Chapter 3

Device Monitor Screen
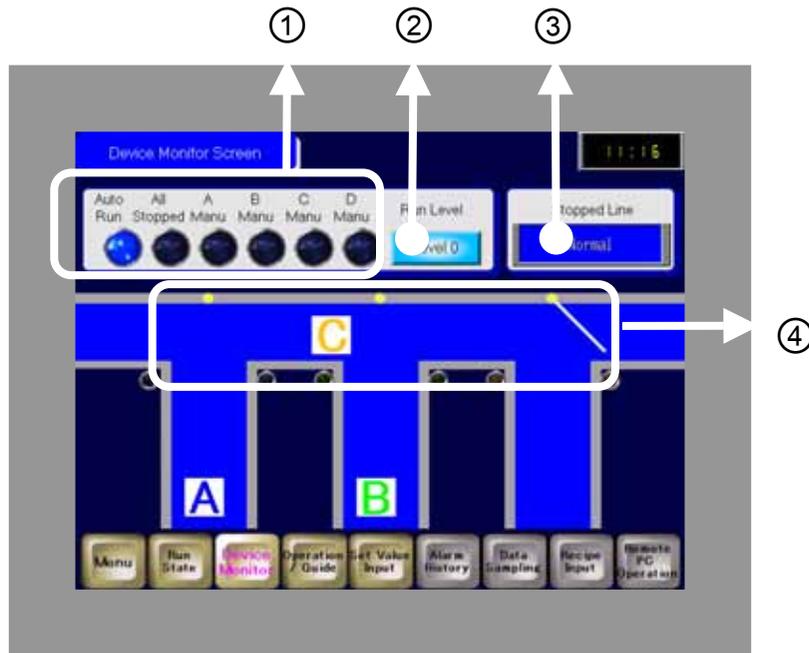
Device Monitor Screen

Instruction

The device monitor screen displays lamps and messages by monitoring bits in a device/PLC turn on and off.
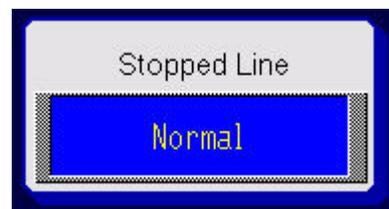

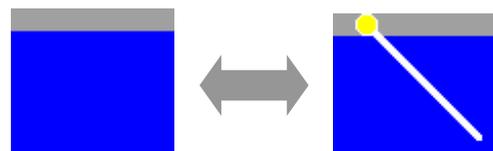**1)** Indicate Run or Stop of lines with lamps.
(→ See page 3-2.)

2) Display the operation level of lines with a lamp.
(→ See page 3-6.)

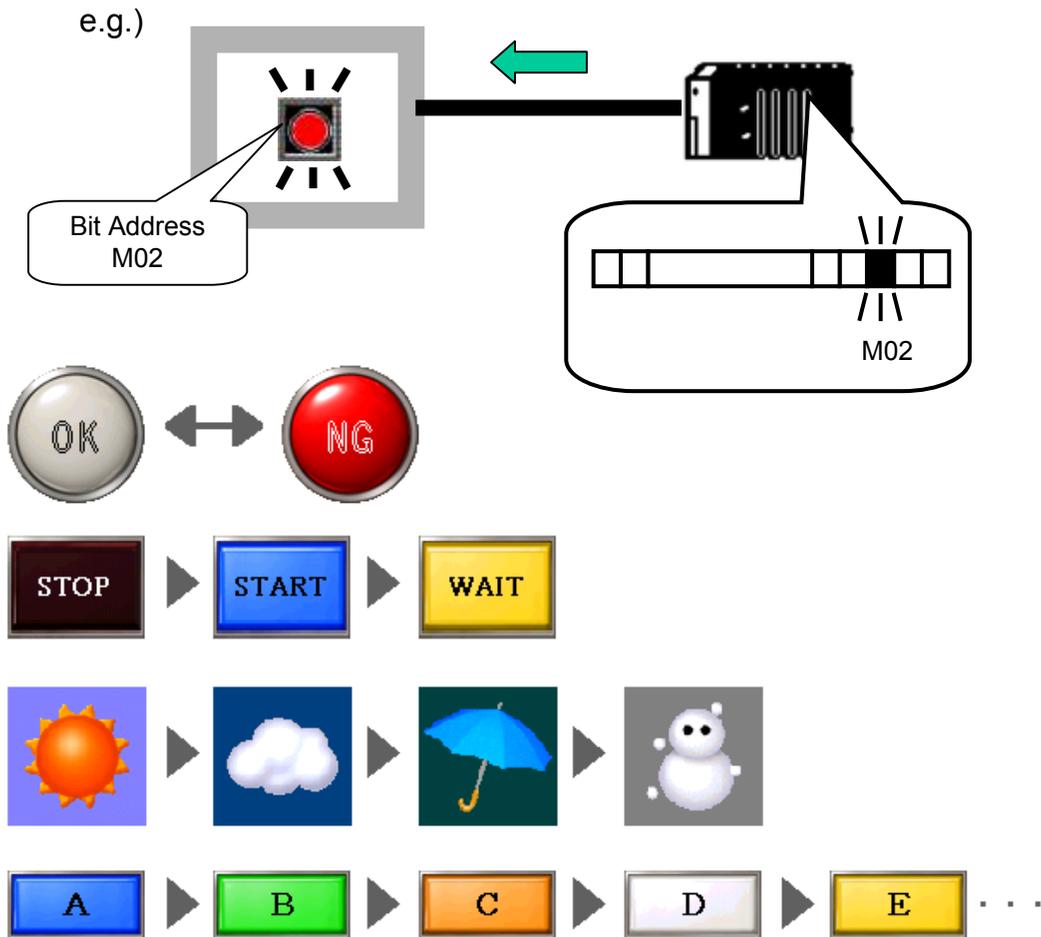**3)** Display which line has been stopped with a message display.
(→ See page 3-8.)

