

MPE720 Ver.7.A5 Version Upgrade Information

1. Functional Additions and Improvements

1.1 Ver.7.A5 Version Up Information

MPE720 Ver.7.A4→ Ver.7.A5 function additions and improvements are as follows.

No.	Function items	classification
1.	The following option units are now supported. – SVF-11 – SVF-12 – CM-CL01	Enhancements
2.	The following option modules are now supported. – SVF-11M – SVF-12M – CM-CL01M	Enhancements
3.	The following SLIO I/O modules are now supported. – 022-1BD80 – 031-1CF90 – 054-2BA10	Enhancements
4.	In the replacing within a Project, function program numbers, motion/sequence program numbers, and table data/Cam Tool data names can now be replaced.	Enhancements
5.	In the MECHATROLINK Detail Definition Window, IP communication and the number of Ethernet switch tiers can now be configured.	Improvement
6.	In the Control Device/Group Definition window, group definitions and axis definitions can now be copied and pasted.	Improvement
7.	The Edit Motion Program window and the Edit Sequence Program window can now be displayed in a floating view.	Improvement
8.	Several bugs have been fixed.	Improvement

2. Details of Fixes

No.1 Support has been added for option units in the YRM1000 series.

The SVF-11 and SVF-12 have been added as motion control units.

The CM-CL01 (CC-Link) have been added as communication option unit.

- 1) You can select "SVF-11", "SVF-12" and "CM-CL01" from the FC unit selection screen and assign them.
- 2) You can set parameters on the detailed definition screen of "SVF-11", "SVF-12" and "CM-CL01".

[Supported versions]

Controller

Series	Controller	Supported firmware versions
YRM1000	CPU-12	Ver.3.03

No.2 Support has been added for option modules in the MPX1000 series.

The SVF-11M and SVF-12M have been added as motion control modules.

The CM-CL01M (CC-Link) have been added as communication option module.

- 1) You can select "SVF-11M", "SVF-12M" and "CM-CL01M" from the FC module selection screen and assign them.
- 2) You can set parameters on the detailed definition screen of "SVF-11M", "SVF-12M" and "CM-CL01M".

[Supported versions]

Controller

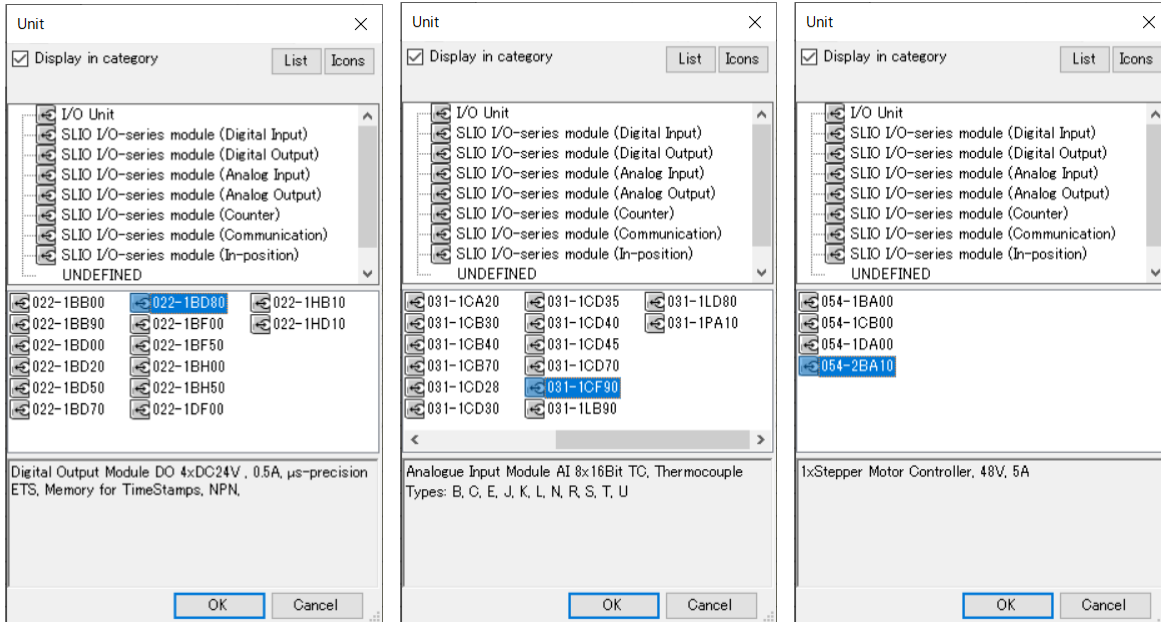
Series	Supported firmware versions
MPX1000	Ver.3.03

No.3 Support has been added for SLIO I/O series modules.

