CHAPTER 9

ANIMATED OBJECTS

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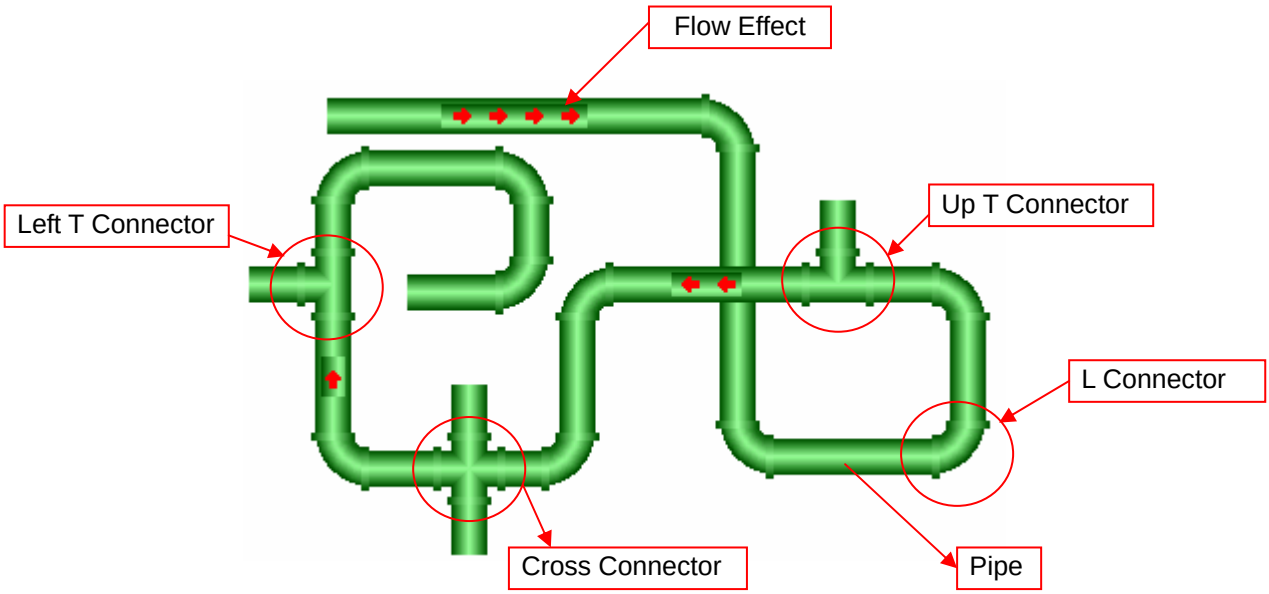
9.1. Pipelines

9.1.1. Basic Operations

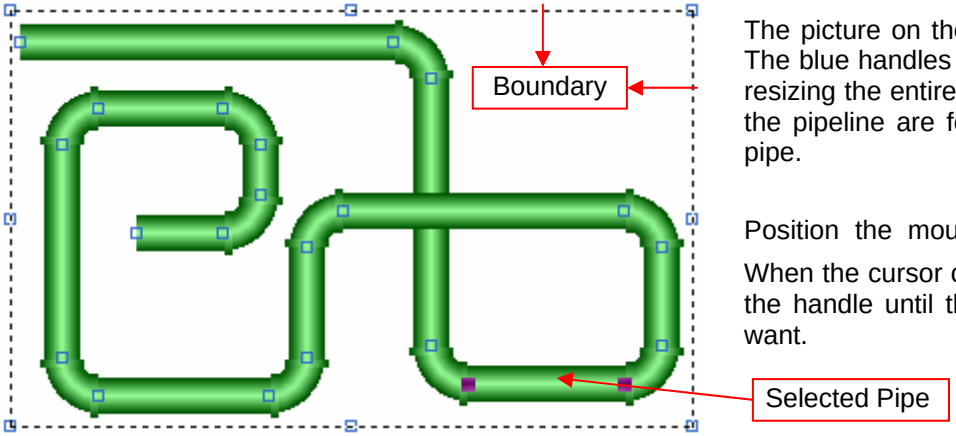
A pipeline is composed of L/T/Cross connectors and pipes. With the software, you can create a pipeline easily and efficiently. You can also control a pipeline to change color, blink, and/or show the flow effect dynamically at runtime.

The following is a sample of a pipeline with the flow effect:



To draw a pipeline, you need to do the following:

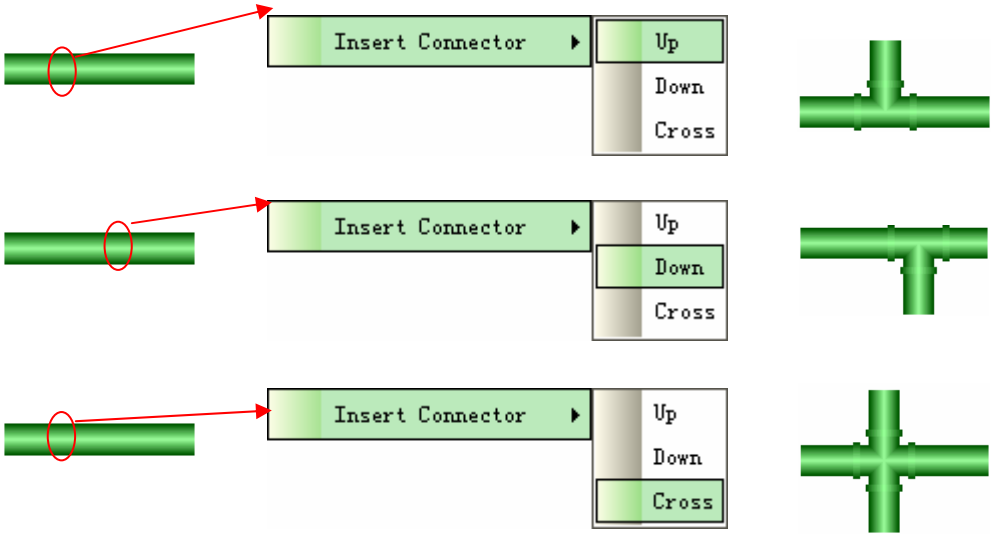
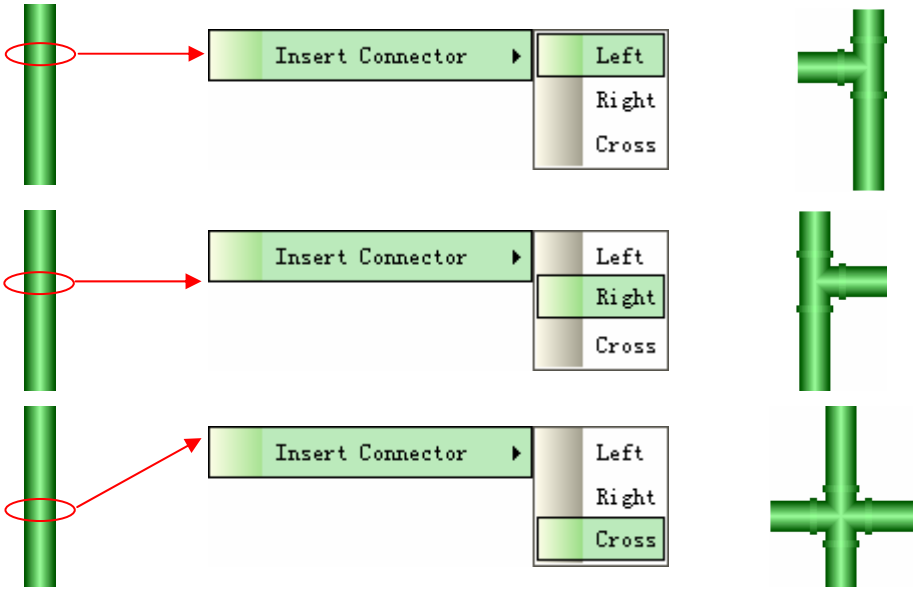
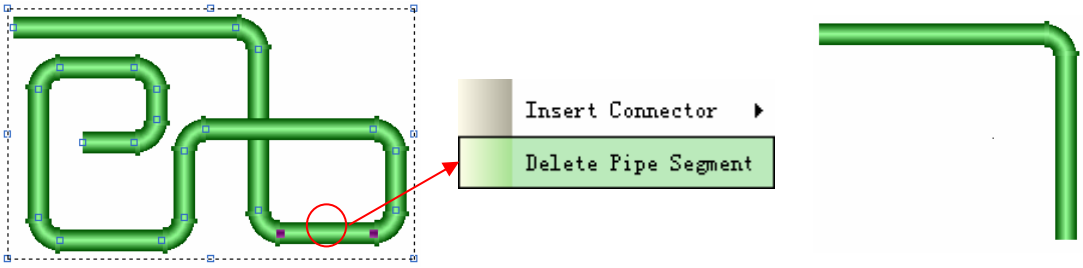
1. In the Object menu or Object toolbar, click Pipeline to draw a pipeline.
2. Move the cursor onto the screen where you want to draw a pipeline and click the position for the start point of the pipeline.
3. Continue clicking on the screen to place as many L connectors needed for the pipes in the pipeline.
4. Right-click to complete the pipeline.
5. Drag one blue handle on the boundary of the pipeline at a time to resize the pipeline.
6. Drag one blue or black handle on the pipeline at a time to adjust the position and length of the selected pipe of the pipeline. The pipe or connector with black handles represents the selected pipe or connector.



The picture on the left shows the handles of a pipeline. The blue handles on the boundary of the pipeline are for resizing the entire pipeline. The blue or black handles on the pipeline are for moving the vertices of the selected pipe.

Position the mouse pointer over one of the handles. When the cursor changes to ⤢ or ↕ or ⤡ or ↔, drag the handle until the pipeline is the shape and size you want.

7. Right-click anywhere on the pipeline and use the Insert Connector command on the object pop-up menu to insert a new T/ Cross connector to the pipeline. Alternatively, right-click the existing connector or pipe of the pipeline and use the Delete Pipe Segment command on the object pop-up menu to delete the connector and its connected pipe.

