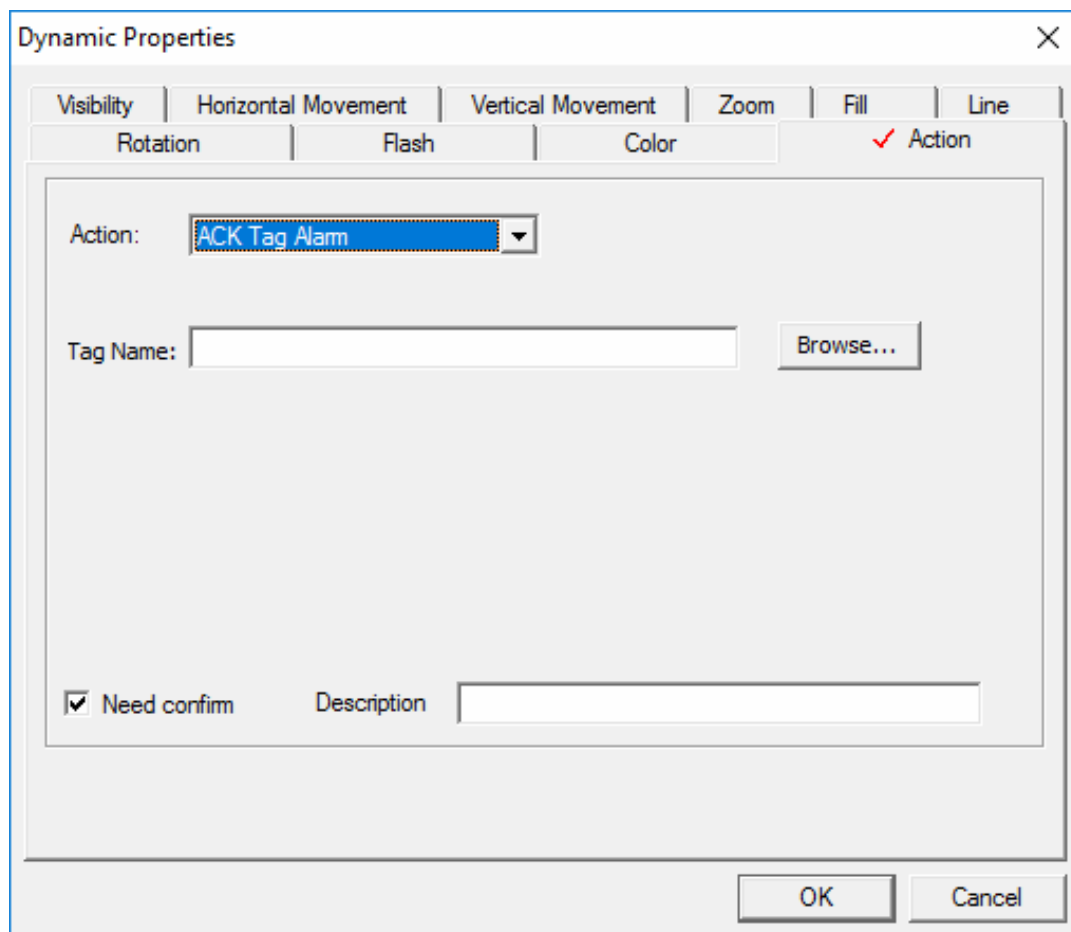


Figure 4-17 ACK Tag Alarm

Specific configuration steps:

Select ACK Tag Alarm in Action.

Tag in this action supports Alias (Tag Group), i.e. enter “@NMAE@” as tag name, and the @NAME@ corresponds to actual tag in Tag Group configuration.

- Pop-up logic diagram: set the pop-up graphics in monitoring graphics, the settings interface is shown below.

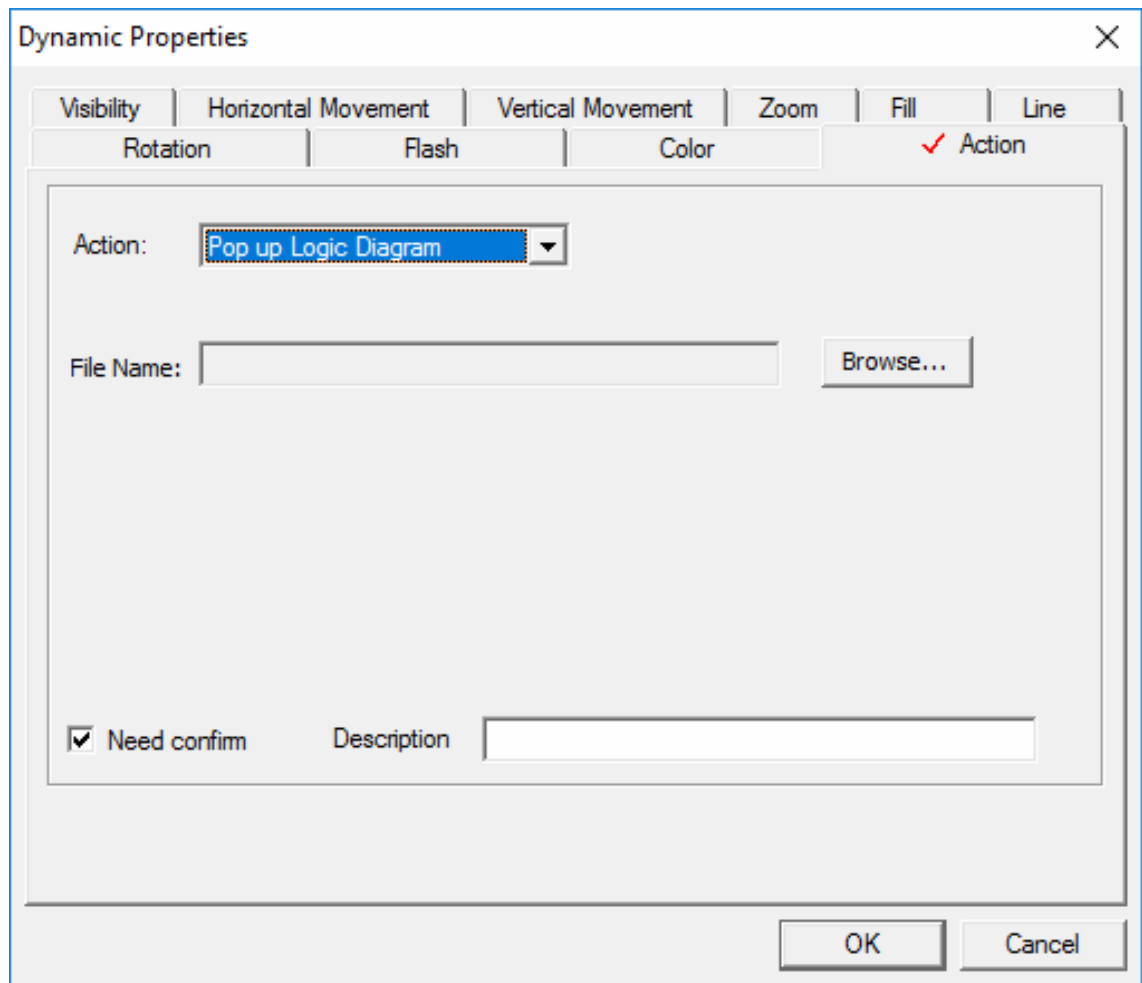


Figure 4-18 Graphics settings

Steps to set pop-up logic diagram:

Click "Browse" to pop up the "Logic Diagram" dialog, select a logic diagram and click "OK". Please refer to *VFFBDBuilder User Manual* for details of creating logic diagram.

- Layers Settings: Show, Hide or Reverse layers in supervision, its interface is shown below.

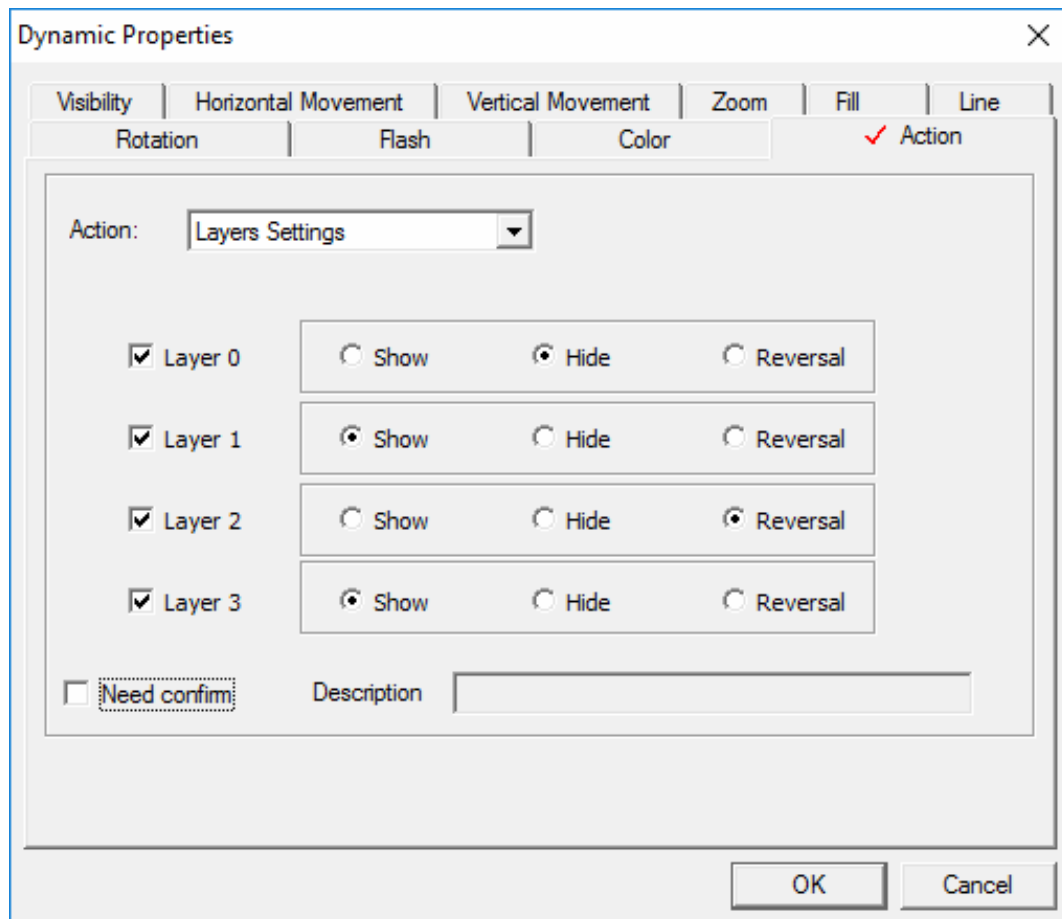


Figure 4-19 Layers Settings

Specific setting steps:

Select Layers Settings in Action.