In the YRM1010/MPX1000 series controllers, the following three SLIO I/O series modules have been added.

<Additional modules>

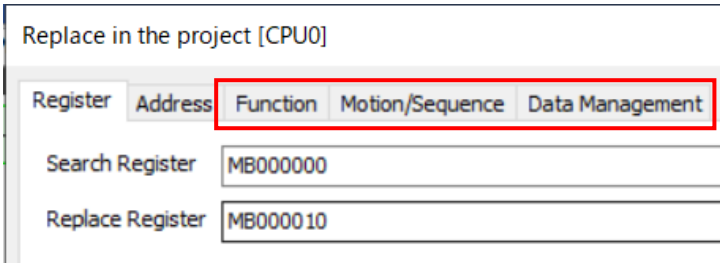
- 022-1BD80 Digital Output Module : DO 4xDC24V , 0.5A, μ s-precision ETS, Memory for TimeStamps, NPN
- 031-1CF90 Analogue Input Module : AI 8x16Bit TC, Thermocouple Types: B, C, E, J, K, L, N, R, S, T, U
- 054-2BA10 In-position Module : 1xStepper Motor Controller, 48V, 5A



No.4 In the replacing within a Project, function program numbers, motion/sequence program numbers, and table data/Cam Tool data names can now be replaced.

In the replacing within a Project window, replacement is now supported for the following programs.

- Program numbers of function programs
- Program numbers of motion programs and sequence programs
- Data names of table data and Cam Tool data

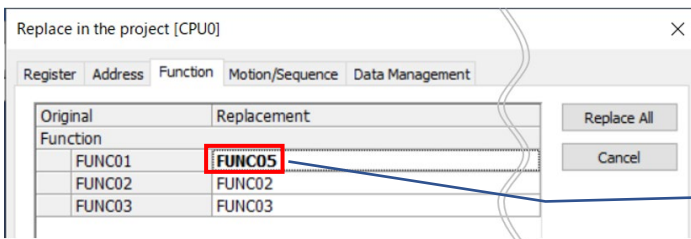


1) Replacement of function program numbers

By selecting the “Function” tab, you can replace function program numbers.

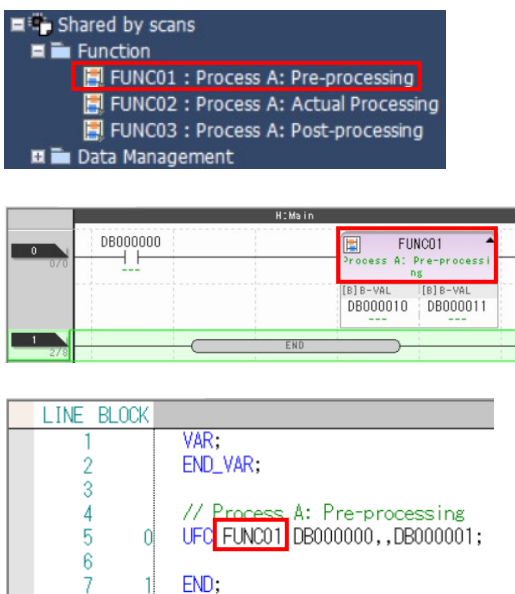
Program numbers referenced from ladder programs or motion/sequence programs are also replaced simultaneously.