4) Open and close according to changes of the bit addresses.
(→ See page 3-12.)

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✔Practice   Let's Display Lamp

The Lamp feature monitors changes of addresses in a device/PLC and shows the changes as a lamp.

e.g.)

Bit Address
M02

M02

★ **One Point**

"Extended" in Lamp Feature Settings

You can set to change lamp displays depending on changes of stored values or states of each bit by monitoring one word address. Up to 256 shapes of states can be changed and displayed.
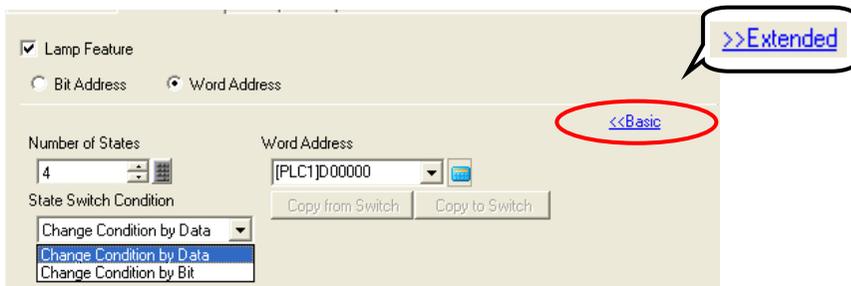
Let's create a lamp to display On/Off states.

<Practice Screen>　　　　　　　　　　　　　　　<Completed Screen>
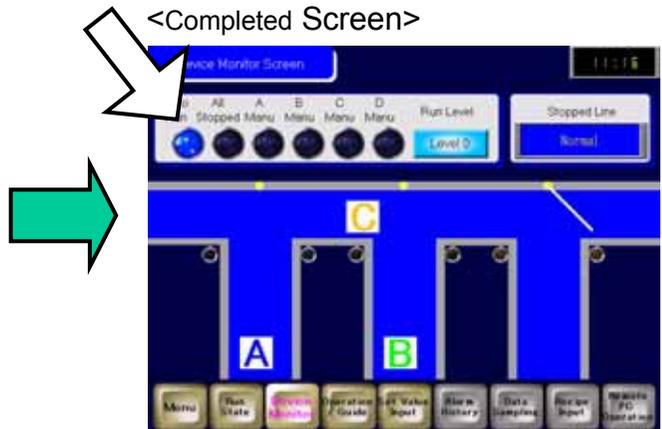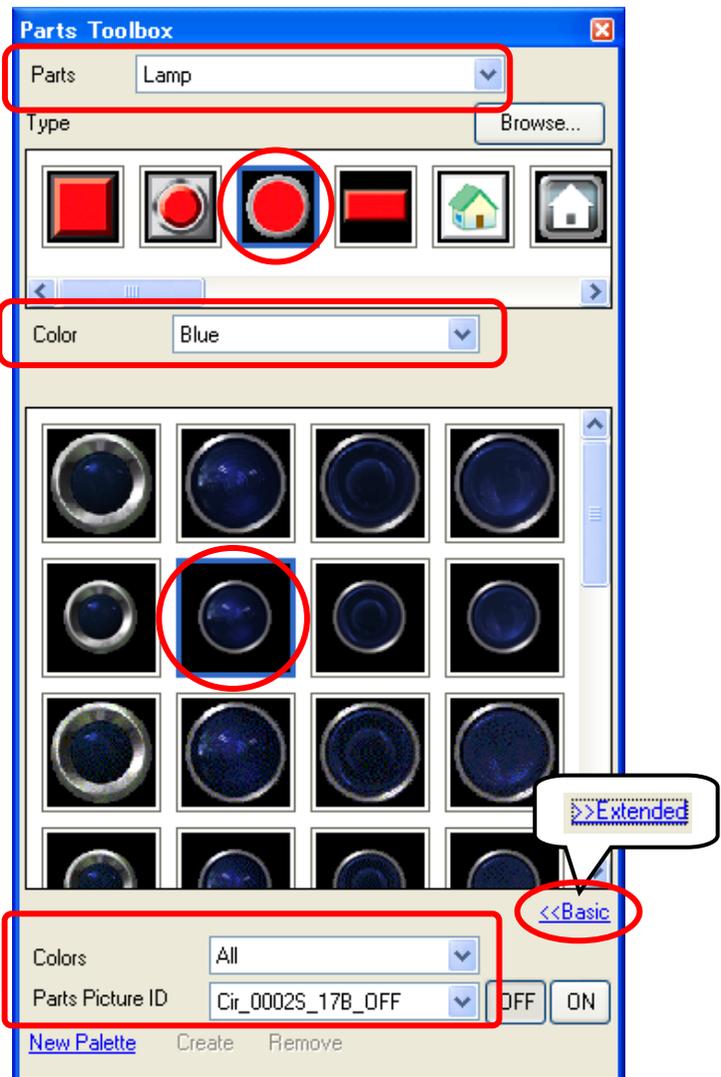

[Setup Procedure]

1. Open the base screen "3".

2. Select, place and set the Lamp.

(1) Select/Place Lamp

1) Open the base screen "3".

