Chapter 8. Monitoring

In GMWIN, it is available to monitor the PLC operation status in the run. The available monitoring is as follows:
1) Program monitoring
2) I/O monitoring
3) Variable monitoring
4) Link parameter monitoring

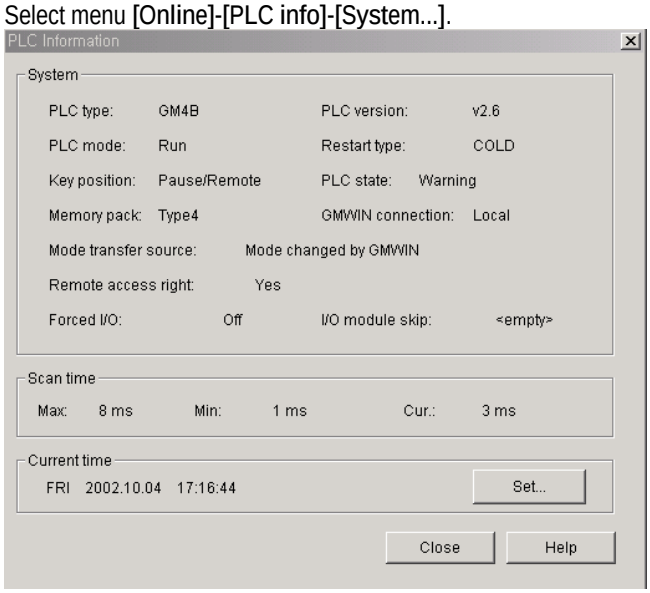
8.1 PLC information

This is the function to show various information of PLC system.
It is available to verify system information, error/warning information, PLC history (AC Fail history, Error history, Mode change history etc).

8.1.1 System Information

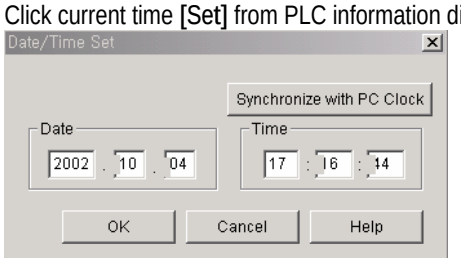
System information is the function to show the composition of PLC system. It is available to verify system information, scan time, current time, error status etc. and set the current time.

◆ Select menu [Online]-[PLC info]-[System...].



To set or modify the current time,

◆ Click current time [Set] from PLC information dialogue box to call [Date/Time Set] dialogue.



◆ Set the date/time in the above dialog box.

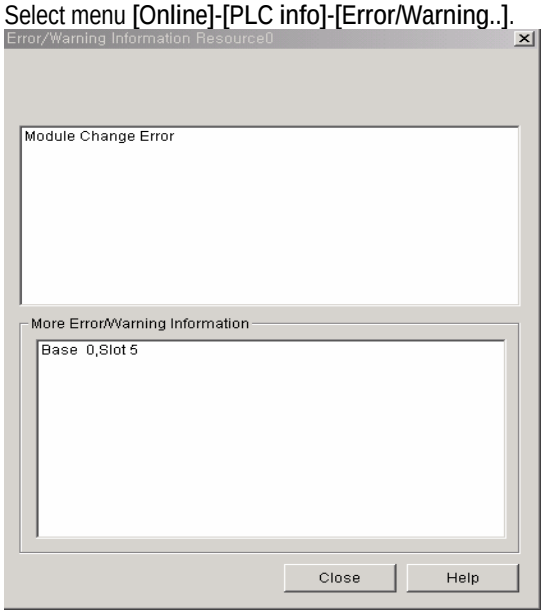
◆ If selecting [Synchronize with PC Clock] and the data/time of PLC is set with the data/time of PC.

8.1.2 Error/Warning information

In error/warning information, it is available to verify if the error occurs as below.

- In case that actually mounted module is different from I/O parameter.
- In case that module composition is changed in the run.
- In case that fuse of the fuse installed module is cut off,
- In case that it is not available to read/write normally in I/O module.
- In case that the normal interface is not available in special or communication module.
- Whether or not the error detect slot position and the fail occurrence of external unit
- Whether or not the task collision

◆ Select menu [Online]-[PLC info]-[Error/Warning..].



8.1.3 AC Fail History

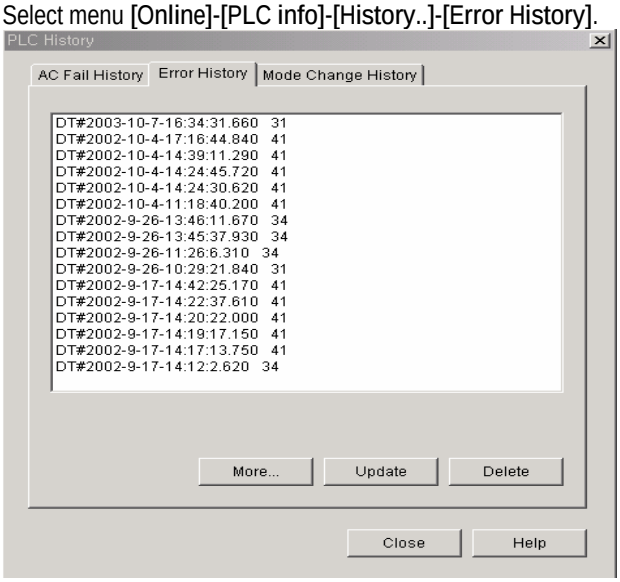
This shows the history that PLC power is cut off.