• Replacement settings for the “Function” tab

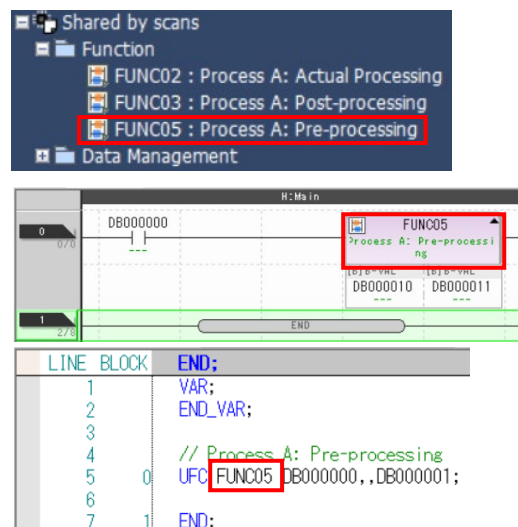


Specify the program number to be used as the replacement target in “Replacement”, and then click the “Replace All” button. In this example, “FUNC01” is replaced with “FUNC05”.

• Navigation window and program before replacement



• Navigation window and program after replacement



“FUNC01” is replaced with “FUNC05,” and within the program, the replacement is performed while retaining the existing parameters.

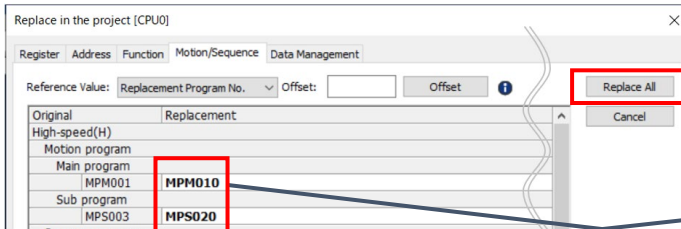
2) Replacement of Motion/Sequence program numbers

By selecting the “Motion/Sequence” tab, you can replace motion/sequence program numbers.

It is also possible to specify a target program number using an offset value.

Program numbers referenced from ladder programs or from other motion/sequence programs are also replaced simultaneously.

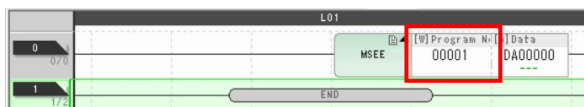
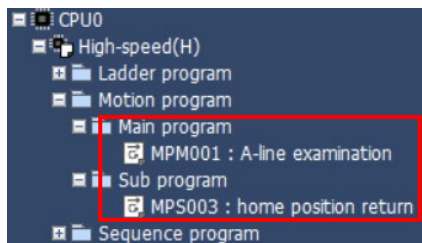
• Replacement settings for the “Motion/Sequence” tab



Specify the program numbers to replace in “Replacement”, and then click the “Replace All” button.

In this example, “MPM001” is replaced with “MPM010”, and “MPS003” is replaced with “MPS020”, respectively.

• Navigation window and program before replacement

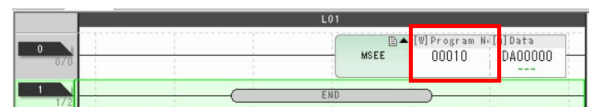
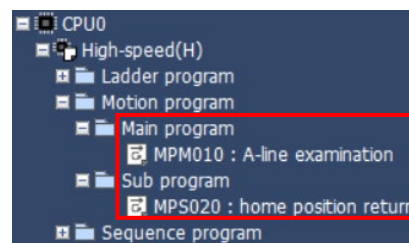


```

LINE BLOCK
1  VAR;
2  END_VAR;
3
4  //home position return
5  MSEE MPM003;
6
7  END;

```

• Navigation window and program after replacement



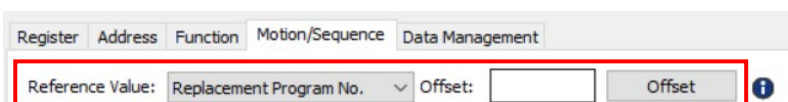
```

LINE BLOCK
1  VAR;
2  END_VAR;
3
4  //home position return
5  MSEE MPS020;
6
7  END;

```

“MPM001” is replaced with “MPM010”, and “MPS003” is replaced with “MPS020”, respectively.

