

Upgrade Information of MPE720 Version 7.81

1. Added and Improved Functions

1.1 Version 7.81 Upgrade Information

Items added and features improved from MPE720 version 7.70 to version 7.81 are as follows.

No.	Feature	Classification
1	Enhanced security of MPE720 Ver.7.	New function
2	Added support for MECHATRLINK-4 communication of YRC1000.	New function
3	Added support for extension setting of MECHATROLINK-4 communication.	New function
4	Added support for Sigma-X FT56.	New function
5	Added new instruction of ladder program.	New function
6	Improved motion program compiler about operation in register array.	Improving
7	Improved to set maximum axis number in YRM-X's group definition.	Improving
8	Improved displaying expression when scrolling ladder editor.	Improving

2. Description

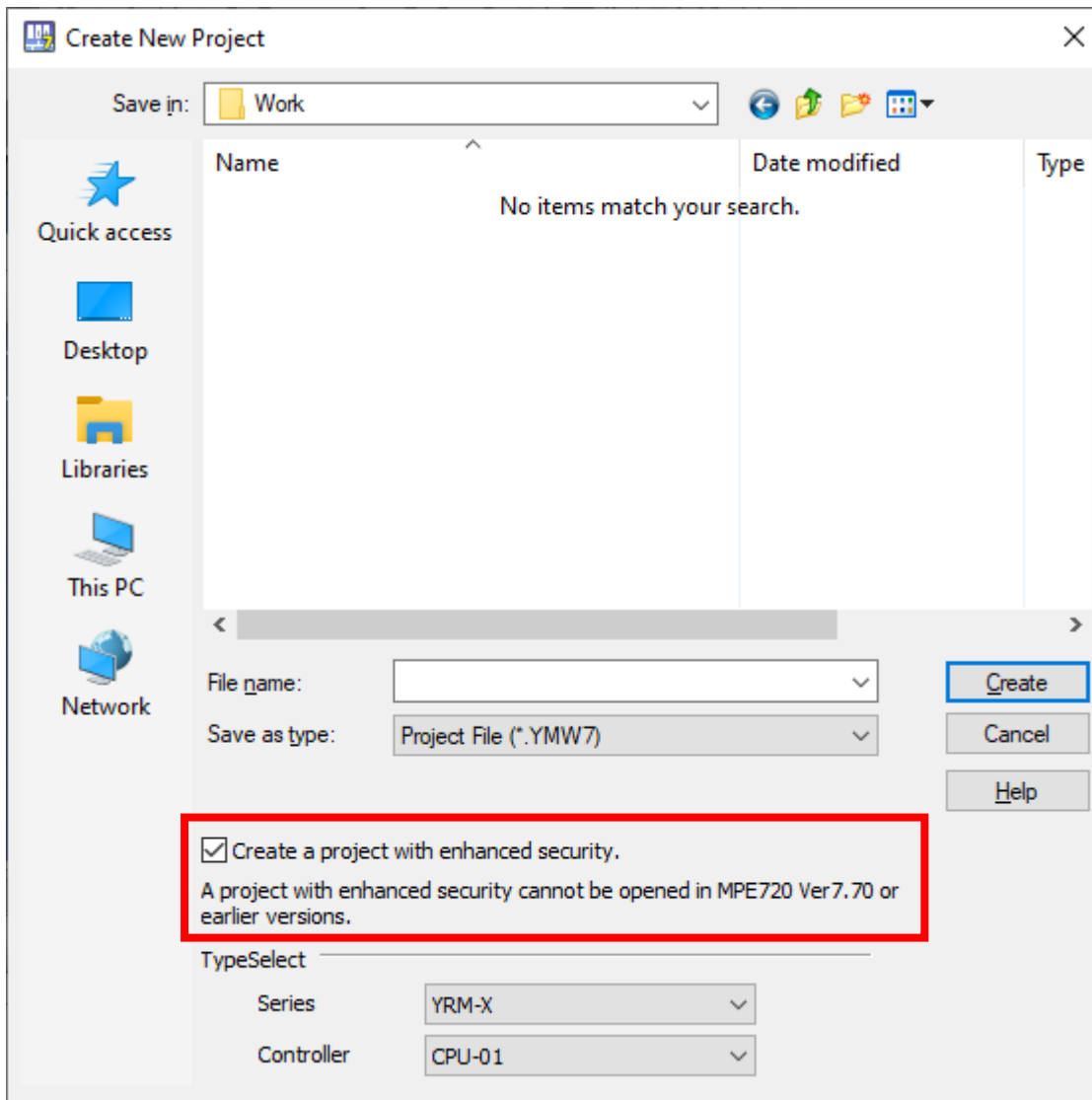
No. 1 Enhanced security of MPE720 Ver.7.

