

CHAPTER 6

LAMPS

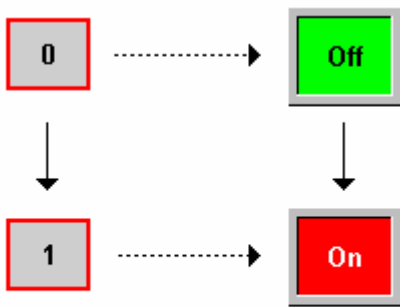
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6.1. Displaying Bit State Using Bit Lamps

6.1.1. Basic Operations

You can use a bit to control the appearance of a bit lamp.

A bit lamp has two states, i.e. state 0 (Off) and state 1 (On). You can set the appearance of a bit lamp for each of the two states. At runtime, a bit lamp displays with the appearance settings corresponding to the state of the monitored bit.



The monitored bit

The bit lamp

6.1.2. Operation Options

The following operation option can be added to a bit lamp. You need to select and set this option in the Bit Lamp property sheet.

Options	Description
Visibility Control	The object can be shown or hidden either by a specified bit or by the current user level. Select and set this option in the Visibility page.

6.1.3. Settings

You can complete all the settings of a bit lamp in the Bit Lamp property sheet. This sheet contains the following four pages. Some of the pages appear only when they are needed.

- **General**

Described in [Section 6.1.4.](#)

- **Label**

Described in [Section 4.3.5.](#)

- **Visibility**

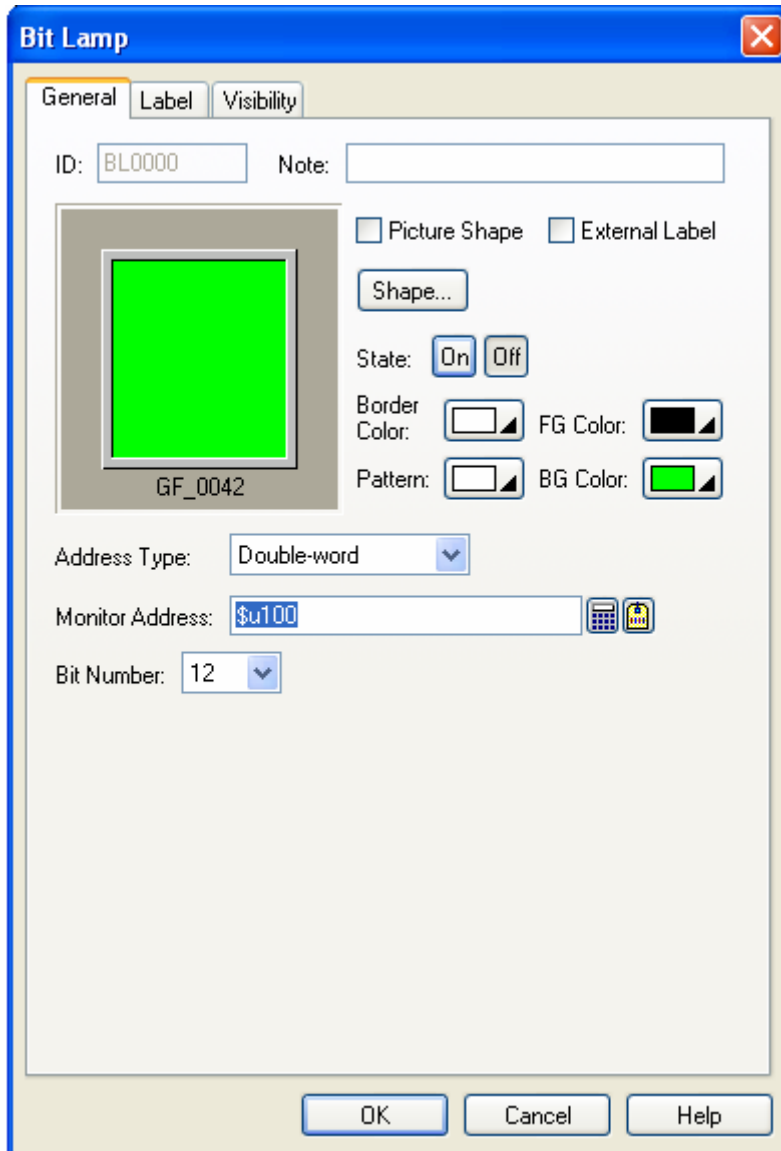
Described in [Section 4.4.6.](#)

- **External Label**

Described in [Section 4.3.8.](#)

6.1.4. General Settings

This section describes how to define the general settings for a bit lamp.