Pop-up menu	Description
Insert Connector	Add an Up/Down T or Cross connector to the specified position on the horizontal pipe.  Add a Left/Right T or Cross connector to the specified position on the vertical pipe 
Delete Pipe Segment	Delete a selected pipe segment and its successor. 

9.1.2. Operation Options

The following operation option can be added to a pipeline. Select and set up the option in the Pipeline property sheet.

Options	Description
Visibility Control	You can show and hide a pipeline by a specified bit or the current user level. Select and set up this option in the Visibility page.

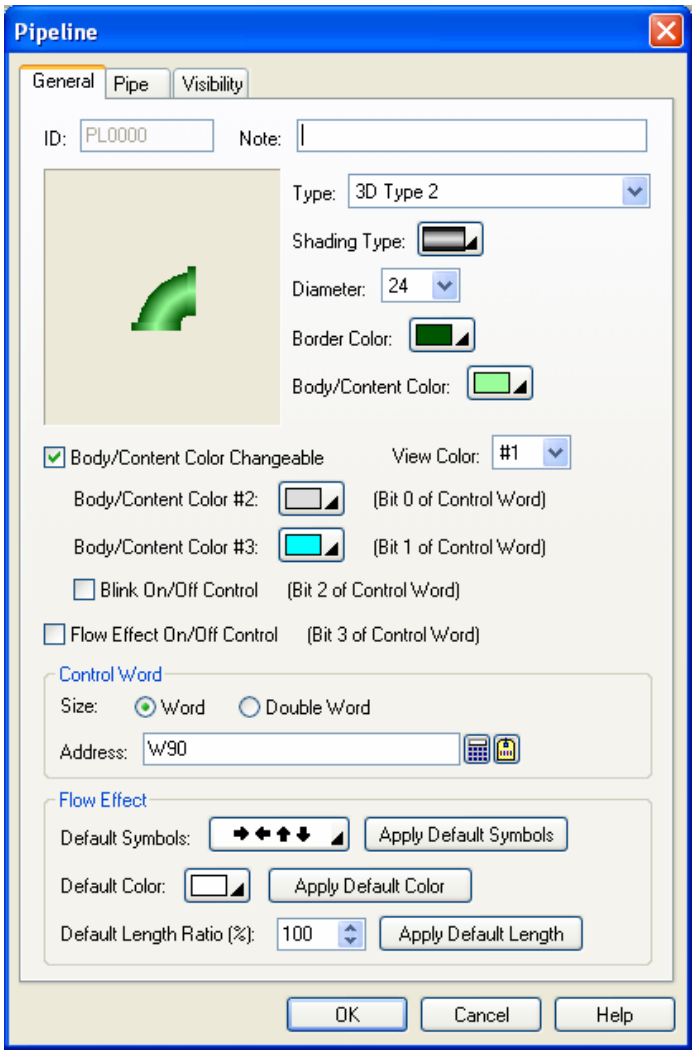
9.1.3. Settings

You can complete all the settings of a pipeline in the Pipeline property sheet. This sheet contains the following three pages.

- **General**
  Described in Section 9.1.4.
- **Pipe**
  Described in Section 9.1.5.
- **Visibility**
  Described in Section 4.4.6.

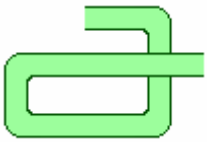
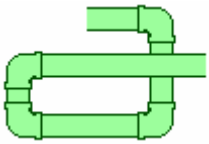
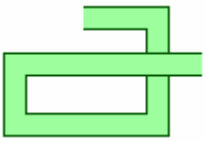
9.1.4. General Settings

This section describes how to define the general settings for the pipelines. The following is an example of the General page of the Pipeline property sheet.



The following table describes each property in the General page.

Property	Description
ID	The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the pipelines is PLnnnn.
Note	You can type a note for the object.
Type	The type of the pipeline. There are five types available:

Type	Example
2D Type 1	
2D Type 2	
2D Type 3	
3D Type 1	
3D Type 2	

Shading	Select a shading method when the Type is "3D Type 1" or "3D Type 2". There are three shading methods available:
Diameter	Specifies the diameter of the pipeline.
Border Color	Specifies the border color of the pipeline.
Body/Content Color	Specifies the body or content color of the pipeline.
Flow Effect On/Off Control	Check this option if you want to enable or disable the flow effect for the pipeline at runtime. The flow effect will be enabled when bit 3 of the control word is on.

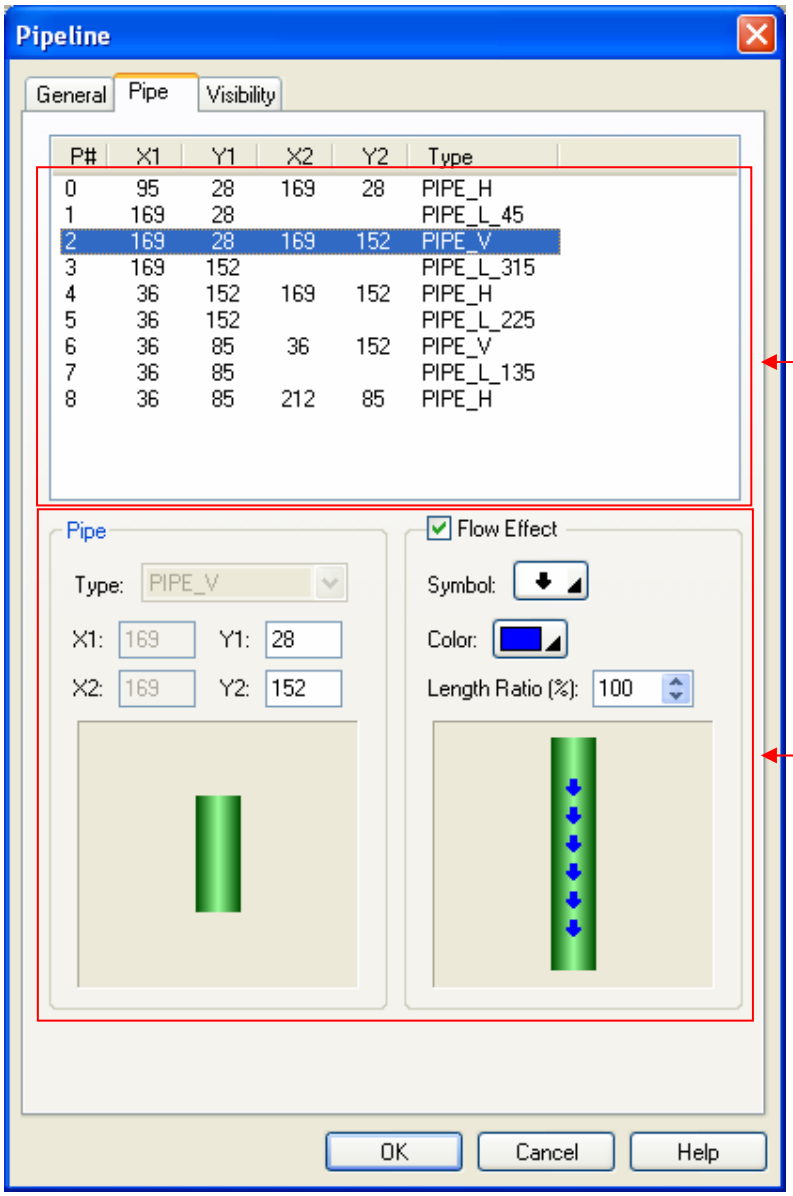
Continued

<table>
<tr><th colspan="2">Property</th><th>Description</th></tr>
<tr><td rowspan="5">Body/Content Color Changeable</td><td><Check Box></td><td>Check this option if you want to control the body/content color of the pipeline at runtime. The variable that controls the pipeline is called the control word and is specified in the Address field.</td></tr>
<tr><td>View Color</td><td>Select a color so you can view the pipeline painted with that color.
<table>
<tr><th>View Color</th><th>Painted With</th></tr>
<tr><td>0</td><td>Body/Content Color</td></tr>
<tr><td>1</td><td>Body/Content Color #2</td></tr>
<tr><td>2</td><td>Body/Content Color #3</td></tr>
</table></td></tr>
<tr><td>Body/Content Color #2</td><td>Select a color as the second body/content color for the pipeline. This color will be used to paint the pipeline when bit 0 of the control word is on.</td></tr>
<tr><td>Body/Content Color #3</td><td>Select a color as the third body/content color for the pipeline. This color will be used to paint the pipeline when bit 1 of the control word is on.</td></tr>
<tr><td>Blink On/Off Control</td><td>Check this option if you want the pipeline to blink at runtime. The pipeline will blink when bit 2 of the control word is on.</td></tr>
<tr><td rowspan="2">Control Word</td><td>Size</td><td>Select Word or Double Word for the size of the control word.</td></tr>
<tr><td>Address</td><td>Specifies the variable that controls the pipeline.
Click to enter an address for this field. Click to select a tag for this field.
The following table shows the bit assignment data of the variable:
<table>
<tr><th>Bit</th><th>Assignment</th></tr>
<tr><td>0</td><td>Shows body/content color #2 when this bit is on</td></tr>
<tr><td>1</td><td>Shows body/content color #3 when this bit is on</td></tr>
<tr><td>2</td><td>Blinks when this bit is on</td></tr>
<tr><td>3</td><td>Shows the flow effect when this bit is on</td></tr>
</table></td></tr>
<tr><td rowspan="3">Flow Effect</td><td>Default Symbols</td><td>Select a set of symbols as the default symbols for the flow effect. There are 14 available sets:

Click Apply Default Symbols to make all pipes of the pipeline use the default symbols for the flow effect.</td></tr>
<tr><td>Default Color</td><td>Select a color as the default color for the flow symbols.
Click Apply Default Color to make all pipes of the pipeline use the default color for the flow symbols.</td></tr>
<tr><td>Default Length Ratio(%)</td><td>Specifies the length ratio between pipe and flow effect as the default length ratio.
Click Apply Default Length to make all pipes of the pipeline use the default length ratio for the flow effect.</td></tr>
</table>

9.1.5. Pipe Settings

This section describes how to define the pipes for the pipelines. The following is an example of the Pipe page.