1) Enhanced security of MPE720 Ver.7.

In order to enhanced security of MPE720 Ver.7, the program password management has been changed in Ver.7.81 or later. By updating to MPE720 Ver.7.81, you can manage your programs more securely.

[Caution]

Projects created and saved in enhanced security format cannot be opened with MPE720 Ver.7 of Ver.7.70 or earlier. To using the project with unsupported security version of MP tool (MPE720 Ver.7, MPLoader, MPLoadMaker), uncheck the following check box in the file selection dialog for creating and saving the project file.



MPLoader and MPLoadMaker will be upgrade with next version.

2) The lower limit of the password length is set to 5 characters.

About the password length of MPE720 Ver.7, The upper limit exists for each password, but there was no lower limit about password length. In order to increase the password strength, the engineering tool will force you to set it with 5 characters or more from Ver.7.81. This allows you to manage your project files more securely.

You can use the conventional password that is set to 4 characters or less. But if you set a new password or change the conventional password in Ver.7.81 or later, a password of 4 characters or less is not accepted.

The target passwords are as follows.

- User password
- Project password
- Program password (ladder/motion)
- Security password of controller
- Online security password

[Supported Versions]

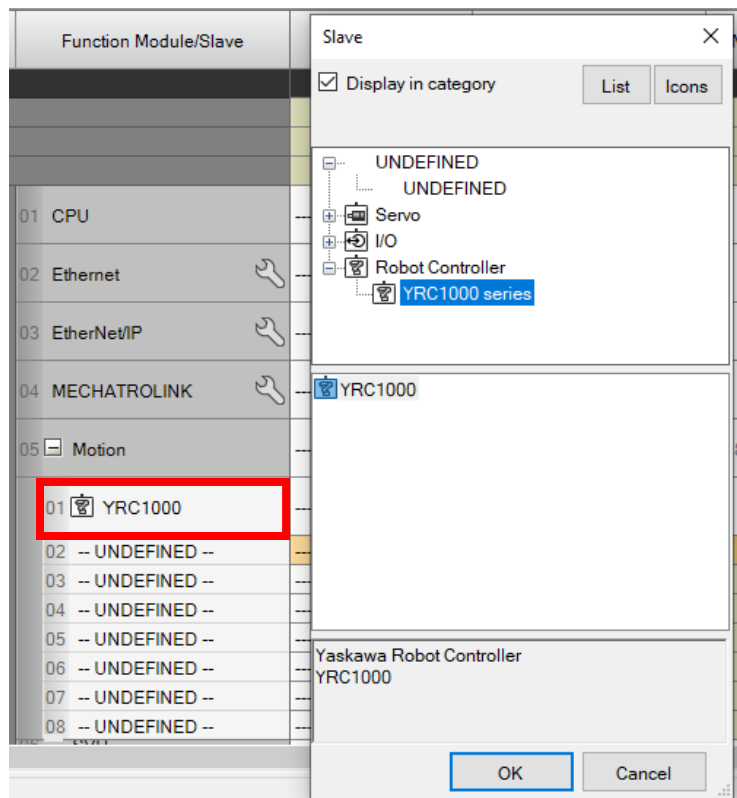
○Controller

Controller	Supported Firmware Version
YRM-X	Not dependent on the controller version.
YRM-7	Not dependent on the controller version.
MP3000 Series	Not dependent on the controller version.
Σ-7 Series	Not dependent on the controller version.
MP2000 Series	Not dependent on the controller version.
Σ-FT Series	Not dependent on the controller version.

No.2 Added support for MECHATROLINK-4 communication of YRC1000.

Robot controller YRC1000 can be selected as MECHATROLINK-4 slave of YRM-X. By setting communication in RC-CONNECT, YRC1000 can command, monitor, and collect data from YRM-X controller. High-speed communication of MECHATROLINK-4 makes YRM-X's command data faster. This allows robot's current position, I / O, and status to be updated at faster cycle than Ethernet communication.

