

Chapter 8 Monitoring

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Chapter 8. Monitoring

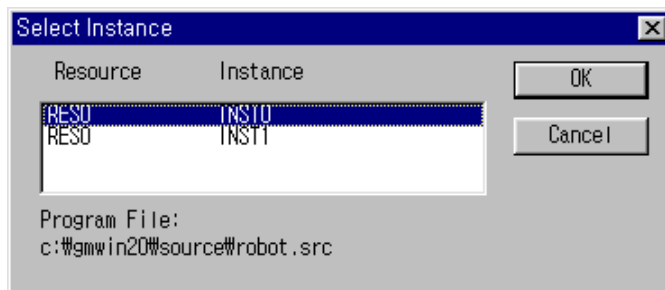
- 1) Program Monitoring
- 2) I/O Monitoring
- 3) Variable Monitoring
- 4) Time Chart Monitoring
- 5) Link Parameter Monitoring

8.1 Monitor a Program

To monitor the operation of PLC in Run mode,

- Select **Online - Connect** in the pull down menu.
- Select **Monitor - Monitor On** in menu.

If there is more than 2 defined instances in a program, **Select Instance** dialog box appears.



- Select an instance in the list box of **Select Instance** dialog box, and click **OK** button.

Note

To monitor in GMWIN, the program in the current window must be exactly same with a transferred program in PLC.

If you monitor the program edited after downloading to PLC, monitored data of the program may be operated differently with the real one in the current window.

So, if you edit the program after downloading to PLC, you must execute monitoring after creating an execution file again in **Compile-Make** menu.

8.1.1. Monitor LD

LD Monitoring basically has two functions. One is that showing the variable status, and the other is that setting or getting ON/OFF the variable value by force.

8.1.1.1. Monitor a Variable

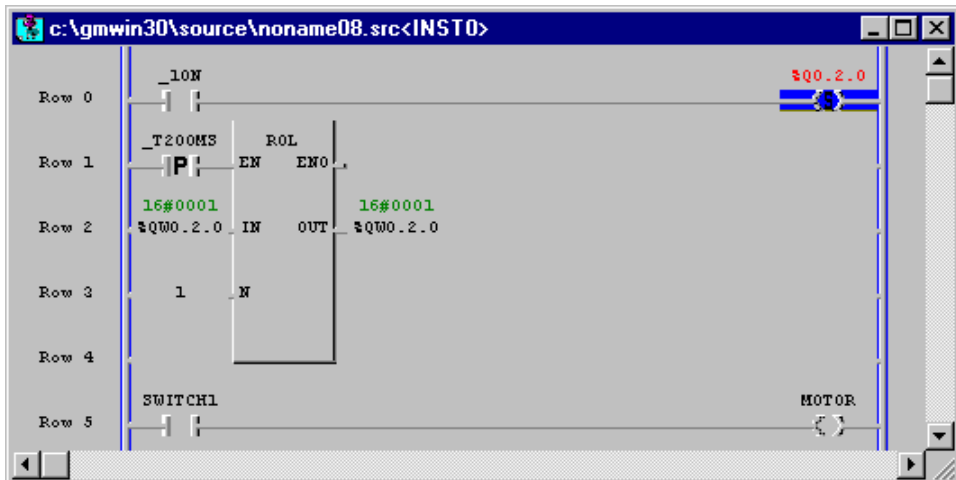
1) Monitor a Contact or Coil variable

You can see the ON/OFF status of variable by the change of color(black . . red) of the appropriate variable name, because the variable of contact or coil is **BOOL** type in Ladder Diagram.

If the color of the variable name turns to be red, the variable means **On** status, and **Off** status for black one.

2) Monitor I/O Variable for the Function or Function Block

I/O variable for the Function or Function Block is displayed as a number or string on the line of the variable name.



8.1.1.2. Forced Variable

This function allows you to turn the variable of contact or coil ON/OFF and set the variable for the function or function block as a desired value forcibly..