◆ Select menu [Online]-[PLC info..]-[History]-[AC Fail History].

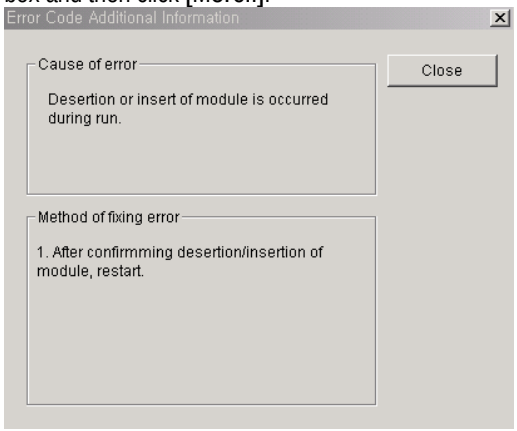
8.1.4 Error History

This shows the history that the error occurred in PLC.

◆ Select menu [Online]-[PLC info]-[History..]-[Error History].



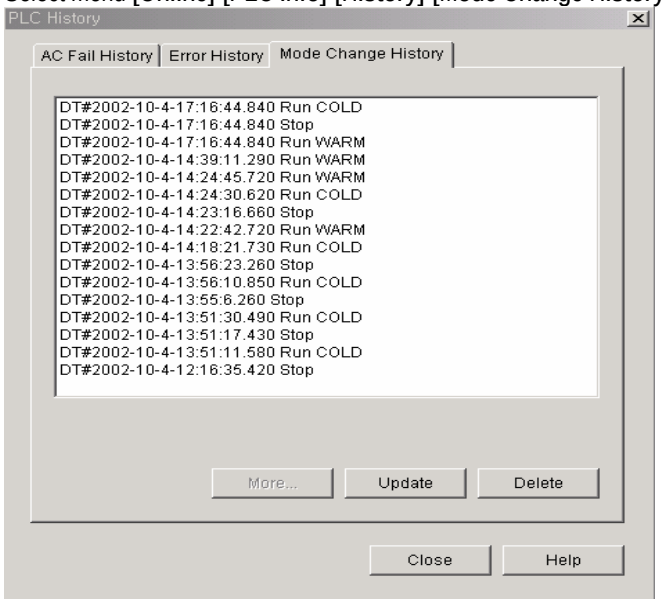
◆ To view the detailed information for the occurred error history, select the item you need more information in the list box and then click [More..].



8.1.5 Mode Change History

This shows the history that PLC mode is changed.

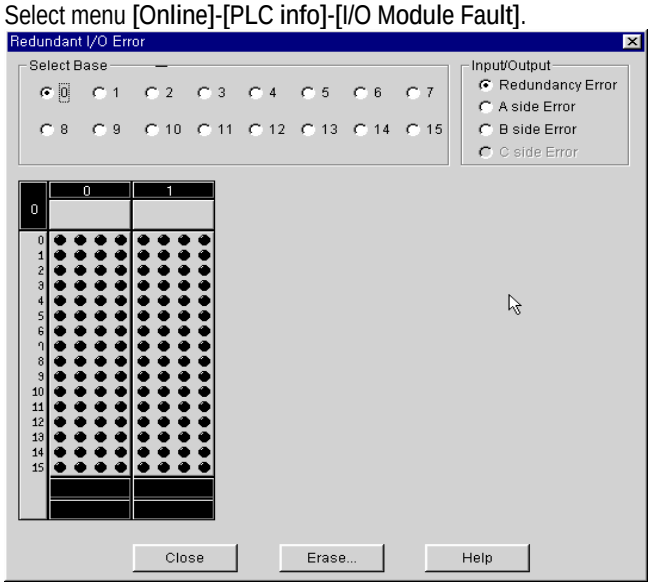
◆ Select menu [Online]-[PLC info]-[History]-[Mode Change History].



8.1.6 How to view I/O failure detail information

This shows the failure information of I/O contact for redundant system.

◆ Select menu [Online]-[PLC info]-[I/O Module Fault].