Select the specified layer and select corresponding action type (Show, Hide or Reverse).

- Show: show the layer in supervision.
- Hide: hide the layer in supervision.
- Reverse: reverse the layer in supervision.

For example, select Reverse for the Layer3. Click the object, Layer3 will be hided. Click the object again, Layer3 will be recovered to show.

- Page Stretch: used to stretch the supervision page (horizontal and vertical), its configuration interface is shown below.

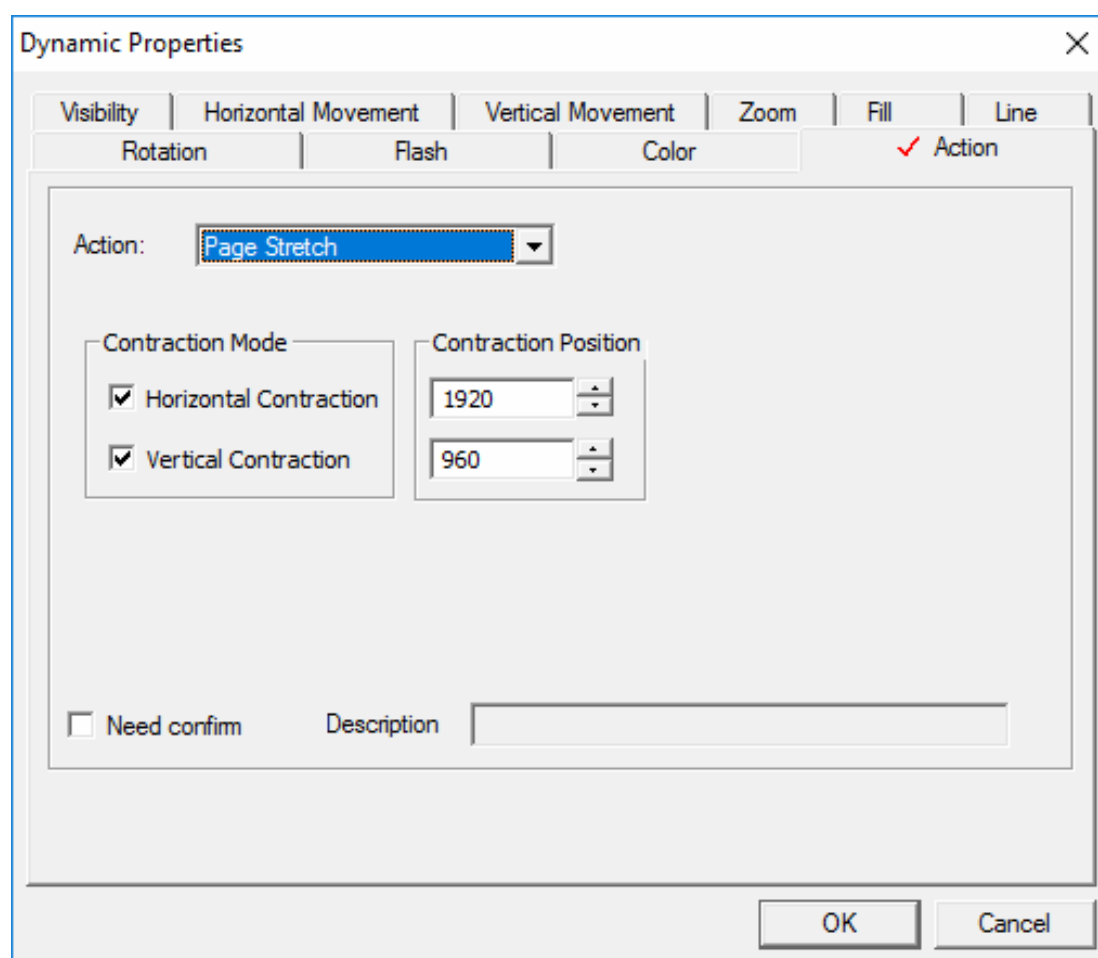



Figure 4-20 Page Stretch

Specific setting steps:

Select Page Stretch in Action, and a scale plate will be added to the outline border of graphics drawing area.

Select the Contraction Mode (Horizontal Contraction and Vertical Contraction), and enter the Contraction Position according to the prompt of scale plate.

Use  to adjust to more precise Contraction Position.

4.3.12 Color

It is used to set the corresponding color transition property in the changing process of tag value, and the “Dynamic Property” setting interface for Color is shown in Figure 4-21. The setting method refers to 4.3.6 Line.

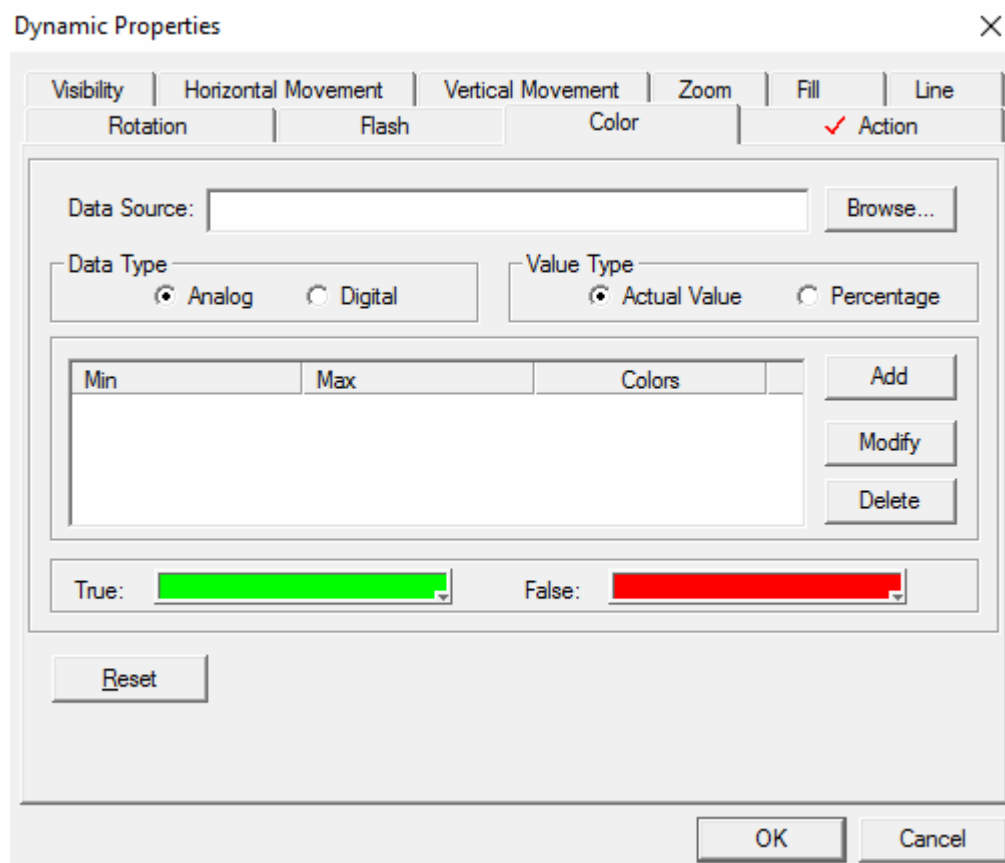


Figure 4-21 "Dynamic Property" setting interface for Color

As shown in the figure above, when the tag number ai02020000 and tag number ai020001 generate alarms at the same time, the graphic object is displayed in dark gray. When no alarm is generated for any of tag number ai02020000 and tag number ai020001, the graphic object is displayed in green.

4.3.13 Enable

Used to Enable or Forbid animation display of the object, the setting interface is shown below.

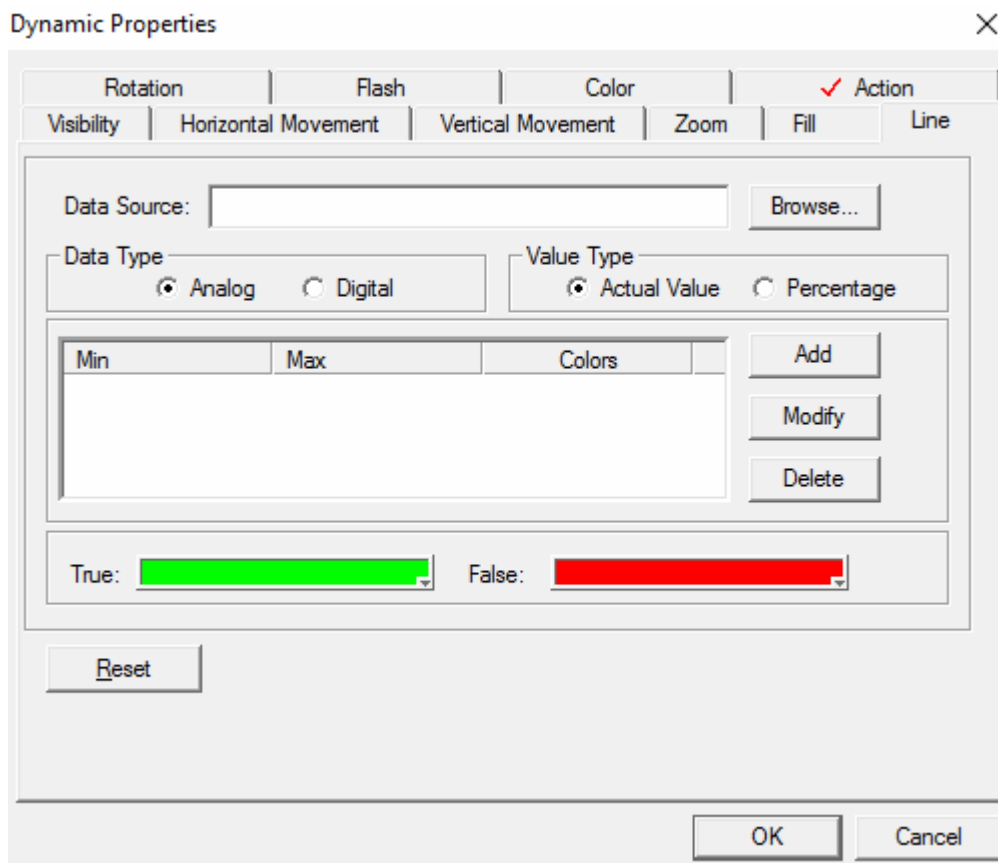


Figure 4-22 Dynamic Properties Enable Settings interface

Specific setting methods:

- Data Source: Please refer to 4.3.1 Visibility.
- Data Type: Please refer to 4.3.1 Visibility.
- Value Type: Please refer to 4.3.1 Visibility.
- Parameter setting: if select **Analog** in Data Type, fill in the **Max/ Min** of parameters and select the **Enable State** in the pop-up dialog box after clicking **Add**. Repeating the operation can set multiple fields. To modify certain parameter, select the parameter and click **Modify** button or double-clicking **Max/ Min**, and refill in the **Max/Min** of parameters and select the **Enable State** in the pop-up dialog box. To delete certain parameter, select the parameter and click **Delete**. If select **Digital** in data type, only need to select the **Enable State** when the digital is “True” or “False”.
- Reset: Users can reset the Enable state after clearing Data Source and parameters set previously (when Data Type is Analog).

4.3.14 Text

It uses digital information to control the text input of “Text” graphics objects automatically, and the “Dynamic Property” setting interface for Text is shown in Figure 4-23.

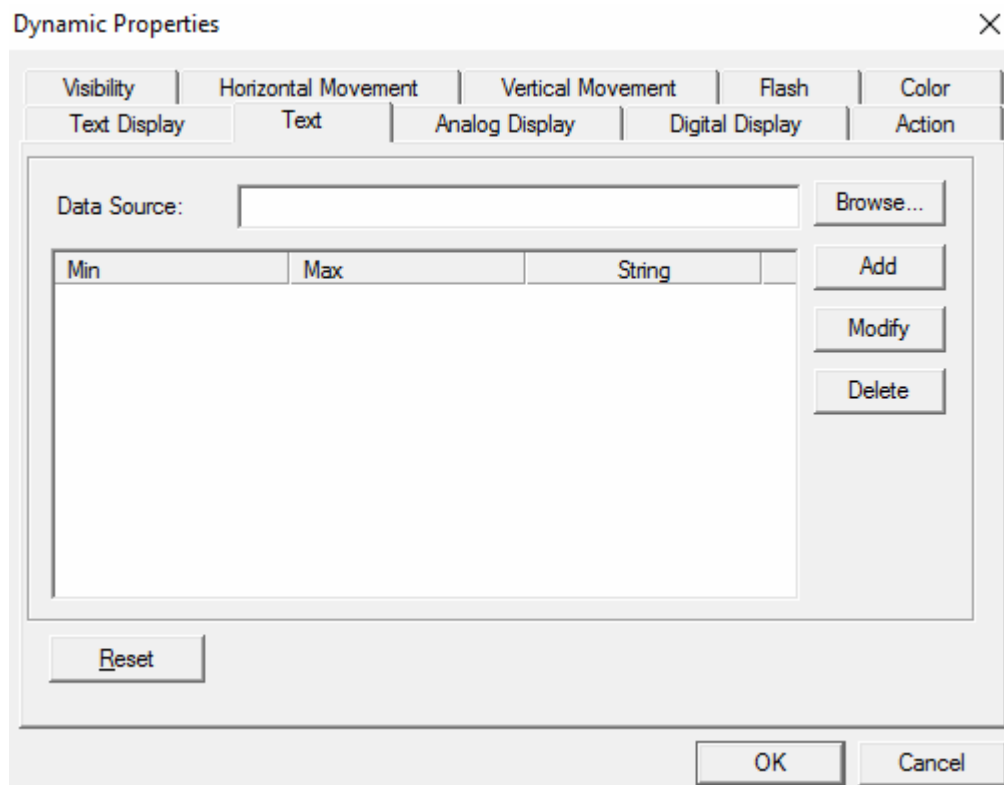


Figure 4-23 “Dynamic Property” setting interface for Text

Specific setting methods:

- **Data Source:** Please refer to that of “Visibility”. As shown in the figure above, when the value of bit 0 of the quality code of tag number ai0202000 is in the range of [- 0.5, 0.5], the graphic object displays string a. When the value of bit 0 of quality code of tag number ai0202000 is in the range of [0.5, 1.5], the graphic object displays the string M.
- **Parameter setting:** Different Min/Max and character strings can be added by clicking “Add”. Setting content can be modified by clicking “Modify” or double-clicking Min/Max; Selected content can be deleted by clicking “Delete”.

4.3.15 Text Display

The data information of Data Source can be displayed directly by Text Display setting, and the color of the display content can also be set. The “Dynamic Property” setting interface for Text Display is shown in Figure 4-24.

Specific setting method:

- **Data Source:** Please refer to that of “Visibility”.
- **Color:** Select a proper color in the pop-up palette shown in Figure 4-25 after clicking the little triangle in the color bar.

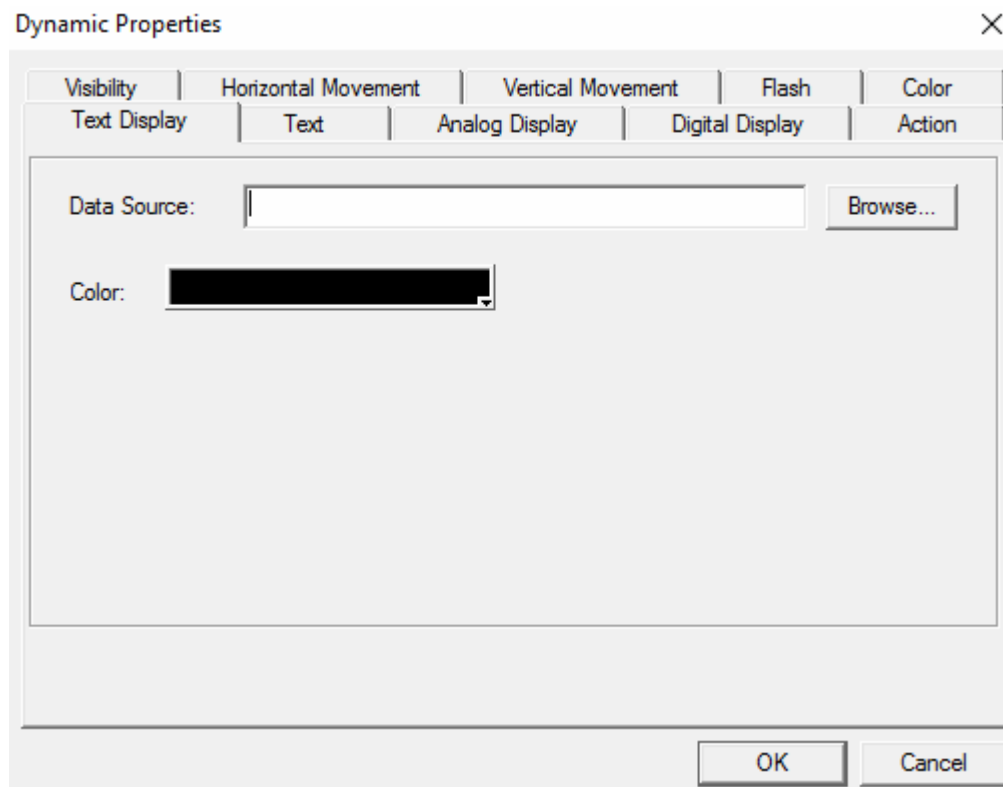


Figure 4-24 "Dynamic Property" setting interface for Text Display



Figure 4-25 Palette

4.3.16 Analog Display

It is used to directly connect analog data source, and text object will display the values of analog tags with different colors according to their data information in supervision. The "Dynamic Property" setting interface for Analog Display is shown in Figure 4-26.

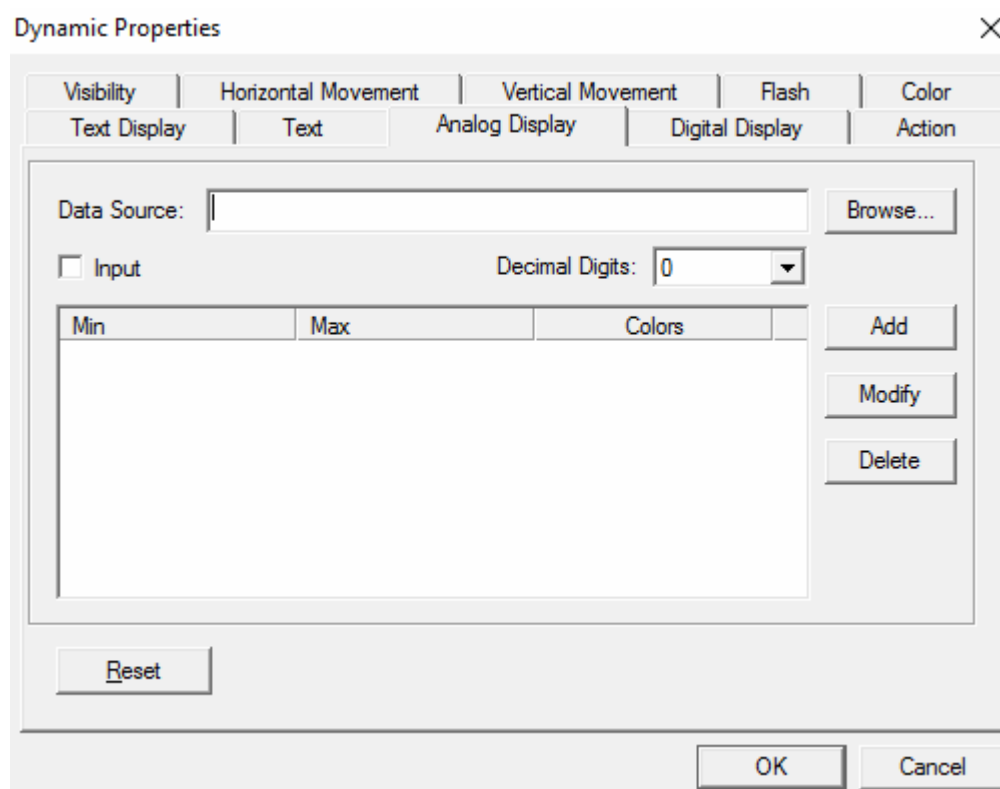


Figure 4-26 “Dynamic Property” setting interface for Analog display

Specific setting method:

- Data Source: Please refer to that of “Visibility”.
- Input Enable: The analog data linking to Data Source can be modified online by double-clicking the text object in supervision. (i.e., the instrument panel can pop up)
- Decimal Digits: It is used to set decimal digits of the analog data information. The “Decimal Digits” here is selected in the pull-down box, including 0, 1, 2, 3, 4~9.
- Parameter settings: It means that the tag information will be displayed in the color set when threshold down reaches Min/Max. The setting content is the same as that of “Color”, “Line”, etc.