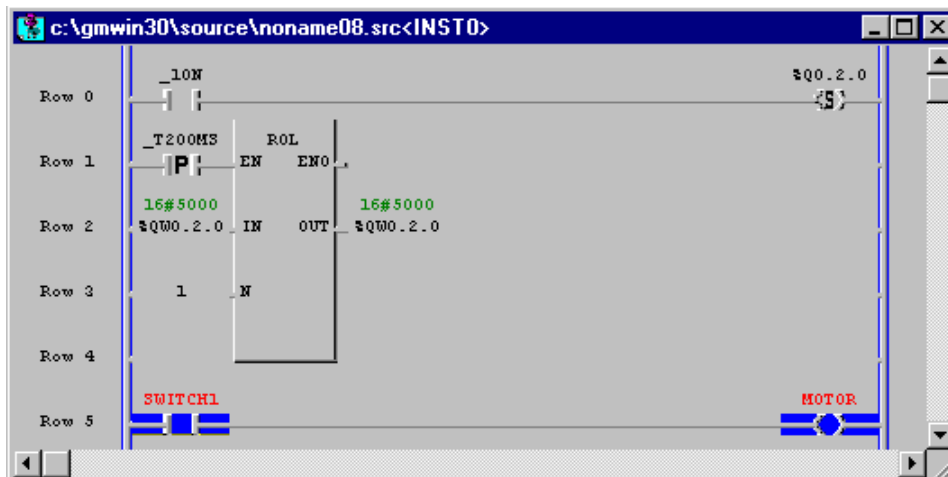
- In LD Program, move the mouse to the variable that you want to set and double-click the left button of the mouse. Then **Force Variable** dialog box appears.



- In LD Program, move the cursor to the variable that you want to set.
- Press **Enter**.

The **Force Variable** dialog box has a title bar with a close button. It contains two input fields: "Variable Name" with the text "SWITCH1" and "Value" with the text "0". To the right of these fields are three buttons: "OK", "Cancel", and "Help".

- Input '0'(Off) in the Value box of **Force Variable** dialog box and click **OK** button.

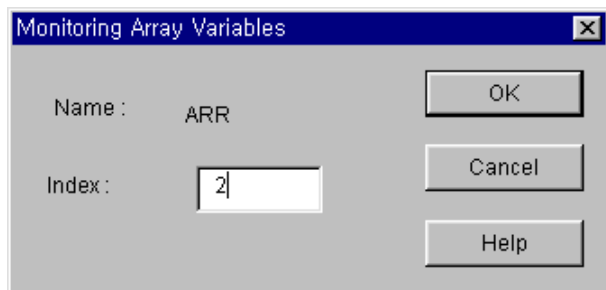


8.1.1.3. Monitor Array Variable

When a program monitoring starts, array variable basically monitors the first elements of array.

If array variable name is **ARR**, this variable is displayed as **ARR(0)** and monitors the first element of array.

- Move the cursor on the array variable that you want to monitor.
- Select the **Toolbox - Select Array Subscript**.



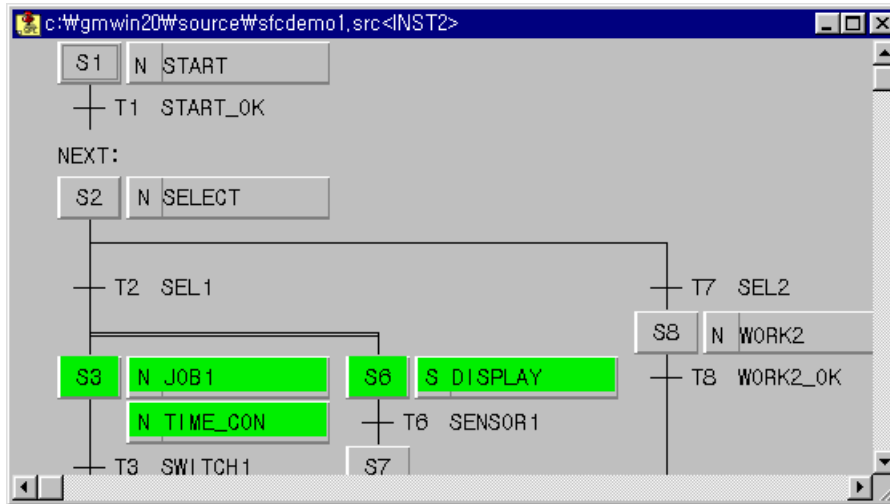
- In **Monitoring Array Variables** dialog box, enter the index of element that you want to monitor
- Click **OK** button.

You can also monitor an array variable with hot key without using **Monitoring Array Variables** dialog box.

- Move the cursor to the array variable.
- Increase the element index with pressing **Ctrl-'** or decrease with pressing **Ctrl-~**.

