

MPE720 Ver.7.A7 Version Update Information

1. Feature Additions and Improvements

1.1 Ver.7.A7 Update Information

The following features are the additions and improvements from MPE720 Ver7.A6 to Ver7.A7.

No.	Functional Items	Categories
1.	A warning message has been added for the use of prohibited instructions in user functions.	Improvement
2.	The expired certificate message for engineering communication encryption has been improved.	Improvement
3.	A bug has been fixed.	Improvement

2. Details of the Amendments

No.1 A warning message has been added for the use of prohibited instructions in user functions.

When a prohibited instruction is used within a user function, the compiler has been modified to output a warning during compilation. The conditions under which the warning is issued are as follows.

Please note that this change only affects the display of warnings and does not alter the existing behavior.

<Supported models>

YRM1000 series
CPU-01
CPU-12
MPX1000 series
CPU-12M(16)
CPU-12M(128)
MPX1012J-10
MPX1012J-20
CPU-12U
CPU-14U
Σ-X FT series
FT-55
FT-56

<Supported instructions>

Relay instructions
Rising-Edge NO Contact
Falling-Edge NO Contact
Extended Rising-Edge NO Contact
Extended Falling-Edge NO Contact
Rising-Edge NC Contact
Falling-Edge NC Contact
Extended Rising-Edge NC Contact
Extended Falling-Edge NC Contact
Coil instructions
Rising-Edge Detection Coil
Falling-Edge Detection Coil

<Drawing type>

User Function

An example of the target program and the corresponding output message are shown below.

The screenshot displays a ladder logic program for a user function named 'FUNC01'. The program consists of 11 steps, each containing a DB000000 instruction with a specific pulse instruction (e.g., P, N, R, F, etc.). The output window shows a series of warning messages (C5022) for each step, indicating that the instruction cannot be used inside a user function and suggesting a replacement circuit.

Output:

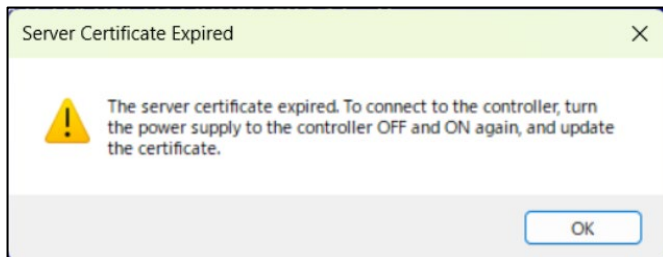
```

Start compiling : FUNC01
warning C5022: (Run: 0001, Step: 00001) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines raising-edge/falling-edge pulses and coils.
warning C5022: (Run: 0002, Step: 00002) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0003, Step: 00003) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0004, Step: 00004) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0005, Step: 00005) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0006, Step: 00006) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0007, Step: 00007) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0008, Step: 00008) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
warning C5021: (Run: 0009, Step: 00009) This instruction cannot be used inside a user function. Replace this instruction with a circuit that combines NO/NC contacts and pulse instructions.
Error 0 : Warning 10
  
```

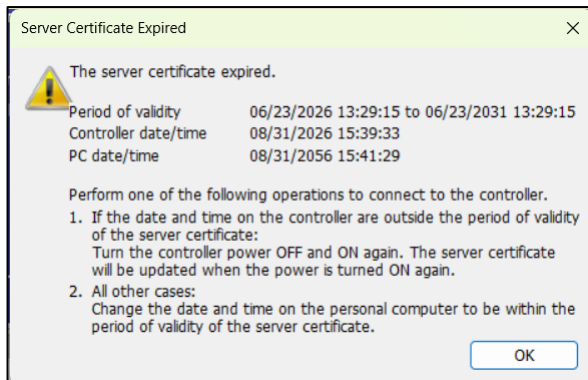
No.2 The expired certificate message for engineering communication encryption has been improved.

The message displayed for an expired certificate used in engineering communication encryption has been improved.

<Before Improvement>



<After Improvement>



<Additional Information>

The expiration check of the server certificate is performed by comparing the certificate's validity period with the date and time of the PC. Therefore, even if the procedure described in the message (<Before Improvement>) is carried out, the issue cannot be resolved when all of the following conditions are met:

- The date/time of the controller and the PC are not synchronized.
- The controller's date/time is within the validity period of the server certificate.
- The PC's date/time is outside the validity period of the server certificate.

No.3 A bug has been fixed.

- 1) When using a PC with an MP3100 installed as the server PC, connection to the MP3100 from a client PC via MPE720 Remote Connection fails.

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.