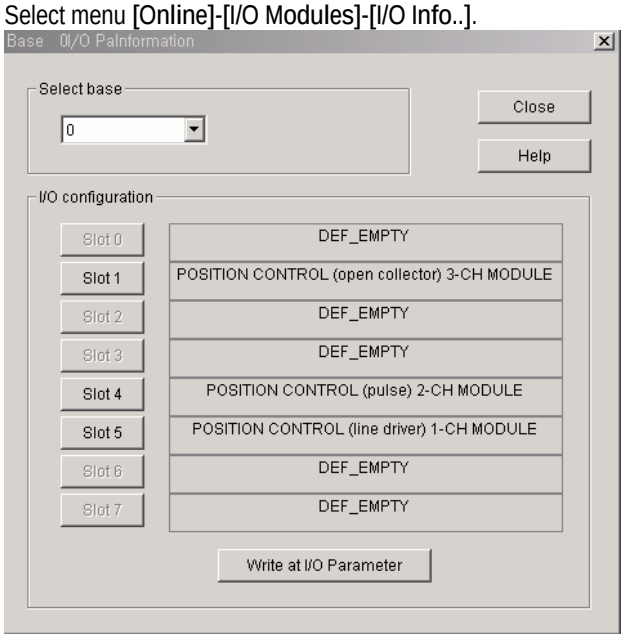
◆ Click [Delete] to delete the I/O module fault information.
It is available to delete the redundancy failure and C side failure when connected to Master, and A side and B side failure when connected to CPU respectively.

8.2 I/O Module Information

8.2.1 I/O Modules

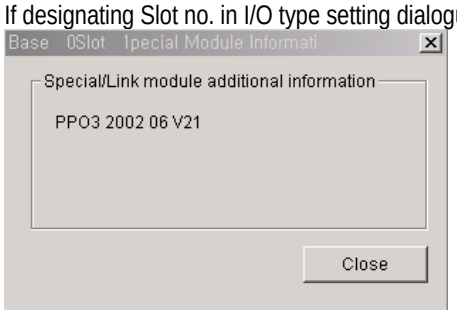
It shows I/O unit composition of system.

◆ Select menu [Online]-[I/O Modules]-[I/O Info..].



◆ Designate Base number.

◆ If designating Slot no. in I/O type setting dialogue box, it is available to read the information of special module.



8.2.2 I/O Synchronization

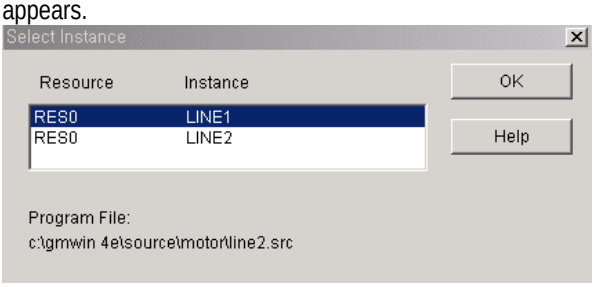
This function is to synchronize I/O information of PLC to I/O parameter.

◆ Select menu [Online]-[I/O Modules]-[I/O Synchronization].

8.3 Program Monitoring

It is available to monitor the PLC operation processing in the run.

- Select menu [Online]-[Connect].
- Select menu [Online]-[Monitor On/Off].
  In this case, if more than two instances are defined for the same program, 'instance selection' dialogue box appears.



- Select the instance in the instance selection list box and click [OK].

Point

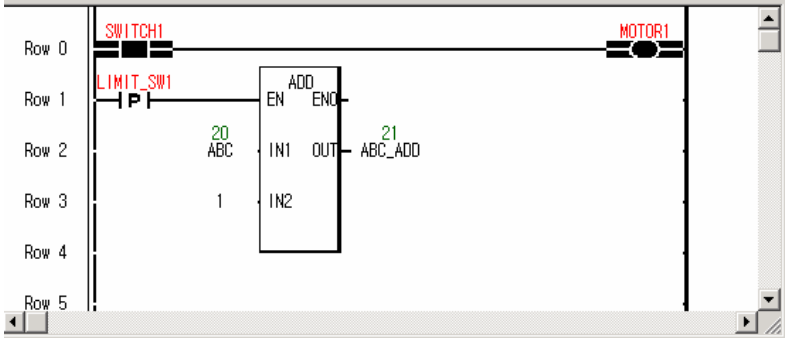
To monitor in GMWIN, the current program on the GMWIN screen and the transferred program to PLC should be same. After making the program and transferring it to PLC, if you modify and monitor the program, the value of monitoring may be different as the transferred program to PLC and the open program in GMWIN is different. Therefore, if the program is modified after transferring the program to PLC, select menu [Compile]-[Make] to make execution file and write it again to PLC and then execute to monitor.
It is not available to edit the program belonging to the project in the way of monitoring while available to edit the program not belonging to the project.

8.3.1 LD Monitoring

This function shall be divided into the function to indicate the variable status basically and the function to set the variable value as ON/OFF.