8.1.2. Monitor SFC

It allows you to know about the flow of SFC program with display of an active step and action. If you select the **SFC Auto Scroll** in **Option** menu, SFC window automatically scrolls along the active step.



To monitor an action and transition program,



- Move the mouse on the action or transition, and double-click the left button of the mouse.



- Move the cursor on the action or transition, and select the **Toolbox - Zoom** in menu.

8.1.3. Monitor IL

It monitors only the program in a project. It is impossible to edit the program during monitoring. Monitoring data is shown at the position of program value. You can see the monitoring data in a desired place by adjusting the column of display region. During the monitoring, you can hide the comment by clicking **Toolbox - Comment Show/Hide** menu.

8.1.3.1. Monitor a Variable

The variable declared as an array is monitored with assigned as initial index '0'.

- If you want to change the index, move the cursor on a desired line.
- Select **Toolbox - Select Array Index (I)...** in the pull-down menu
- Assign the index of array element.

- Click **OK** button, or hit the Ctrl-**Y**, Ctrl-**W**.

| Nu... | Instruction | Input... | Variable | Value |
|-------|-------------|----------|----------------|------------|
| 0 | LD | | 16#1234567 | |
| 1 | ST | | DISPLAY_MODULE | 16#01234.. |
| 2 | LD | | 1 | |
| 3 | ST | | A | 1 |
| 4 | ST | | B | 1 |
| 5 | ST | | C | 1 |
| 6 | CAL | TON | TIMER3 | |
| 7 | | IN:= | RESET | 1 |
| 8 | | PT:= | T#4S | |
| 9 | LD | | TIMER3.Q | 0 |
| 10 | ST | | SENSOR1 | 0 |
| 11 | STN | | RESET | 1 |
| 12 | NOP | | | |

8.1.3.2. Forced Variable

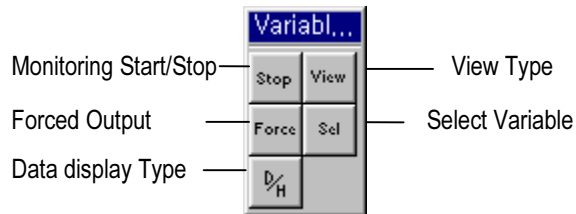
- Double-click the line of variable that you want to write.

- Enter the value of variable in the **Force Variable** dialog box.
- Click **OK** button.

8.2. Monitor a Variable

You can monitor a variable declared in a program, global variable, I, Q, M area, system flag and etc.

Toolbox for Variable monitoring



To monitor the program initially,

- To call the **Select Variable** dialog box, select **Online - Monitor – Monitor On** in menu.
- select **Online – Monitor - Variable Monitor** in menu.

To monitor the program,

- To call the **Select Variable** dialog box, select **Online - Monitor - Variable Monitor** in menu

Note


If GMWIN is not connected to PLC, select **Connect** in menu before selecting the above menu.
Before monitoring the program, you must download the project file for the execution.

- In the **Register Variable** dialog box, select the variable that you want to monitor.
Refer to the following section for selecting variable.

8.2.1. Register Variable

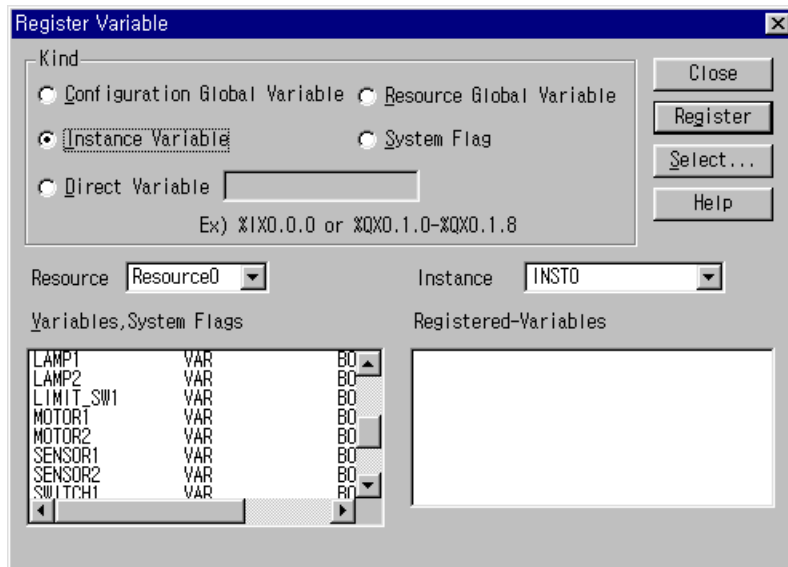
To select the variable declared in program, global variable, I, Q, M area, system flag and etc. at the same time,



- Click () in toolbox.
- Select a variable to monitor in accordance with the **Register Variable** dialog box.