4.3.17 Digital Display

It is used to directly connect digital data source, and control the output content and color of text according to the data information of digital tags, and the “Dynamic Property” setting interface for Digital Display is shown in Figure 4-27.

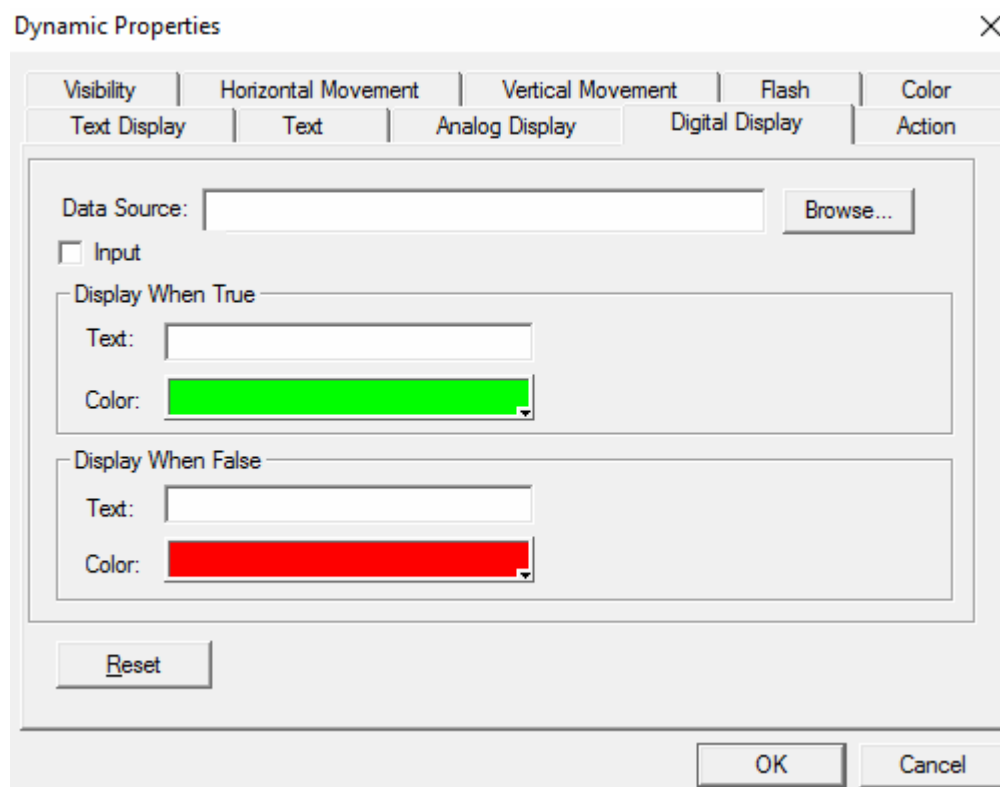


Figure 4-27 “Dynamic Property” setting interface for Digital Display

Specific setting method:

- Data Source: Please refer to that of “Visibility” in 4.3.1.
- Input: The ON/OFF switch (pop up instrument panel) can be operated to digital tags linking to Data Source after double-clicking the text object in supervision.
- Text: The text content input will be displayed in supervision when moving the cursor on the text object.
- Color: Please refer to that of Text Display.

4.3.18 Flow

When the graphic object is "pipe", user can configure the dynamic flow of pipe and its associated tag. The flow effect of pipe is determined by the size of flow block and flow rate.

After creating a pipe, user can configure the flow effect of pipe by the following operations:

1. Select the pipe that needs to configure the flow effect, and select "Dynamic" in its right-click menu to bring up the "Dynamic Properties" dialog box. Select the "Flow" tab to display the configuration interface shown in the following figure.

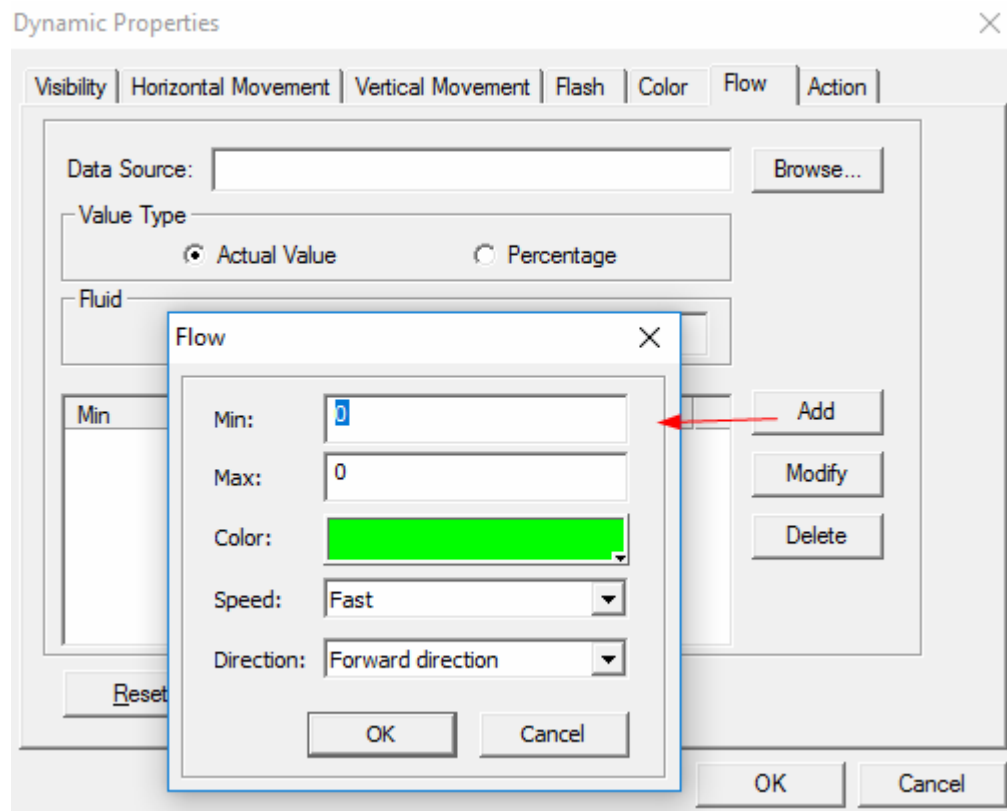
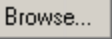


Figure 4-28 The configuration interface of flow dynamic

7. Configure the basic parameters of flow dynamics according to the table below.

Item	Function Description	Configuration Instruction
Data Source	Use to specify data source that affects dynamic effects.	Enter the tag name directly (cannot omit the tag field, such as .PV), or select tag in the "Tag Selector" by clicking the  button.
Value Type	Use to specify the value type of data source	When "Actual Value" is selected, the maximum value and minimum value correspond directly to the data source. When "Percentage" is selected, the maximum value and minimum value correspond to the percentage of data source.
Fluid	Use to specify fluid length and interval.	"Length" is used to specify the length of fluid block. "Interval" is used to specify the length each step of fluid block.

8. Click "Add" to bring up the "Flow" dialog where user can specify the flow rate of flow block and the data source values related to rate.

Item	Function Description	Configuration Instruction
Min/ Max	Use to specify the values range of data source related to dynamic.	Enter in the text box.
Color	Use to specify the color of flow block in this range.	Click the right area of "Color" and select it in the pop-up box.
Speed	Use to specify the fluid speed of flow block within this range.	Select "Stop", "Fast", "Slow" from the dropdown list.
Direction	Use to specify the direction of fluid in the flow block within this range.	Select "Forward direction" or "Opposite direction" in the drop-down list.

9. Click "OK" to save the current configuration.

4.4 Alias and Tag Groups

Drawing and modification of graphics will be simplified by using Alias and Tag Groups.

4.4.1 Alias

One of the features of VFDDraw is that it focuses on improving efficiency. Here is the introduction of using alias which can improve efficiency.

Function of Alias

Such situation may occur during the graphics configuration: one graphics may be invoked by several places that have different tag contents, and these complicated operations can be simplified by using alias.

Form of Alias

Tag alias must start and end with “@”, like a general value tag must be written as “@name.@.Value”.

Application of Alias

Graphics Page Annotation, Button Text, Parameter in Open Graphics and Display Name and Parameter of Pop-up Picture support Alias.

Specific application methods:

- Graphics Page Annotation
Right-click in blank area of the graphics, and select **Page Properties** in the right-click menu, pop-out the Page Properties dialog box.
Enter annotation which using the Alias in Page Annotation box, e.g. “@name @graphics”.
- Button Text
Double-click the specified button, pop-out Settings dialog box.
Enter the text displayed in button which using the Alias in Text box, e.g. “@name @switch”.
- Parameter in Open Graphics
Select the specified object and select **Dynamic** in the right-click menu, pop-out the Dynamic Properties Settings dialog box.
Select **Action** and select **Open Picture** in the pull-down menu. Enter the description information which using the Alias in the Parameter box, e.g. “@name @=FIC1201”.
- Display Name and Parameter of Pop-up Picture
Select the specified object and select **Dynamic** in the right-click menu, pop-out the Dynamic Properties Settings dialog box.