• Specifying replacement program numbers using an offset value



You can also specify replacement program numbers in bulk by using an offset value. The program numbers can be offset based on either the source program numbers, or the program numbers specified as the replacement targets.

Negative offset values can also be entered.

Before offset execution

Original	Replacement
High-speed(H)	
Motion program	
Main program	
MPM001	MPM001
MPM002	MPM002
MPM003	MPM003
MPM004	MPM004
MPM005	MPM005
MPM006	MPM006
MPM007	MPM007
MPM008	MPM008
Sub program	
MPS030	MPS030
MPS031	MPS031
MPS032	MPS032

After executing with an offset value of 10

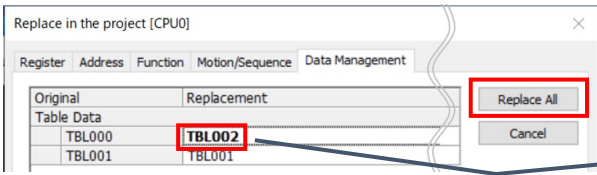
Original	Replacement
High-speed(H)	
Motion program	
Main program	
MPM001	MPM011
MPM002	MPM012
MPM003	MPM013
MPM004	MPM014
MPM005	MPM015
MPM006	MPM016
MPM007	MPM017
MPM008	MPM018
Sub program	
MPS030	MPS040
MPS031	MPS041
MPS032	MPS042

The replacement program numbers are offset by 10.

3) Replacement of table data / Cam Tool data names

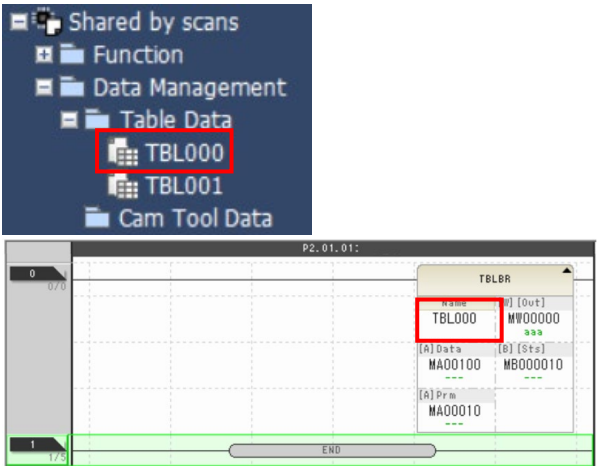
By selecting the “Data Management” tab, you can replace table data names and cam tool data names. Table names referenced from ladder programs are also replaced at the same time.

•Replacement settings for the “Data Management” tab

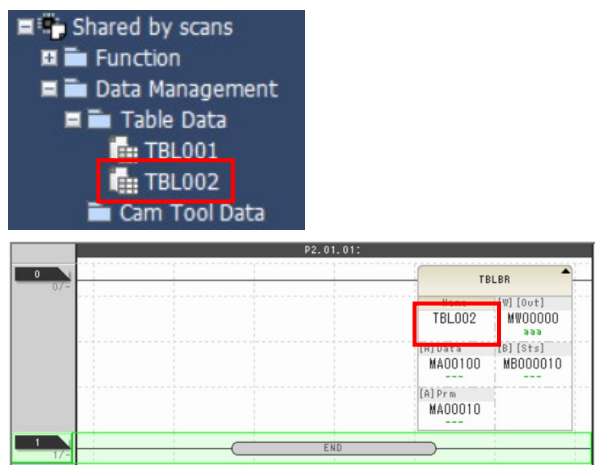


Specify the data name to be used as the replacement target in “Replacement”, and then click the “Replace All” button. In this example, “TBL000” is replaced with “TBL002”.

•Navigation window and program before replacement



•Navigation window and program after replacement



“TBL000” is replaced with “TBL002”.

No.5 In the MECHATROLINK Detail Definition Window, IP communication and the number of Ethernet switch tiers can now be configured.

IP communication and Ethernet switches can now be used without the M-4 communication extension function in the YRM1000/MPX1000.

In the MECHATROLINK Detail Definition Window, it is possible to configure IP communication enable/disable settings and the number of Ethernet switch tiers. For the allowable settings, refer to Appendix D.