1) Program monitoring

	Variable Name	Variable Value	Data Type	Memory Allocat	Initial Value	Variab
1	ABC	20	SINT	<Auto>		VAR
2	ABC_ADD	21	SINT	<Auto>		VAR
3	ADD	0	SINT	<Auto>		VAR
4	LIMIT_SW1	1	BOOL	<Auto>		VAR
5	MOTOR1	1	BOOL	<Auto>		VAR
6	SWITCH1	1	BOOL	<Auto>		VAR



(1) Variable monitoring

The used variable value is monitored in LD variable window.

(2) Program monitoring

- As contact or coil variable is BOOL type, it is available to identify the variable status (ON/OFF) by the color change of the relevant variable name (RED↔BLACK).
  That is, if the variable name is indicated as RED, it indicates that the relevant variable is ON while if BLACK, it indicates that the relevant variable is OFF.
- As I/O variable of function/function block are various such as BOOL, BYTE, WORD, SINT, STRING etc., the current variable value is indicated on the blank of high order of variable name as number or string.

2) How to write forced variable value

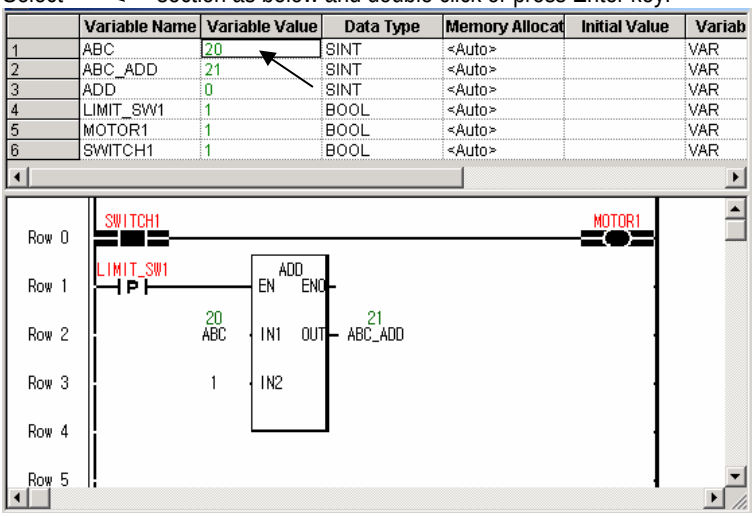
As contact or coil variable is Boolean, set the variable value as 1 or 0 to indicate ON/OFF, while in case of I/O of function/function block, it is available to set the variable value as the desired value.

◆ After moving the mouse to the variable position for forced setting in LD program or the variable window, double click to call [Force Variable Input] dialogue box.

◆ Move the cursor to the variable position for forced setting in LD program or variable window.
◆ Press Enter key.

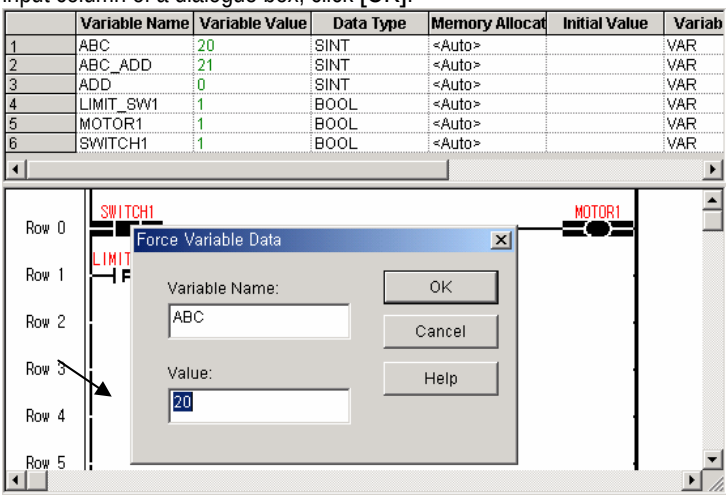
(1) Example of forced variable input in variable window

◆ Select ↘ section as below and double click or press Enter key.



(2) Examples of forced variable input in program window

◆ Double click ↘ section directly as below program or press Enter key. After inputting '0 (off)' in variable value input column of a dialogue box, click [OK].

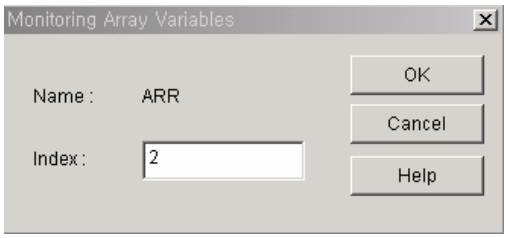


3) Array variable monitoring

If program monitoring starts, the array variable monitors the first elements of array variable basically. If array variable name is ARR, this variable shall be indicated as ARR (0) in monitoring and monitors the first element. (Ex: in case of using as ARR, ARR [1] type is not related.)

◆ Move the cursor to the array variable to monitor.

◆ Click [View]-[Monitor Array].



