MPE720 Ver.7.A4 Version Upgrade Information

1. Functional Additions and Improvements

1.1 Ver.7.A4 Version Up Information

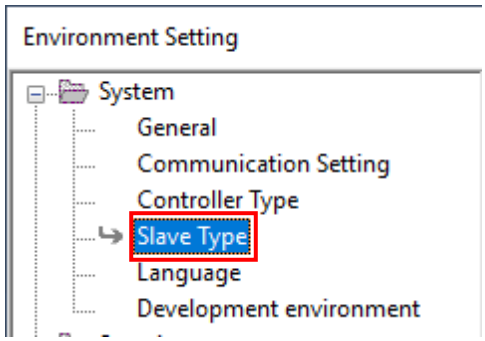
MPE720 Ver.7.A3→ Ver.7.A4 function additions and improvements are as follows.

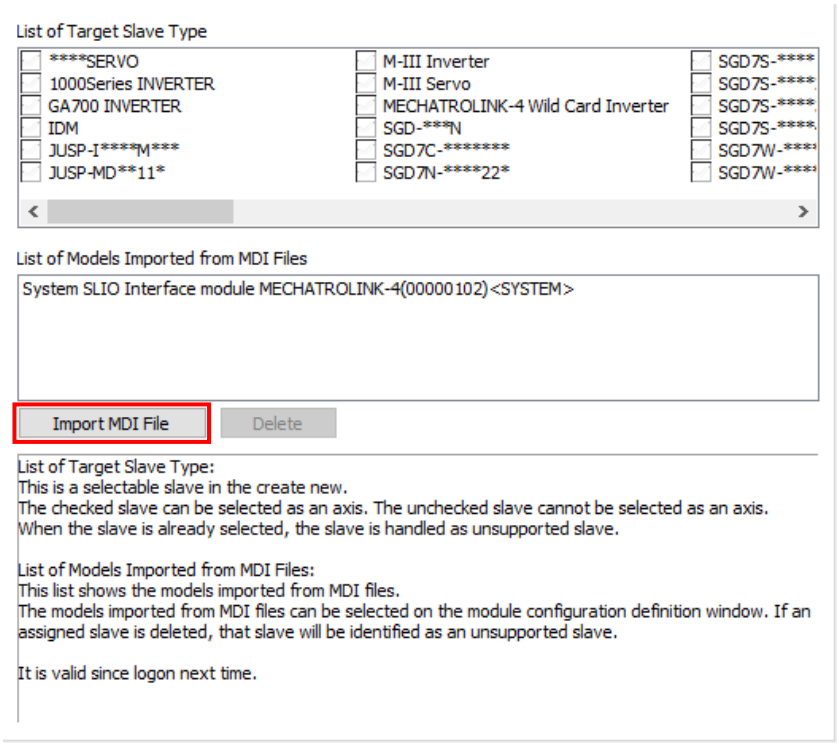
No.	Function items	classification
1.	Importing MECHATROLINK Device Information (MDI) files for IO devices is now supported.	New Features
2.	Support has been added for assigning sub-modules to the 'SLIO Bus Coupler (M-4) ' and to device types defined in MECHATROLINK Device Information (MDI) files.	New Features
3.	Support has been added for replacing 'Register' within 'Program' in the "Edit Variable" window.	Enhancements
4.	A new 'Recording File List' feature has been added to the 'Motion Recorder', enabling saving and deleting files on the SD card installed in the controller.	Improvement
5.	Variable information can now be exported in a format that can be imported into third-party Touch Pad drawing tools.	Improvement
6.	Support has been added for floating the "Ladder program" window.	Improvement
7.	For models that support multiple scans, individual transfers of 'Program', 'Table Data', and 'Cam Tool Data' are now supported even when the ' Multiple Scans Settings ' or 'Group Definition' differs between the source and the destination.	Improvement
8.	In the "Edit Variable" window, the 'Variable Group' and 'Constant Variable' functions are now supported.	Improvement
9.	For models that support multiple scans, the display structure of the "Navigation" window and the "Program Selection Tree" has been improved.	Improvement
10.	In the 'Motion Program' and 'Sequence Program', comments for 'Register', 'Variable', and 'Program' can now be added from the menu.	Improvement
11.	Several bugs have been fixed.	Improvement

2. Details of Fixes

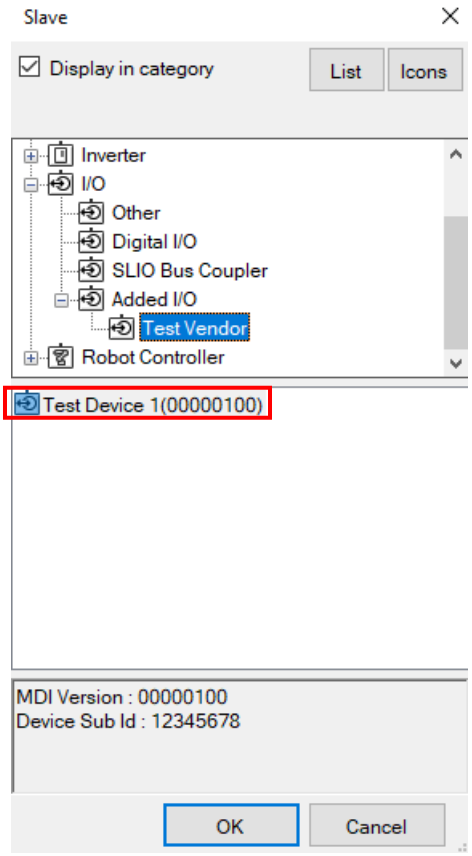
No.1 Importing MECHATROLINK Device Information (MDI) files for IO devices is now supported.

1) In the [Environment Setting]-[System]-[Slave Type] window, you can import MDI files.

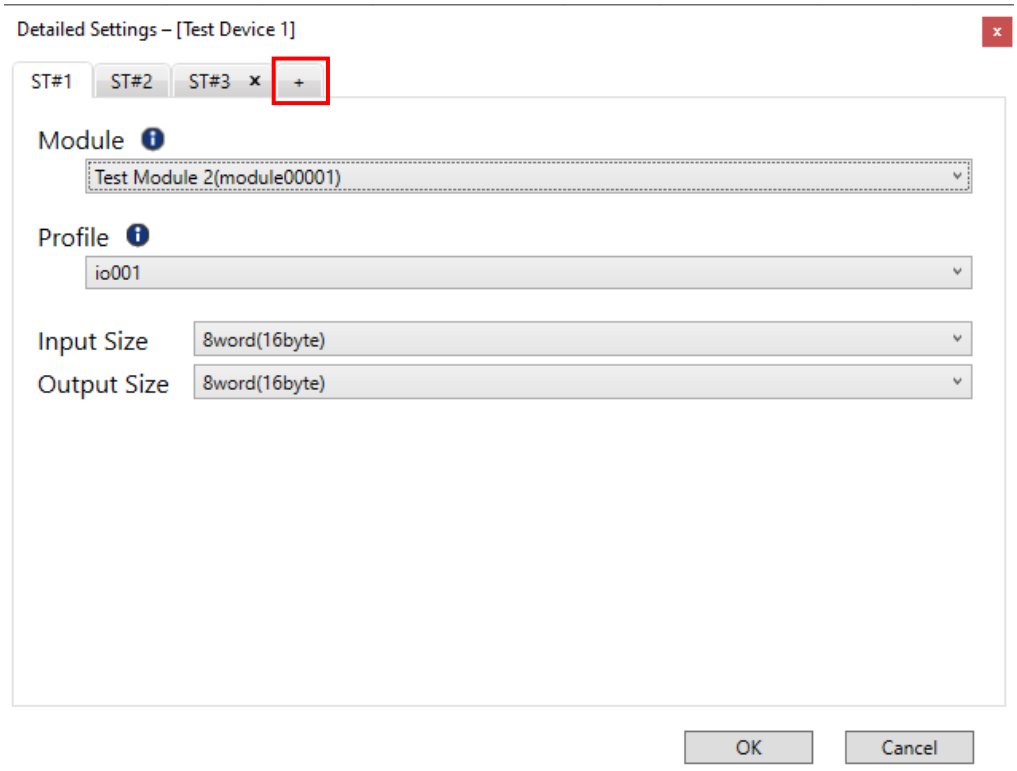




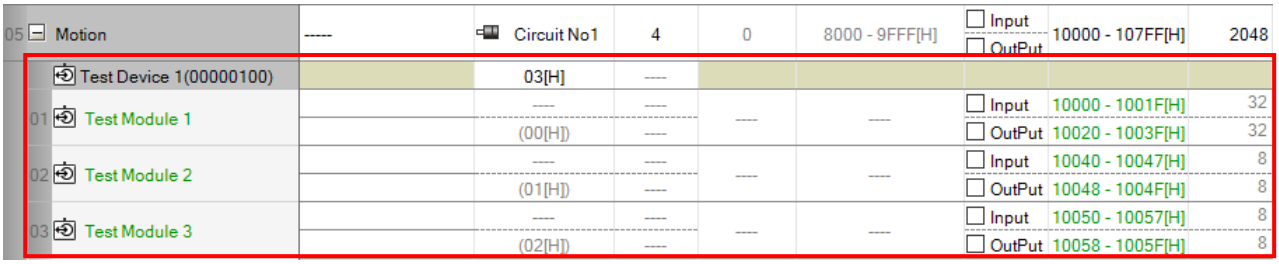
2) You can select the model of the imported MECHATROLINK Device Information (MDI) file in the "Module Configuration" window.



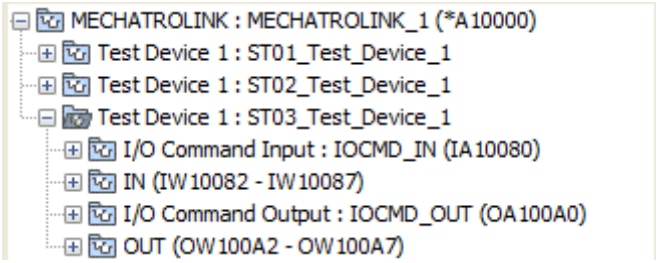
3) In the "Detailed Settings" window, you can set the Module, Profile, Input Size, and Output Size.
By pressing the "+" button and increasing the number of tabs, you can increase the number of stations.