Select a pipe here by clicking it

View and edit the property of the selected pipe here

The following table describes each property in the Pipe page.

Property		Description
Pipe	Type	Specifies the type of the selected pipe.
	X1	The horizontal coordinate of the upper-left corner of the selected pipe.
	Y1	The vertical coordinate of the upper-left corner of the selected pipe.
	X2	The horizontal coordinate of the lower-right corner of the selected pipe.
	Y2	The vertical coordinate of the lower-right corner of the selected pipe.
Flow Effect	<Check Box>	Select this option if you want the selected pipe to show the flow effect.
	Symbol	Select a symbol for the flow effect.
	Color	Select a color for the flow symbol
	Length Ratio(%)	Specifies the length ratio between pipe and flow effect.

9.2. Dynamic Circles

You can change the size, position, and/or color of a dynamic circle at runtime.

9.2.1. Operation Options

The following operation option can be added to a dynamic circle. Select and set up the option in the Dynamic Circle property sheet.

Options	Description
Visibility Control	You can show and hide a dynamic circle by a specified bit or the current user level. Select and set up this option in the Visibility page.

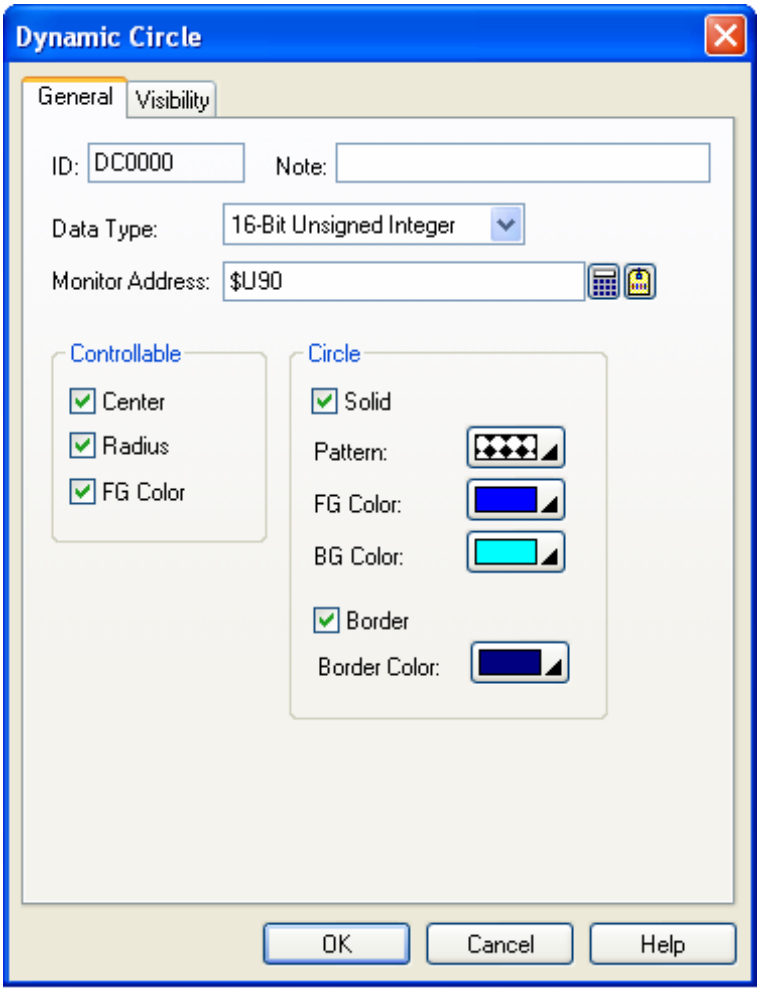
9.2.2. Settings

You can complete all the settings of a dynamic circle in the Dynamic Circle property sheet. This sheet contains the following two pages.

- **General**
  Described in Section 9.2.3.
- **Visibility**
  Described in Section 4.4.6.

9.2.3. General Settings

This section describes how to define the general settings for dynamic circles. The following is an example of the General page of the Dynamic Circle property sheet.



The following table describes each property in the General page.

Property	Description
ID	The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the dynamic circles is DCnnnn.
Note	You can type a note for the object.
Data Type	The data type of the variable that controls the dynamic circle. The supported data types include: 16-Bit Unsigned Integer, 32-Bit Unsigned Integer, 16-Bit Signed Integer, 32-Bit Signed Integer, 16-Bit BCD, and 32-Bit BCD.

Continued

Property			Description
Monitor Address			Specifies the variable that controls the dynamic circle. Click to enter an address for this field. Click to select a tag for this field. The following table shows the data arrangement of the variable.

Data Type / Controllable	16-Bit Unsigned Int. 16-Bit Signed Int. 16-Bit BCD	32-Bit Unsigned Int. 32-Bit Signed Int. 32-Bit BCD
☐ Center ☐ Radius ☑ FG Color	W0 FG Color	W0,1 FG Color
☐ Center ☑ Radius ☐ FG Color	W0 Radius	W0,1 Radius
☐ Center ☑ Radius ☑ FG Color	W0 Radius W1 FG Color	W0,1 Radius W2,3 FG Color
☑ Center ☐ Radius ☐ FG Color	W0 X W1 Y	W0,1 X W2,3 Y
☑ Center ☐ Radius ☑ FG Color	W0 X W1 Y W2 FG Color	W0,1 X W2,3 Y W4,5 FG Color
☑ Center ☑ Radius ☐ FG Color	W0 X W1 Y W2 Radius	W0,1 X W2,3 Y W4,5 Radius
☑ Center ☑ Radius ☑ FG Color	W0 X W1 Y W2 Radius W3 FG Color	W0,1 X W2,3 Y W4,5 Radius W6,7 FG Color

Note: About color values, see Section 9.2.4.

Controllable		Center	Check this option if you want to control the center.
		Radius	Check this option if you want to control the radius.
		FG Color	Check this option if you want to control the FG color. This option is available when the Circle is Solid and the Pattern is not solid white.
Circle	Solid	<Check Box>	Check this option if you want the dynamic circle to be filled with the selected pattern.
		Pattern	Select a pattern for filling the dynamic circle.
		FG Color	Select a color to paint the black part of the pattern. This item is available when the Pattern is not solid white.
		BG Color	Select a color to paint the white part of the pattern.
	Border	<Check Box>	Check this option if you want the dynamic circle to have a border.
		Border Color	The border color.

9.2.4. Specifying Colors for Dynamic Rectangles and Circles

9.2.4.1. 64K-color Models

64K-color HMI models use one word to specify a color. The color word contains the three color components: red, green, and blue. The format to store the three color components of a color is described below.

Bit 0-4: 5 bits to store the blue component
Bit 5-10: 6 bits to store the green component
Bit 11-15: 5 bits to store the red component

Example

Color	Red	Green	Blue	Hex. Value	Decimal Value
Black	0	0	0	0000H	0
Blue	0	0	16	0010H	16
Green	0	32	0	0400H	1024
Cyan	0	32	16	0410H	1040
Red	16	0	0	8000H	32768
Magenta	16	0	16	8010H	32784
Brown	16	32	0	8400H	33792
Dark gray	16	32	16	8410H	33808
Gray	24	48	24	C618H	50712
Light blue	0	0	31	001FH	31
Light green	0	63	0	07E0H	2016
Light cyan	0	63	31	07FFH	2047
Light red	31	0	0	F800H	63488
Light magenta	31	0	31	F81FH	63519
Yellow	31	63	0	FFE0H	65504
White	31	63	31	FFFFH	65535

9.2.4.2. 256-color Models

The following table lists the color index values used by 256-color HMI models. You can use the color index values to specify the desired colors for your application.

Color Index Value	Color	Color Index Value	Color	Color Index Value	Color
0	Black	84	Autumn Orange	159	Chalk
1	Blue; 53% Blue	85	Light Orange	166	Deep Blue
2	Red; 53% Red	88	Deep Navy Blue	172	Deep River
3	Green; 53% Green	91	Grass Green	174	Twilight Blue
4	Magenta; 53% Magenta	94	Deep Purple	177	Turquoise
5	Cyan; 53% Cyan	96	Moss Green	178	Purple
6	Brown; 53% Yellow	97	Kentucky Green	179	Majestic Purple
7	Light blue	103	Army Green	180	Twilight Violet
8	Gray; 50% Black	107	Crimson	182	Light Blue Green
9	Light red	109	Khaki	186	Violet
10	Light green	110	Dull Green	187	Pale Purple
11	Light magenta	113	Regal red	189	Ghost Green
12	Light gray; 20% Black	117	Moon Green	193	Pink
13	Light cyan	118	Neon Red	194	Faded Pink
14	Yellow	120	Tropical Pink	195	Pale Yellow
15	White	121	Peach	200	Sky Blue
23	Murky Green	123	Light Yellow	209	Deep Azure
29	Walnut	125	Navy Blue	210	Electric Blue
34	Ruby red	130	Storm Blue	211	Baby Blue
39	Chartreuse	132	Desert Blue	214	Blue Purple
41	Brick Red	134	Sea Green	216	Blue Violet
48	Orange	137	Grape	217	Pastel Blue
50	Deep Yellow	139	Ocean Green	219	Ice Blue
54	Forest Green	142	Deep Violet	221	Neon Purple
62	Spring Green	144	Dusty Plum	222	Light Purple
65	Dark Brown	146	Faded Green	223	Easter Purple
66	Olive Drab	147	Mint Green	224	Powder Blue
67	Avocado Green	149	Deep Rose	229	Light Violet
73	Olive	150	Dusty Rose		
74	Martian Green	155	Hot Pink		
78	Red Brown	156	Deep Pink		
79	Gold	157	Soft Pink		
80	Banana Yellow	158	Sand		

9.3. Dynamic Rectangles

You can change the size, position, and/or color of a dynamic rectangle at runtime.