- Select the **Toolbox – Select (F5)** in menu.
- Select a variable to monitor in accordance with the **Register Variable** dialog box.



8.2.1.1. Register Configuration Global Variable

(only available in GM1)

To register configuration global variable,

- Select the **Configuration Global Variable** in option button.
- Select the variables to monitor in the **Variables, System Flags** list box.
- Click **Register** button.

8.2.1.2. Register Resource Global Variable

To register resource global variable,

- Select the **Resource Global Variable** in option button.
- Select the variable to monitor in the **Variables, System Flags** list box.
- Click **Register** button.

8.2.1.3. Register Instance Variable

To register the variable declared in the designated program,

- Select the **Instance Variable** in option button.
- Select the instance in the **Instance** list.
- Select the variable to monitor in the **Variables, System Flags** list box.
- Click **Register** button.

8.2.1.4. Register Direct Variable

- Select the **Direct Variable** in option button.
- Enter the address of direct variable in the input text box.
- Click **Register** button.

8.2.1.5. Register System Flag

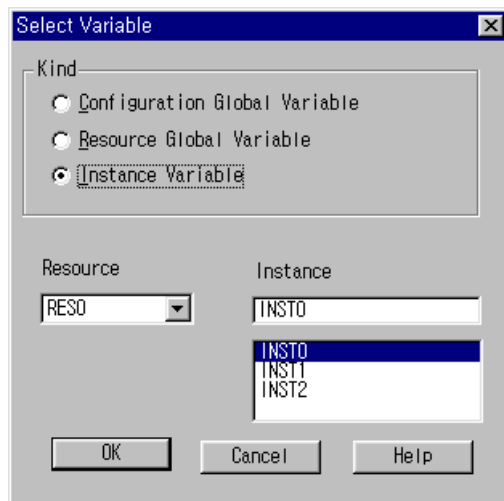
- Select the **System Flag** in option button.
- Select the flag to monitor in the **Variables, System Flags** list box.
- Click **Register** button.

Registered Variable will be displayed in **Registered Variables** list box.

8.2.1.6. All Select

It allows you to monitor one program or the entire global variable.

- Click **Select...** button, and **Select Variable** dialog box appears.



- 1) Select Configuration Global Variable
To monitor only configuration global variable,
 - Select the **Configuration Global Variable** in option button, and click **OK** button.
- 2) Select Resource Global Variable
To monitor only resource global variable,
 - Select the **Resource Global Variable** in option button, and click **OK** button.
- 3) Select Instance Variable
To monitor only program instant variable,
 - Select the **Instance Variable** in option button, and click **OK** button.

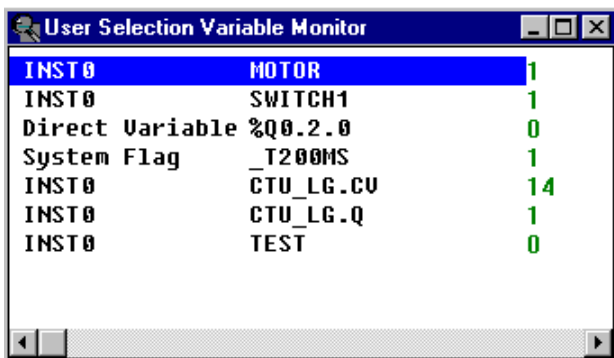
8.2.2. Start Monitoring



- Click () in toolbox.



- Select **Toolbox – Start (F2)** in menu.




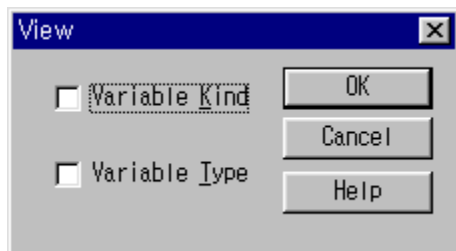
| INST# | MOTOR | Value |
|-----------------|-----------|-------|
| INST# | MOTOR | 1 |
| INST# | SWITCH1 | 1 |
| Direct Variable | %Q0.2.0 | 0 |
| System Flag | _T200MS | 1 |
| INST# | CTU_LG.CV | 14 |
| INST# | CTU_LG.Q | 1 |
| INST# | TEST | 0 |

8.2.3. Set the View Type of Monitoring

It allows you to monitor the detail information of variable selectively.