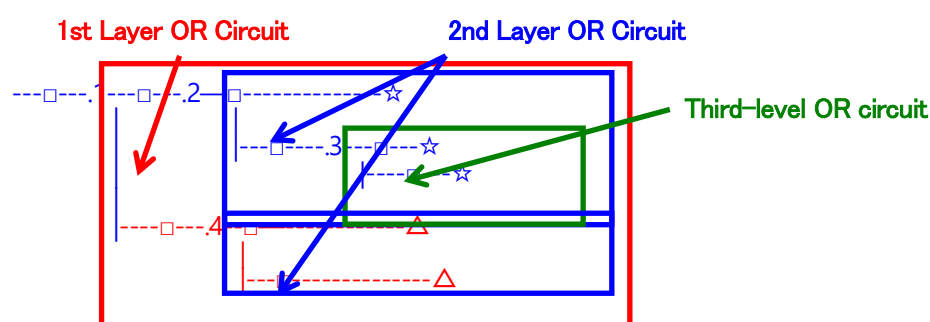
< phenomenon >

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 ($=$, $\neq$, $>$, $<$) 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.

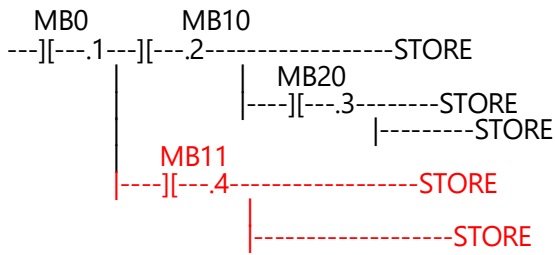
[Phenomenon occurrence pattern]

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

[NG pattern]



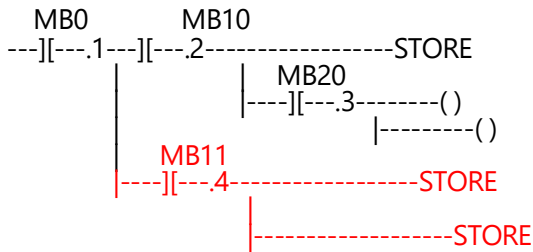
②



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

This is NG

③

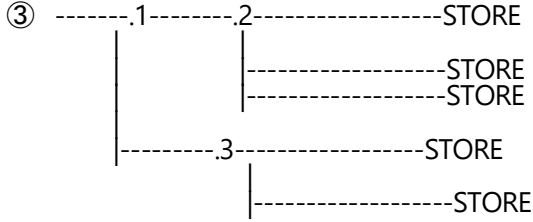


If there is even one block instruction (STORE instruction, etc.) here, it is NG

This is NG

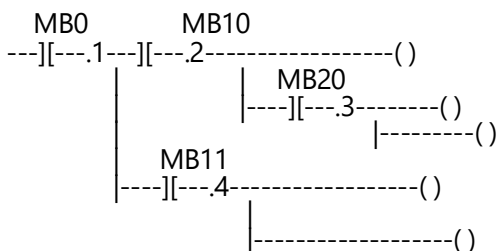
[OK pattern]

①



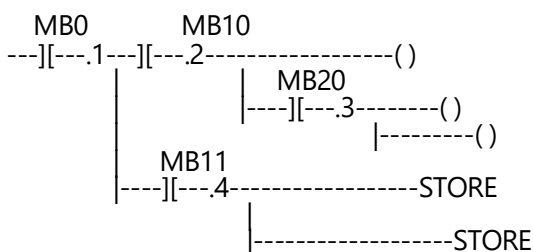
It's OK because it's a two-layer OR circuit

②



It's OK because it's all coils

③



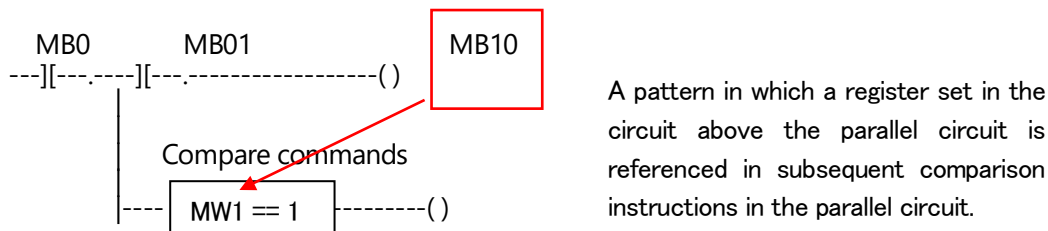
It's OK because it's all coils

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.