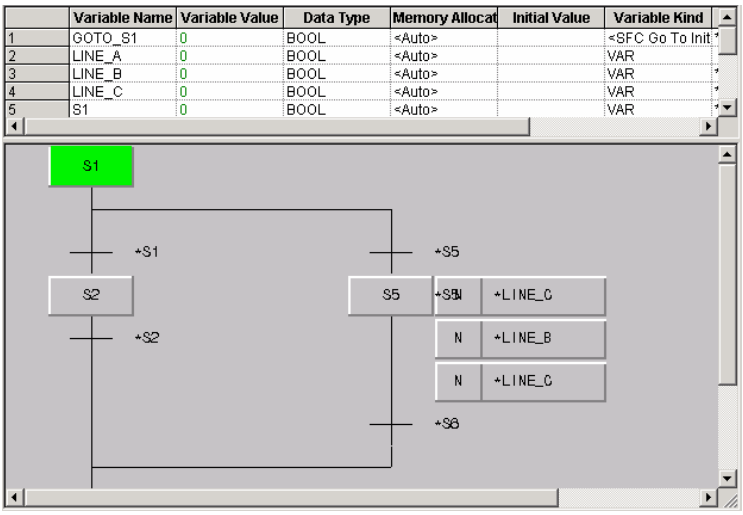
◆ After inputting the desired element no. to monitor in the 'Monitoring Array Variables' dialogue box, and click [OK]. It is available to monitor array variable by using a short-cut key instead of 'Monitoring Array Variables' dialogue box.

◆ Move the cursor to the array variable to monitor.

◆ To increase the element no., input Ctrl+↑ and to decrease it, input Ctrl+↓.

8.3.2 SFC Monitoring

It is available to see the flow of SFC program by indicating the active (in the run) step and action.
If you select [SFC Auto Scroll] from menu [Option], SFC window is automatically scrolled according to the active step.



To monitor Action, Transition program,

◆ Move the mouse to Action or Transition and then double click.

◆ After moving the cursor to Action or Transition, Press Enter key.

8.3.3 IL Monitoring

This monitors only the program belonging to the project. It is not available to edit in the way of monitoring.
Monitoring data is shown on the position of program value. It is available to see monitoring data on the desired position by adjusting the column of header window.
When monitoring, press menu [View]-[Comment] to hide the comment.

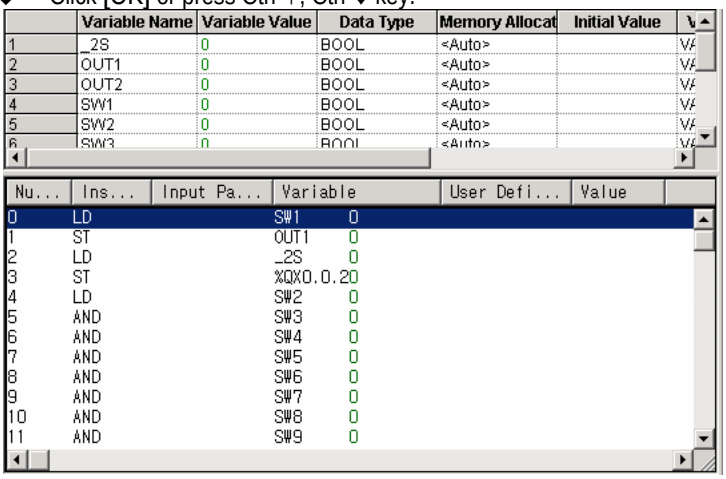
1) Program monitoring

(1) Variable monitoring
In IL variable window, the value of the used variable shall be monitored as GREEN.

(2) Program monitoring
In IL program, the value shall be monitored as GREEN on the right side of variable.

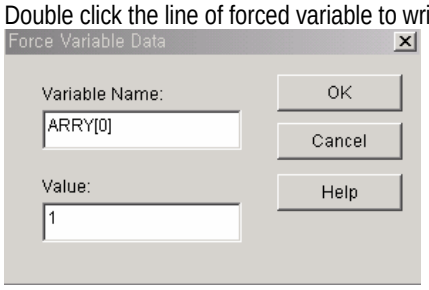
(3) Array variable monitoring
The variable declared as array shall be monitored after designating the initial index as '0'. To change the index, move the cursor to the desired line and then

- Double-click
- Designate the index of array element.
- Click [OK] or press Ctrl-↑, Ctrl-↓ key.



2) How to write forced variable

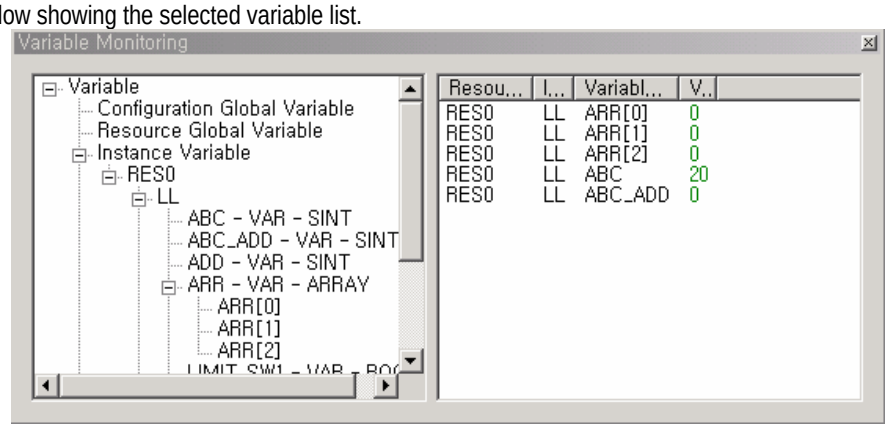
- Double click the line of forced variable to write.