The above is an example of the General page of the Bit Lamp dialog box.

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 on. The format of the ID's for the bit lamps is BLnnnn.
Note	You can type a note for the object.
Shape settings	For details about the following properties, see Section 4.3.4 Setting up the Shape of an Object . Picture Shape, <input type="button" value="Shape..."/> , Border Color, Pattern, FG Color, BG Color
External Label	Check this option if you want the bit lamp to have an external label. Set up the external label in the External Label page.

Continued

Property		Description								
		Click this button to change the object state to 1 (On) so you can view and set the object appearance for state 1 (On).								
		Click this button to change the object state to 0 (Off) so you can view and set the object appearance for state 0 (Off).								
Monitor Address	Address Type	Specifies the type of variable in the Monitor Address field. The bit lamps support the following three variable types:								
		<table border="1"> <thead> <tr> <th>Variable Type</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Bit</td> <td>The variable is a bit variable.</td> </tr> <tr> <td>Word</td> <td>The variable is a word variable. You need to specify which bit of the word variable that is to be monitored. Specify the bit number (0~15) in the Bit Number field.</td> </tr> <tr> <td>Double-word</td> <td>The variable is a double-word variable. You need to specify which bit of the double-word variable that is to be monitored. Specify the bit number (0~31) in the Bit Number field.</td> </tr> </tbody> </table>	Variable Type	Description	Bit	The variable is a bit variable.	Word	The variable is a word variable. You need to specify which bit of the word variable that is to be monitored. Specify the bit number (0~15) in the Bit Number field.	Double-word	The variable is a double-word variable. You need to specify which bit of the double-word variable that is to be monitored. Specify the bit number (0~31) in the Bit Number field.
		Variable Type	Description							
		Bit	The variable is a bit variable.							
	Word	The variable is a word variable. You need to specify which bit of the word variable that is to be monitored. Specify the bit number (0~15) in the Bit Number field.								
	Double-word	The variable is a double-word variable. You need to specify which bit of the double-word variable that is to be monitored. Specify the bit number (0~31) in the Bit Number field.								
Monitor Address	Specifies the bit variable to be monitored when the Address Type is Bit. Specifies the word variable that contains the bit to be monitored when the Address Type is Word. Specifies the double-word variable that contains the bit to be monitored when the Address Type is Double-word.									
	Click this icon to bring up the Address Input Keypad and specify the desired address for the Monitor Address field.									
	Click this icon to bring up the Select Tag dialog box and select the desired tag for the Monitor Address field.									
Bit Number	Specifies which bit of the variable specified in the Monitor Address field is to be monitored.									