4) The configured Slave Type will be displayed in the "Module Configuration" window.



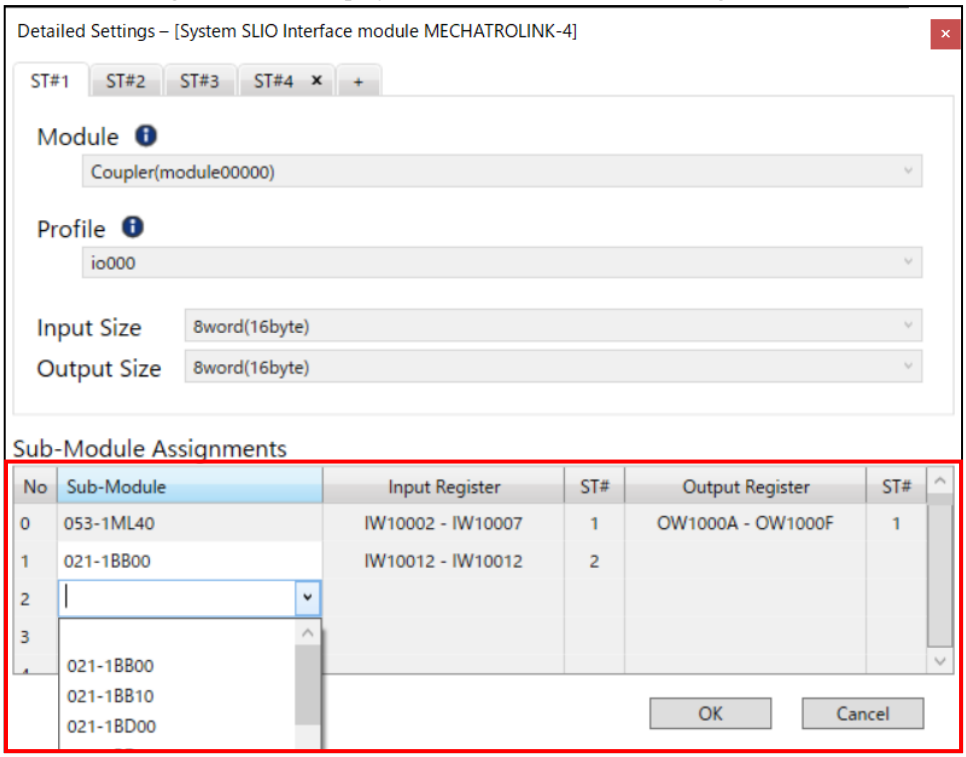
5) After running "Save to Project", the variables for the Slave Type allocated in step 3) will appear under "Input/Output Variable".



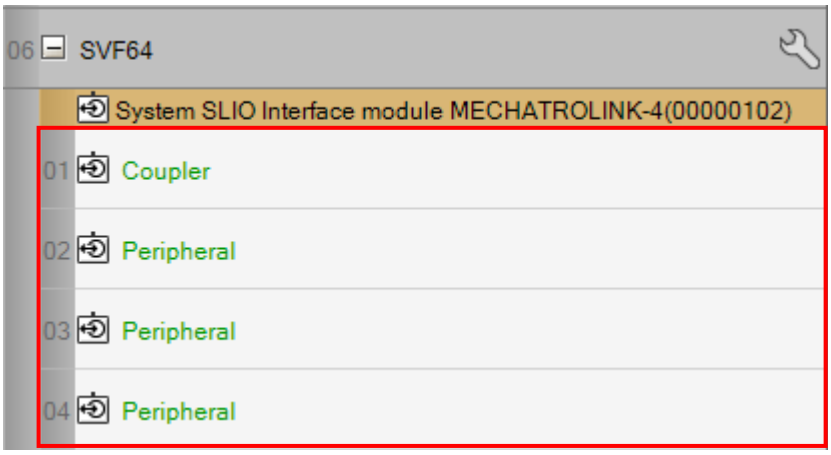
No.2 Support has been added for assigning sub-modules to the 'SLIO Bus Coupler (M-4) ' and to device types defined in MECHATROLINK Device Information (MDI) files.

[For SLIO Bus Coupler(M-4)]

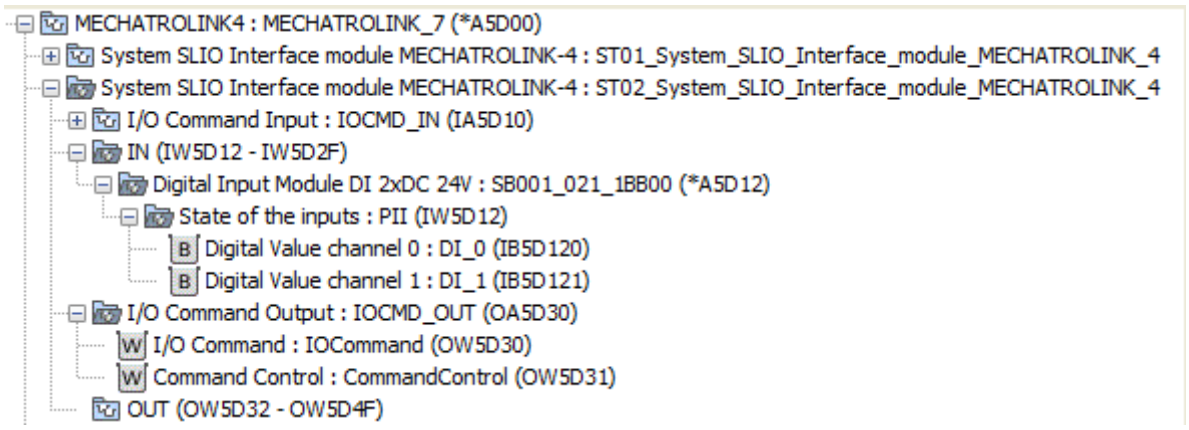
1) When the SLIO Bus Coupler(M-4) (053-1ML40 (multi slave)) is assigned in the "Module Configuration" window, the advanced settings window is displayed and submodules can be assigned.



2) The configured Slave Type will be displayed in the "Module Configuration" window. The "Module Configuration" window displays 'Coupler' and 'Peripheral'.



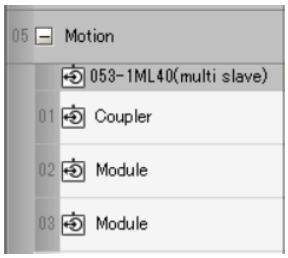
3) Performing 'Save to Project' in the "Module Configuration" window shall automatically add the assigned submodules and their corresponding 'Variables' to 'IO Variable'.



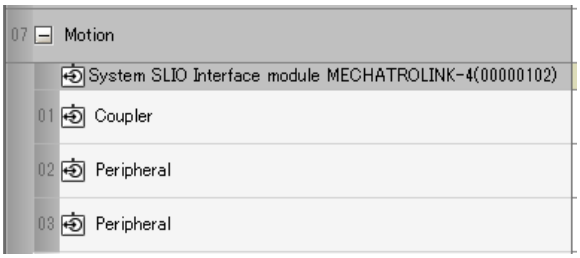
*When a project that assigns an SLIO Bus Coupler(M-4) created with MPE720 Ver.7.A3 or earlier is opened in MPE720 Ver.7.A4:

1. When the detailed settings window of an SLIO Bus Coupler(M-4) assigned in the "Module Configuration" window is opened and the "OK" button is clicked, the displayed name changes to the name defined in the MECHATROLINK Device Information (MDI) file.

Ver.7.A3



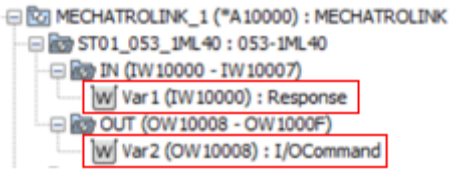
Ver.7.A4



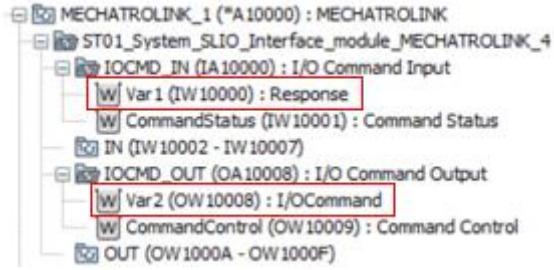
2. Performing 'Save to Project' in the "Module Configuration" window shall automatically updated 'IO Variable'.

2-1. Pre-defined variables are retained if their data types match those of variables added through automatic updating.
In this case, the pre-defined variables (Var1/Var2) are retained because their data types (Word) match those of the variables (IOCommandResponse/IOCommand) added through automatic updating.

Ver.7.A3



Ver.7.A4

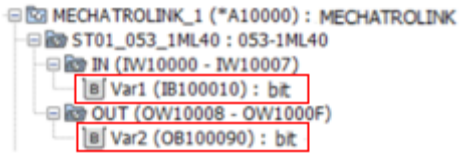


2-2. Pre-defined variables are deleted if their data types do not match those of variables added through automatic updating.

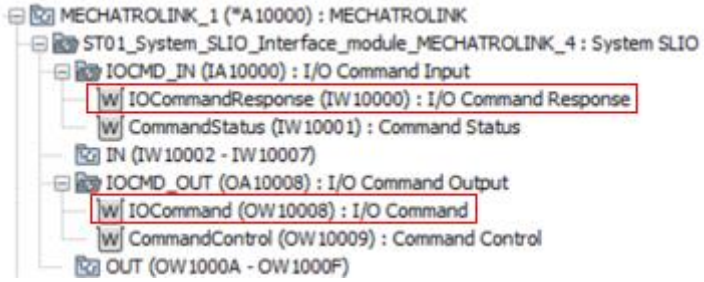
In the following case, there is a difference in data types (Bit and Word) between the pre-defined variables (Var1/Var2) and the variables (IOCommandResponse/IOCommand) added through automatic updating.