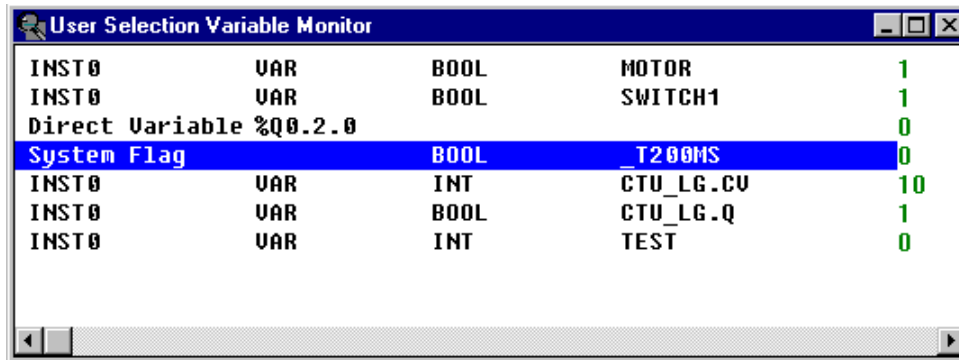
- Click () in toolbox.



- In the **View** dialog box, select the information that you want to display and click **OK** button.



- Select **Toolbox – View (F3)** in the pull-down menu.
- In the **View** dialog box, select the information that you want to display and click **OK** button.




| Variable Name | Type | Value |
|-------------------------|------|--------|
| INST0 | VAR | 1 |
| INST0 | VAR | 1 |
| Direct Variable %Q0.2.0 | | 0 |
| System Flag | BOOL | T200MS |
| INST0 | VAR | 10 |
| INST0 | VAR | 1 |
| INST0 | VAR | 0 |

8.2.4. Data Display Form

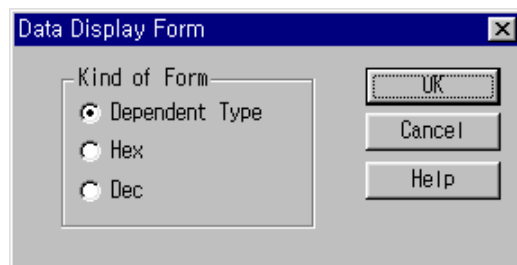
To display type of variable's value as decimal, hexadecimal or by the variable type,



- Click () in toolbox.



- Select **Toolbox – Hex (F6)** in menu.




- Select display type with **Kind of Form** option radio box.
- Click **OK** button.

8.2.5. Forced Variable Output

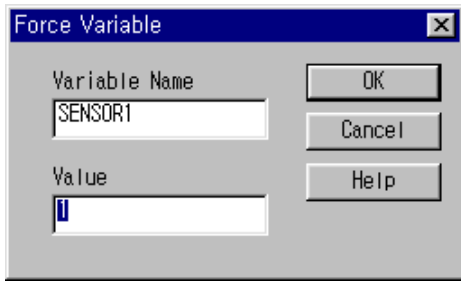
To output the desired variable's value forcibly,



- Click () in toolbox.

or

- Move the mouse on the variable to change a value, and double-click the left button of the mouse, which calls the **Force Variable** dialog box.



- Enter the variable's value in the **Value** input text box.
- Click **OK** button.



- Call the **Force Variable** dialog box.
- Enter the variable's value in the **Value** input text box.
- Click **OK** button.

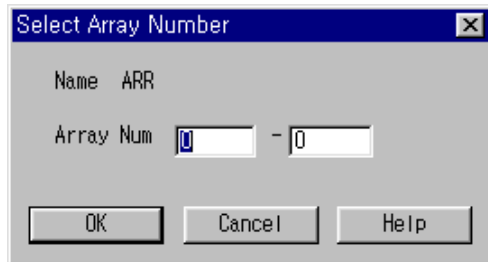
If the type of a variable is a direct variable and Boolean type, forced I/O setting is available and you can prevent the value from being changed by program.

| |
|--|
| Note |
| Although you output a variable's value forcibly, it can be changed by program. |

8.2.6. Monitor Array Variable

Select array range to monitor the variable of array type.
(Use **Select** menu in monitoring of variable selected by User)


- To call the **Select Array Number** dialog box, move the cursor to Array Type Variable and select **Toolbox – Array Number Select (F7)** in menu.