6.2. Displaying Word State Using Multi-state Lamps

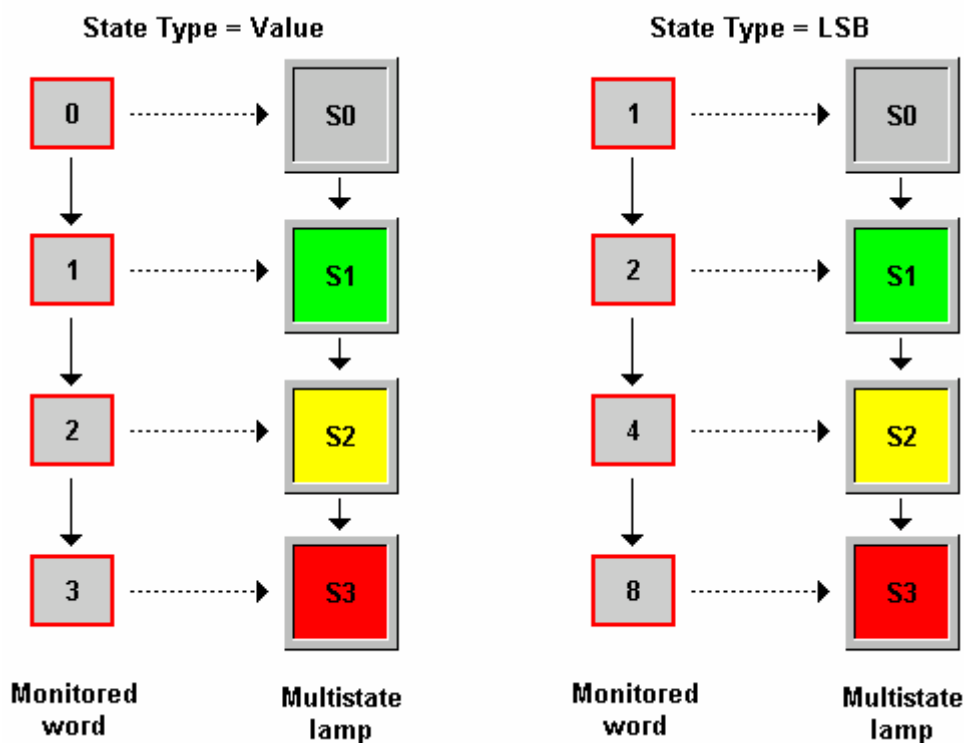
6.2.1. Basic Operations

You can use a variable to control the appearance of a multi-state lamp.

A multi-state lamp can have up to 256 states. The maximum number of states that a multi-state lamp 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.

		16-bit Variable	32-bit variable
State Type	Bit	2	2
	Value	256	256
	LSB	16	33

You need to specify the number of states for a multi-state lamp and the number must not exceed the allowed maximum. You can set the appearance of a multi-state lamp for each of its states. At runtime, a multi-state lamp displays with the appearance settings 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.



6.2.2. Operation Options

The following operation option can be added to a multi-state lamp. You need to select and set this option in the Multi-state Lamp property sheet.

Options	Description
Visibility Control	The object can be shown or hidden either by a specified bit or by the current user level. Select and set this option in the Visibility page.

6.2.3. Settings

You can complete all the settings of a multi-state lamp in the Multi-state Lamp property sheet. This dialog box contains the following five pages. Some of the pages appear only when they are needed.

- **General**

Described in [Section 6.2.4.](#)

- **Text**

Described in [Section 4.3.6.](#)

- **Picture**

Described in [Section 4.3.7.](#)

- **Visibility**

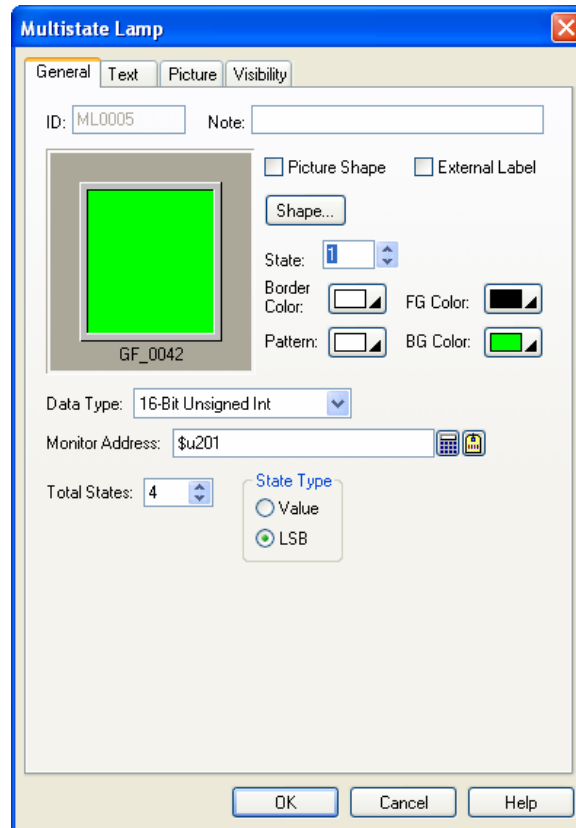
Described in [Section 4.4.6.](#)