9.3.1. Operation Options

The following operation option can be added to a dynamic rectangle. Select and set up the option in the Dynamic Rectangle property sheet.

Options	Description
Visibility Control	You can show and hide a dynamic rectangle by a specified bit or the current user level. Select and set up this option in the Visibility page.

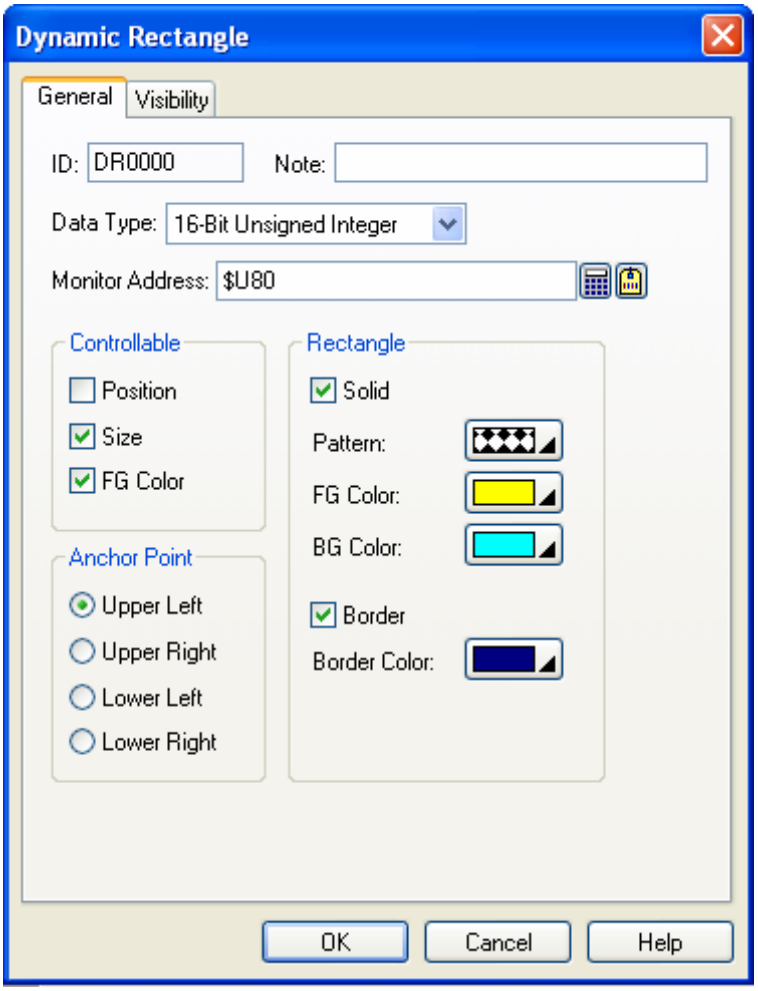
9.3.2. Settings

You can complete all the settings of a dynamic rectangle in the Dynamic Rectangle property sheet. This sheet contains the following two pages.

- **General**
  Described in Section 9.3.3.
- **Visibility**
  Described in Section 4.4.6.

9.3.3. General Settings

This section describes how to define the general settings for dynamic rectangles. The following is an example of the General page of the Dynamic Rectangle property sheet.



The following table describes each property in the General page.

Property	Description
ID	The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the dynamic rectangles is DRnnnn.
Note	You can type a note for the object.
Data Type	The data type of the variable that controls the dynamic rectangle. The supported data types include: 16-Bit Unsigned Integer, 32-Bit Unsigned Integer, 16-Bit Signed Integer, 32-Bit Signed Integer, 16-Bit BCD, and 32-Bit BCD.

Continued

<table>
<tr><th>Property</th><th colspan="2">Description</th></tr>
<tr><td>Monitor Address</td><td colspan="2">Specifies the variable that controls the dynamic rectangle.
Click to enter an address for this field. Click to select a tag for this field.
The following table shows the data arrangement of the monitored variable.
<table>
<tr><th>Data Type
Controllable</th><th>16-Bit Unsigned Int.
16-Bit Signed Int.
16-Bit BCD</th><th>32-Bit Unsigned Int.
32-Bit Signed Int.
32-Bit BCD</th></tr>
<tr><td>☐ Position
☐ Size
☑ FG Color</td><td>W0 FG Color</td><td>W0,1 FG Color</td></tr>
<tr><td>☐ Position
☑ Size
☐ FG Color</td><td>W0 Width
W1 Height</td><td>W0,1 Width
W2,3 Height</td></tr>
<tr><td>☐ Position
☑ Size
☑ FG Color</td><td>W0 Width
W1 Height
W2 FG Color</td><td>W0,1 Width
W2,3 Height
W4,5 FG Color</td></tr>
<tr><td>☑ Position
☐ Size
☐ FG Color</td><td>W0 X
W1 Y</td><td>W0,1 X
W2,3 Y</td></tr>
<tr><td>☑ Position
☐ Size
☑ FG Color</td><td>W0 X
W1 Y
W2 FG Color</td><td>W0,1 X
W2,3 Y
W4,5 FG Color</td></tr>
<tr><td>☑ Position
☑ Size
☐ FG Color</td><td>W0 X
W1 Y
W2 Width
W3 Height</td><td>W0,1 X
W2,3 Y
W4,5 Width
W6,7 Height</td></tr>
<tr><td>☑ Position
☑ Size
☑ FG Color</td><td>W0 X
W1 Y
W2 Width
W3 Height
W4 FG Color</td><td>W0,1 X
W2,3 Y
W4,5 Width
W6,7 Height
W8,9 FG Color</td></tr>
</table>
Note: About color values, see Section 9.2.4.</td></tr>
<tr><td rowspan="3">Controllable</td><td>Position</td><td>Check this option when you want to control the position.</td></tr>
<tr><td>Size</td><td>Check this option when you want to control the size.</td></tr>
<tr><td>FG Color</td><td>Check this option when you want to control the FG color. This option is available when the Rectangle is Solid and the Pattern is not solid white.</td></tr>
</table>

Continued

Property			Description
Anchor Point			Select one of the following four corners of the dynamic rectangle to stay fixed as its size changes: Upper Left, Upper Right, Lower Left, and Lower Right. This item is available when Size is controllable but Position is not controllable.
Rectangle	Solid	Solid	Check this option if you want the dynamic rectangle to be filled with the selected pattern.
		Pattern	Select a pattern to fill the dynamic rectangle.
		FG Color	Select a color to paint the black part of the pattern. This item is available when the Pattern is not solid white.
		BG Color	Select a color to paint the white part of the pattern.
	Border	Border	Check this option if you want the dynamic rectangle to have a border.
		Border Color	The border color.

9.4. GIF Displays

You can use a GIF display to show a GIF image and control the animation of that image.

9.4.1. Operation Options

The following operation option can be added to a GIF display. Select and set up the option in the GIF Display property sheet.

Options	Description
Visibility Control	You can show or hide a GIF display by a specified bit or the current user level. Select and set up this option in the Visibility page.

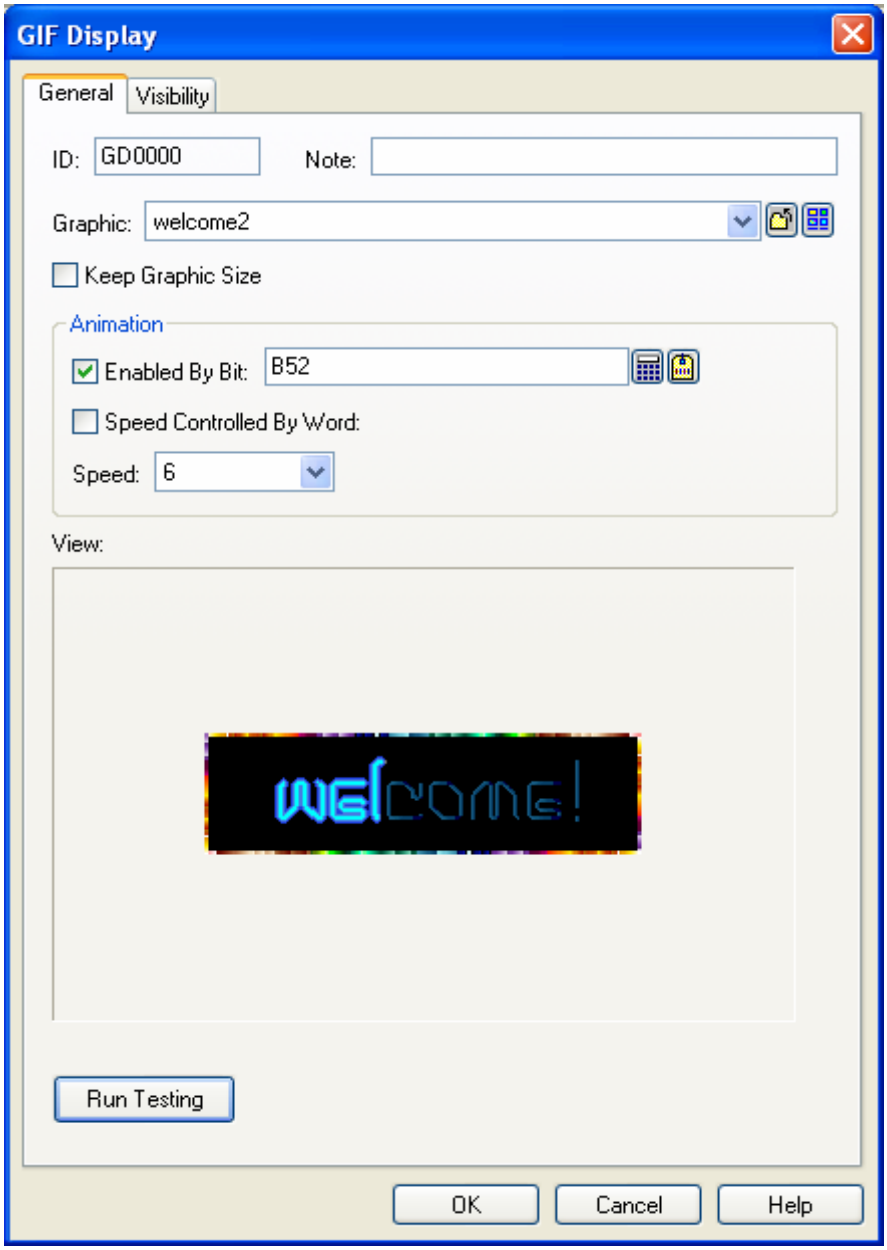
9.4.2. Settings

You can complete all the settings of a GIF display in the GIF Display property sheet. This sheet contains the following two pages.