Select **Action** and select **Pop-up Picture** in the pull-down menu. Enter the description information which using the Alias in the Display Name and Parameter boxes, e.g. enter “@name @graphics.PIC” as the Display Name and enter “@name @=FIC1201” as the Parameter.

- Examples of application

- Example Description

To make it clear, two interfaces are defined, one of which is an original interface (invoked interface) and the other is an invoking interface (interface that implement invoking function). The alias are generated in original interface, and it implements its function in invoking interface. The tags used when configuring original interface is only alias instead of tags existed in real. To change the alias to the real tags, set “Open Picture” or “Pop-up Picture” in “Action” of the invoking interface. The corresponding relationship between tag and its alias can be designated in Open Picture (or Pop-up Picture).

- Example Display

Select **Graphics** as the picture type in the dialog box shown in Figure 4-29, and click **Browse** to select the picture, then enter content in the form of “@ alias@ =tag No.[.type]” in the input box of the “Parameter” item. “@ alias@” is an intermediate name (when using DATALINK in Graphics, enter alias between two @ as tag names), and tag No. is the real tag.

If there are several alias, connect them with “&”, like “@ name 1@=tag1&@ name 2@=tag2& @name 3@=tag3”.

One graphics can correspond to different tags by using alias, which implements the reuse function and reduces the work.

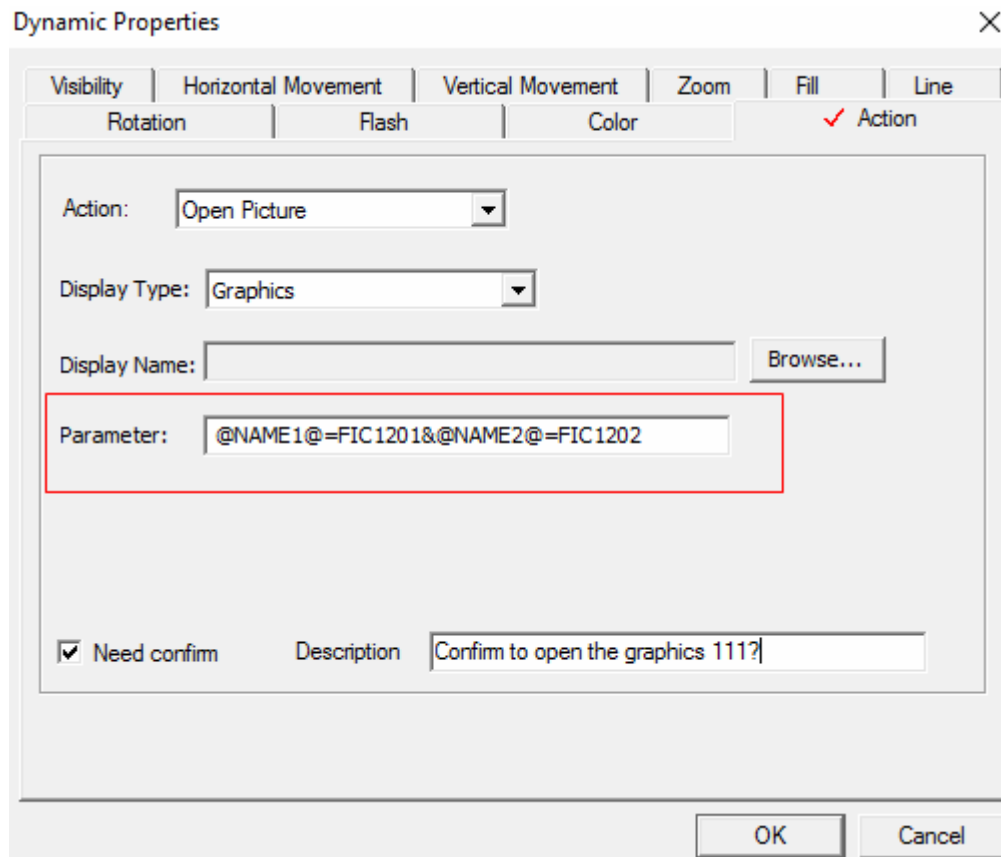


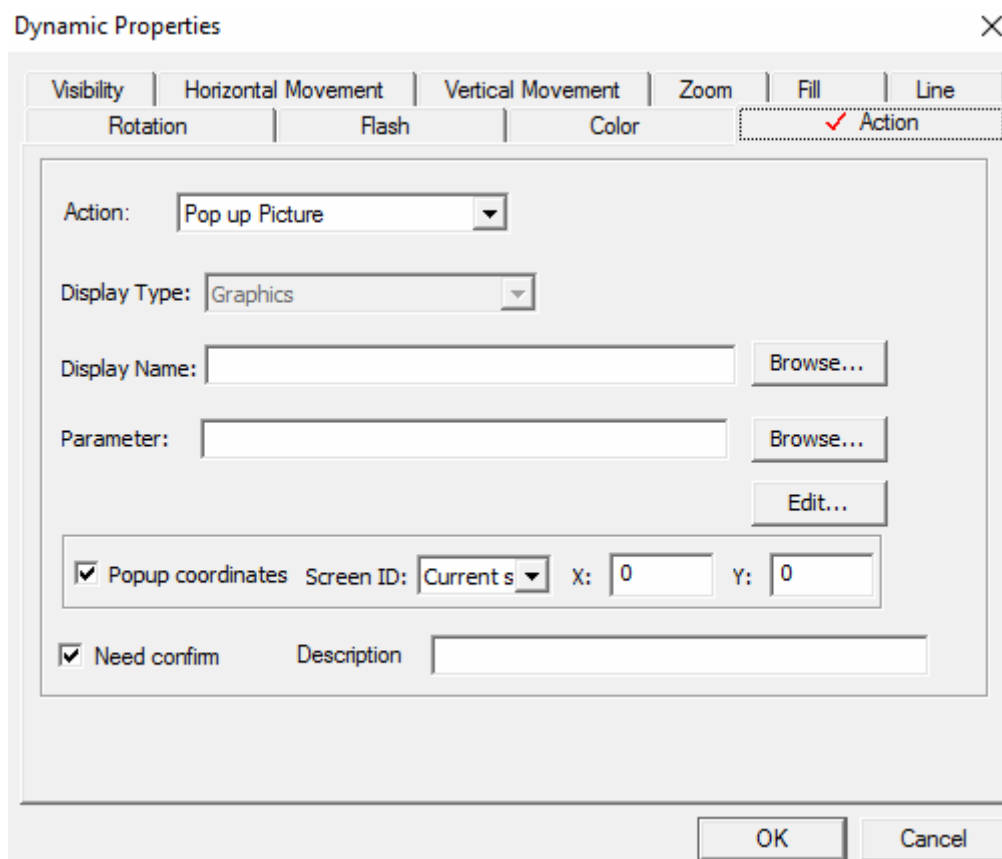
Figure 4-29 How to use alias

4.4.2 Tag Groups

Tag Group Editor can realize the corresponding relationship between alias and tags to achieve the reuse function of alias.

Specific operation steps:

1. Select the specific object and select **Dynamic** in the right-click menu, pop-up the Dynamic Properties Settings dialog box.
10. Select **Action**, and select **Pop-up Picture** in the pull-down menu, as shown below.

*Figure 4-30 Pop-up Picture Settings*

11. Click Browse to select the graphics picture (graphics name) and then it pops up. Assuming the graphics has two alias of @NAME1@ and @NAME2@.
12. Click **Edit** and the Tag Group Editor interface pops up, shown in Figure 4-31.

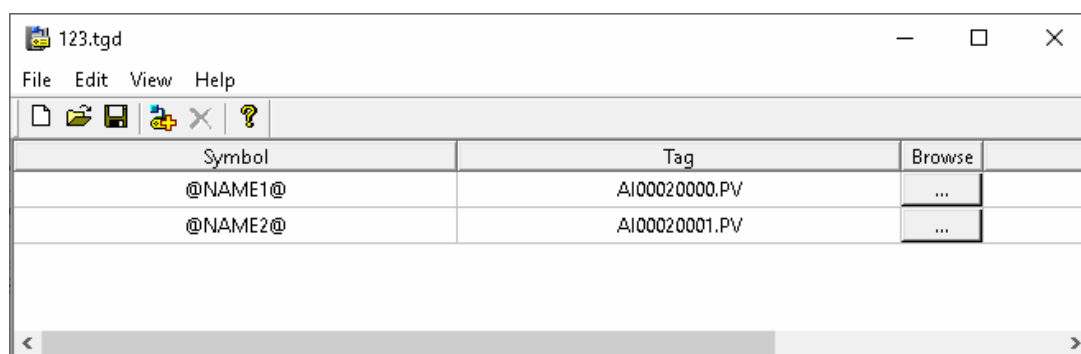


Figure 4-31 Editing interface of Tag Group Editor

13. The Tag Group Editor can automatically find out the alias existed in that graphics. Therefore, users only need to select the tag that corresponds to the alias, and relevant descriptions can also be written in.
14. Click Save after configuration and name the Tag Group file.
15. Click Browse besides the Parameter in the interface shown in Figure 4-29, and select the Tag Group file saved just now, alias will be replaced with corresponding real tag when pop up the graphics in supervision.

Converse operation is also available to Tag Group configuration. Build a Tag Group file and add alias and corresponding real tag, then add corresponding alias in the graphics to be popped up.

4.5 Expression

Not only tags but also expressions can be treated as Data Source in dynamic.

Expression resolution function is used to resolve character string expressions that accord with syntax and work out the corresponding results. When there are tags names in one expression, their values can be required and used in the operation. Two expression modes for tag name are: display tag name directly (make blank to separate with other operators) and use the TAG format ("tag name").

Currently there are 38 available expression operators, include:

- 6 bit-operation operators: BNOT, BAND, BOR, BXOR, MASK, GETB;
- 4 logic operators: AND, OR, XOR, NOT;
- 6 comparison operators: <, >, <=, >=, <>, =;
- 6 arithmetic operators: +, -, *, /, MOD, ^;
- Function operators: SIN, COS, TAN, LN, ASIN, ACOS, ATAN, LOG, INT, ABS, SQRT, EXP, CSTR and CNUM.
- Alarm-related functions

ACP function achieves alarm status as per graphics

ACA function achieves alarm status as per alarm area

ACT function achieves alarm status as per tag statistics

ACAN function counts alarms which are in the specified alarm level as well as in specified alarm area, including the shelved alarms

ACAN function counts alarms which are in the specified alarm level as well as in specified alarm area, excluding the shelved alarms

- Graphic confirmation functions:

EQP function is used to determine whether the current graphic is specific.