- **External Label**




Described in [Section 4.3.8.](#)

6.2.4. General Settings

This section describes how to define the general settings for a multi-state lamp. The following is an example of the General page of the Multi-state Lamp 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 on. The format of the ID's for the multi-state lamps is MLnnnn.
Note		You can type a note for the object.
Shape settings		For details about the following properties, see Section 4.3.4 Setting up the Shape of an Object , Picture Shape,  , Border Color, Pattern, FG Color, BG Color
External Label		Check this option if you want the multi-state lamp 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 multi-state lamp so you can view and set the object appearance for that state.
Data Type		The data type of the monitored variable. The supported data types include: 16-bit Unsigned Integer, 16-bit BCD, 32-bit Unsigned Integer, and 32-bit BCD.
Monitor Address	Monitor Address	Specifies the variable to be monitored.
		Click this icon to bring up the Address Input Keypad and specify an address for the Monitor Address field.
		Click this icon to bring up the Select Tag dialog box and select a tag for the Monitor Address field.
Total States		Specifies the number of states that the multi-state lamp can display.
State Type		The state type to decide the state of the monitored variable. The supported state types include Value and LSB. For details, see Section 4.4.1.1 State Types

6.3. Displaying Text Information Using Message Displays

6.3.1. Basic Operations

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

A message display can have up to 256 states. Each state can have a predefined message. The maximum number of states that a message 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.

		Type of Variable	Maximum
State Type	Bit	Bit	2
	Value	16-bit	256
		32-bit	256
	LSB	16-bit	17
32-bit		33	

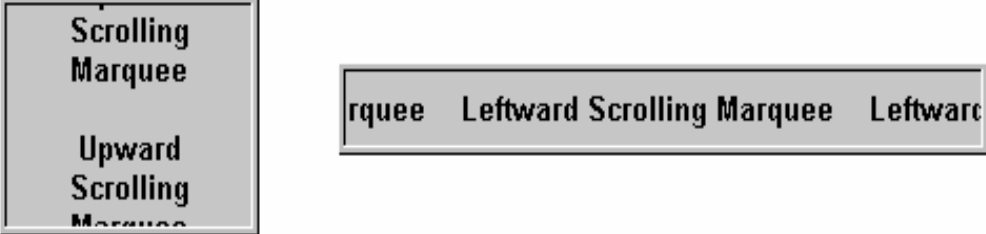
You need to specify the number of states for a message display and the number must not exceed the allowed maximum. You can set the text (message) for each state. At runtime, a message display shows the message corresponding to the state of the monitored variable. The state of the monitored variable is determined by the state type and value of the variable.

Note: The differences between Message Display and Lamps are:

The lamps can display either text or picture or both of them, but message display can only display text. Both of the message display and lamps can display predefined text by changing the value of the monitored variable. But only the message display can perform as a marquee controlled by the value of the monitored variable and the specified running speed.

6.3.2. Operation Options

The following operation option can be added to a message display. You need to select and set this option in the Message Display dialog box.

Options	Description
Marquee	<p>The displayed message scrolls automatically in the specified direction. When the displayed message is not long enough to cover the whole display area, the message is duplicated to fill the uncovered area in sequence.</p> 
Visibility Control	The object can be shown or hidden either by a specified bit or by the current user level. Select and set this option in the Visibility page.

6.3.3. Settings

You can complete all the settings of a message display in the Message Display dialog box. This dialog box contains the following four pages. Some of the pages appear only when they are needed.