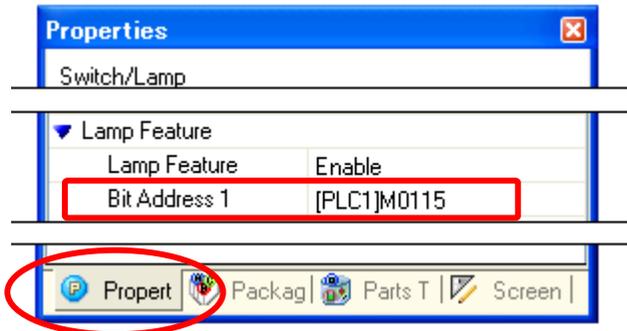**2)** Select a shape from the Parts Toolbox as specified in the right figure and drag and drop it on the base screen.

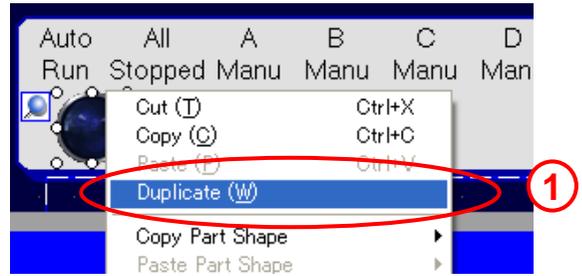To show the Colors and Parts Picture ID, click [Basic].

Setting Example

3 - 3

(2) Lamp Feature

Select the placed lamp and set its bit
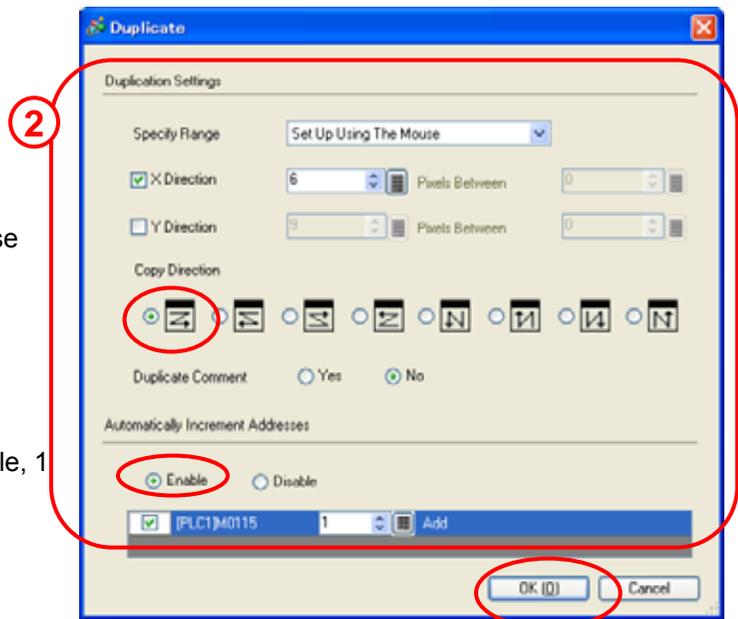address in the Properties window.
(Keep the default values on other
items.)

Properties

Switch/Lamp

▼ Lamp Feature

Lamp Feature	Enable
Bit Address 1	[PLC1]M0115

ⓟ Propert | 🎒 Packag | 🎒 Parts T | 📝 Screen |

(3) Duplicate

1) Select the placed lamp, right-click,
and select "Duplicate".

Auto	All	A	B	C	D
Run	Stopped	Manu	Manu	Manu	Man

Cut (T)   Ctrl+X
Copy (C)   Ctrl+C
~~Paste (P)~~   ~~Ctrl+V~~
Duplicate (W)
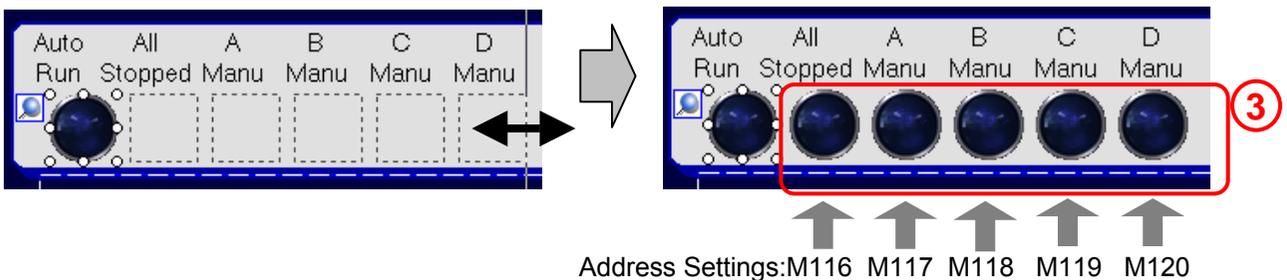Copy Part Shape   ▶
Paste Part Shape   ▶

①

2) Set items as follows and click
[OK].

②

Specify Range: Set Up Using The Mouse
X Direction: 6
Y Direction: Not checked
Copy Direction:

Duplicate Comment: No
Automatically Increment Address: Enable, 1

Duplicate

Duplication Settings

Specify Range	Set Up Using The Mouse

☑ X Direction   6   Pixels Between   0
☐ Y Direction   9   Pixels Between   0

Copy Direction

⦿▧ ○▧ ○▧ ○▧ ○Ｎ ○Ｍ ○Ｍ ○Ｎ

Duplicate Comment   ○ Yes   ⦿ No

Automatically Increment Addresses

⦿ Enable   ○ Disable

☑ [PLC1]M0115   1   Add

OK (O)   Cancel

3) Designate the rage with the mouse, and 6 lamps are now placed in the range as shown
below.