- Input the variable value in value input column from 'Force Variable Data' dialogue box.
- Click [OK].

8.4 Variable Monitoring

In the variable monitoring, it is available to monitor the variable declared in the program, global variable, I, Q, M scope, system flag etc. Variable monitoring window is composed of variable selection window that has a tree structure and the window showing the selected variable list.



To select monitoring variable, double click the desired item or drag & drop.

In case of first monitoring,

- Select menu [Online]-[Monitor On/Off], menu [View]-[Variable Monitor].

In case of in the way of program monitoring

- Select menu [View]-[Variable Monitor].

Point

If not connected to PLC, select menu [Connect] before selecting the above menu.

- Select the variable to monitor in the variable selection window.
  For variable selection, refer to 'how to select the variable' as below.

8.4.1 Variable selection

This function enables to monitor the variable declared in the program, global variable, I, Q, M scope, system flag etc. simultaneously. The user selects the variable to monitor.

- To select the variable in the variable monitor window, double click the variable to monitor or drag & drop.

1) Registration of configuration global variable (only for GM1)

It registers Configuration global variable.

- Click ⊞ of configuration global variable item.
- Select the variable to monitor.

2) Selection of resource global variable

It registers Resource global variable.

- Click ⊞ of Resource global variable item.
- Select the variable to monitor.

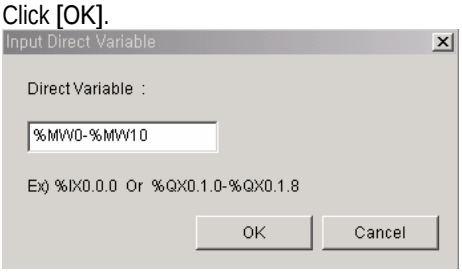
3) Selection of program instance variable

It registers the variable declared in the designated program.

- Click ⊞ of instance variable item.
- Unfold the instance in the instance item.
- Select the variable to monitor.

4) Registration of direct variable

- Double click the item of direct variable.
- Input the lot no. of direct variable in the input column.
  Ex) if input %QW0.0.1 or %QW0.0.1 －%QW0.0.3,
  %QW0.0.1, %QW0.0.2. , %QW0.0.3 shall be registered.
- Click [OK].



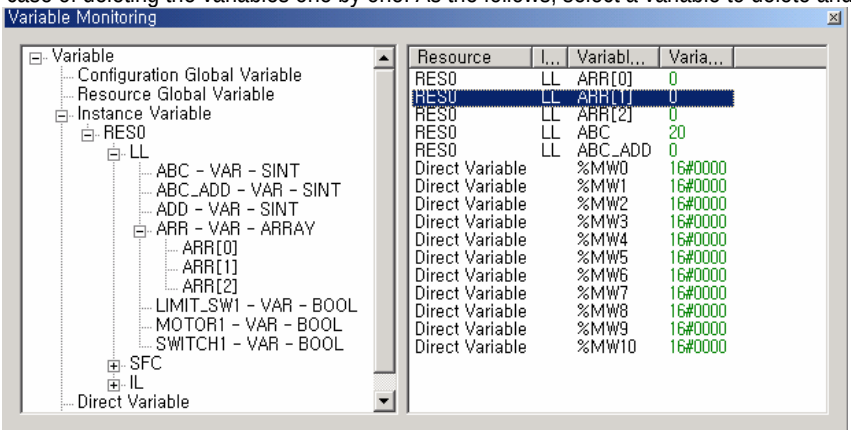
5) Registration of system flag

- Unfold ⊞ of flag item.
- Select the flag to monitor.

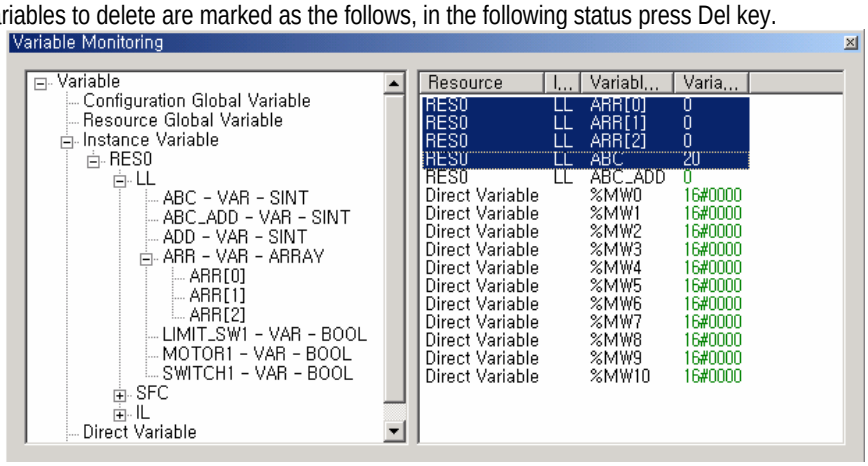
The registered variables shall be displayed in variable list.