EQP function can be combined with dynamic properties of the buttons. For example, a process graphic contains multiple graphics, each of which contains different executable buttons, switches the button color while switching the graphics, and the executable button will be more visible.

The dynamic data source of graphic supports EQP function, which is EQP("relative path of graphic\name of graphic.pic"), such as WQP("PIC\UserDefine\graphics.pic "). The relative path of graphic begins with "PIC" or "POPPIC", where PIC is the default save path for regular graphic and POPPIC is the default save path for pop-up graphic.

EQP function supports referencing cross-domain graphic, which support the reference of graphic from cross-domain graphic directories, and the expression path is uncharged.

Among them, all function operators, BNOT, NOT are "Unary Operator", others are "Binary Operator".

Operators array in priority from high to low: function operators NOT, BNOT, ^, *, /, MOD, +, -; comparison operator GETB MASK BAND BXOR BOR AND XOR OR.



Tip:

"Text Display" of Text objects is unavailable to expressions.

Instructions to operators:

4.5.1 Special Tags

In graphics, tags indicating system alarm status can be used as the data source, data link, and more.

System alarm status tags supports the format of "_ALM_SYS_STATE.VALUE" and "_ALM_SYS_STATE ". 0 refers to no system alarms, 1 is system alarm is not acknowledged, 2 means system alarms are all acknowledged.

For example, in the figure below, a text reads "Unacknowledged System Alarm Exists" is added to the graphic. Configure the Visibility tab of this text as shown below. Then, in the HMI screen, if a system alarm is not acknowledged, the text is displayed.

Dynamic Properties

Line | Rotation | Flash | Color | Action

Visibility | Horizontal Movement | Vertical Movement | Zoom | Fill

Data Source:

Value Type: ☒ Analog ☐ Digital

Value Type: ☒ Actual Value ☐ Percentage

Min	Max	Visibility
-0.5	0.5	No
0.5	1.5	Yes
1.5	2.5	No

True: ☒ Visible ☐ Invisible False: ☐ Visible ☒ Invisible

Figure 4-32 Example of system alarm status tag

4.5.2 Alarm Status Statistics Functions (ACP, ACA, ACT)

Function

- ACP: count the alarm status of the specified graphics.
- ACA: count the alarm status of one or more tags in the specified alarm region.
- ACT: count alarm status of one or several tags in graphics.

Syntax instruction

- ACP ("Graphics Name.PIC").
- ACT ("Tag 1; Tag 2……Tag n"). ACT function can count maximum 50 tags which are separated by ".".
- ACA ("Alarm Group No. Alarm Region No.") or ACA ("Alarm Group No."). The value range of Alarm Group No. is 0~199. The value range of Alarm Region No. is 0~199.

- ACA ("OA. Alarm Region No.") or ACA ("OA") is used to count the operation node alarm status. ACA ("OA. Alarm Region No.") can count the alarm status of the specified alarm region in operation node. The value range of alarm region No. is 0~199. ACA ("OA") can all operation node alarm status.

The graphics file path should be added if the graphics is saved through several levels folders. For example, the graphics is "PIC\Boiler\1#Blower.pic" (PIC is the main directory of graphics file, and no need to input in function), so the usage of ACP function is ACP ("Boiler\1#Blower.pic")



Tip:

When the saving method of the flowchart is in multi-level folders, the path of the flowchart file needs to be added into the function. If the flowchart is "PIC\Boiler\1#induced draft fan" (PIC is the main directory of the flowchart files and don't need to be inserted in the function), the use method of ACP function is ACP ("boiler\1#induced draft fan.pic")

Returned value

- 0: no alarm.
- 1: having alarms and not been acknowledged all.
- 2: having alarms and been acknowledged all.

Examples

- Count the alarm status of graphics named "EF Synthesis".
Alarm function should be: ACP "EF Synthesis.PIC".
- Count alarm status of tag1 and tag2 in graphics.
Alarm function should be: ACT("tag1;tag2").
- Count the alarm status of tag whose alarm group No. is 16 and alarm region No. is 31.
Alarm function should be: ACA ("16.31").
- Count alarm status of all tags in No.0 Alarm Group.
Alarm function should be: ACA("0")
- Count all alarm status in operation node.
Alarm function is ACA("OA").
- Count alarm status of No.31 alarm region in operation node.
Alarm function is ACA("OA.31").

Cautions

- ACA, ACP and ACT function doesn't support inter-domain. But Operation domain referenced domain including Graphic used ACA function can display the function count result.
- While using ACT function, tags should be the tags in group and region of current operation team without alarm in level 0.

4.5.3 Alarm count function (ACAN)

Features

ACAN is used to count the number of alarms or the highest level of alarms in the specified alarm group or alarm region, including the alarms that have been suppress.

Grammar

ACAN("All;Return Type"), ACAN ("Alarm Group Number. Alarm Region Number; Return Type") or ACAN ("Alarm Group Number; Return Type"). The meanings of the fields in the function are:

- Alarm group number: When the alarm group is "default alarm group", the "alarm group number" is the number 0 ~ 199 or OA, the number indicates the control domain number, and OA indicates the host computer control domain. When the alarm group is "Custom Alarm Group", the range is from 0 to 199.
- The range of the alarm partition number is from 0 to 199 and 250, where 250 is the alarm group number of the directly connected domain of JX-300XP / ECS-100.
- Return type supports 1 ~ 32, ALL, UNACK , SUP and PRI.

Return value

- The number from 1 to 31 is used to indicate the number of alarms that return a specified alarm level.
- The number 32 is used to indicate no alarm of the specified alarm group.
- ALL indicates the total number of alarms returned.
- UNACK indicates the number of unacknowledged alarms.
- PRI indicates the highest alarm level.
- SUP indicates the number of suppressed alarms.
- number.UNACK indicates the number of unacknowledged alarms of the specified level.

Examples

- Count the total number of alarms with the alarm group number of 16 and the alarm region number of 31 and the alarm level of 1, including the suppressed alarms.

The alarm function should be expressed as ACAN ("16.31; 1").

- Count the highest level of alarms in alarm group 0, including suppressed alarms.

The alarm function should be expressed as ACAN ("0; PRI").

- Count the alarms in the current operation team.

Targets	Expressions
Count the alarms (alarm level=4)	ACAN("ALL;4")
Count all the alarms	ACAN("ALL;ALL")
Count the alarms (alarm level=3) that have not been acknowledged	ACAN("ALL;3,UNACK")

Targets	Expressions
Count the alarms that have not been acknowledged	ACAN("ALL;UNACK")
Count the alarms that have been suppressed	ACAN("ALL;SUP")
Return the highest alarm level	ACAN("ALL;PRI")

4.5.4 Alarm Count Function (ACPN)

Features

ACPN is used to get the number of tag alarms and suppressed alarms, and the highest alarm level in the specified graphics. Latching alarms are included in the statistics.

Syntax

ACPN("xxx.pic;Return Type"):

- xxx.pic is used to specify the graphic.
- Return type supports 1 ~ 31, ALL, UNACK, numbers (1~31), UNACK, PRI, and SUP.

Return value

Return the qualified alarm information in the graphics according to the specific return type. The relationship between return types and return values are shown in the table below.

Return Types	Return Values
Number 1~31	Count the alarms of the corresponding level (which is designated by the number)
All	Count the total alarms
UNACK	Count the alarms that have not been acknowledged
Number 1~31, UNACK	Count the alarms of the specific level (designated by the number) that have not been acknowledged
PRI	Return the highest alarm level
SUP	Count the alarms that have been suppressed

Examples

The table below lists the usages and their explanations of ACPN expression.

Usages	Explanations
ACPN("1.PIC;4")	Count the alarms (alarm level=4) in graphics "1.PIC"
ACPN("1.PIC;ALL")	Count the total alarms in graphics "1.PIC"
ACPN("1.PIC;3,UNACK")	Count the alarms (alarm level=3) that have not been acknowledged in graphics "1.PIC"
ACPN("1.PIC;UNACK")	Count the alarms that have not been acknowledged in graphics "1.PIC"
ACPN("1.PIC;SUP")	Count the alarms that have been suppressed in graphics "1.PIC"
ACPN("1.PIC;PRI")	Return the highest alarm level in graphics "1.PIC"

4.5.5 Function Operators (14 operators)

Commonly used operators include: SIN (sine), COS (cosine), TAN (tangent), LN (logarithm, base e), ASIN (arc-sine), ACOS (arc-cosine), ATAN (arc-tangent), LOG (logarithm, base 10), INT (integer), ABS (absolute), SQRT (square root), EXP (exponent, base e), CSTR (convert to string), and CNUM (convert to number).

Calculation method

The same as the function it represents. They are the right association operators.

Syntax instruction

Function operators (Operand)

e.g., SIN (AI001), SIN (TAG ("AI001")), etc.

Note

The bracket can't be ignored.

4.5.6 Arithmetic Operators

Arithmetic operators include +, -, *, /, MOD, ^.

Calculation method

It is the same with that of the corresponding operators in C language. (MOD is corresponding to %, and ^ is corresponding to the power function).

Syntax instruction

Operand1 (with or without blank) arithmetic operator (with or without blank) Operand2

e.g., AI001+ AI001, TAG ("AI001") – TAG ("AI002"), etc.

Special format of MOD: Operand1 (blank) MOD (blank) Operand2. Blank can't be left out.

e.g. AI001 MOD AI001, TAG ("AI001") MOD TAG ("AI002")

4.5.7 Tag Operation Operators

Tag operation operators include BAND, BOR, BXOR, BNOT, GETB, MASK.

- BAND, BOR, BXOR, BNOT

Calculation method

The same as the corresponding operators in C Language. BNOT is unary operator and others are binary operators. Returned value is a long integer number.