- **General**

Described in [Section 7.9.4.](#)

- **Text**

Described in [Section 4.3.6.](#)

- **Visibility**

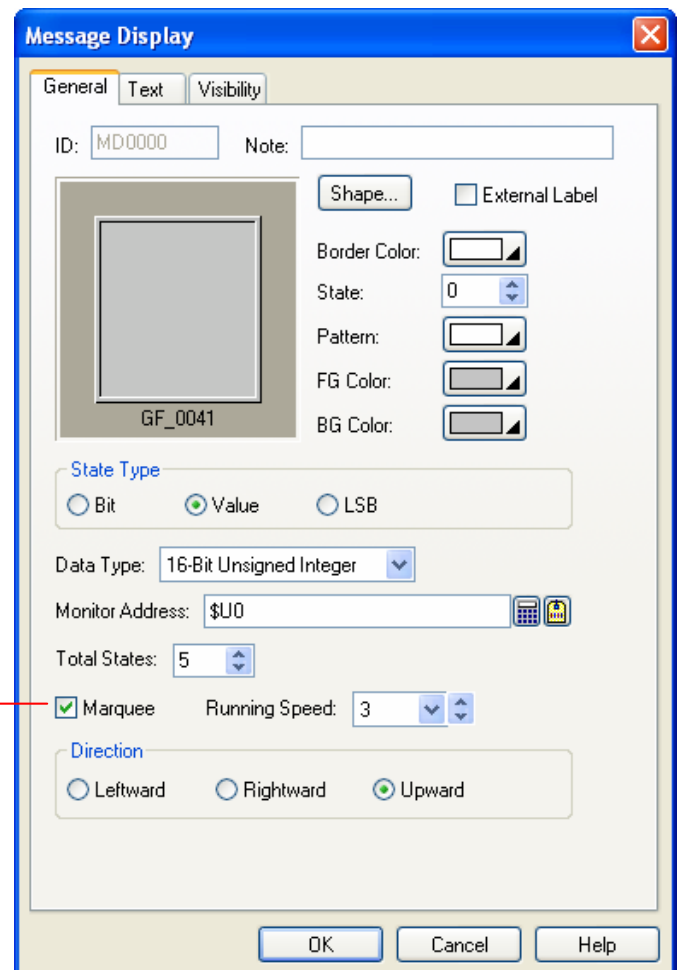
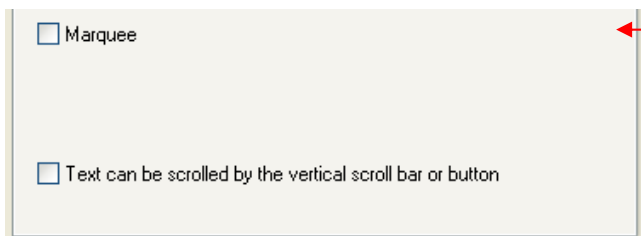
Described in [Section 4.4.6.](#)

- **External Label**

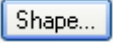


Described in [Section 4.3.8.](#)

6.3.4. General Settings

This section describes how to define the general settings for a message display. The following is an example of the General page of the Message 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 on. The format of the ID's for the message displays is MDnnnn.
Note		You can type a note for the object.
Shape settings		For details about the following properties, Section 4.3.4 Setting up the Shape of an Object .  , Border Color, Pattern, FG Color, BG Color
External Label		Check this option if you want the message 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 message 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 message display. The supported state types include Bit, Value and LSB. For details, see Section 4.4.1.1 State Types
Data Type		The data type of the variable that controls the message 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 message display. Click  to enter an address for this field. Click  to select a tag for this field.
Total States		Specifies the number of states of the message display.
Marquee	Marquee	Select this item if you want the displayed message scrolls automatically.
	Running Speed	The speed of scrolling. Select from 1 to 10; The speed of 1 is the slowest and the speed of 10 is the fastest.
	Direction	The direction of scrolling. The supported directions include Leftward, Rightward, and Upward.
Text can be scrolled by the vertical scroll bar or button		Select this option so you can scroll the content of the message display vertically using the associated scroll buttons or scroll bar.