Slave select screen:



RC-CONNECT screen:

Detailed definition – [RC-CONNECT]

File				
Settings / Status				
No.	System Configuration	Transmission Type	Start Register No.	End Register No.
1	YERCPProfile Connection 1	Built-in MECHATROLINK-4	GW00000	GW04691

Circuit No (CIR#)	Station No (ST#)
1	1

[Supported Versions]

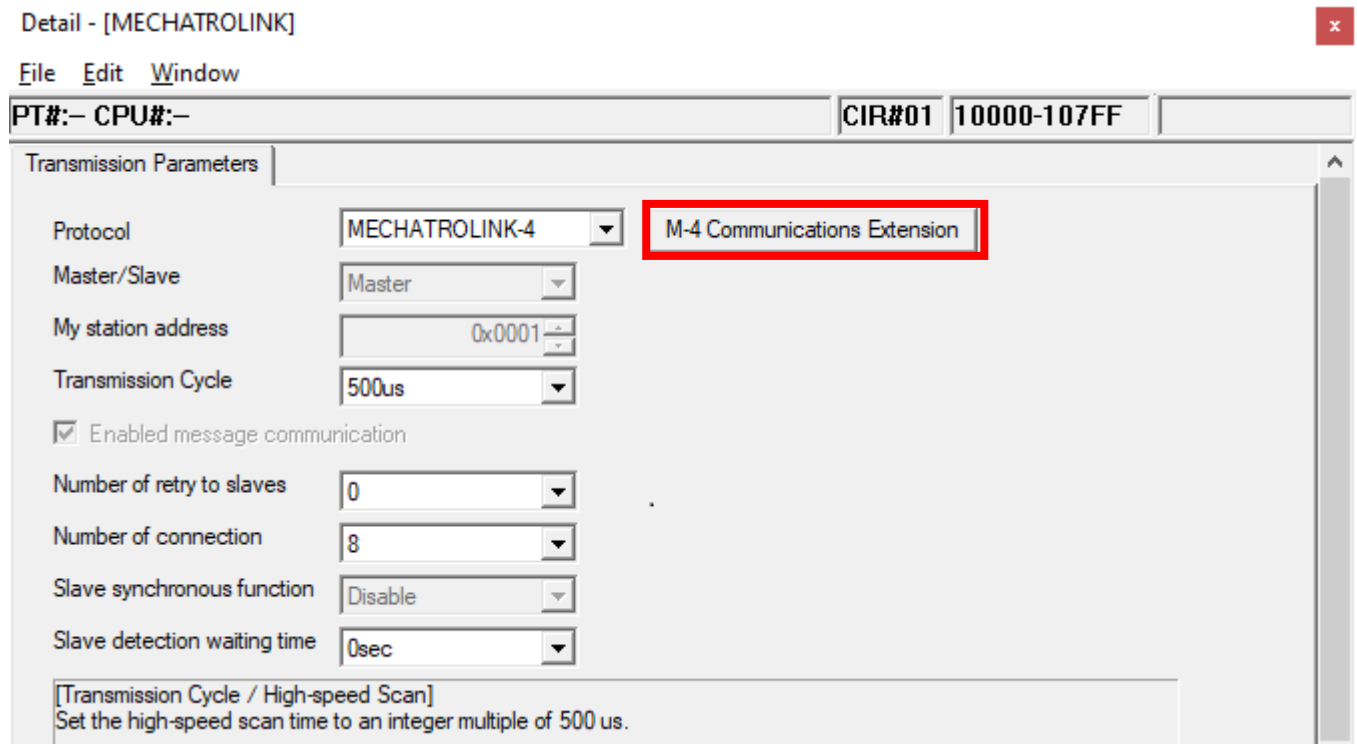
○Controller

Controller	Supported Firmware Version
YRM-X	1.06 (2022/8 Release)
YRC1000	YAS4.51.00(*)-00

No.3 Added support for extension setting of MECHATROLINK-4 communication.

MECHATROLINK-4 communication setting file (MNI file) created with M-4 Configuration Tool can be imported from parameter setting screen of MPE720 Ver.7 to support extension setting of MECHATROLINK-4 communication. As a result, the following functions are available.