Auto	All	A	B	C	D
Run	Stopped	Manu	Manu	Manu	Manu

→

Auto	All	A	B	C	D
Run	Stopped	Manu	Manu	Manu	Manu

③

Address Settings:M116 M117 M118 M119 M120
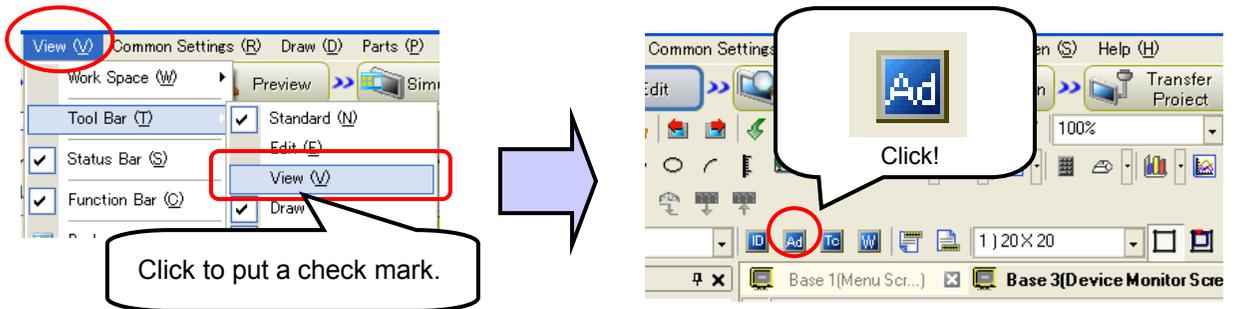
⭐ **One Point**

Show Address

Select the [View] menu → [Tool Bar] and check [View] to put the [Show Address] [Ad] icon on the tool bar.

Clicking this icon shows addresses.

Click to put a check mark.

Click!

Example of Display on Base Screen

Normally   When displaying addresses

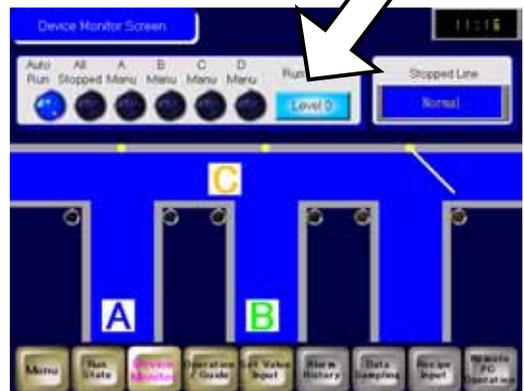✓Practice Let's Create Lamp to Display 4 States

Let's create a lamp to monitor 2 bit addresses and show 4 states!

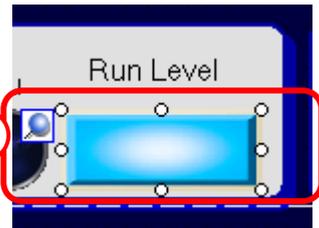<Practice Screen>   <Completed Screen>

[Setup Procedure]

1. Open the base screen "3".

2. Place and set the Lamp.

(1)Select/Place Lamp

1) Click the [Lamp] icon on the tool bar.
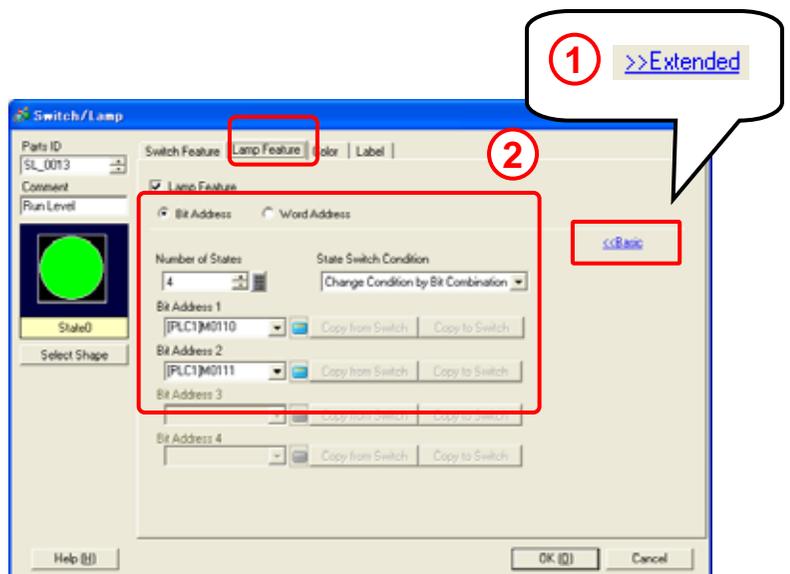
**2)** Drag the range to place the lamp.

(2) Lamp Feature

1) Double-click the selected lamp. On the dialog box, open the [Lamp Feature] tab and click [>>Extended].

2) Select "Bit Address" and set as below.