The screenshot shows the 'Detail - [MECHATROLINK]' window with a menu bar (File, Edit, Window) and status fields (PT#: -- CPU#: --). The 'Transmission Parameters' tab is active. A red box highlights the 'IP communications' and 'Number of Ethernet switch tiers' settings.

Parameter	Value
Protocol	MECHATROLINK-4
Master/Slave	Master
My station address	0x0001
Transmission Cycle	250us
Enabled message communication	<input checked="" type="checkbox"/>
IP communications	Disable
Number of Ethernet switch tiers	0
Number of retry to slaves	0
Number of connection	8
Slave synchronous function	Disable
Slave detection waiting time	0sec

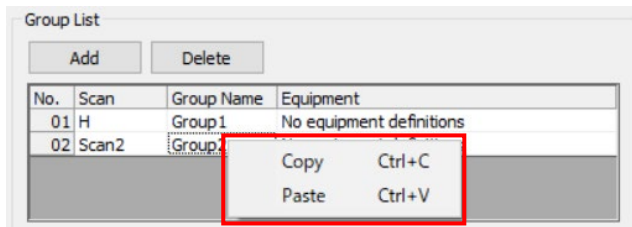
No.6 In the Control Device/Group Definition window, group definitions and axis definitions can now be copied and pasted.

Copy and paste are now supported editing Group Definition and Axis Definition.

The operation for changing the order of Axis Definition has been modified from mouse drag to up/down buttons.

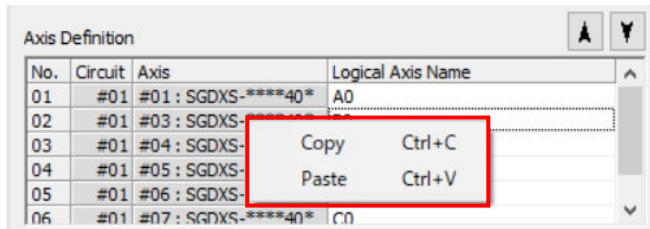
1) Group Definition

- A context menu (right-click menu) for copy and paste has been added.

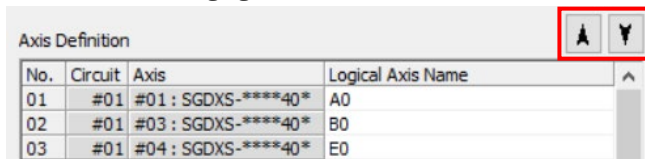


2) Axis Definition

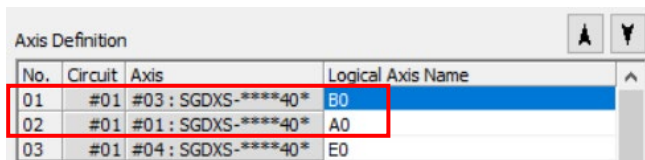
- A context menu (right-click menu) for copy and paste has been added.



- Buttons for changing the order of axes have been added.