- Select the array range in the **Select Array Number** dialog box.

8.3. I/O Monitoring

It monitors I/O modules mounted on the PLC system. First assign the base to monitor, and the I/O cards mounted on the base are displayed.

And click () button in toolbox, then the PLC system starts monitoring.

Start/Stop Monitoring button in toolbox is toggled each other.

Selected base number is displayed at the left upper corner, and at the bottom of each slot the value of monitoring data is displayed as decimal scale or hexadecimal by the display type to monitor. If you click the each contact in the I/O module with mouse, each contact are toggled into On or Off.

Toolbox for I/O Monitoring (This toolbox appears after selecting *I/O monitor* in *Online – Monitor* menu)



To monitor the program initially,


- Select the **Online - Monitor – Monitor on** in menu, **Online - Monitor - I/O Monitor** in menu.

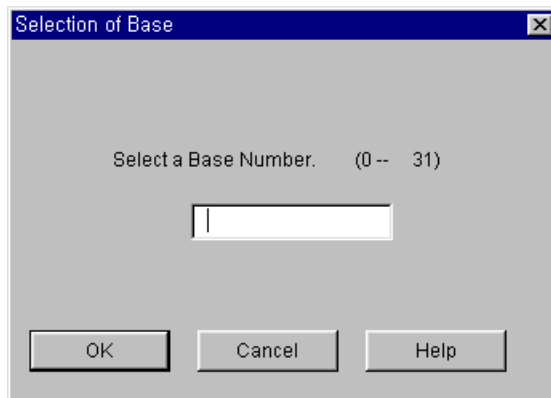
To monitor the program in monitoring mode,


- Select **Online - Monitor - I/O Monitor** in menu.

To start I/O Monitoring in monitoring mode,



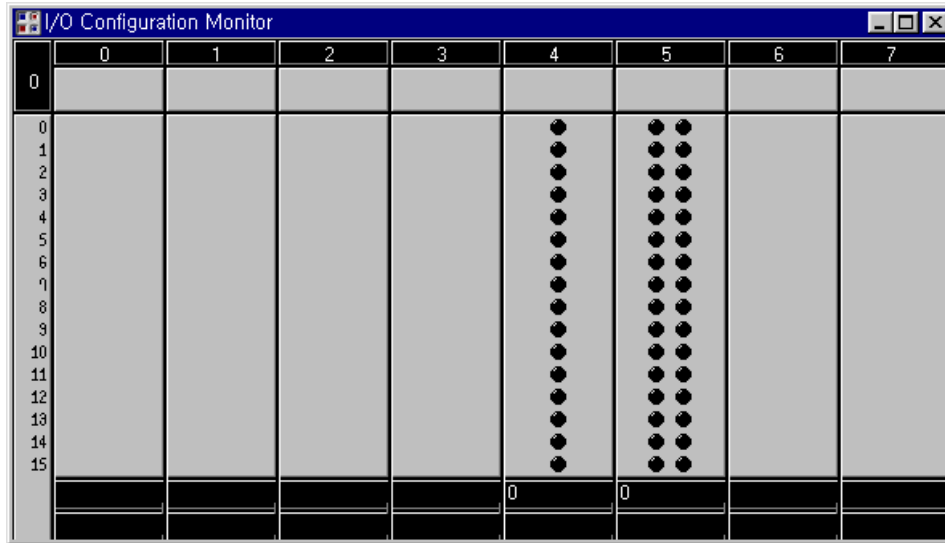
- Call the **Select Base** dialog box by clicking () button in toolbox.



- Enter the base number to monitor in the **Select Base** dialog box and click **OK** button.
- Click () in toolbox.



- Call the **Select Base** dialog box by selecting **Toolbox - Select Base (F2)** in menu.
- Enter the base number to monitor in the **Select Base** dialog box, and click **OK** button.
- Select **Toolbox - Start/Stop (F3)** in menu.



To stop the I/O monitoring,



- Click () in toolbox.



- Select **Toolbox - Start/Stop (F3)** in menu.