8.4.2 How to delete the registered variables

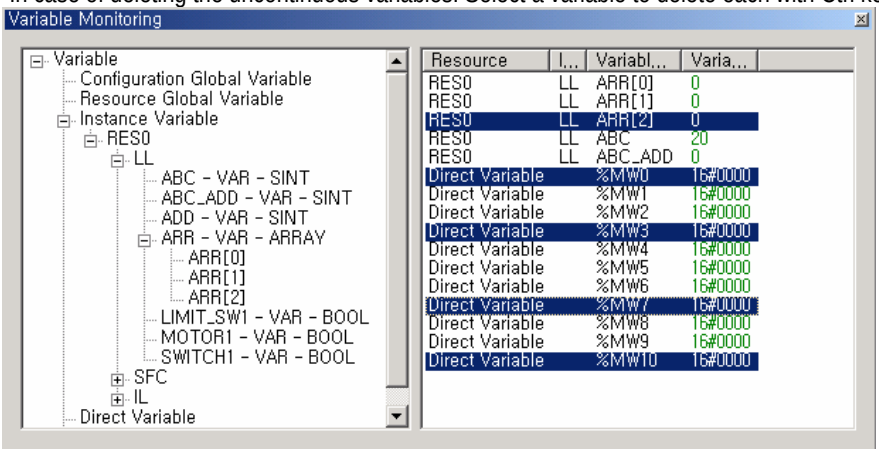
♦In case of deleting the variables one by one: As the follows, select a variable to delete and press Del key.



♦In case of deleting the continuous variables: Select a first variable to delete and a last variable with Shift key and the variables to delete are marked as the follows, in the following status press Del key.



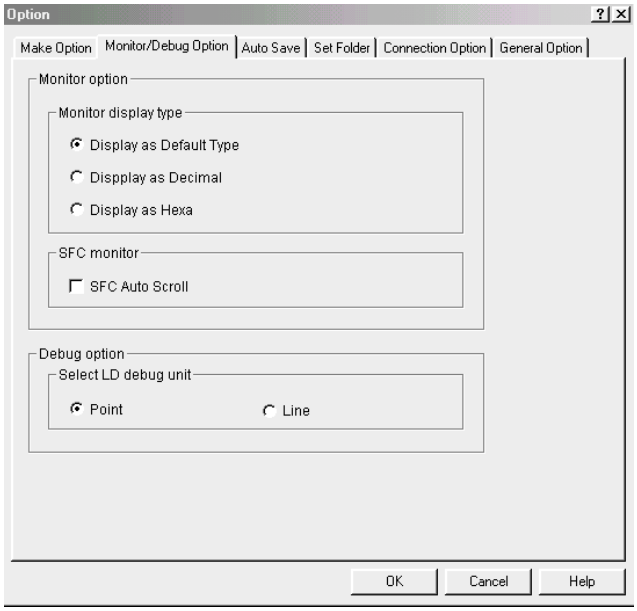
♦ In case of deleting the uncontinuous variables: Select a variable to delete each with Ctrl key and press Del key.



8.4.3 How to change the monitor display type

This option is to change the indication form of the variable to monitor.

◆ Select menu [Project]-[Option]-[Monitor/Debug Option].



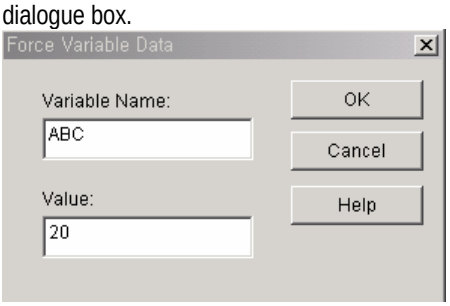
◆ After selecting the desired indication form from monitor indication form, click [OK].

Ex) If selecting [Display as Hexa] in monitor display type, the monitoring value of variable shall be indicated as Hexa such as “16#*” when monitoring.

8.4.4 Force Variable Data

This forces to output the variable value as the desired value.