- One-to-many M-4 slave CPU synchronization using M-4 HUB
- Extended the size of I/O register from 32 bytes to 1492 bytes



[Supported Versions]

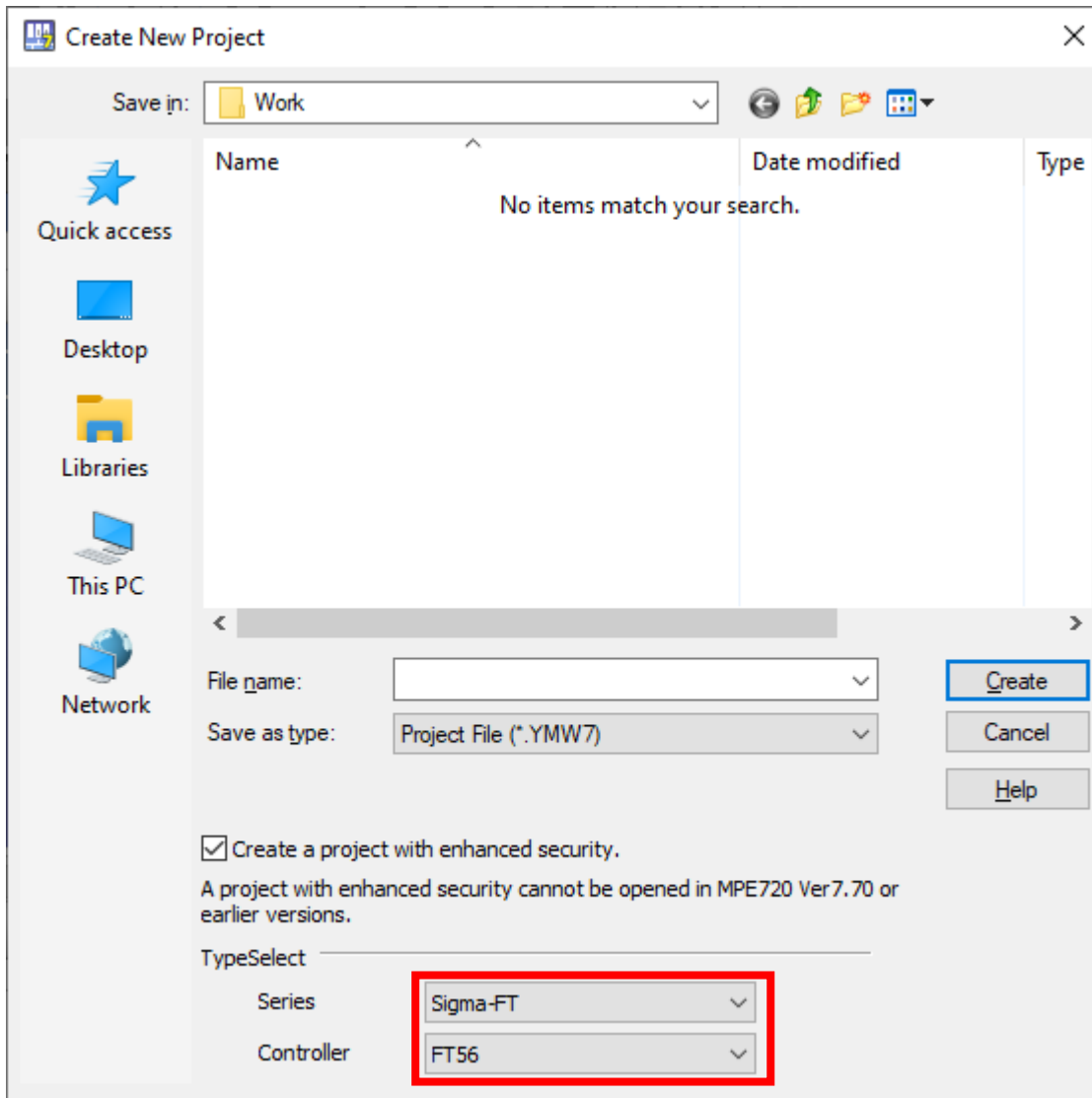
○Controller

Controller	Supported Firmware Version
YRM-X	1.06 (2022/8 Release)
MP3000	1.64 (Release after 2022/9)

No.4 Added support for Sigma-X FT56.

Support Sigma-X FT56 servo.

1) A project file can be created by specifying the series name "Sigma-FT" and model "FT56".



2) It can be connected to the Sigma-X FT56 and engineer the controller function.