Therefore, the pre-defined variables (Var1/Var2) are removed, and the variables(IOCommandResponse/IOCommand) added through automatic updating take precedence.

Ver.7.A3

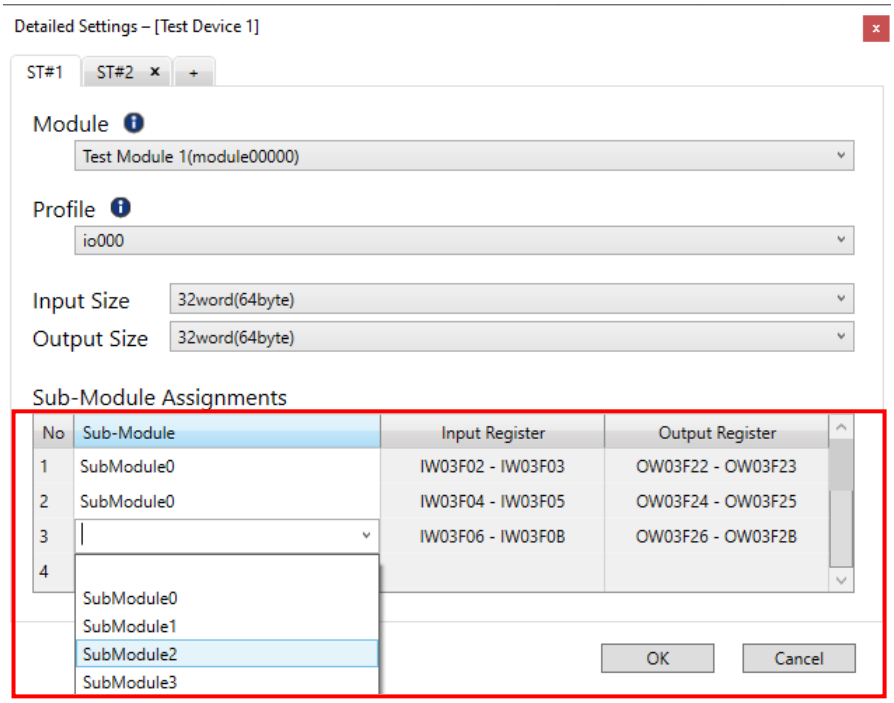


Ver.7.A4

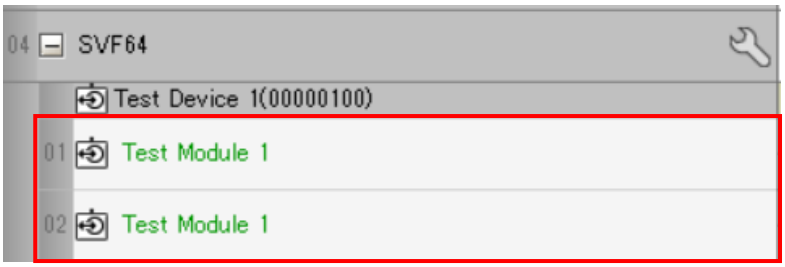


[For MECHATROLINK Device Information (MDI) file models other than SLIO Bus Coupler(M-4)]

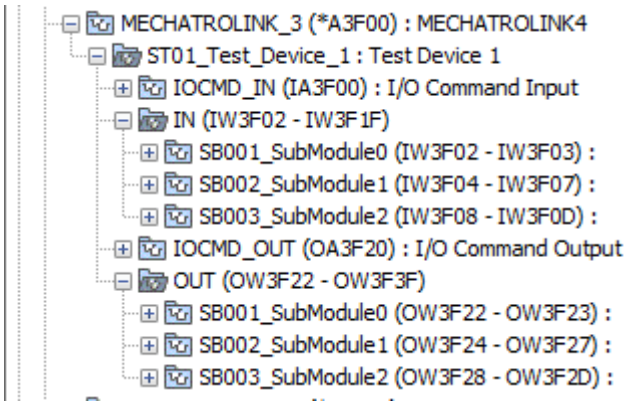
1) When you assign a MECHATROLINK Device Information (MDI) file model in the "Module Configuration" window, the "Detailed Settings" window is displayed and you can assign submodules.



2) The configured Slave Type will be displayed in the "Module Configuration" window.

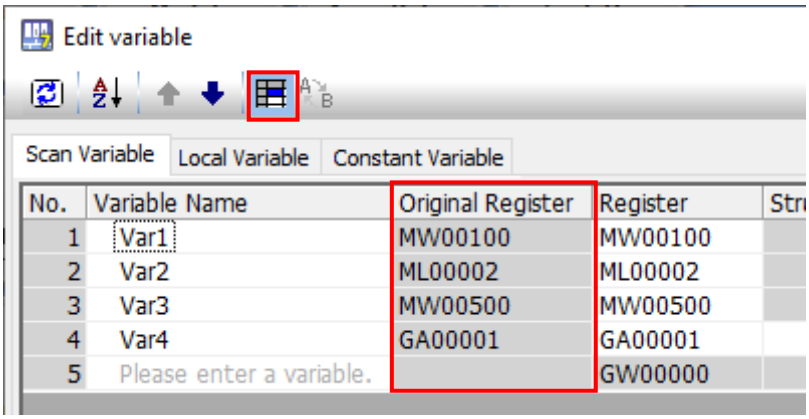


3) Performing 'Save to Project' in the "Module Configuration" window shall automatically add the assigned submodules and their corresponding 'Variables' to 'IO Variable'.

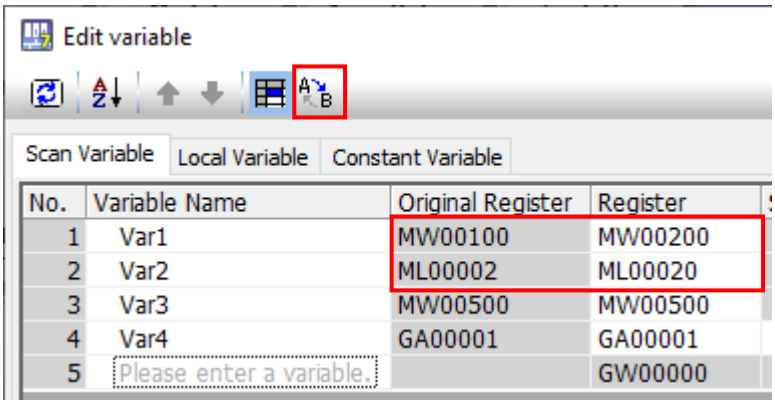


No.3 Support has been added for replacing 'Register' within 'Program' in the "Edit Variable" window.

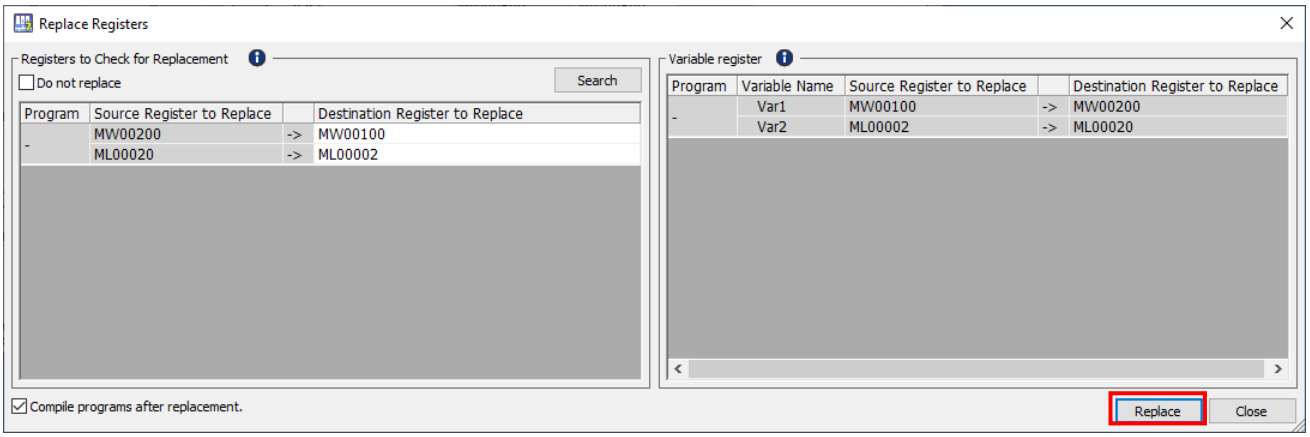
1) Added a " Replace Registers Mode" button to the toolbar.
When " Replace Registers Mode" is turned ON, the "Original Register" column is displayed.
You can then perform register substitutions for variables that have changed the [Register] column.

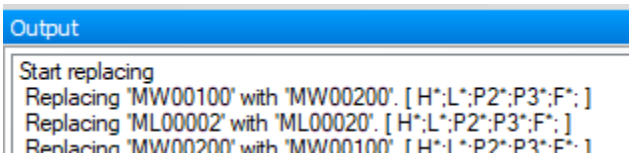


2) Added a "Replace Registers" button to the toolbar.
If "Replace Registers Mode" is ON and there is a 'Variable' with a changed 'Register', the "Replace Registers" window is displayed.

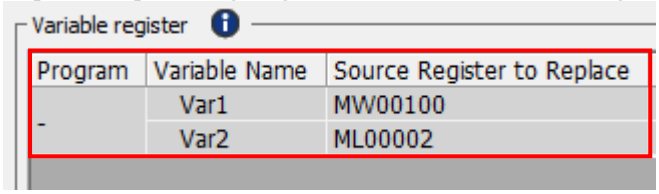


3) On the "Register Replace" window, you can now replace variable registers in the project.
By executing [Replace], the [Source Register to Replace] set on the screen will be replaced with the [Destination Register to Replace].