Syntax instruction

Operand1 (blank) bit-operation operator (blank) Operand2
e.g. AI001 BOR AI001, TAG ("AI001") BAND TAG ("AI002"), etc.
Special format of BNOT: BNOT (blank) Operand1.
e.g. BNOT AI001, BNOT TAG("AI001")

Note

Operand is a decimal number, and blank can't be omitted.
BNOT expression is available to analog tag, but unavailable to digital tag.

- GETB

Calculation method

It is used to take out the binary value of designated bit (certain bit) of the binary number corresponding to certain decimal number. Returned value is a long integer number.

Syntax instruction

Operand1 (blank) GETB (blank) Operand2
e.g. AI001 GETB AI001, TAG("AI001") GETB TAG("AI002")

Note

Operand1 is a decimal number, and blank can't be left out. Operand1 means the number to be taken bit, and Operand2 means the bit No. (Number from 0 begin and from low-order bit to high-order bit)

- MASK

Calculation method

It is used to implement MASK operation to the binary number corresponding to certain decimal number, i.e., take out the binary values of designated bits and the rest bits zeroing, and then form the result (decimal number) after grouping in the original order. Returned value is a long integer number.

Syntax instruction

Operand1 (blank) MASK (blank) Operand2
e.g., AI001 MASK AI001, TAG("AI001") MASK TAG("AI002")

Note

Operand1 is a decimal number, operand2 is binary number and blank can't be omitted. Operand1 means the number to implement MASK operation, and Operand2 means the bits to implement MASK operation.

4.5.8 Logic Operators

Logic operators include AND, OR, XOR, NOT.

Calculation method

It is the same with that of the corresponding operators in C Language. NOT is unary operator and others being binary operators. Returned value is Boolean value.

Syntax instruction

Operand1 (blank) logic operator (blank) Operand2

e.g. AI001 XOR AI001, TAG ("AI001") OR TAG ("AI002"), etc.

Special format of NOT: NOT (blank) Operand1.

e.g. NOT AI001, NOT TAG ("AI002"), etc..

Note

Operand is a decimal number or Boolean value (true or false), and blank can't be omitted.

4.5.9 Comparison Operators

Comparison operators include >, <, >=, <=, <>, =.

Calculation method

The same as the corresponding operators in C Language. They are binary operators. Returned value is a Boolean value.

Syntax instruction

Operand1 (with or without blank) comparison operator (blank) Operand2

e.g. AI001 <= AI002, TAG ("AI001") <> TAG ("AI002"), etc.

Note

Operand is a decimal number.

Section 5 Graphics Edit Example

Figure 5-1 is shown as an example to introduce the graphics edit method in details.

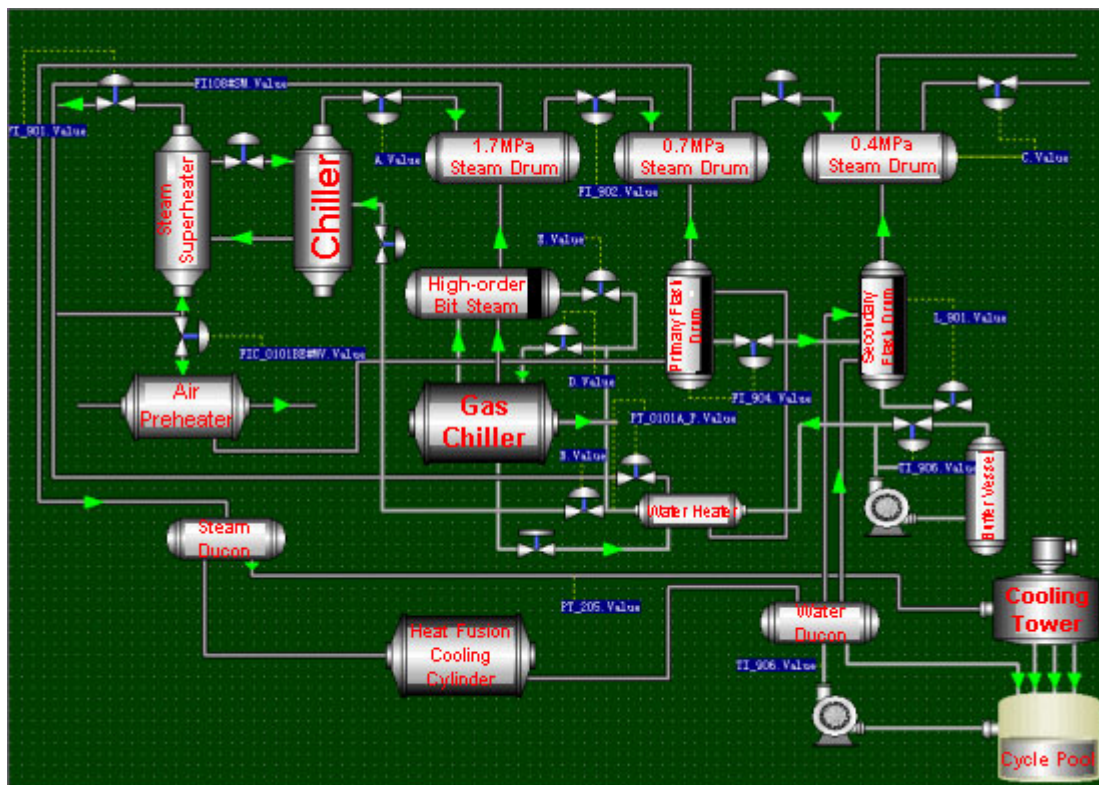


Figure 5-1 Graphics edit interface

In figure 5-1, the main components are as follows: chiller, various types of steam drums, cooling cylinder, flash drum, cycle pool, ducon, various types of valves and pumps, buffer vessels and so on. Others are data connection, pipeline and so on. The dynamic effects used are data display of datalink, fill of level column in high-order bit steam drums.

The drawing of graphics is shown as follows.

Before drawing graphics, users shall set the page property so that it is convenient for drawing. Select the menu command **Settings/ Page Properties**, pop up a dialog box for page property setting.

- Page property is set as: reserve Grid, set Grid to Align, others remains default status, The figure distribution will be clarified by reserving the Grid while canceling Grid to align is convenient for setting fine tuning
- Set the background color as blackish green. Users can set as you like.
- Other settings remain default status.

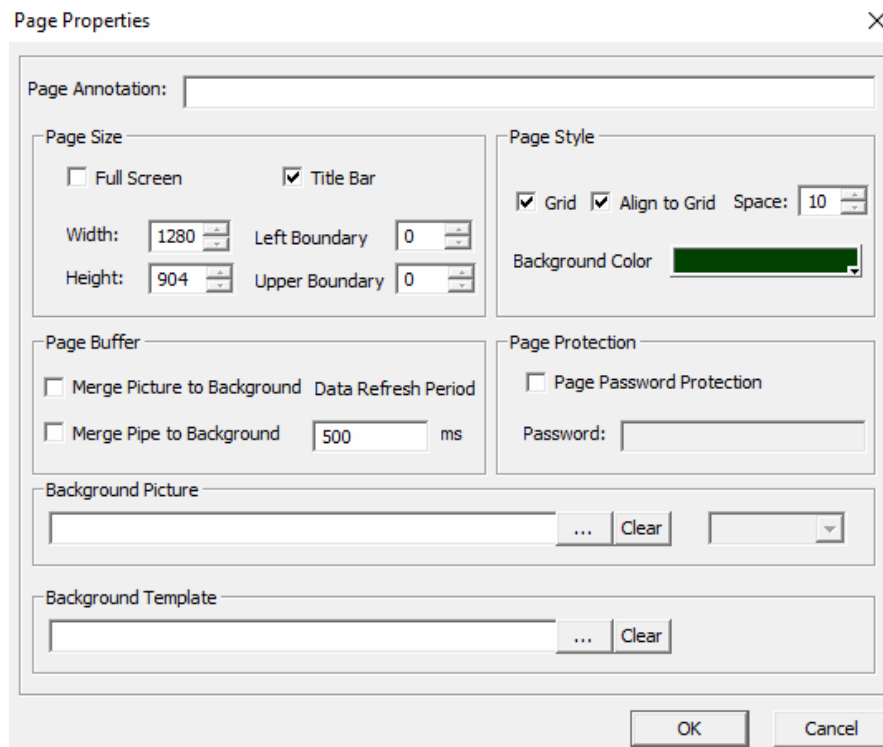




Figure 5-2 Graphics Page Properties

5.1 Chiller


Chiller consists of eight components: two long rectangles, two triangles, two short, one big rectangle and a text.



Figure 5-3 Decomposition chart of chiller

- Draw Rectangle: select the icon  in the Object Bar and click in the Drawing area, drag with the left mouse button pressed and release later, a sizeable rectangle will appear.
- Draw Triangle: select the icon  in the Object Bar, and click in the Drawing area, drag with the left mouse button pressed and released, a sizeable isosceles triangle will appear with the help of Grid. In the process, left-click can determine the peak

position, double-click means the end.

- The filling mode of the graphics is , set the background color as white and transition color as black in Property Column.
- Add Text: set the text color as red, size as 22, background color as clarity.

Tips for drawing symmetry graphics: first draw one side of the graphics, then copy it and rotate it by 180° . For example, when drawing a chiller, first, draw the short rectangle, triangle and long rectangle on the left side, then copy them by CTRL+D and rotate by 180, at last, combine them together as request.

5.2 Cycle Pool

The process of drawing a cycle pool is complex. Its component is shown as follows:

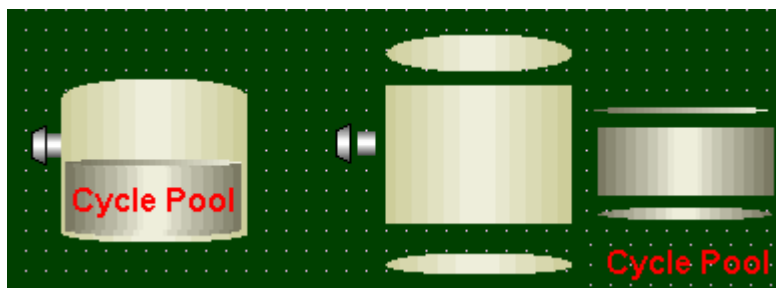


Figure 5-4 *Decomposition chart of Cycle Pool*

The drawing of isosceles trapeziform can imitate the drawing of isosceles triangle. The drawing steps shall be pay attention to, first draw from the very bottom of the graphics, then up to the top. Combine them as a whole after finishing each part.