[Supported Versions]

○Servo

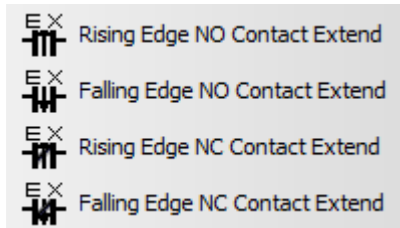
Servo	Supported Firmware Version
Sigma-X FT56	Not dependent on the controller version.

No.5 Added new instruction of ladder program.

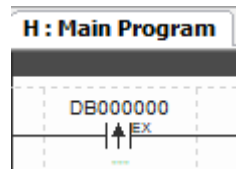
Added extended rising and falling edge contact instructions of ladder program. These instructions can be used in combination with existing instructions.

- Rising Edge NO Contact (Extend)
- Falling Edge NO Contact (Extend)
- Rising Edge NC Contact (Extend)
- Falling Edge NC Contact (Extend)

Icon in ladder sub window:



Ladder editor:



The difference in behavior between the conventional instruction and the extend instruction is explained using rising edge NO contact as example.

1) When there is no other instruction before (on the left) the instruction.

There is no difference in behavior. In both cases, only one scan with a changed input is turned on.

Ladder Program	Timing Chart
<p>Conventional</p> <p>MB0 MB1 MB10</p> <p>---] ↑ [-----] [-----○-----</p>	
<p>Extend</p> <p>MB0 MB1 MB10</p> <p>---] ↑^{EX} [-----] [-----○-----</p>	

2) When there is another instruction before (on the left) the instruction.

Conventional instruction:

Turns ON for one scan in which AND of the previous instruction's value and the own instruction's value changes. In the figure below, MB11 turns ON the moment both MB0 and MB1 turn ON.

Extend instruction:

Regardless of the previous instruction, it will be turned on only at the moment when the own instruction's value changes.

In the figure below, MB0 is ON at the moment MB1 is first turned ON, so MB11 is ON. The next time MB1 is turned ON, MB0 is OFF, so MB11 remains OFF.

Ladder Program	Timing Chart
<p>Conventional</p>	
<p>Extend</p>	

Please refer to ladder program manual for detailed behavior of each instruction.

* The Extend instruction can only be used with MP ladder. It cannot be used with CP ladder.

[Supported Versions]

○Controller

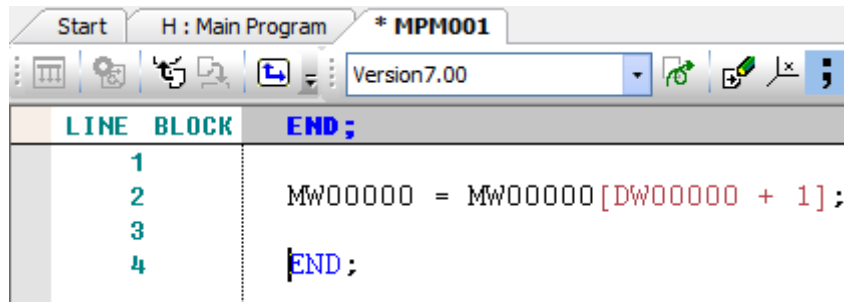
Controller	Supported Firmware Version
YRM-X	Not dependent on the controller version.
YRM-7	Not dependent on the controller version.
MP3000 Series	Not dependent on the controller version.
Σ-7 Series	Not dependent on the controller version.
MP2000 Series	Not supported
Σ-FT Series	Not dependent on the controller version.

No.6 Improved motion program compiler about operation in register array.

It is specification that mathematic operation cannot be used in index of register array of the motion program. But error did not occur in specific operation, so it was improved so that it would cause compile error.

Before improvement:

Compiling was successful when there was a "register + number" or "register-number" operation in array index as shown below. (The operation is ignored in the actual behavior)



The screenshot shows a software interface for editing a motion program. The title bar indicates the file is named '* MPM001' and the version is 'Version7.00'. The main editing area contains the following code:

```
LINE BLOCK END;  
1  
2 MW00000 = MW00000 [DW00000 + 1];  
3  
4 END;
```

After improvement:

If there is operation in array index, compile error will occur.