- **General**
  Described in Section 9.4.3.
- **Visibility**
  Described in Section 4.4.6.

9.4.3. General Settings

This section describes how to define the general settings for the GIF displays. The following is an example of the General page of the GIF Display property sheet.



The following table describes each property in the General page.

Property	Description
ID	The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the GIF displays is GDnnnn.
Note	You can type a note for the object.
Graphic	Select a GIF image for the GIF display. You can use the drop-down list to select a GIF image from the picture database. You can click to select a GIF image from a file. You can click to select a GIF image from a library file. If the selected GIF image is not from the picture database, it is imported and saved in the picture database.

Continued

Property		Description
Keep Graphic Size		Check this option so the size of the selected graphic will not change with the object's size.
Animation	Enabled By Bit	Check this option so the animation will be enabled by the specified bit variable.
		Specifies the bit variable that enables the animation. Click to enter an address for this field. Click to select a tag for this field. The animation is enabled when the state of the variable is on.
	Speed Controlled By Word	Check this option so the speed of the animation will be controlled by the specified word variable.
		Specifies the variable that controls the speed of the animation. Click to enter an address for this field. Click to select a tag for this field. The value of the variable can be from 0 to 10. The slowest speed is 1 and the highest speed is 10. The value 0 disables the animation.
	Speed	Select a speed from 1 to 10 for the animation. The slowest speed is 1 and the highest speed is 10.
Run Testing		Click this button to see the animation of the GIF display with the current settings on the screen.

9.5. Picture Displays

9.5.1. Basic Operations

You can use a variable to select and display a predefined picture with a picture display.

A picture display can have up to 256 states. Each state can have a predefined picture. The maximum number of states that a picture display can have is determined by the state type and the data type of the monitored variable. The following table shows the maximum in each case.

State Type	Type of Variable	Maximum
Bit	Bit	2
Value	16-bit	256
	32-bit	256
LSB	16-bit	17
	32-bit	33
Animation	Bit	256 **Note:** This is a special state type that is unique to picture displays. The bit variable is used to control the animation. When the bit is on, the animation is enabled. When the bit is off, the animation is disabled. The animation is performed by showing the picture of each state one by one at a specified change frequency.

You need to specify the number of states for a picture display and the number must not exceed the allowable maximum. You can define a picture for each state. At runtime, a picture display shows the picture corresponding to the state of the monitored variable. The state of the monitored variable is determined by the state type and value of the variable.

9.5.2. Operation Options

The following operation option can be added to a picture display. Select and set up the option in the Picture Display property sheet.

Options	Description
Visibility Control	You can show or hide a picture display by a specified bit or the current user level. Select and set up this option in the Visibility page.

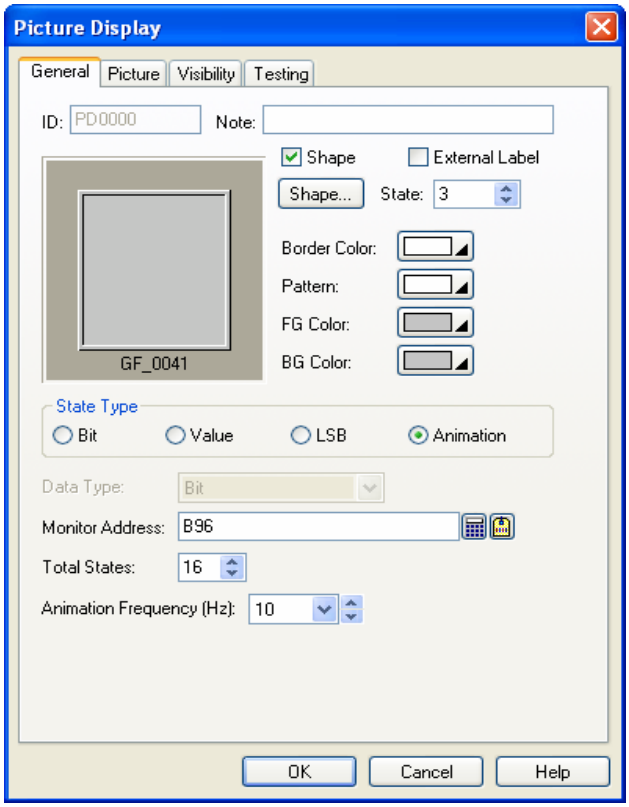
9.5.3. Settings

You can complete all the settings of a picture display in the Picture Display property sheet. This sheet contains the following three pages.

- **General**
  Described in Section 9.5.4.
- **Picture**
  Described in Section 4.3.7.
- **Visibility**
  Described in Section 4.4.6.

9.5.4. General Settings

This section describes how to define the general settings for the picture displays. The following is an example of the General page of the Picture Display property sheet.



The following table describes each property in the General page.

Property		Description
ID		The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the picture displays is PDnnnn.
Note		You can type a note for the object.
Shape	Shape	Check this option if you want the picture display to have a frame.
	Shape settings	For details about the following properties, see Section 4.3.4 Setting up the Shape of an Object. Shape..., Border Color, Pattern, FG Color, BG Color
External Label		Check this option if you want the picture display to have an external label. Set up the external label in the External Label page.
State		Select a state as the current state of the picture display so you can view and set the Pattern, FG Color, BG Color for that state.
State Type		The state type of the variable that controls the picture display. There are four state types you can select from: Bit, Value, LSB, and Bit For Enabling Animation. For details, see Section 9.5.1 Basic Operations.
Data Type		The data type of the variable that controls the picture display. The supported data types include: Bit, 16-bit Unsigned Integer, 16-bit BCD, 32-bit Unsigned Integer, and 32-bit BCD.
Monitor Address		Specifies the variable that controls the picture display. Click to enter an address for this field. Click to select a tag for this field.
Total State		The number of states for the picture display.
Animation Frequency (Hz)		The rate to change the picture.

9.6. Animated Graphics

An animated graphic can change its image and move along a specified path automatically. You can also change the position and image of an animated graphic at runtime by a specified variable. You can use BMP/JPG/GIF/Object Group for the animated graphics.

9.6.1. Operation Options

The following operation option can be added to an animated graphic. Select and set up the option in the Animated Graphic property sheet.

Options	Description
Visibility Control	You can show or hide an animated graphic by a specified bit or the current user level. Select and set up this option in the Visibility page.

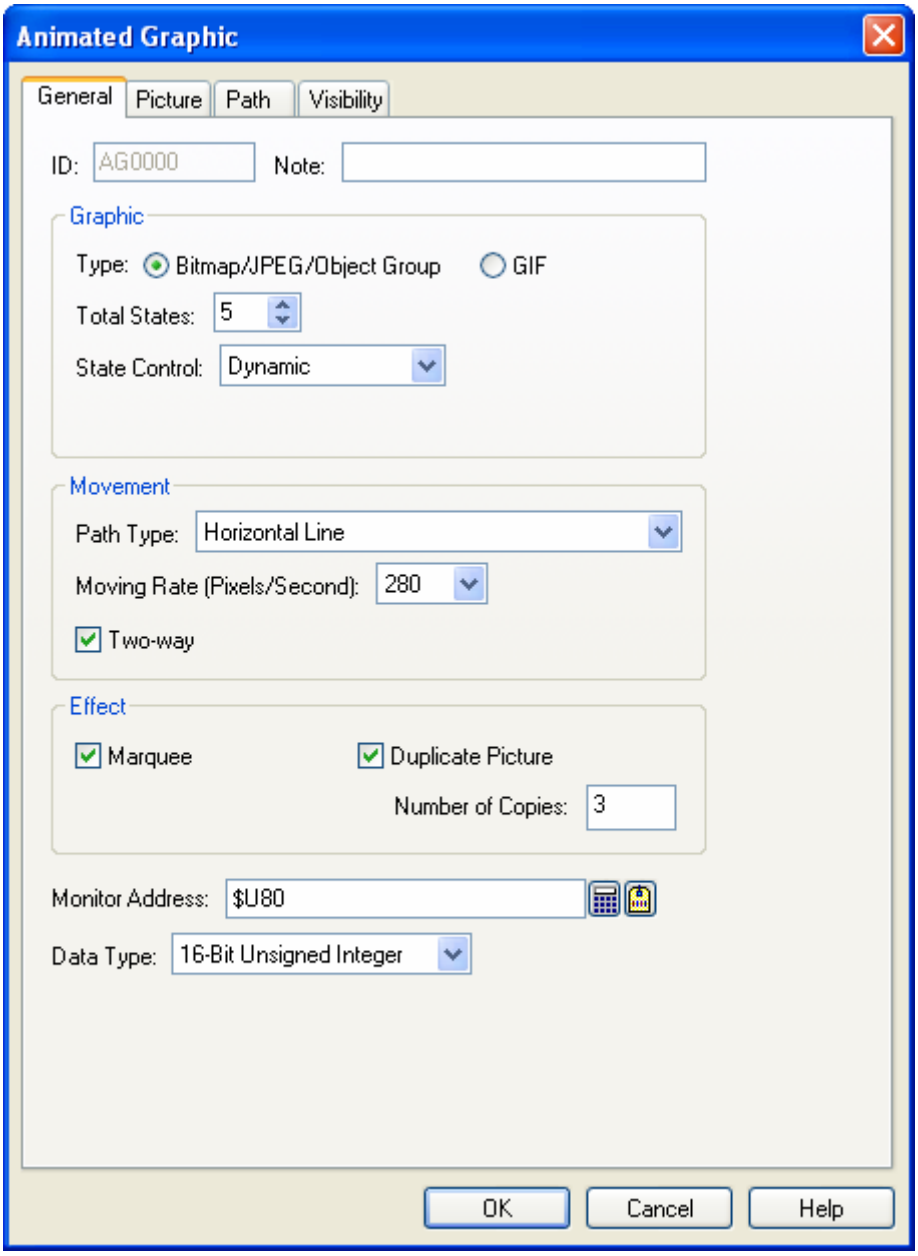
9.6.2. Settings

You can complete all the settings of an animated graphic in the Animated Graphic property sheet. This sheet contains the following five pages. Some of the pages appear only when they are needed.