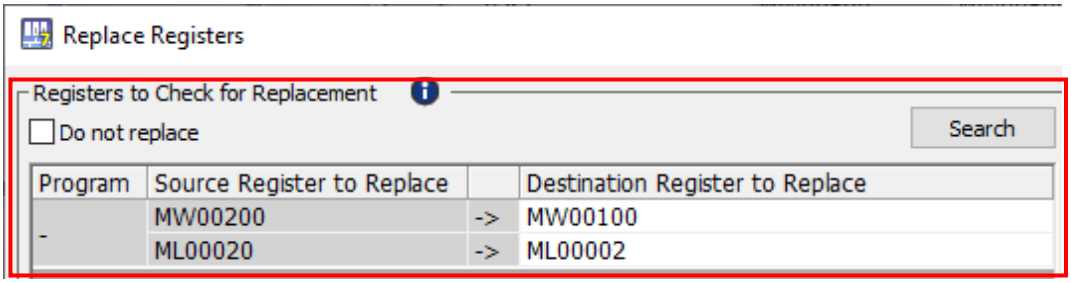




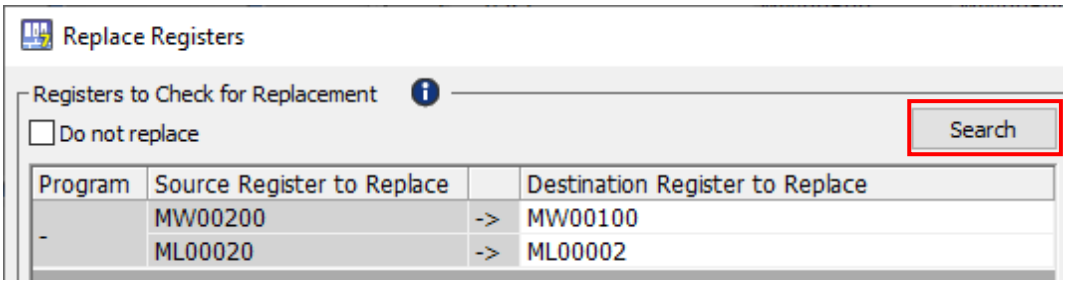
4) In "Variable Register", variables that have had register changes in the "Edit Variable" window are displayed.
Replace the pre-change register of the variable with the register after the change.



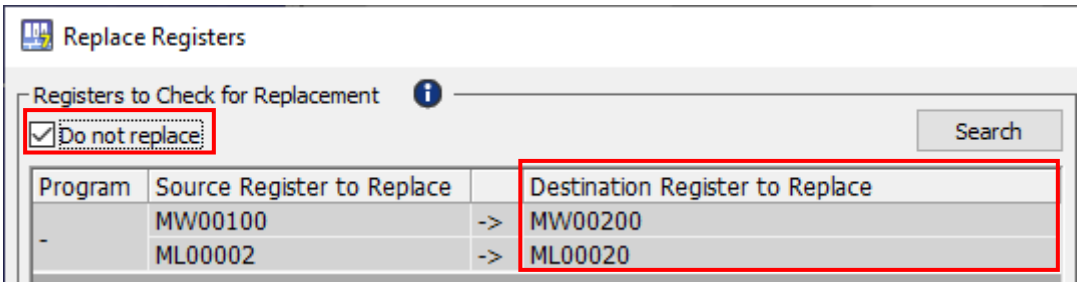
5) Registers displayed in "Registers to Check for Replacement" may cause duplication if the destination register in "Variable Register" is used in the program.
If necessary, set the "Destination Register to Replace".



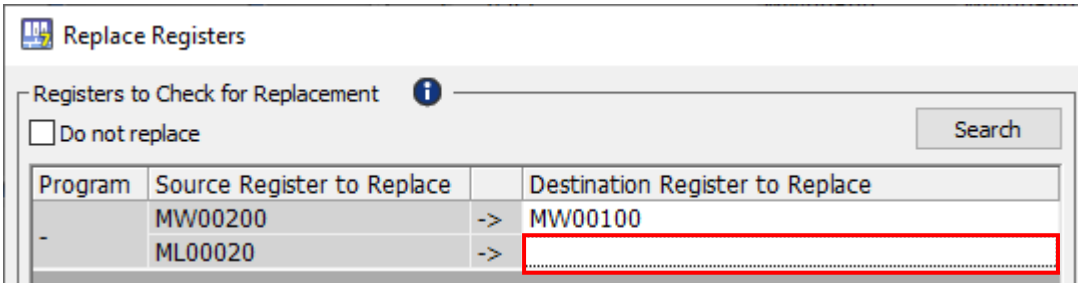
6) By executing the "Search" button, you can display only the registers that are actually used in the program.



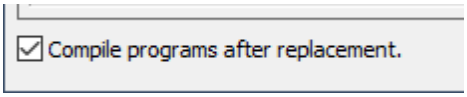
7) By turning on the "Do not replace" checkbox, replacement will not be performed during execution.
The replacement register becomes uneditable.



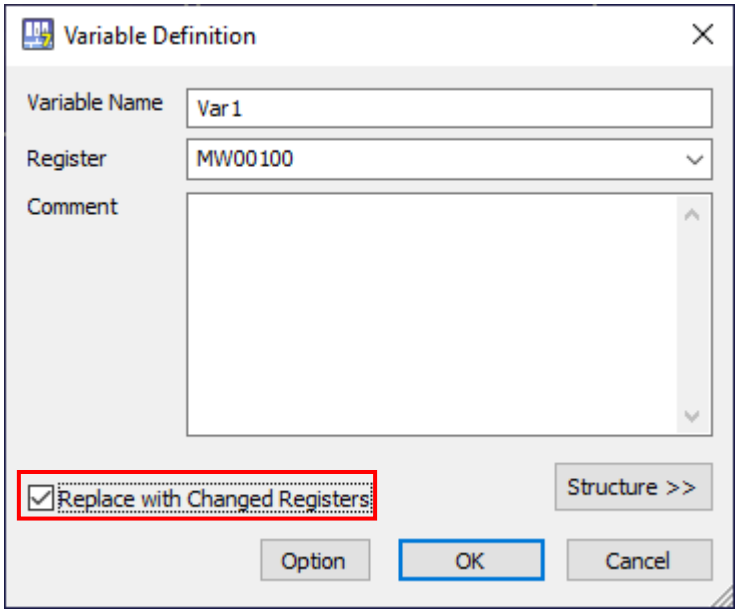
8) By leaving "Destination Register to Replace" blank, no replacement will be performed during execution.



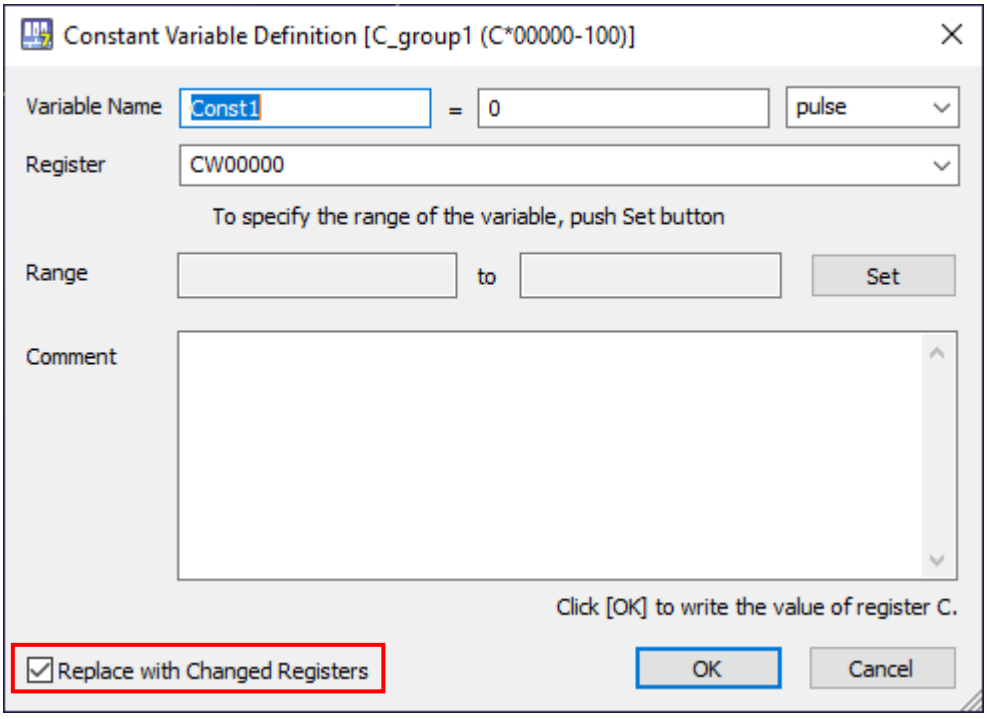
9) When the "Compile programs after replacement" checkbox is turned on and replacement is executed, both the replacement and program compilation will be performed simultaneously.



10) Added 'Replace with Changed Registers' to the "Variable Definition" window.
When the 'Replace with Changed Registers' checkbox is selected, the "Replace Registers" window is displayed when registers are modified.

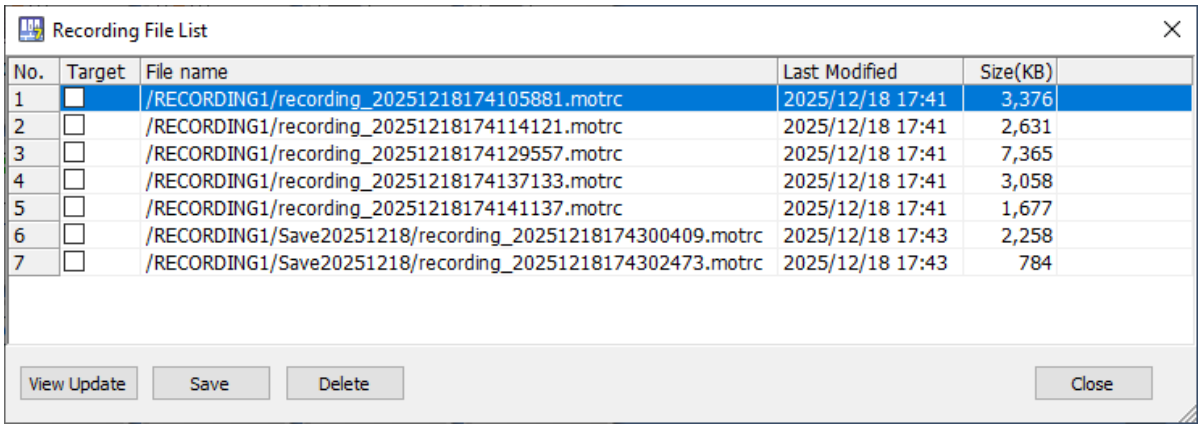


11) Added 'Replace with Changed Registers' to the " Constant Variable Definition" window.
When the 'Replace with Changed Registers' checkbox is selected, the "Replace Registers" window is displayed when registers are modified.