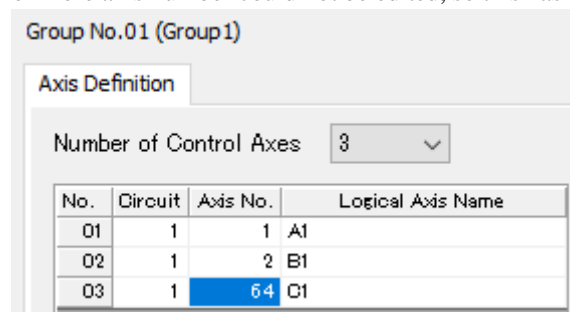
[Supported Versions]

○Controller

Controller	Supported Firmware Version
YRM-X	Not dependent on the controller version.
YRM-7	Not dependent on the controller version.
MP3000 Series	Not dependent on the controller version.
Σ-7 Series	Not dependent on the controller version.
MP2000 Series	Not dependent on the controller version.
Σ-FT Series	Not dependent on the controller version.

No.7 Improved to set maximum axis number in YRM-X's group definition.

In Motion module of YRM-X, number of axes can be set up to 64, but when editing axis number in group definition screen, 33 or more axis number could not be edited, so this has been improved.



[Caution]

In MPE720 Ver.7.67, maximum axis number of YRM-X could be set up to 64 in new project, but the number of control axes can also be set up to 64. Since control axes of any MP controller is limited up to 32, do not set the number of control axes to 33 or more when using Ver.7.67.

[Supported Versions]

○Controller

Controller	Supported Firmware Version
YRM-X	Not dependent on the controller version.

No.8 Improved displaying expression when scrolling ladder editor.

When scrolling ladder editor online, there was a phenomenon that characters in Expression were displayed overlapping, so it has been improved.

[Supported Versions]

○Controller

Controller	Supported Firmware Version
YRM-X	Not dependent on the controller version.
YRM-7	Not dependent on the controller version.
MP3000 Series	Not dependent on the controller version.
Σ-7 Series	Not dependent on the controller version.
MP2000 Series	Not dependent on the controller version.
Σ-FT Series	Not dependent on the controller version.

Appendix A:

【About compile of the parallel circuit】

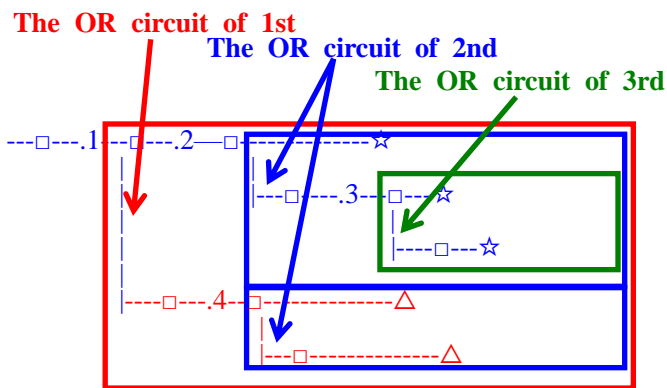
In the Ladder program of MPE720 Ver7 before MPE720 Ver7.23, when the parallel circuit is used, the following phenomena may occur.

<Phenomena>

When the circuit containing the following pattern was created, there was a phenomenon of operating without receiving the condition that the circuit below the OR circuit of 1st class must operate essentially in response to the conditional instruction before the OR circuit of 1st class.

<Measures>

When a phenomenon occurs, please carry out re-compile about the Ladder program in MPE720 Ver7 after MPE720 Ver7.24. Or please carry out again “Compile All Programs” of “Compile” menu.



The OR circuit of 1st class: The OR circuit branched from the bus-bar of language.

The OR circuit of 2nd class: The OR circuit branched out of the OR circuit of 1st class.

The OR circuit of 3rd class: The OR circuit branched out of the OR circuit of 2nd class.

□(Conditional instruction): NO Contact, NC Contact, Coil, instruction(==, !=, >, <), power line (-----) etc.

☆(Output instruction): Coil, Block instruction(Expression, STORE, COPYW) etc

※However, when all ☆ is coil commands, a phenomenon does not occur.