- **General**
  Described in Section 9.6.3.
- **Picture**
  Described in Section 4.3.7.
- **GIF**
  Described in Section 9.6.4.
- **Path**
  Described in Section 9.6.5.
- **Visibility**
  Described in Section 4.4.6.

9.6.3. General Settings

This section describes how to define the general settings for animated graphics. The following is an example of the General page of the Animated Graphic property sheet.



The following table describes each property in the General page.

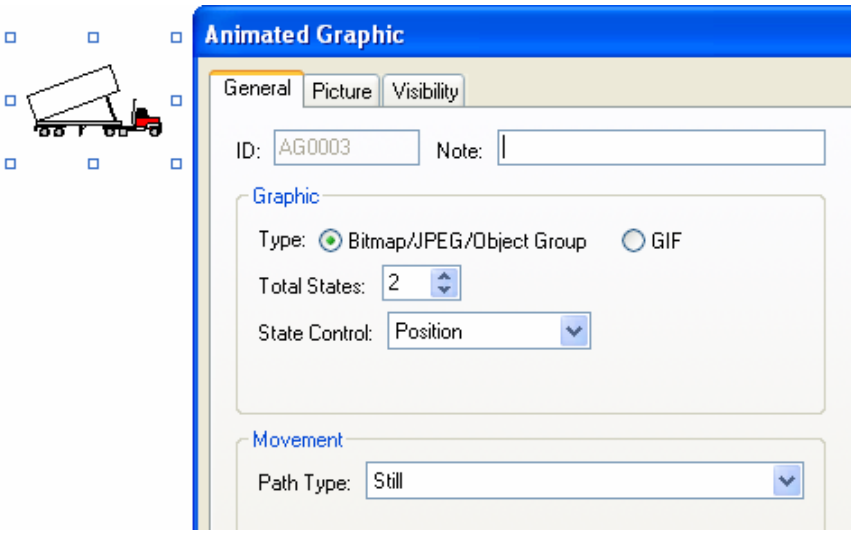
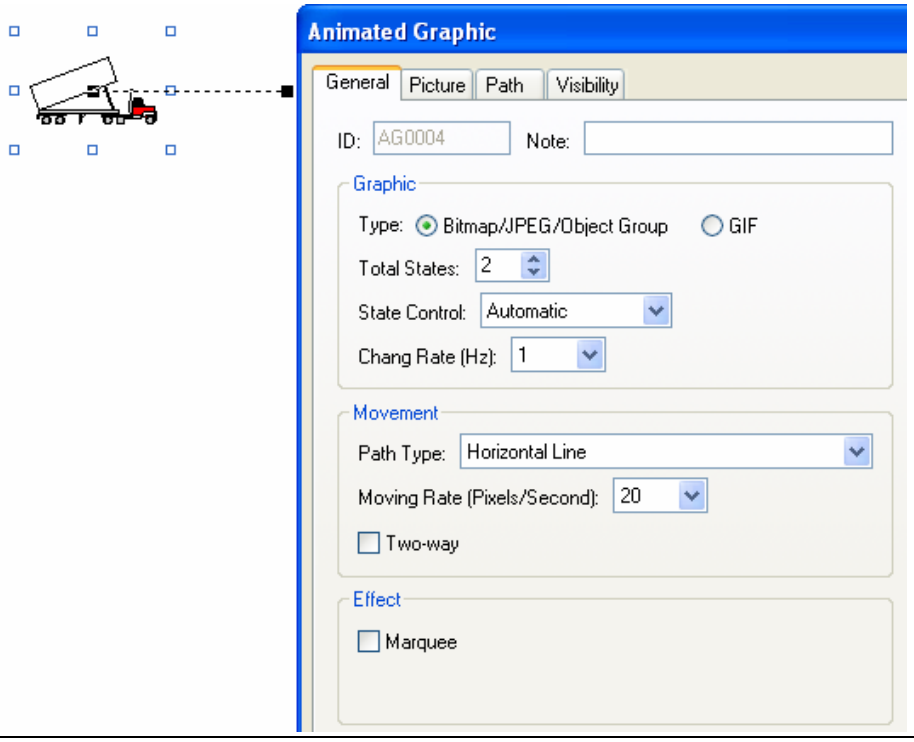
Property	Description
ID	The object's identifier. It is generated when the object is created. The identifier is unique within the screen where the object is located. The format of the IDs for the animated graphics is AGnnnn.
Note	You can type a note for the object.

Continued

<table>
<tr><th colspan="2">Property</th><th>Description</th></tr>
<tr><td rowspan="4">Graphic</td><td>Type</td><td>Select one of the following graphic types for the animated graphic:
<table>
<tr><th>Type</th><th>Description</th></tr>
<tr><td>Bitmap/JPEG/Object Group</td><td>You can configure the animated graphic to have up to 256 pictures. The pictures can be bitmap images, JPEG images, or object groups. Define the pictures in the Picture page. For details, see Section 4.3.7 Picture Settings.</td></tr>
<tr><td>GIF</td><td>The animated graphic can have one GIF image. Define the GIF image in the GIF page. The speed of the animation for the GIF image is specified in the Change Rate field.</td></tr>
</table></td></tr>
<tr><td>Total States</td><td>The number of graphic states. You can specify a picture for each state. The animated graphic displays the associated picture for the current state.</td></tr>
<tr><td>State Control</td><td>Select one of the following methods to control the state of the animated graphic.
<table>
<tr><th>State Control</th><th>Description</th></tr>
<tr><td>Automatic</td><td>The animated graphic changes the state in sequence starting from state 0 at a rate specified in the Change Rate field. When the current state is the last state, it will change back to state 0.</td></tr>
<tr><td>Position</td><td>The state is determined by where the animated graphic is. In the Path page, you can define the associated state for each path point. For details, see Section 9.6.5 Path Settings.</td></tr>
<tr><td>Dynamic</td><td>The state is determined at run time by the variable specified in the Monitor Address field.</td></tr>
</table>
The animated graphic displays the associated picture for the current state.</td></tr>
<tr><td>Change Rate (Hz)</td><td>Select a rate when the State Control is Automatic or the Graphic Type is GIF.</td></tr>
</table>

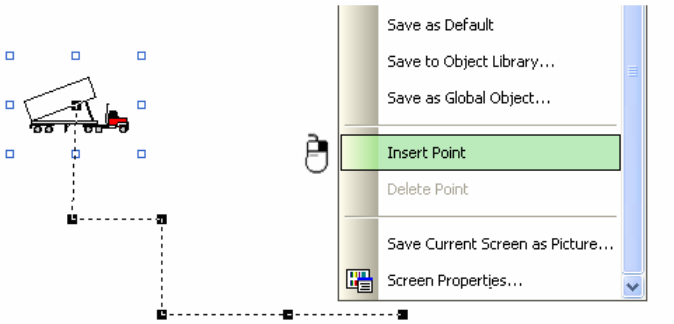
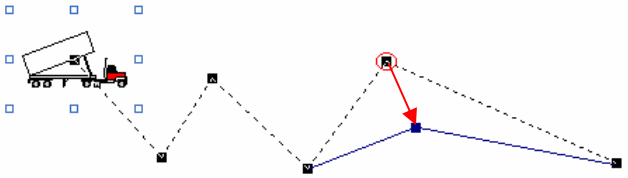
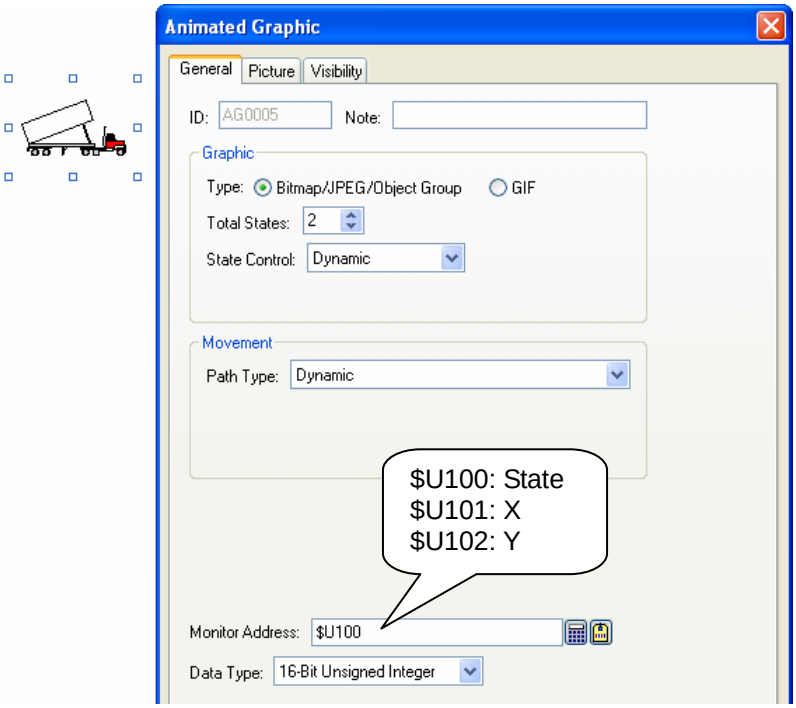
Continued

Property		Description
Movement	Path Type	There are six path types: Still, Horizontal Line, Vertical Line, Polyline, Dynamic, and Dynamic; Predefined Positions. Select one of the following path types for the animated graphic:

Path Type	Description
Still	The animated graphic does not move. 
Horizontal Line	The animated graphic moves along a horizontal line. 
Vertical Line	The animated graphic moves along a vertical line.