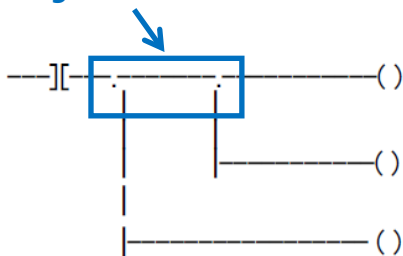
< measures >

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: Compilation of Circuits with Consecutive Branches

In the ladder program of MPE720 Ver.7.A4 or earlier, the following symptoms described in [C-1] and [C-2] may occur when branches are used consecutively without any elements placed between them as shown below.

Using consecutive branches without any elements placed between them

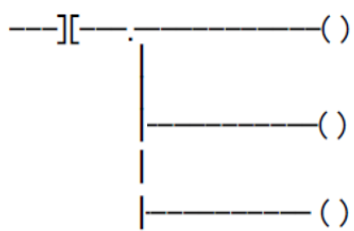


This element arrangement may occur when elements placed between branches are deleted, or when moving the branch destination after inserting a branch into the circuit.

If this phenomenon occurs, recompile the corresponding ladder program with MPE720 Ver.7.A5 or later MPE720 Ver.7.

Alternatively, select "Compile All Program" from the "Compile" menu again.

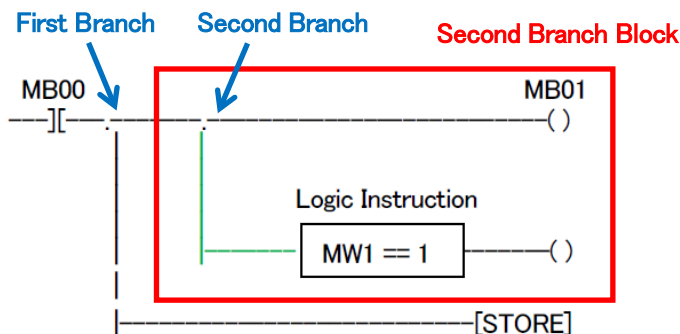
If you do not change the version of MPE720 Ver.7, either avoid placing consecutive branches as shown below, or make sure that you do not meet any of the conditions described in [C-1] or [C-2].



[C-1]

< phenomenon >

When a circuit that satisfies the following all conditions was created, the STORE instruction in the first branch destination and the logic and coil instructions in the second branch destination should determine whether they are executed based on the MB00 condition. However, they are executed regardless of the MB00 condition.



< conditions >

- Consecutive branches are used (in this case, no element exists between the first branch and the second branch)
- No block instruction is used inside the second branch block, while a block instruction is used elsewhere within the same rung
- A logic instruction is used immediately after a coil-type instruction inside the second branch block (in this case, no element exists in the highlighted green area)

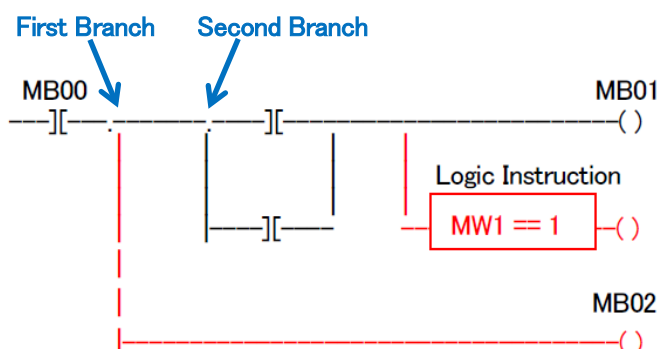
< Terms and Definitions >

- Second branch block : The circuit that exists after the second branch
- Block instruction : Instructions such as the STORE, Expression, and COPYW
- Coil – type instruction : Instructions such as the coil and the set coil
- Logic instruction : Instructions such as comparison instructions ($=$, $!$, $>$, $<$)

[C-2]

< phenomenon >

When a circuit that satisfies the following all conditions was created, the coil instruction for MB02 in the first branch destination should determine whether it is executed based on the MB00 condition. However, it is not executed regardless of the MB00 condition.



< conditions >

- Consecutive branches are used (in this case, no element exists between the first branch and the second branch)
- No block instruction is used within the same rung
- A logic instruction is used after a coil-type instruction (the logic instruction is used in the highlighted red area)
- The first branch is executed after the above coil-type instruction (in this case, MB01)
- The second branch is executed before the above coil-type instruction (in this case, MB01)

< Terms and Definitions >

- Block instruction : Instructions such as the STORE, Expression, and COPYW
- Coil – type instruction : Instructions such as the coil and the set coil
- Logic instruction : Instructions such as comparison instructions ($=$, $!$, $>$, $<$)