Number of States: 4
State Switch Condition:
        Change Condition by Bit
        Combination
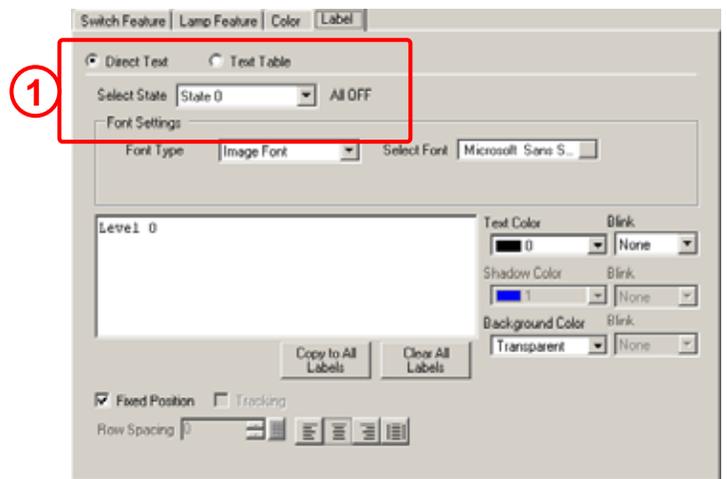Bit Address 1:   M110
Bit Address 2:   M111

(3) Select Shape

1) Open the [Color] tab and click [Select Shape].
Select the shape of "State0" and click [Auto]. Click [OK].
Select a lamp color of each state.
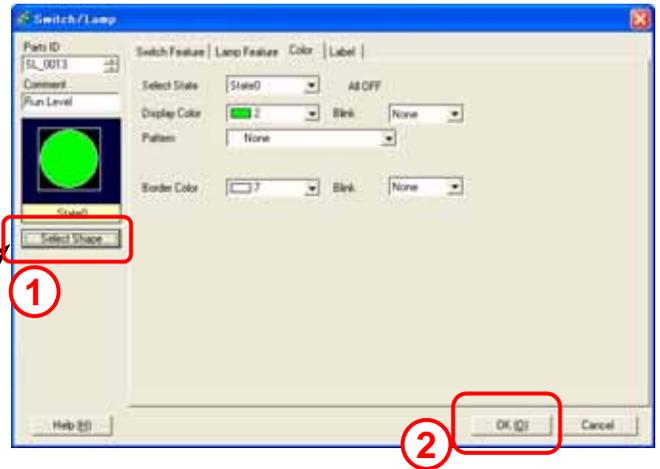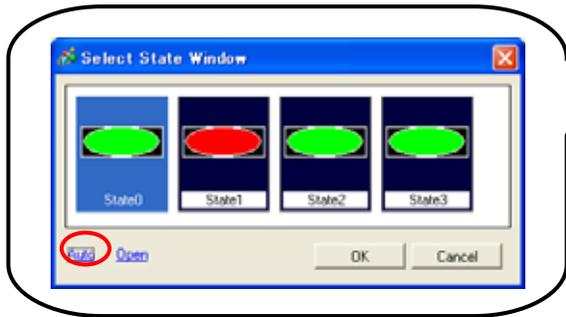
2) After selecting shapes, click [OK].

(4) Label Settings

1) On the Label tab, enter text for the label of each state from "State 0" to "State 3".

2) Click [OK] to finish the settings.

OK(O)

⭐ **One Point**

Example of Labels on this practice screen

State 0 →	Lamp Address1: OFF Lamp Address2: OFF	Level 0
State 1 →	Lamp Address1: ON Lamp Address2: OFF	Level 1
State 2 →	Lamp Address1: OFF Lamp Address2: ON	Level 2
State 3 →	Lamp Address1: ON Lamp Address2: ON	Level 3

✓Practice | Let's Display State of Device with Message

The "Message Display" monitors a specified bit address or word addresses and shows messages according to the states of the address.
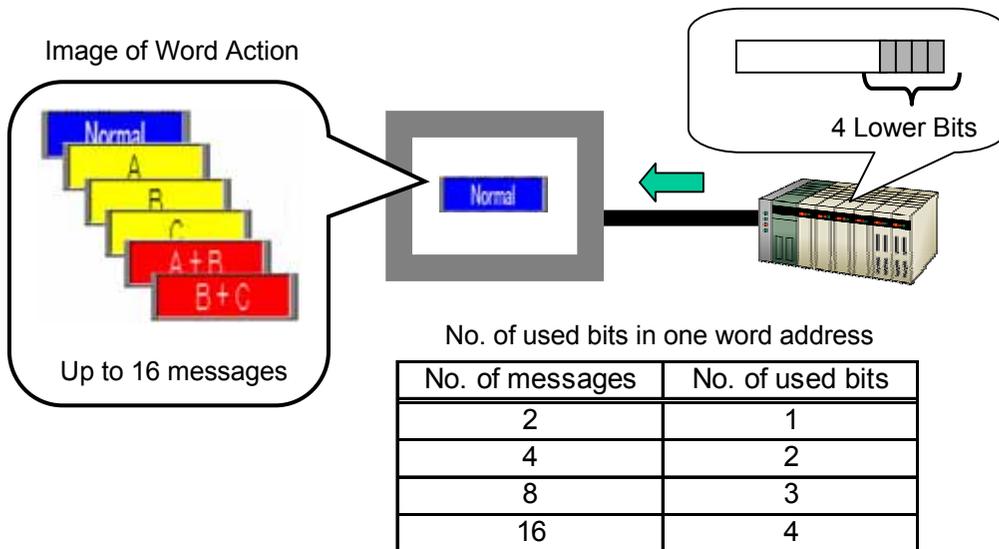
┌─────────────────────────┐
│ **Message Display Image** │
└─────────────────────────┘

Message Display changes created messages depending on changes of data and display.
There are 2 types of texts to display; "Direct Input" and "Text Display".

Direct Input: Displays texts that you enter in the field in the dialog box of the parts. The Message Display feature has two action modes, "Bit" and "Word".
For "Bit", it changes two messages according to the ON/OFF state of one bit.
For "Word", it monitors four lower bits of one word and displays one of up to 16 messages according to the state.

Image of Word Action

4 Lower Bits

Up to 16 messages

No. of used bits in one word address

No. of messages	No. of used bits
2	1
4	2
8	3
16	4

Text Display: Calls and displays the specified text.
You can specify the text file number and the start row.