Continued

Property		Description
Movement	Path Type	

Path Type	Description
Polyline	The animated graphic moves along a set of connected lines. **Tips:** You can right-click anywhere on the connected line and use the Insert Point command on the pop-up menu to insert a new point to the polyline. You can also right-click the existing point and use the Delete Point command to delete the point.  You can also position the mouse pointer over one of the points. When the cursor changes to ↖↘, drag the point to the position you want. 
Dynamic	The position of the animated graphic is determined at runtime by the variable specified in the Monitor Address field. The data elements of the variable that specify the position are X and Y. They specify the coordinate of the position. 
Dynamic; Predefined Positions	The position of the animated graphic is determined at runtime by the variable specified in the Monitor Address field. The data element of the variable that specifies the position is Point. It specifies which point of the predefined path that the animated graphic should move to.

Continued

<table>
<tr><th colspan="2">Property</th><th>Description</th></tr>
<tr><td rowspan="3">Effect</td><td>Marquee</td><td>Check this option if you want the current picture of the animated graphic to scroll into both ends of its path. This option is available when the Path Type is Horizontal Line or Vertical Line.</td></tr>
<tr><td>Duplicate Picture</td><td>Check this option so the current picture of the animated graphic will be duplicated by a specified number of times. All the copies will display and move together. This option is available when the Marquee option is selected.</td></tr>
<tr><td>Number of Copies</td><td>Specifies the number of copies to make for the Duplicate Picture option.</td></tr>
<tr><td colspan="2">Monitor Address</td><td>Specifies the variable that controls the animated graphic.
Click to enter an address for this field. Click to select a tag for this field.
The following table shows the data arrangement of the variable:
<table>
<tr><th>Data Type / Settings</th><th>16-Bit Unsigned Int.
16-Bit Signed Int.
16-Bit BCD</th><th>32-Bit Unsigned Int.
32-Bit Signed Int.
32-Bit BCD</th></tr>
<tr><td>State Control = Dynamic</td><td>W0 State</td><td>W0,1 State</td></tr>
<tr><td>Path Type = Dynamic</td><td>W0 X
W1 Y</td><td>W0,1 X
W2,2 Y</td></tr>
<tr><td>Path Type =
Dynamic; Predefined Positions</td><td>W0 Point</td><td>W0,1 Point</td></tr>
<tr><td>State Control = Dynamic
Path Type = Dynamic</td><td>W0 State
W1 X
W2 Y</td><td>W0,1 State
W2,3 X
W4,5 Y</td></tr>
<tr><td>State Control = Dynamic
Path Type =
Dynamic; Predefined Positions</td><td>W0 State
W1 Point</td><td>W0,1 State
W2,3 Point</td></tr>
</table></td></tr>
<tr><td colspan="2">Data Type</td><td>The data type of the variable that controls the animated graphic. The supported data types include: 16-bit Unsigned Integer, 32-bit Unsigned Integer, 16-bit Signed Integer, 32-bit Signed Integer, 16-bit BCD, and 32-bit BCD.</td></tr>
</table>

9.6.3.1. Using Object Group for Animated Graphics

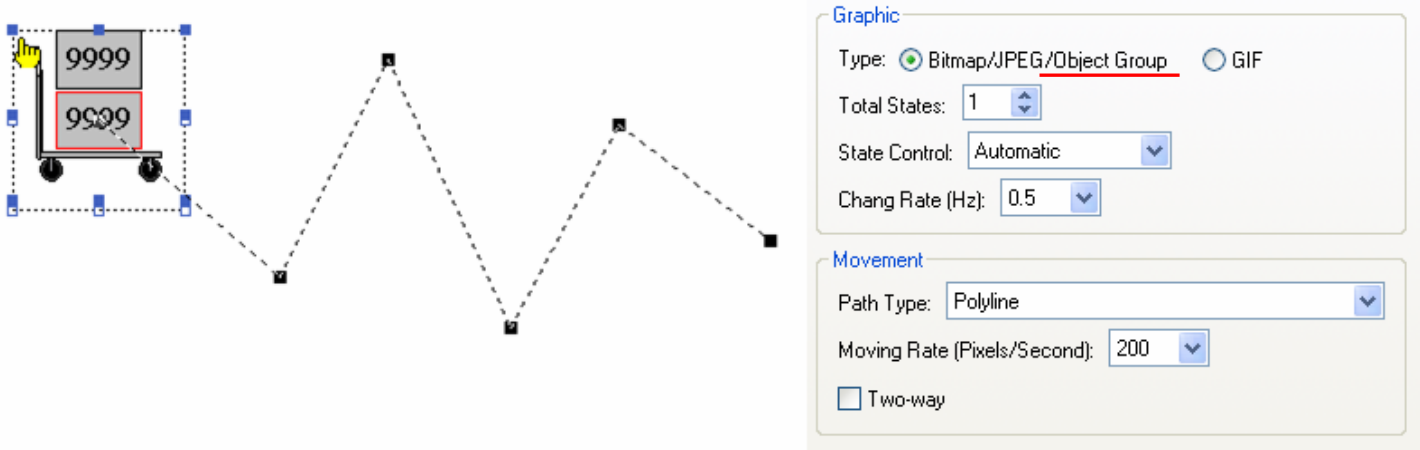
You can use an object group for the animated graphic.

To create an object group, you can first group the selected objects and then save the group into the object library.
To use the object group, you can click the button in the Picture page to bring up the Copy Object from Object Library dialog box. In the dialog, you can select an existing object group for the animated graphic.

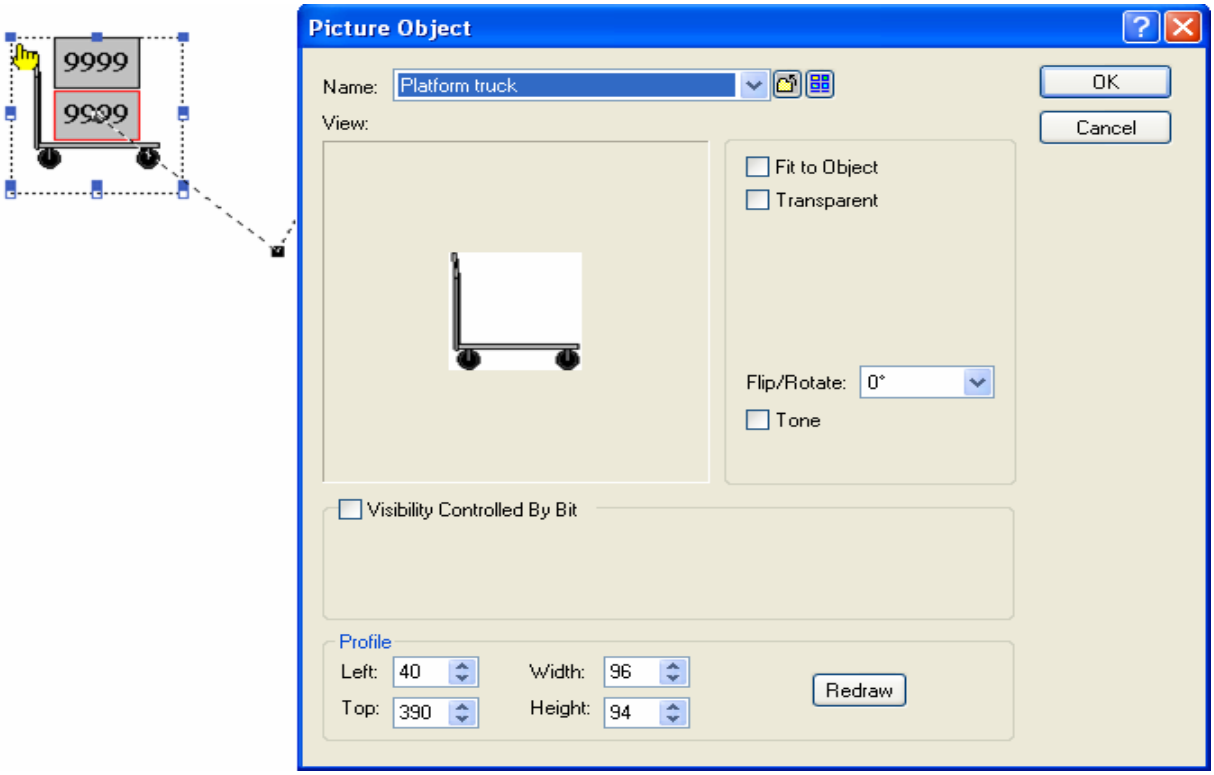
Any modifications such as moving the group, resizing the group, deleting the group etc. will be applied to the objects of the group at the same time. However, each object in the group can have its own properties. You can double click the icon to bring up the properties dialog box of the corresponding object and then define the settings of each object.

The following is an example showing you how to edit the object group for the animated graphic. The object group includes a numeric entry, a numeric display and a picture object. They will move along the set of connected lines. At the same time, the value of numeric entry and the numeric display will change.