5.3 Cooling Tower

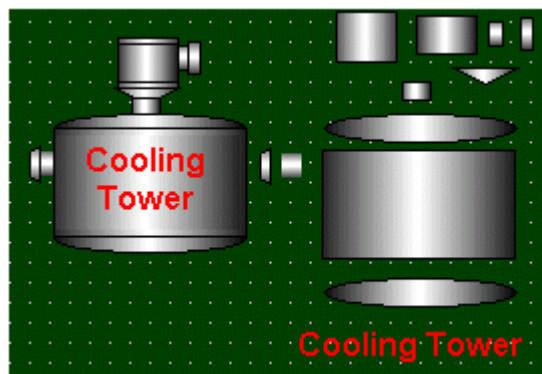


Figure 5-5 *Decomposition chart of Cooling Tower*

The components of cooling tower are ellipse, rectangle, triangle, isosceles triangle and so on, as shown in . When drawing cooling tower, the stacking order of graphics object shall be pay attention to.

5.4 Pump

As shown in, the drawing of pump is complex, however, High-performanceHMI has provided with templates for such complicated graphics. When drawing these graphics, users can invoke similar graphics object from VisualField Template Library, then modify it.

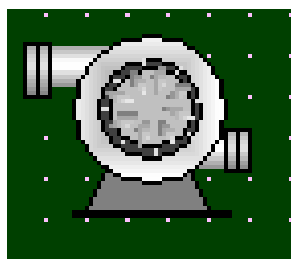


Figure 5-6 Pump

The specific operations are as follows:

Left click Menu Bar **View/Template Library** shown as follows:

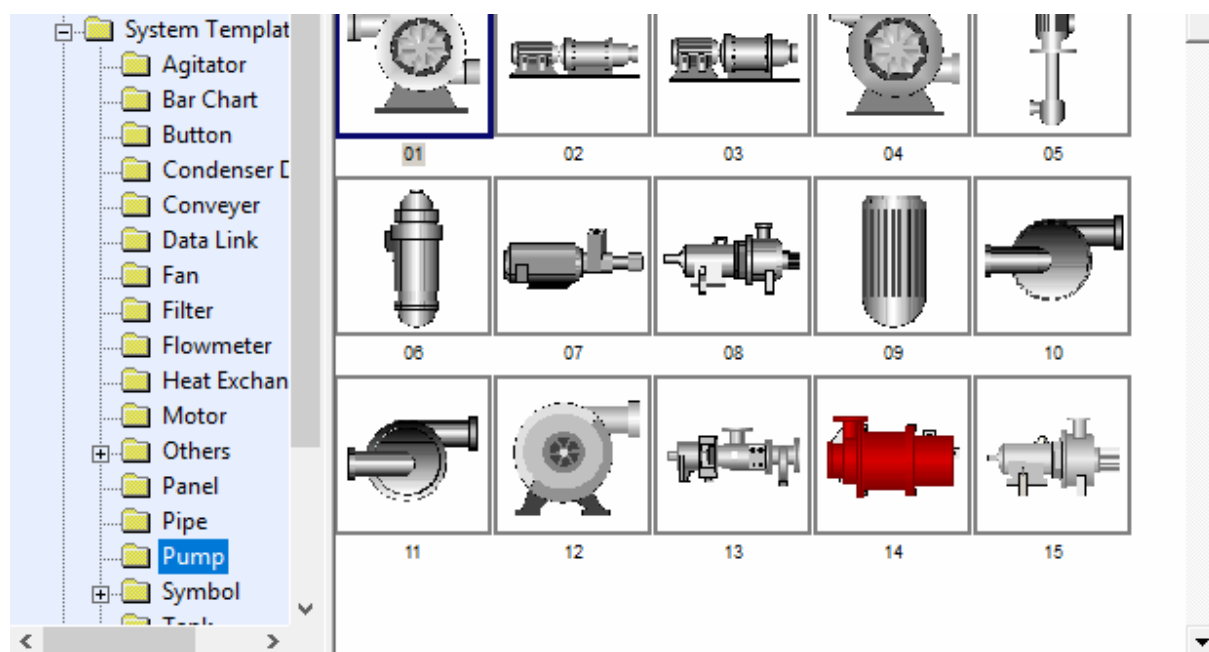


Figure 5-7 Template Manager

Double click to open the needed object. For example, double click the pump named '01', the graphics will be displayed in the workaroud shown as follows:

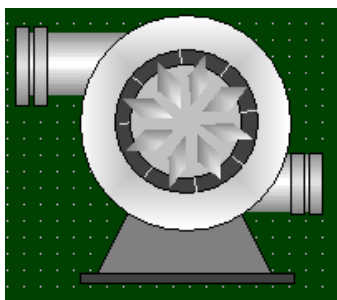


Figure 5-8 Pump Template

Change the size to get the graphics object used in practical project graphics. Meanwhile, the templates from the templates library can be used as normal composite graphics, so it is very convenient for users to do operations such as splitting and recombining.

5.5 Primary Flash Drum

The drawing of primary flash drum is based on the drawing of buffer vessels. The dynamic filling of rectangle is added to this operation.

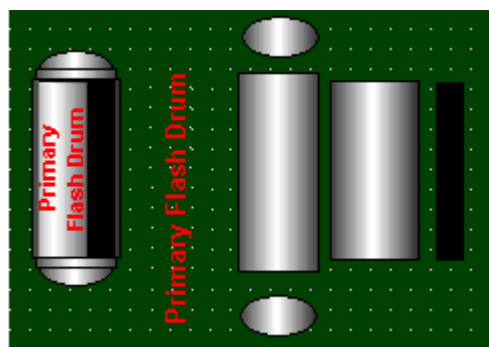


Figure 5-9 Decomposition chart of Primary Flash Drum

The drawing of buffer vessels can consult to the drawing of chiller. The level column of flash drum can be realized by using the dynamic filling effect to a rectangle. The specific operations are as follows: first, draw a rectangle, then set the background color to black, and double click the rectangle to accomplish the Dynamic Properties Settings shown as follows:

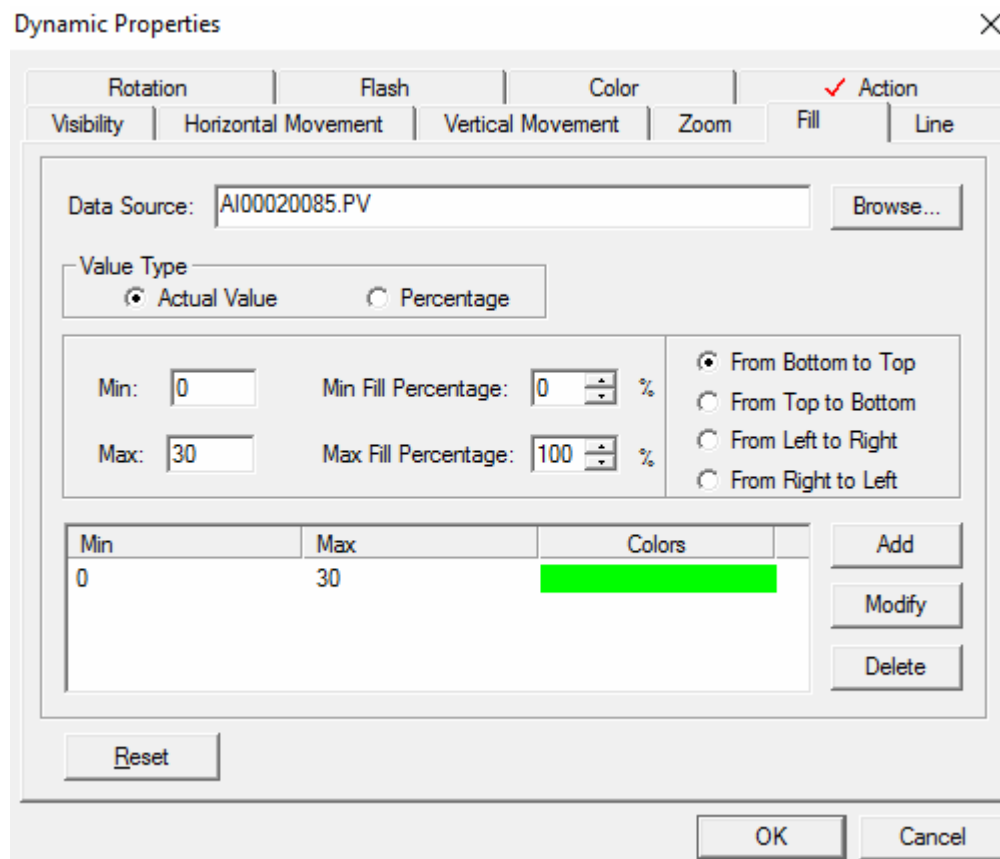


Figure 5-10 Fill settings

The instruction for Fill Setting:

Set Data Source: the stretch and shrink of the filling is linked by the change of the data source. As shown in, data source 'DCOMDSCA2_NA000.VALUE' has the range of 0 to 30. After setting the filling ratio, the change of the data can be reflected in the filling ratio.

Filling Direction: in this case, the filling direction is set as 'From Bottom to Top' (the filling direction has four modes). When the data is 0, the filling color displays black (the background color). When the data is 15, the bottom half displays green (the filling color) and the top half displays black.

Setting of Maximum/Minimum and Color: in this case, the maximum is set as 30 while the minimum is set as 0. The color is set as green. The rectangle column will be filled with green gradually with the change of the data. When the data reaches the maximum, the filling ratio is 100%, and the whole rectangle column displays green. Users can set different filling ratios according to practical situation..

Section 6 Revision

Table 6-1 Retrofit list of the version

Document Version	Applicable Software Version	Remarks
V1.0 (20230301)	OMC High-performanceHMI V4.70.00.00	First release
V1.1 (20230830)	OMC High-performanceHMI V5.10.00.00-M	Updated screenshots. Added a dynamic (line width), ACPN function. Modified ACAN function descriptions.