8.4. Monitor a Link Parameter

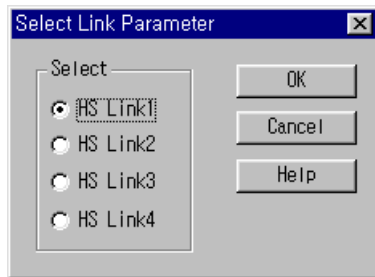
It allows you to monitor the status of link parameters, which is set by the parameter items in Project window.

To monitor the link parameter initially,

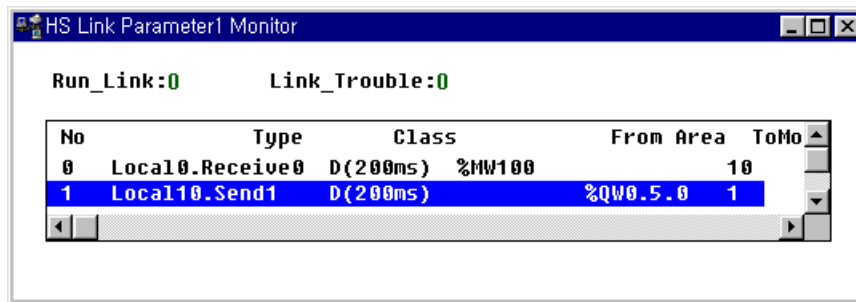
- Select the **Online - Monitor – Monitor on** in menu, **Online - Monitor - Link Parameter Monitor** in menu.

To monitor the link parameter in monitoring mode,

- Call the **Select Link Parameter** dialog box by selecting **Online - Monitor - Link Parameter Monitor** in menu.



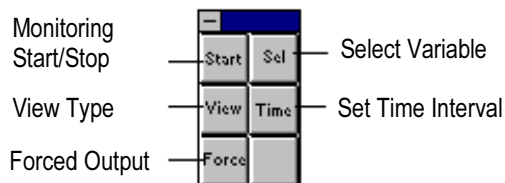
- Select **HS Link Parameter** to monitor in the **Select Link Parameter** dialog box, and click **OK** button.



8.5. Monitor a Time Chart

It allows you to monitor ON/OFF status by time chart for anything that declared as Boolean type out of declared variables in the program, global variables, I, Q, M area and system flag.
If a variable to monitor is not Boolean type, you can monitor the variable in **Variable Monitor** menu.

Toolbox for Time Chart Monitoring



To monitor the program by time chart initially,

- Select **Online – Monitor – Monitor on** in menu, **Online - Start Monitor - Time Chart Monitor**.

To monitor the program by time chart in monitoring mode,

- Select **Online – Monitor – Time Chart** in menu

Note

If GMWIN is not connected to PLC, setup the **connect option** in project menu and select **connect** in online menu before selecting the above menu.

- Select a variable in the **Select Variable** dialog box.

8.5.1. Select a Variable

It is selected when you monitor the variable declared in a program, global variable, I, Q, M area, system flag and etc. at the same time.

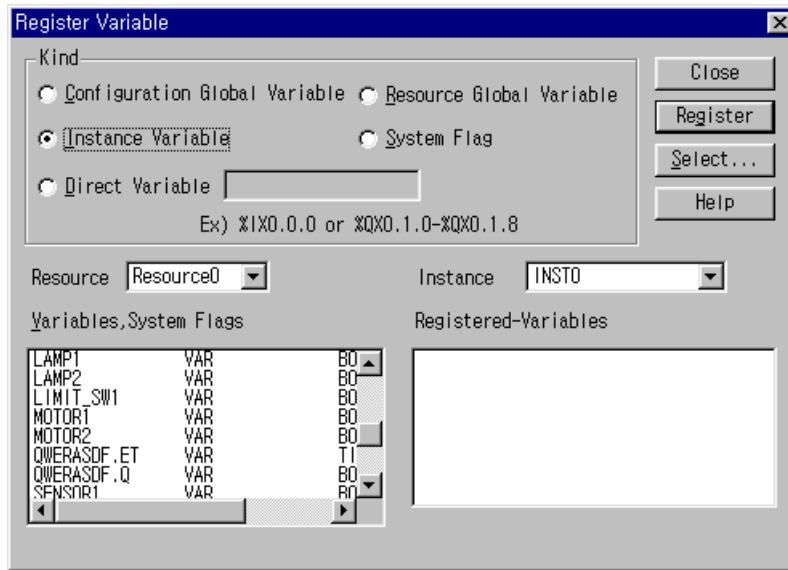
To monitor a variable time chart,



- Click () in toolbox.
- Select variables to monitor in the **Register Variable** dialog box.