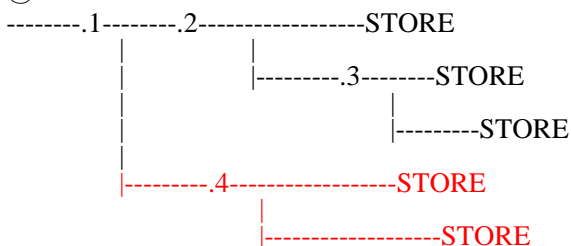
△(Output instruction): Coil, Block instruction(Expression, STORE, COPYW)etc

<Pattern>

Symbol	Instruction
	NO Contact
STORE	STORE instruction
()	Coil

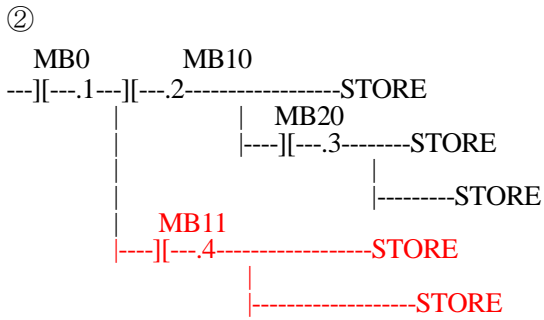
<NG Pattern>

①



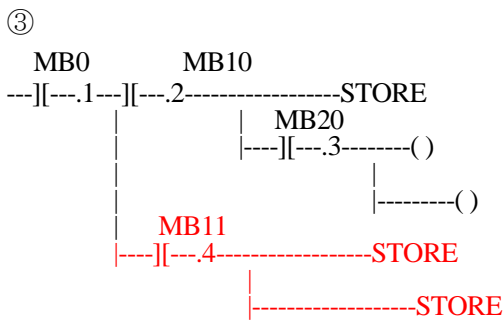
This pattern is minimum circuit pattern.

This is NG.



It is NG even if the minimum circuit pattern has conditional instructions (NO Contact etc.).

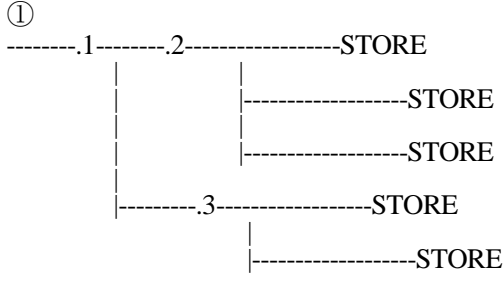
This is NG



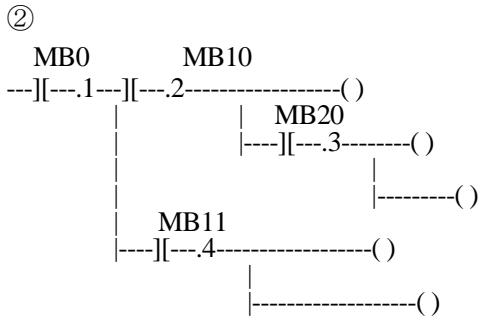
It is NG when there are at least one block commands (STORE command etc.) here.

This is NG

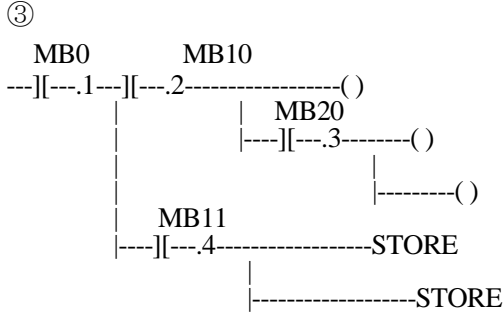
<OK Pattern>



Since it is the OR circuit of 2nd, it is OK.



Since it is the coil altogether, it is OK.



Since it is the coil altogether, it is OK.

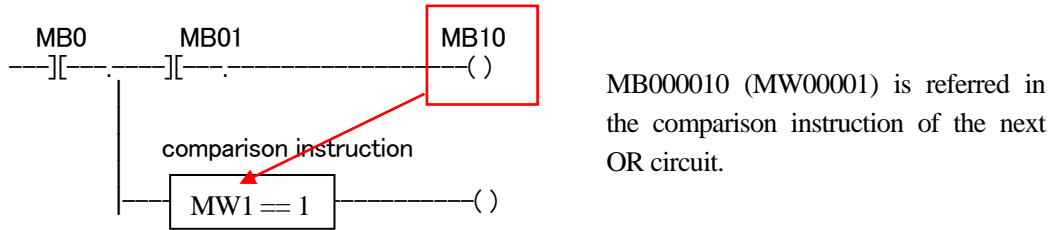
Appendix B:

【About compile with a comparison instruction in branch】

In the Ladder program of MPE720 Ver7 before MPE720 Ver7.63, when a comparison instruction is used in branch, the following phenomena may occur.