Text 1   Text 2   Text 3

Displays
Text 3.

3
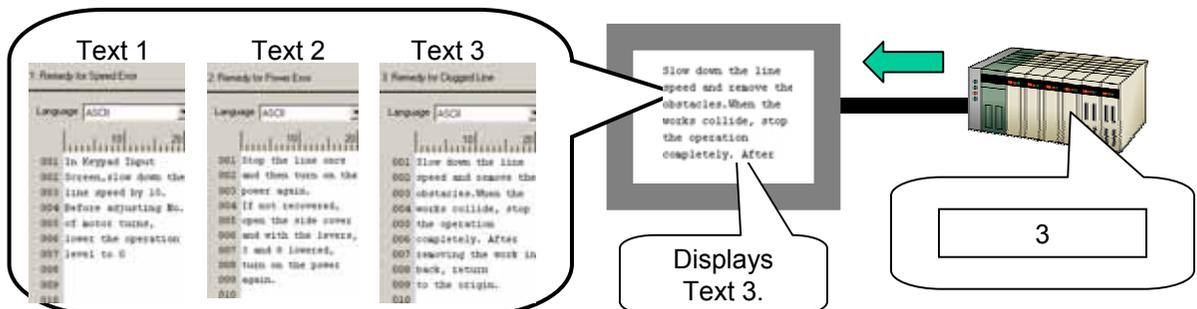
In this chapter, let's practice on Direct Input.

Let's change and display messages on a message display!

<Practice Screen>   <Completed Screen>

[Setup Procedure]

1. Open the base screen "3".

2. Place and set the Message Display.

(1) Select/Place Message Display

1) Click the [Message Display] icon on the tool bar.

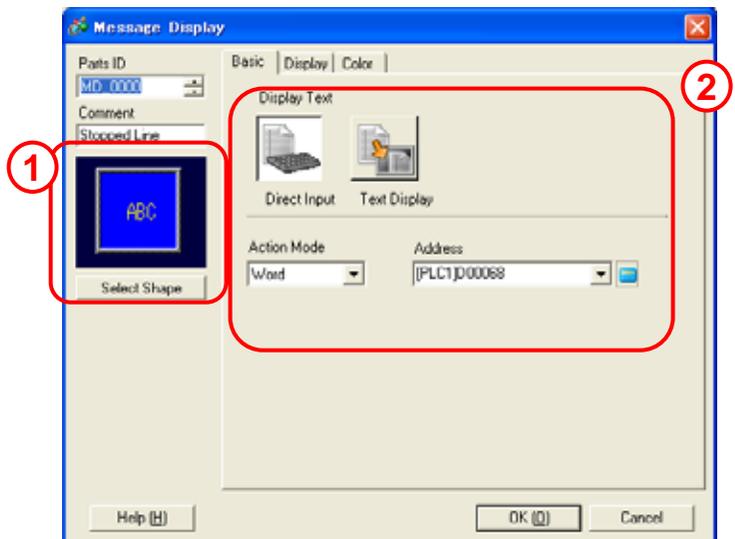2) Drag the range to place the message display on the base screen.

(2) Basic Settings

1) Select a desired shape from the Shape Browser.

2) Select "Direct Input" for [Display Text], "Word" for [Action Mode], and set [Address] to "D68".

(3) Display / Color Settings

1) Select "Direct Text" for [Text Type] and set [Number of Messages] to "8".

2) Select each state from State 0 to State 15 and register a message for each.

3) Select a desired color.

4) Click [OK].
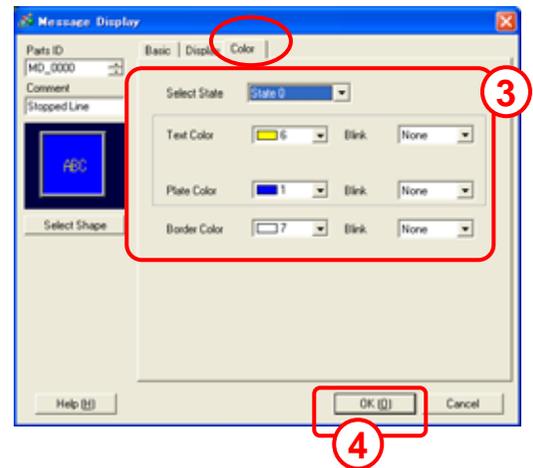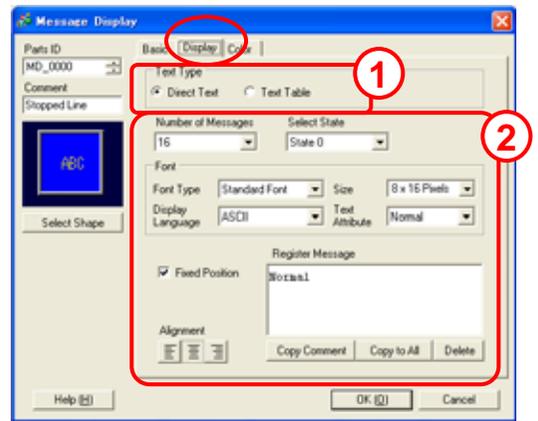
⭐ **One Point**

Example of Message on this practice screen (State: Message: Fg/Bg)

0:	Normal:	Yellow/Blue	4:	Line A + B:	White/Red
1:	Line A:	Black/Yellow	5:	Line B + C:	White/Red
2:	Line B:	Black/Yellow	6:	Line A + C:	White/Red
3:	Line C:	Black/Yellow	7:	Line A + B + C:	White/Red (Blink: Fast)