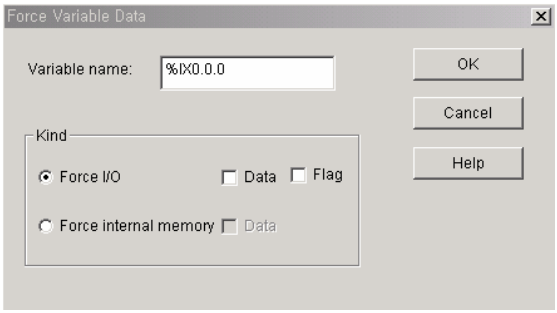
◆ After moving the mouse to the variable position to replace the value, double click to call force variable data dialogue box.



◆ Input the variable value in the value input column.
◆ Click [OK].

Point

Despite of forced output of variable value, the value may be changed by program.
In case of direct variable I/O, the dialogue box appears as below.



♦ If you want to replace the I/O value, select [Force I/O] option and if you want to set it as 1, select data and flag column.
(Refer to 7.3 how to set forced I/O)
♦ If you want to replace the internal value, select [Force internal memory] option, and if you want to set it as 1, select Data column.

Point

For the forced I/O of direct variable, select [Set] from menu [Online]-[I/O Forcing]-[Input/output].

8.5 I/O Monitoring

This monitors the I/O unit composing of PLC system. If you select menu [View]-[I/O Monitor] or press ID= m toolbox, it starts to monitor.
On the left top, the selected base no. appears and on the bottom of each slot, the monitoring data value is indicated as decimal or hexa according to the monitor display type of [Option]. And if you press each contact of I/O card by a mouse, ON/OFF toggles. As this is different from [I/O Forcing], the value may be changed by the program.

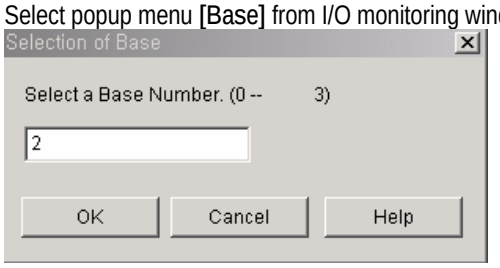
In case of first monitoring,
- Select menu [Online]-[Start/finish to Monitor], menu [View]-[I/O Monitor].

In the way of monitoring,
- Select menu [View]-[I/O Monitor].

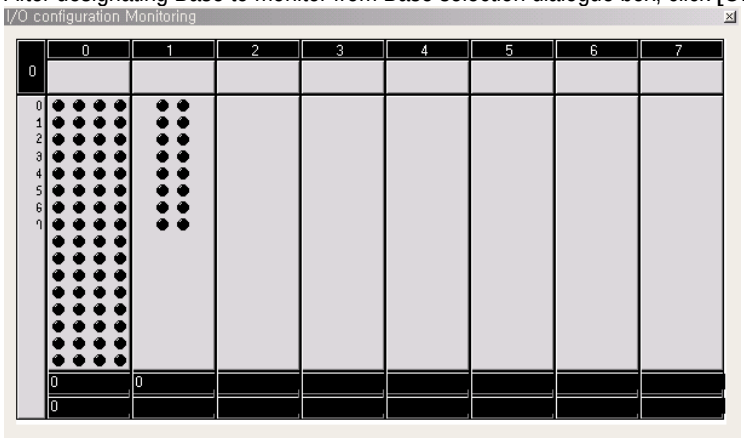
If you start to monitor I/O, it monitors the I/O of 0 Base. If you want to monitor the I/O of other base, select the desired base.

1) Base selection

- Select popup menu [Base] from I/O monitoring window to call the base selection dialogue box.



- After designating Base to monitor from Base selection dialogue box, click [OK].



2) View I/O information

Select popup menu [Properties] from I/O monitoring window to call I/O information of base dialogue box.

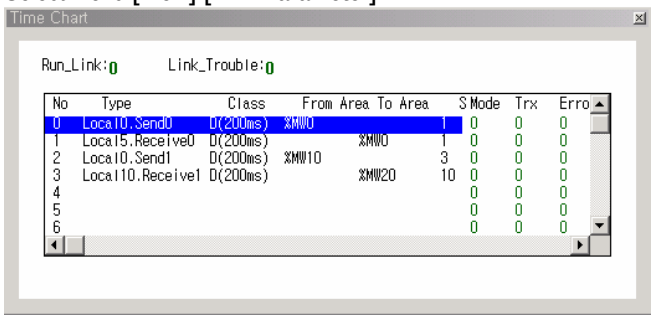
To stop I/O monitoring, do as follows:
Select menu [View]-[I/O Monitor] or click ID=

8.6 Link Parameter monitoring

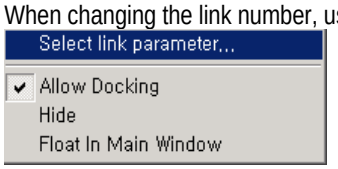
It monitors the link proceeding status for the parameter set in Link parameter item of project window. If you select menu [View]-[Link Parameter], it starts to monitor.

In case of first monitoring,

◆ Select menu [View]-[Link Parameter].



◆ When changing the link number, use popup menu as follows.



◆ If selecting [Select link parameter] the following dialog box appears.