- Select **Toolbox – Select (F5)** in menu.
- Select variables to monitor in the **Register Variable** dialog box.



Refer to the section 8.2.1 **Register Variable** for the detail description.

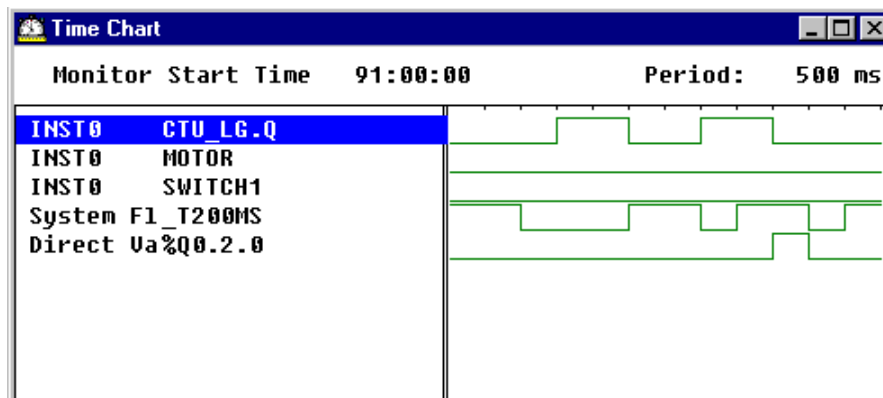
8.5.2. Start Monitoring



- Click () in toolbox.




- Select **Toolbox – Start (F2)** in menu



8.5.3. Set the View Type of Monitoring

It allows you to monitor the detail information of variable selectively.



- Click () in toolbox.
- Select information to display in the check box.



- Select **Toolbox – View (F3)** in menu.
- Select information to display in the check box.


8.5.4. Set Time Interval

It sets the time interval of monitoring the status of a variable's value.

It determines the time interval of collecting the PLC variable's value.

If you set the 5-second, you cannot monitor the variable's value that changes within the 5-second.



- Click () in toolbox.
- Enter the time interval to monitor in the **Time Chart Period** dialog box.




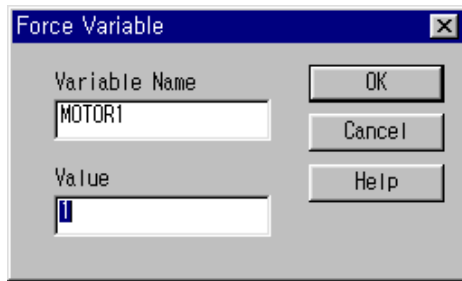
- Select **Toolbox – Time (F6)** in menu.
- Input the time interval to monitor in the **Time Chart Period** dialog box.

8.5.5. Forced Variable Output

To output the desired variable's value forcibly,



- Click () in toolbox. Or move the mouse on the variable to change a value, and double-click the left button of the mouse.



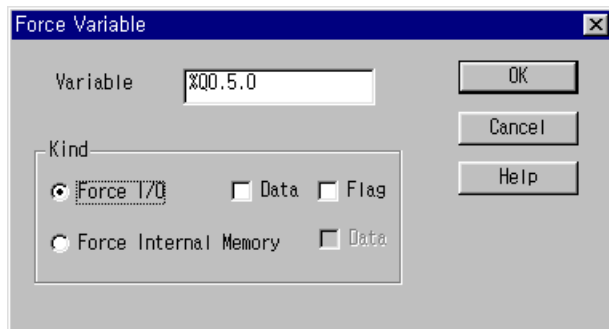
- Enter the variable's value in the **Value** input text box.
- Click **OK** button.



- Call the **Force Variable** dialog box.
- Enter the variable's value in the **Value** input text box.
- Press **Enter** key.

8.5.6. Forced Direct Variable Output

For a direct variable, the following dialog box appears.



- If you want to change the input/output value, select the **Force I/O** in option.
And if you would like to set the value as '1', select **Data, Flag** check box.
(Refer to the section 7.12 Set Forced I/O and section 7.13. Enable I/O Forcing)
- If you want to change the internal value, select the **Force Internal Memory** in option.
And if you want to set the value as '1', select **Data** check box.