No.4 A new 'Recording File List' feature has been added to the 'Motion Recorder', enabling saving and deleting files on the SD card installed in the controller.

1) From the "Recording File List" window, it is now possible to save files in the SD card on the PC or delete them from the SD card.



No.5 Support has been added for exporting variable information in a format compatible with import functions of third-party Touch Pad drawing tools.

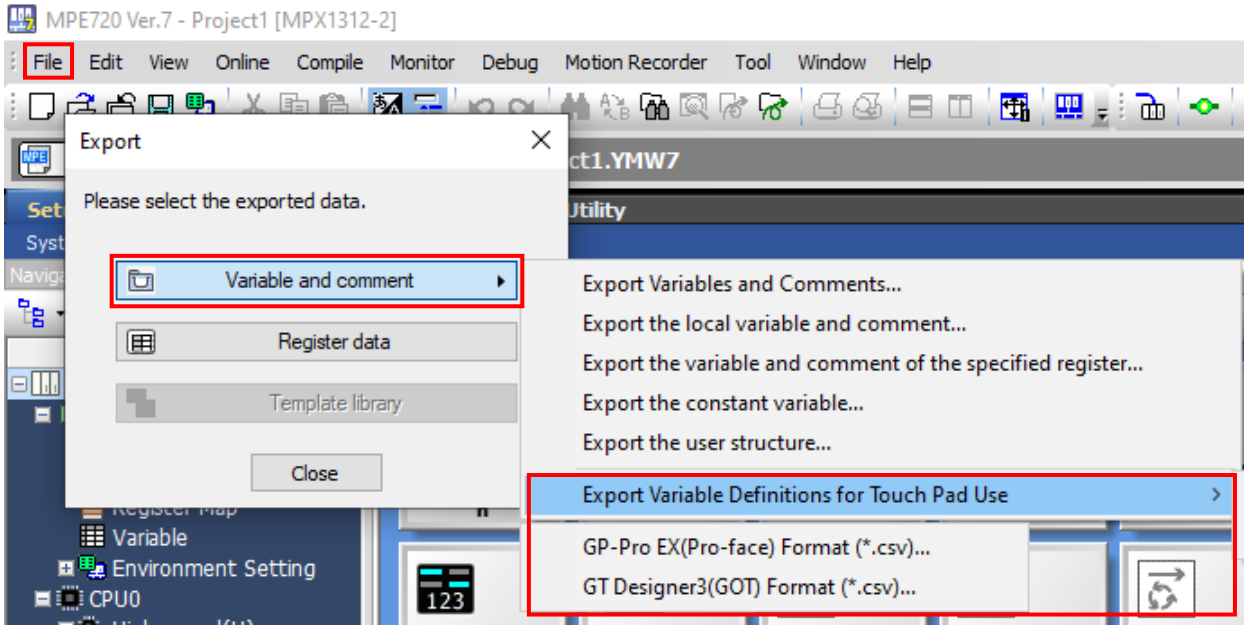
There are two drawing tools that support export:

・GP-Pro EX

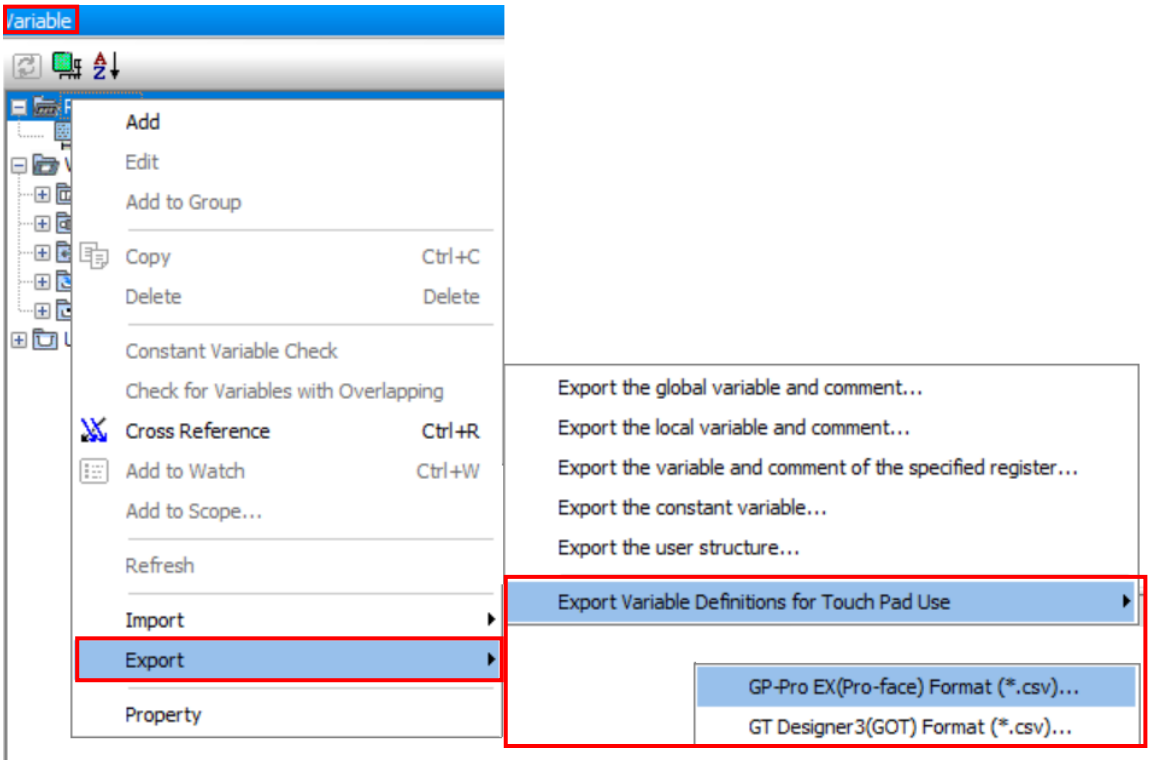
・GT Designer3

There are two ways to activate this function.

1) Click "Export" in the File menu. From the "Export" window, launch 'Export Variable Definitions for Touch Pad Use' under 'Variable and comment'.



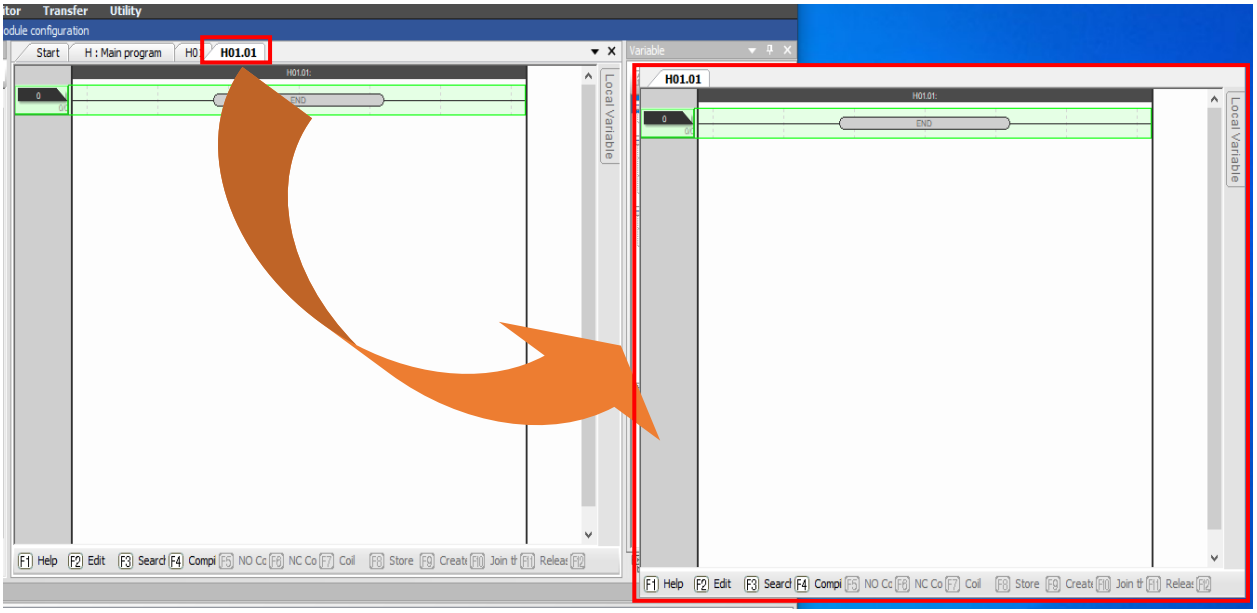
2) In the "Variable" window, open the context menu (right-click), select "Export", and choose 'Export Variable Definitions for Touch Pad Use'.