<Phenomena>

When the circuit containing the following pattern was created, the value of the register set in the upper OR circuit must be reflected to the comparison instructions in the lower OR circuit in the same scan. However, there was a phenomenon that it was reflected in the next scan.



<Measures>

When a phenomenon occurs, please carry out re-compile about the Ladder program in MPE720 Ver7 after MPE720 Ver7.64. Or please carry out again “Compile All Programs” of “Compile” menu. Also, about these programs that include circuits with this pattern, the number of internal steps will change in Ver7.64 or later, so when cross-reference is performed in a project created in an earlier version, there is a possibility of jumping to an unintended location. In this case, please recompile too.

Appendix C:

【About high DPI setting】

When MPE720 Ver.7 is started on a computer that supports high DPI such as a 4K display, part of MPE720 screen may not be displayed depending on the resolution and scale settings. From MPE720 Ver.7.67, the high DPI setting of MPE720's property is set to disable. This avoids phenomena such as the screen being cut off. If you want to use the high DPI setting, please change the MPE720 Ver.7's property setting.

Appendix D:
Past Upgrade Information

No.	Upgrade Information	Remarks
1	MPE720 version 7.11 upgrade information	version 7.10→version 7.11
2	MPE720 version 7.13 upgrade information	version 7.11→version 7.13
3	MPE720 version 7.14 upgrade information	version 7.13→version 7.14
4	MPE720 version 7.20 upgrade information	version 7.14→version 7.20
5	MPE720 version 7.21 upgrade information	version 7.20→version 7.21
6	MPE720 version 7.23 upgrade information	version 7.21→version 7.23
7	MPE720 version 7.24 upgrade information	version 7.23→version 7.24
8	MPE720 version 7.26 upgrade information	version 7.24→version 7.26
9	MPE720 version 7.27 upgrade information	version 7.26→version 7.27
10	MPE720 version 7.28 upgrade information	version 7.27→version 7.28
11	MPE720 version 7.29 upgrade information	version 7.28→version 7.29
12	MPE720 version 7.30 upgrade information	version 7.29→version 7.30
13	MPE720 version 7.31 upgrade information	version 7.30→version 7.31
14	MPE720 version 7.33 upgrade information	version 7.31→version 7.33
15	MPE720 version 7.34 upgrade information	version 7.33→version 7.34
16	MPE720 version 7.35 upgrade information	version 7.34→version 7.35
17	MPE720 version 7.36 upgrade information	version 7.35→version 7.36
18	MPE720 version 7.37 upgrade information	version 7.36→version 7.37
19	MPE720 version 7.38 upgrade information	version 7.37→version 7.38
20	MPE720 version 7.39 upgrade information	version 7.38→version 7.39
21	MPE720 version 7.40 upgrade information	version 7.39→version 7.40
22	MPE720 version 7.41 upgrade information	version 7.40→version 7.41
23	MPE720 version 7.42 upgrade information	version 7.41→version 7.42
24	MPE720 version 7.43 upgrade information	version 7.42→version 7.43
25	MPE720 version 7.44 upgrade information	version 7.43→version 7.44
26	MPE720 version 7.45 upgrade information	version 7.44→version 7.45
27	MPE720 version 7.46 upgrade information	version 7.45→version 7.46
28	MPE720 version 7.47 upgrade information	version 7.46→version 7.47
29	MPE720 version 7.50 upgrade information	version 7.47→version 7.50
30	MPE720 version 7.51 upgrade information	version 7.50→version 7.51
31	MPE720 version 7.52 upgrade information	version 7.51→version 7.52
32	MPE720 version 7.60 upgrade information	version 7.52→version 7.60
33	MPE720 version 7.62 upgrade information	version 7.60→version 7.62
34	MPE720 version 7.63 upgrade information	version 7.62→version 7.63
35	MPE720 version 7.64 upgrade information	version 7.63→version 7.64
36	MPE720 version 7.65 upgrade information	version 7.64→version 7.65
37	MPE720 version 7.66 upgrade information	version 7.65→version 7.66
38	MPE720 version 7.67 upgrade information	version 7.66→version 7.67
39	MPE720 version 7.70 upgrade information	version 7.67→version 7.70