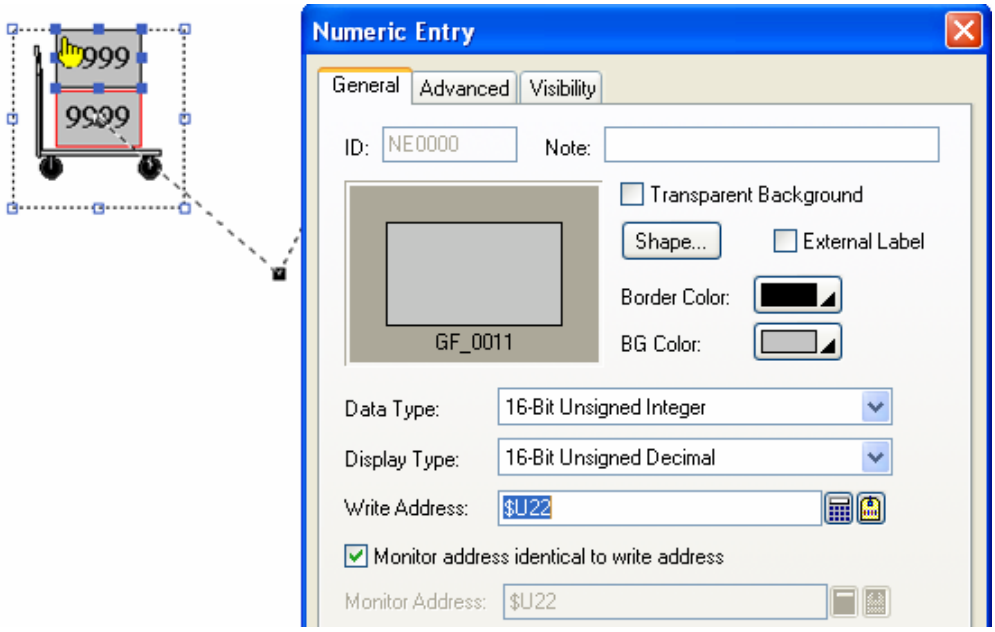
1. Set up the animated graphic with the object group as its graphic.



2. Set up the picture object

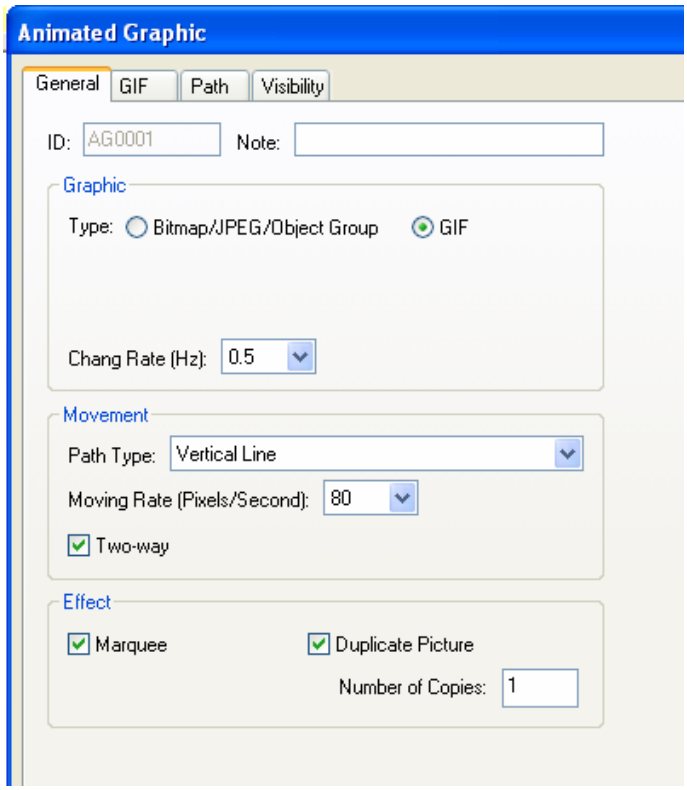


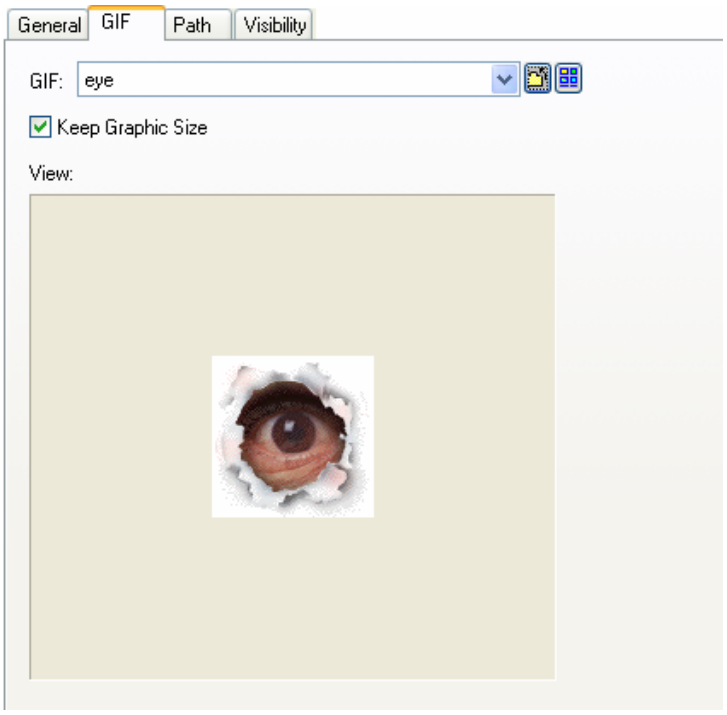
3. Set up the numeric entry



9.6.4. GIF Settings

This section describes how to define the GIF image for animated graphics. The following is an example of the GIF page.



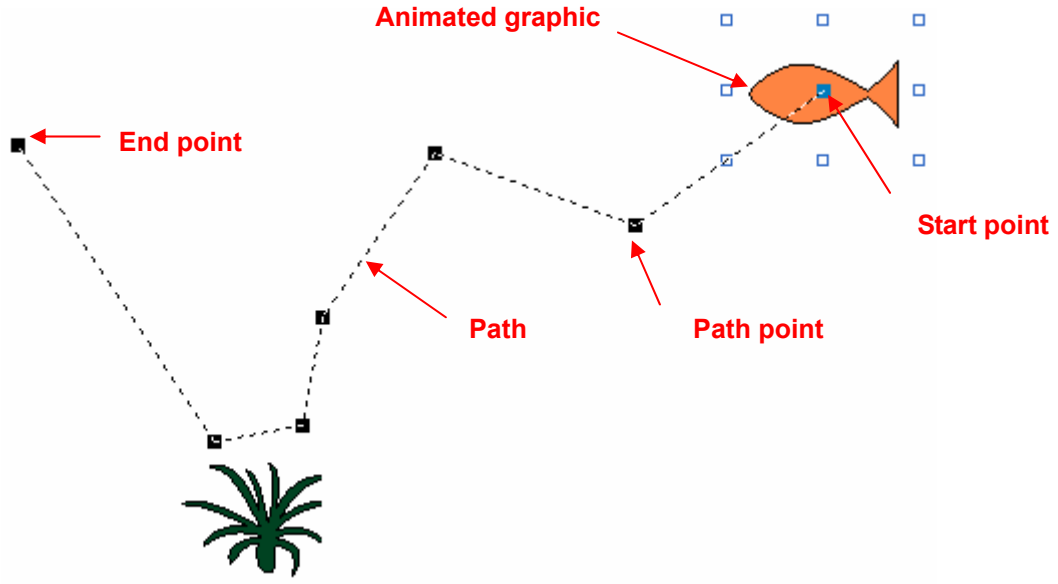


The following table describes each property in the GIF page.

Property	Description
GIF	Select a GIF image for the animated graphic. You can use the drop-down list to select a GIF image from the picture database. You can click to select a GIF image from a file. You can click to select a GIF image from a library file. If the selected GIF image is not from the picture database, it is imported and saved in the picture database.
Keep Graphic Size	Check this option so the size of the selected GIF image will not change with the object's size.

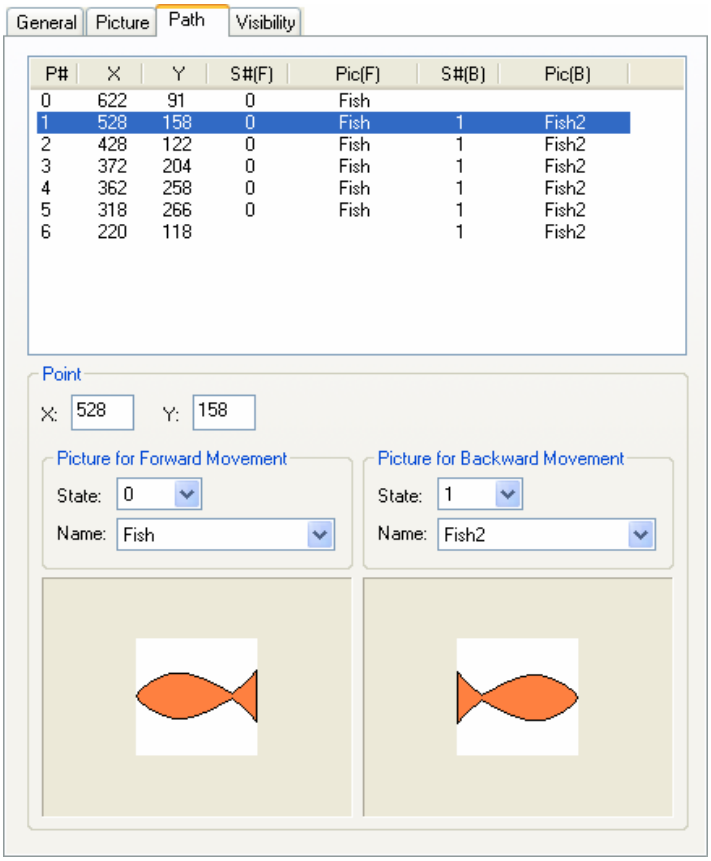
9.6.5. Path Settings

This section describes how to define the path settings for animated graphics. You can easily define the path of an animated graphic in the editing window. To edit the path of an animated graphic, click it to display the path as shown in the following example.



To modify the path, drag the path points to desired positions. You can insert a path point by right-clicking at the desired position on the path and clicking Insert Point from the popup menu. To delete a path point, right-click at the path point and click Delete Point on the popup menu. Use the Path page to define all the properties of the path.

The following is an example of the Path page.



The following table describes each property in the Path page.

Property		Description
X		The horizontal coordinate of the selected path point.
Y		The vertical coordinate of the selected path point.
Picture for Forward Movement	State	The associated state of the selected path point for forward movement.
	Name	The associated picture name of the selected state. It is also the associated picture name of the selected path point for forward movement.
Picture for Backward Movement	State	The associated state of the selected path point for backward movement.
	Name	The associated picture name of the selected state. It is also the associated picture name of the selected path point for backward movement.