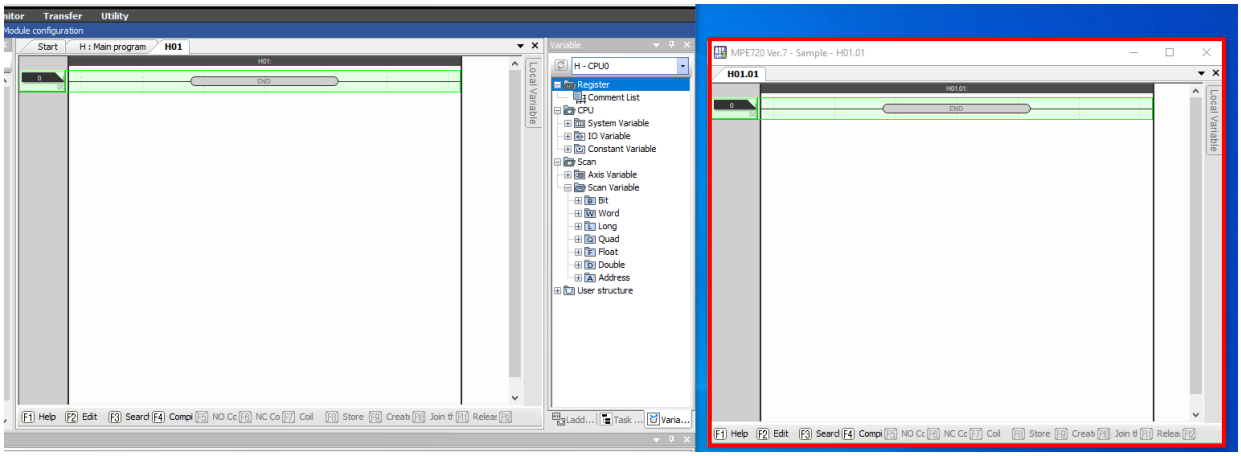
No.6 Support has been added for floating the "Ladder program" window.

1) [How to display floating]

Click and drag the floating screen name tab to move the mouse cursor outside the window frame.



It can be displayed floating by dropping it outside the window frame.



No.7 For models that support multiple scans, individual transfers of 'Program', 'Table Data', and 'Cam Tool Data' are now supported even when the ' Multiple Scans Settings' or 'Group Definition' differs between the source and the destination.

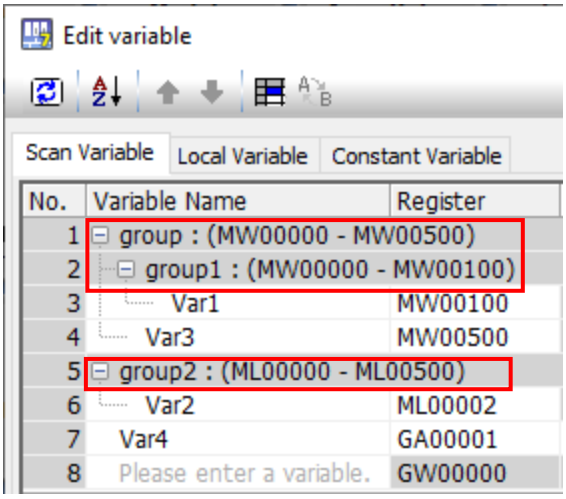
1) Program, table data, and cam tool data can now be transferred separately.

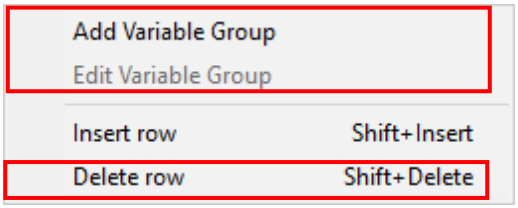
* If the 'Scan' or 'Group' in the source 'Program' does not exist in the destination, it is still necessary to transfer them together with 'Multiple Scans Settings' and other related settings.

*If you select any of 'Module configuration', 'Multiple Scans Settings', or 'Group Definition', you must transfer all programs together as before.

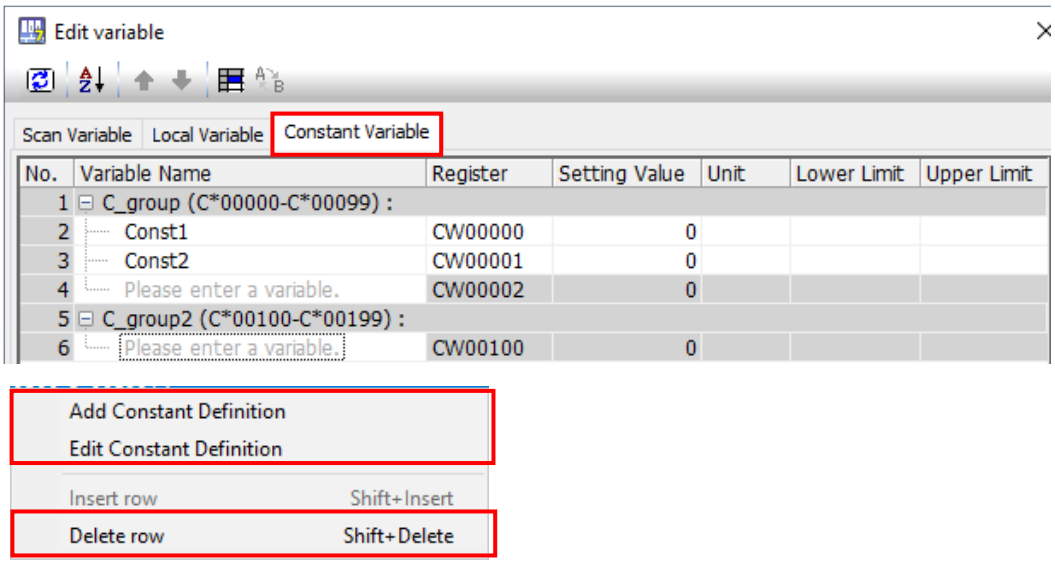
No.8 In the "Edit Variable" window, the 'Variable Group' and 'Constant Variable' functions are now supported.

1) 'Variable group' are now supported.
You can add, edit, and delete 'Variable Group' from the context menu (right-click menu).

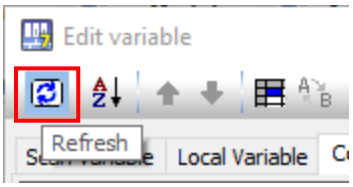




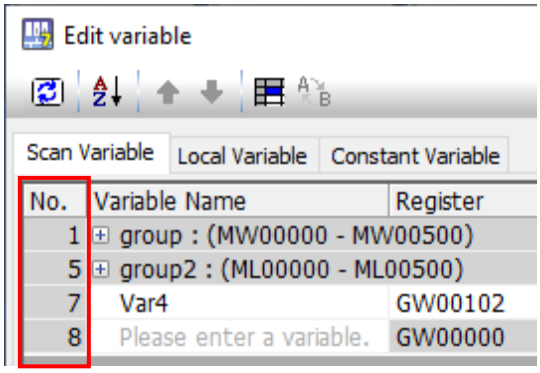
2) 'Constant variable' are now supported.
'Constant Definition' can be added, edited, and deleted from the context menu (right-click menu).



3) The "Edit Variable" window is now available as a modeless dialog.
With the "Edit Variable" window open, you can operate other functions of the MPE720.
Added a "Refresh" button to the toolbar.
If 'Variable' or 'Comment' is updated outside the "Edit Variable" window, the window will update to show the latest information.

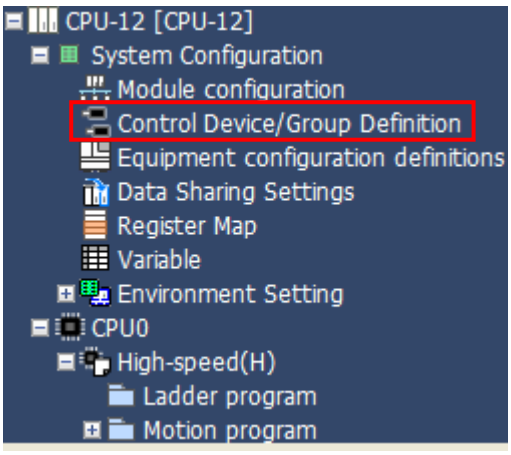


4) The "Edit Variable" window now includes a 'No.' column.



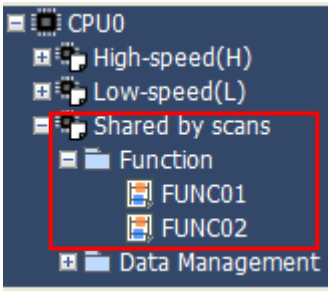
No.9 For models that support multiple scans, the display structure of the "Navigation" window and the "Program Selection Tree" has been improved.

1) 'Control Device/ Group Definition' are now displayed in the 'System Configuration'.



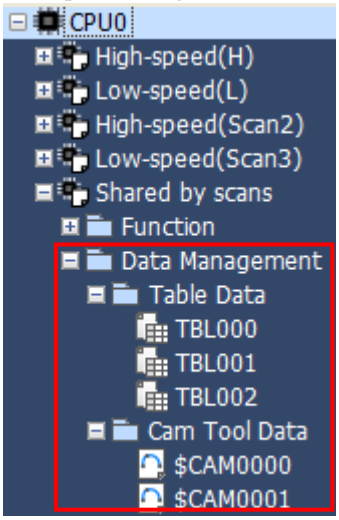
2) 'Functions' are now displayed in the scan. *1