⭐ **One Point**

Change part state

On the [View] menu, select [Tool Bar] and check [Change part state]. The "Change part state" bar will appear.
Selecting a state, you can check and confirm the state display of the lamp or message display
placed on the screen.
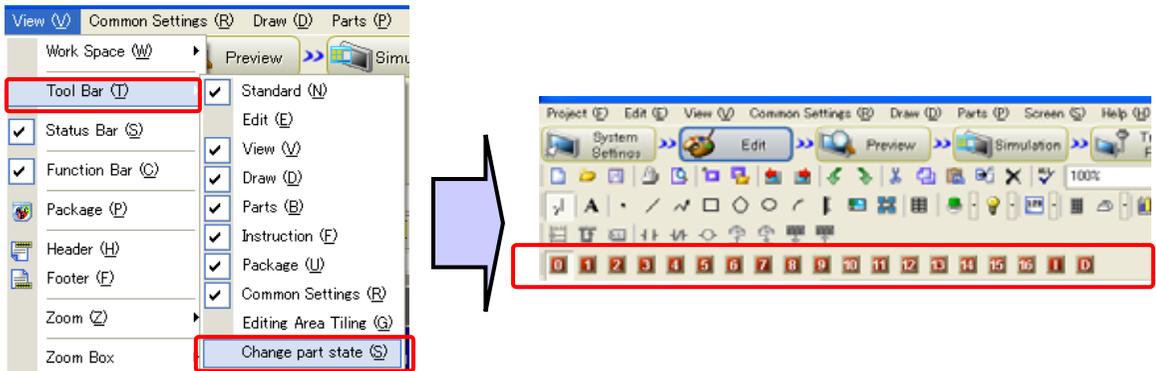
0	State 0 (OFF)	🔘	Level 0	Normal
1	State 1 (ON)	🔘	Level 1	Line A
2	State 2 ……………………		Level 2	Line B
3	State 3 ……………………		Level 3	Line C
4	State 4 ………………………………………			Line A + B
5	State 5 ………………………………………			Line B + C
6	State 6 ………………………………………			Line A + C
7	State 7 ………………………………………			Line A + B + C
8	State 8			

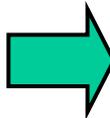✓Practice   Let's Display Changes of Device

Let's display movement of a pusher on a line!

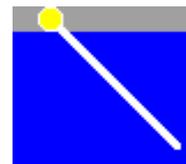<Practice Screen>   <Completed Screen>

[Setup Procedure]
1. Open the base screen "3".
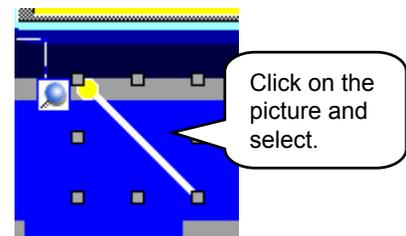2. Select, place and set Animation: Visibility Animation.

(1) Create Picture to Display

Create a picture to display on a base screen.

* This practice project file already has a picture of pushers on the base screen "3".
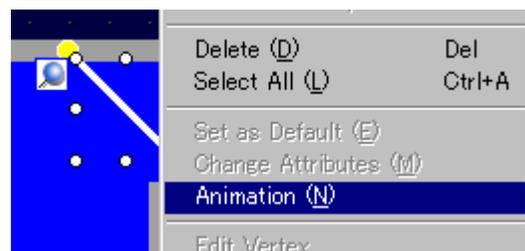

(2) Set up/Place Animation

1) Select a picture to display.

Click on the picture and select.

2) Right-click it, and the menu will appear. Select [Animation] from the menu.

| Delete (D) | Del |
Select All (L)	Ctrl+A
Set as Default (E)	
Change Attributes (M)	
Animation (N)	
Edit Vertex	

(3) Basic Settings

1) Put a check mark on [Visibility Animation].

2) Bit Address:
Set a bit address to be a display trigger.
Here in this practice, set
"[#INTERNAL]USR0001001".

3) Select [Display When ON].

4) Set other two pushers as well.
Set the following addresses and select
[Display When ON].

④   [#INTERNAL]USR0001002   [#INTERNAL]USR0001003
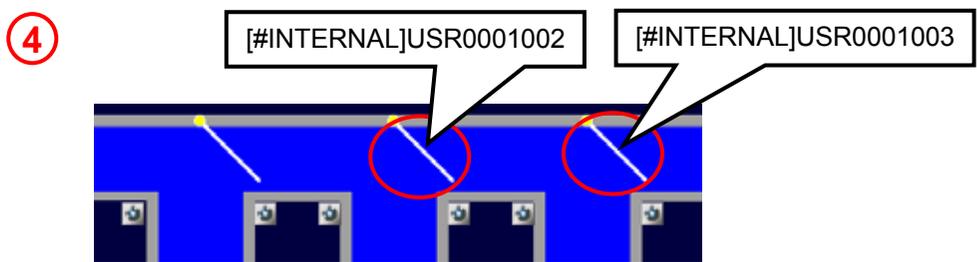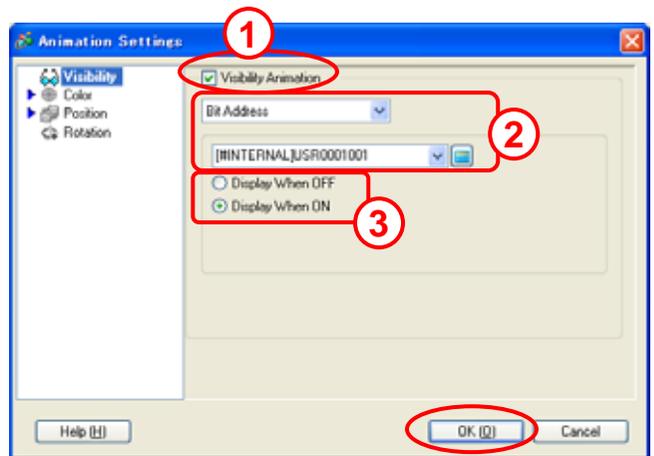
Check the performance
in the Simulation mode.   ➤   Simulation

Or F12 key

If you touch the hidden switch on the upper left corner of the screen, the
operation panel will appear.
Operate the screen and check the performance.
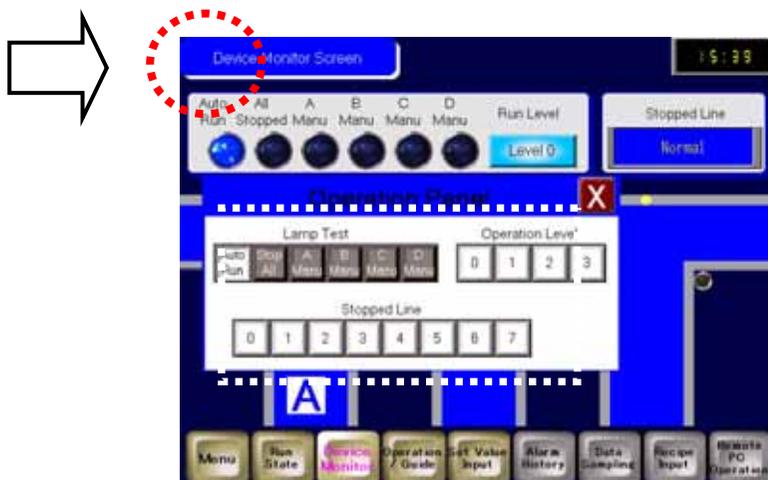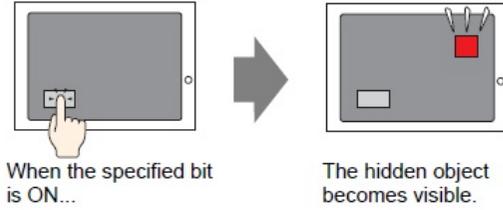
⭐ **One Point**

Animation feature

To display animated pictures on a screen, use the animation feature.

Animation

Visibility Animation

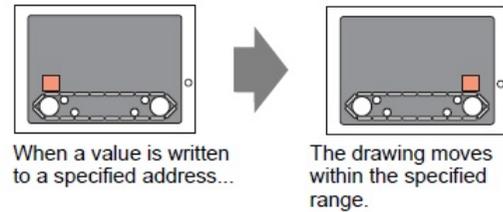Shows and hides an object by on/off changes of a bit address.

e.g.)

When the specified bit is ON...   The hidden object becomes visible.

Position Animation

Moves an object horizontally or vertically by the value of a specified word address.

e.g.)

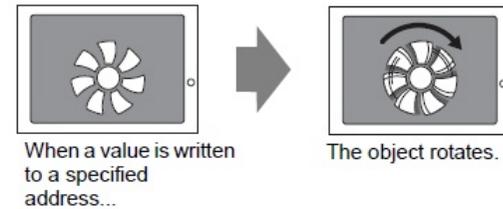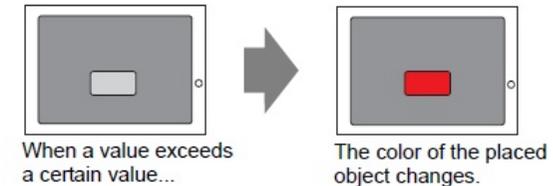When a value is written to a specified address...   The drawing moves within the specified range.

Rotation Animation

Rotates an object by the value of a specified word address.

e.g.)

When a value is written to a specified address...   The object rotates.

Color Animation

e.g.)

When a value exceeds a certain value...   The color of the placed object changes.

Addresses used with the Animation feature

Bit addresses "[#INTERNAL]USR0001001" and after used with the Animation
feature are in the USR Area, which is the GP's internal address area, and
used in the logic screen (MAIN).
Each address can temporarily store data handled internally. Also there is
internal addresses called the LS Area.
For the details of these internal device addresses, see GP-Pro EX Reference
Manual.
 "Appendix: A 1.2 Communicating with a Device/PLC Using the Direct Access
Method"
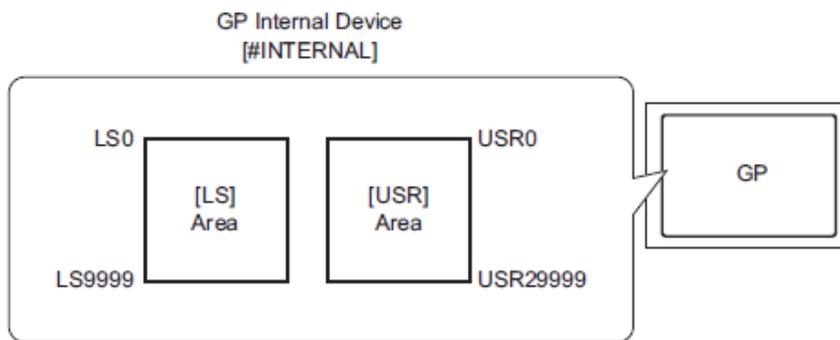
The performance of the logic program can be checked in the Simulation
feature. Opening the I/O View in the Simulation mode allows you to see how
the screen and the logic program interlock with each other.