Example: "Navigation" window

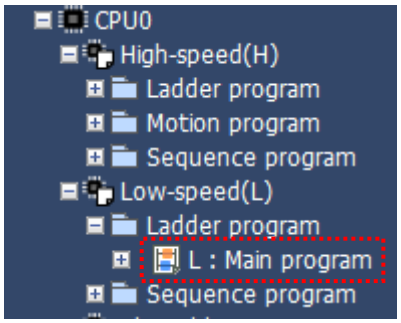


3) 'Table Data' and 'Cam Tool Data' are now displayed in 'Shared by scans'. *2

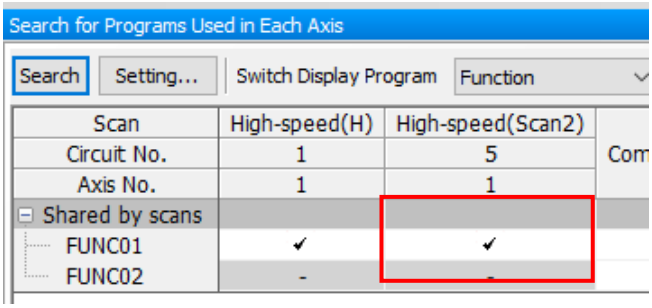
Example: "Navigation" window



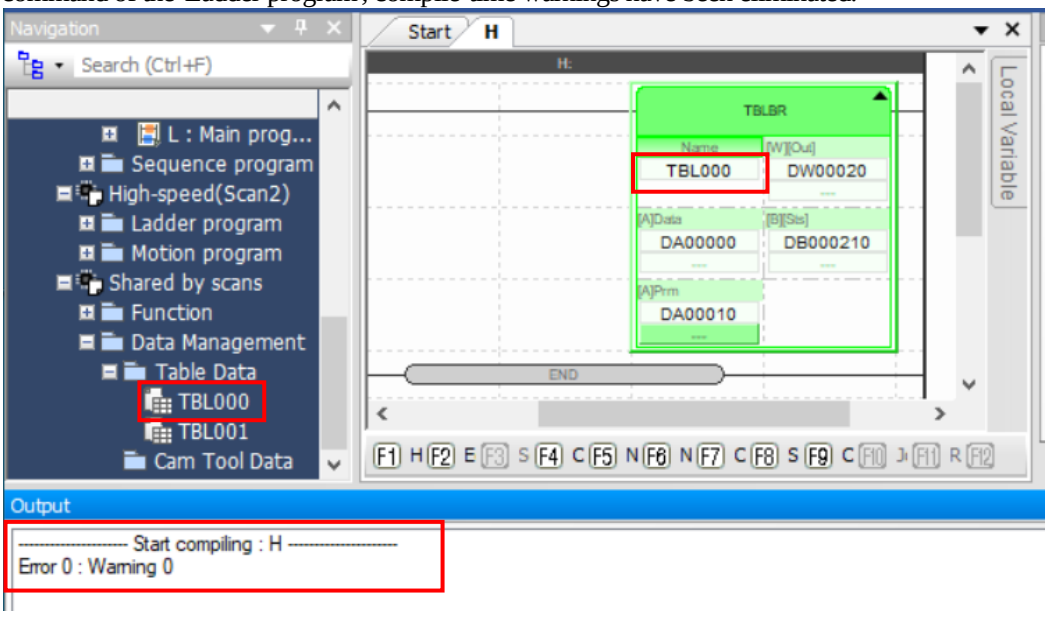
4) The drawing type tree under the 'Ladder program' has been deleted.
*3You can check the drawing type by looking at the scan type.



*1 Due to the unification of function scans, in "Search for Programs Used in Each Axis, " IO registers of different scan axes described within a function are no longer highlighted in red.

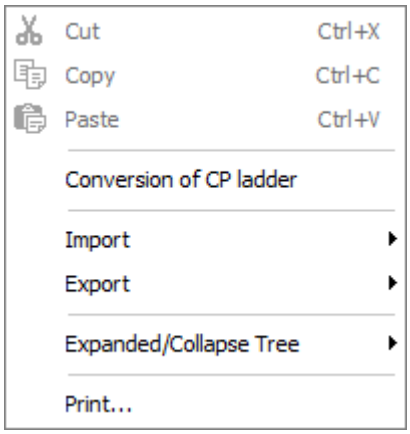


*2 With the standardization of table data scanning,When using the Shared by scans table data in the 'Table Data Manipulation' command of the 'Ladder program', compile-time warnings have been eliminated.

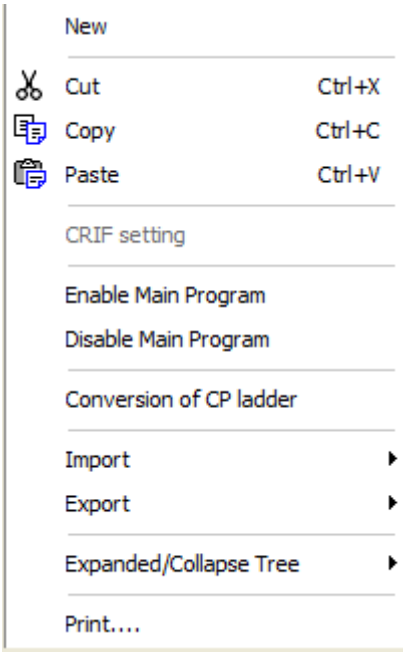


*3 Due to the deletion of the drawing type tree, the context menu(right-click menu) of the 'Ladder program' tree has been changed to the following.

[Before Change]



[After Change]



No.10 In the 'Motion Program' and 'Sequence Program', comments for 'Register', 'Variable', and 'Program' can now be added from the menu.

Comments can be added to the following subjects.

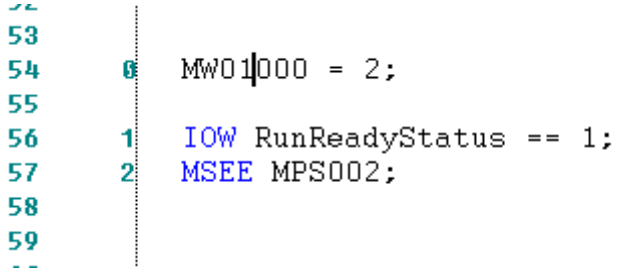
・Register comments

・Variable comments

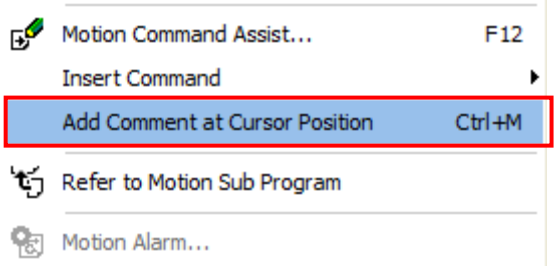
・Program Comments

1) If a register, variable, or program has an existing comment, you can add a comment by displaying the right-click menu on it and selecting the "Add Comment at Cursor Position (M) " option or pressing the keyboard shortcut (Ctrl+M).

・Before adding registers/variables/program comments



・Display the context menu (right-click menu) and select



・After adding a comment to the register

```
53
54        MW01000=2;        // Program Execution Status
55
56        IOW RunReadyStatus == 1;
57        MSEE MPS002;
58
```

The register comment is inserted at the end of the same line, and the cursor is placed at the end.

・After adding a comment for a variable in the same way

```
53
54        MW01000=2;        // Program Execution Status
55
56        IOW RunReadyStatus == 1;          // RunReadyStatus
57        MSEE MPS002;
58
```

The variable comment is inserted at the end of the same line, and the cursor is placed at the end.

・After adding comments to the program as well

```
52
53
54        MW01000 = 2;      // Program Execution Status
55
56        IOW RunReadyStatus == 1;      // RunReadyStatus
57        MSEE MPS002;      // Carriage Positioning
58
```

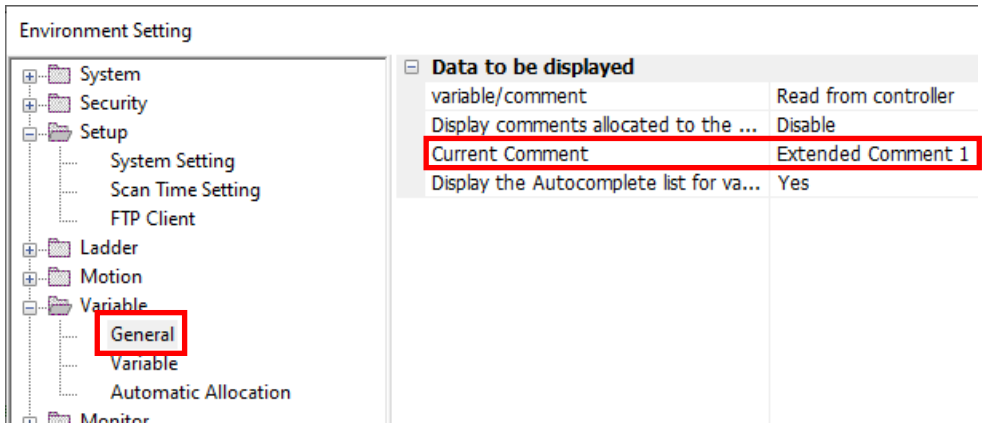
The program comment is inserted at the end of the same line, and the cursor is placed at the end.

【Supplement】

When adding comments to registers and variables, the comment set in "Current Comment" on the "Environment Setting" screen will be added.

An example of setting " Extended Comment 1" for a current comment.

・"Current Comment" on the "Environment Setting" screen



No.11 Several bugs have been fixed.

The following bugs have been fixed.

1) Fixed a bug where "Error code: 0xA0A058EC Failed to compile for user structure." was displayed when any of the following conditions were met.
   - In Ver.7.A3, "Compile All Programs" or any motion program on the MP2000 series.
   - In a structure definition with a nested structure, open or compile a project with a total number of member variables exceeding 500.
2) After Ver.7.A2, if you delete an IO Variable, the MPE720 may be forcibly terminated.
3) In the Sigma-7C, when the Motion Register is operated from the rudder program on an axis that exceeds the number of axes controlled by the motion function module, the MPE720 may be forced to terminate when you read the parameter from the SERVOPACK.
4) In the following cases, the progress status was not clear on a model that supports multiple scans, making the MPE720 appear to freeze.
   - When a large number of motion programs are written to a controller that has already been written to a large number of motion programs by individual transfer.
   - When deleting scans that have created a large number of programs, or deleting programs of the motion program Main (Sub)/sequence program Main (Sub) at once.
5) On models that do not support multiple scans, Functions are not displayed on the screen for transferring programs individually or Search in Project.
6) After Ver.7.A2, you can't select multiple rows on Watch window .
7) When the Watch has a maximum of 200 variables registered and selects "Insert" in the context menu (right-click menu), a blank line shouldn't be able to insert, but it was temporarily inserted.
8) If you press the left arrow key when the active cell is on the far left after the column is swapped on the Watch/AutoWatch, or the right arrow key if it is on the far right, "Error code: 0x800A017D" may be displayed.
9) The following bugs have been fixed in the Motion Recorder settings window.
   - Characters other than numbers shouldn't be able to enter at the Collection Time After Save File Trigger but it can.
   - When you try to edit the "First Address" or "size(WORD)" of a program with registers set outside the range in the Register Range Setting, the input process does not complete.
   - If the System Variable and Axis Variable tree items are changed from checked to unchecked, the checkbox will be displayed with "■" for a moment, and then it will be unchecked, and it will take some time for the display to complete.
   - In the "Recording Target Settings" tab and the "Sampling and trigger " tab, the focus does not shift to some controls even if you use the Tab key to transition controls.
   - The maximum number of registers that can be recorded and the maximum recording time in the recording settings of Motion Recorders other than MPX1012J-20 are less than at the time of Ver.7.A2.
10) On a model that supports multiple scans, when the Table Data hierarchy is selected in the [Navigation] window and the table data is updated to the latest information, the table data that does not exist is displayed.
11) On a model that supports multiple scans, even though the Functions are aggregated under High-speed (H) in Ver.7.A3 so that they can be handled in common to all scans, warnings are displayed when the user function is called from the motion/sequence program with [Support Access Control between Scans] enabled.
12) On a model that supports multiple scans, when multiple wildcards of the P drawing are used in the [Search in project] or [Replace in project], such as [P2*, P3*], the search and replace is performed only for the wildcard of the P drawing described at the end.
13) In the offline MPX1012J-20 Module Configuration, the M-4 Inverter is not displayed on the slave device selection window of the M-4 protocol.
14) In the combo box that selects the target program, such as a Cross Reference, some of the motion programs and functions that are displayed as candidates are not lined up in ascending order.

15) Registers other than C registers shouldn't be able to be registered as Constant Variables, but they were able to be registered.
16) Importing the Tuning Panel takes a long time.
17) The version of "Ladder compiler" and "Motion compiler" displayed in the Help About is incorrect.

Appendix A: Compilation of Parallel Circuits

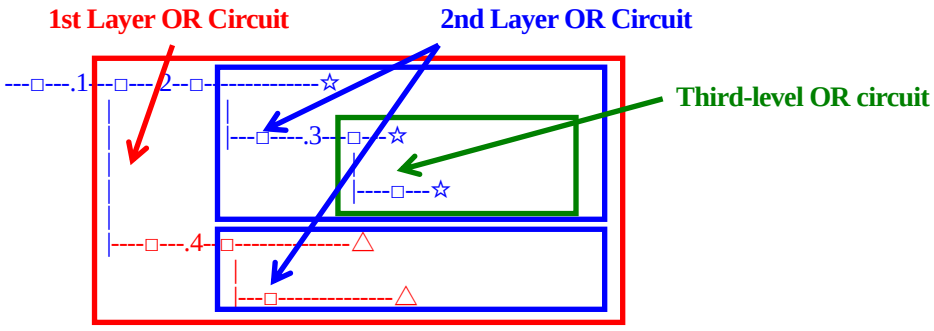
In the ladder program of MPE720 Ver.7.23 or earlier, the following symptoms may occur when using parallel circuits.

< phenomenon>

When a circuit containing the following pattern was created, there was a phenomenon that the circuit on the lower side of the first-layer OR circuit originally received a conditional instruction in front of the first-level OR circuit and operated without being subjected to the condition.

< measures>

If this phenomenon occurs, recompile the corresponding ladder program with MPE720 Ver.7.24 or later MPE720 Ver.7. Alternatively, select "Compile All Program" from the "Compile" menu again.



1st level OR circuit: OR circuit branched from Lang's busbar
2nd layer OR circuit: OR circuit branched from within the 1st level OR circuit
3rd level OR circuit: OR circuit branched from within the 2nd level OR circuit

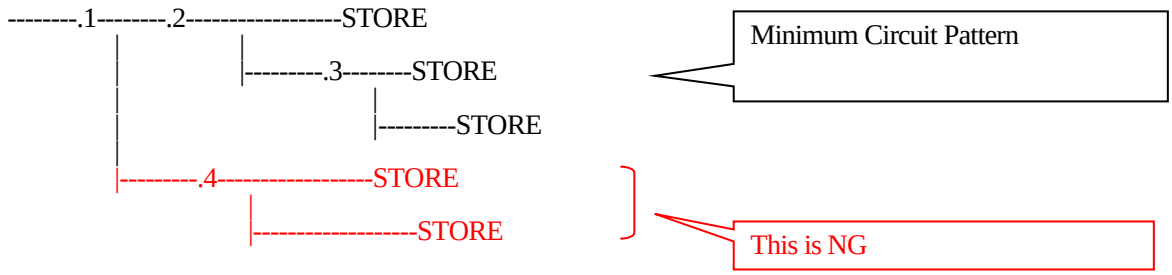
☐ (Conditional Instructions): A contact, B contact, comparison (==, !=, >, <) instructions, etc.
* ☐ (conditional instructions) includes power wires (————)
☆ (Output instructions): coils, block instructions (Expression, STORE, COPYW) instructions, etc.
* However, if all ☆ are coil instructions, this phenomenon will not occur.
△ (Output instructions): Coils, block instructions (Expression, STORE, COPYW) instructions, etc.

[Phenomenon occurrence pattern]

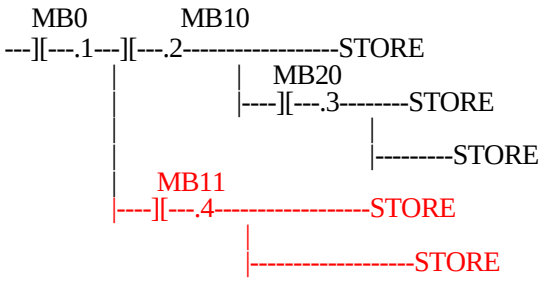
symbol	order
][	A contact
STORE	STORE command
( )	coil

[NG pattern]

①



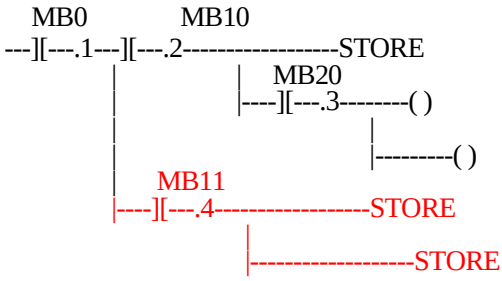
②



Even if there is a conditional instruction (A contact, etc.) in the minimum circuit pattern, it is NG

This is NG

③

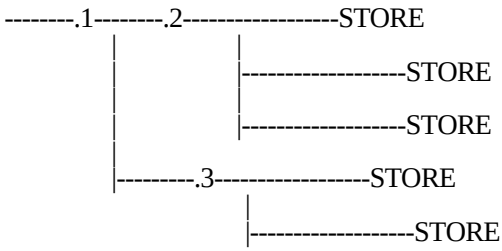


If there is even one block instruction (STORE instruction, etc.) here, it is NG

This is NG

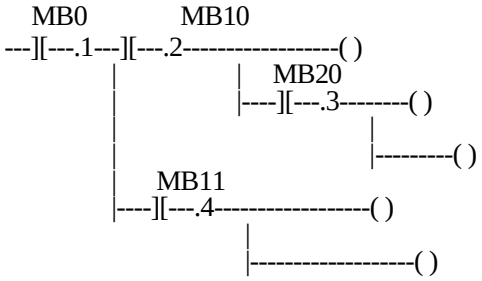
[OK pattern]

①



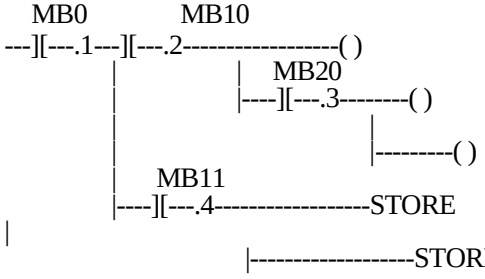
It's OK because it's a two-layer OR circuit

②



It's OK because it's all coils

③



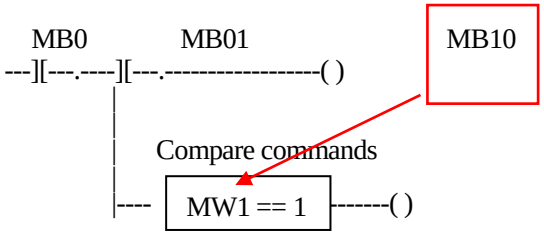
It's OK because it's all coils

Appendix B: Compilation when there are comparison instructions in a parallel circuit

MPE720 Ver.7.In the ladder program of the MPE720 Ver.7 before 63, the following symptoms may occur when using parallel circuits.

< phenomenon >

When a circuit containing the following pattern was created, the value of the register set in the upper circuit of the OR circuit was reflected in the next scan when it should have been reflected in the comparison instruction in the subsequent OR circuit in the same scan.



A pattern in which a register set in the circuit above the parallel circuit is referenced in subsequent comparison instructions in the parallel circuit.

< measures>

If this phenomenon occurs, recompile the corresponding ladder program with MPE720 Ver.7.64 or later MPE720 Ver.7. In addition, the number of internal steps changes in programs that include circuits with this pattern in Ver. 7.64 or later, so there is a possibility that you may jump to an unintended place when cross-referencing is performed in a project created in the previous version. In that case, please recompile the program. Alternatively, select "Compile All Program" from the "Compile" menu again.

Appendix C: High DPI

When the MPE720 Ver.7 was started on a computer that supports high DPI, such as a 4K display, part of the screen could not be displayed depending on the resolution and scale settings. Therefore, from MPE720 Ver.7.67, the high DPI setting of the MPE720 properties has been disabled. This avoids phenomena such as screen cutouts. If you need to use it at a high DPI setting due to circumstances, please change the high DPI setting from the properties screen of MPE720 Ver.7.