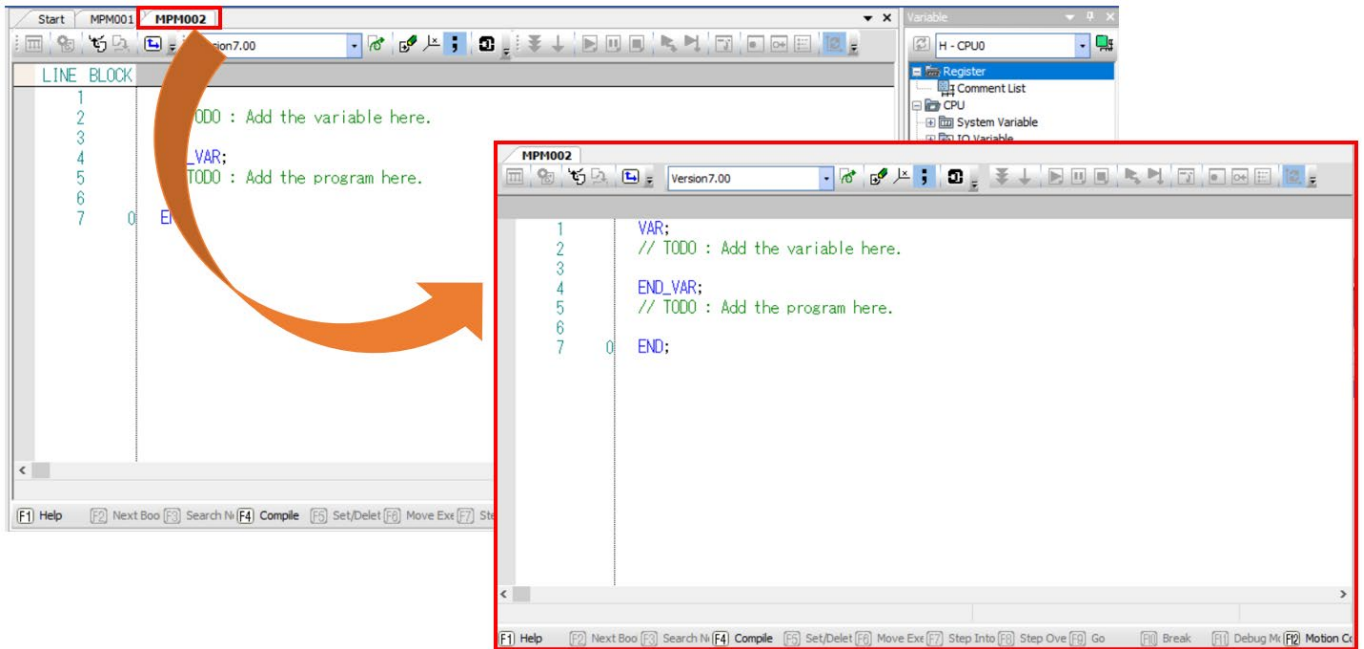
When No. 02 (B0) is selected and the ▲ button is pressed, its axis definition moves one position above No. 01 (A0).



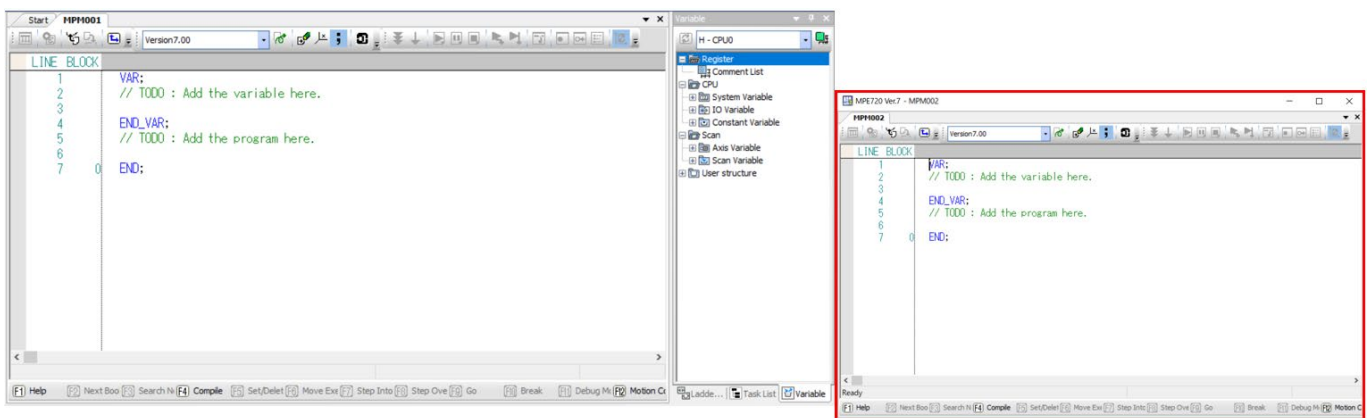
No.7 The Edit Motion Program window and the Edit Sequence Program window can now be displayed in a floating view.
Floating display is now supported in the Edit Motion Program window and the Edit Sequence Program window.

[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.8 Several bugs have been fixed.

The following bugs have been fixed.

- 1) In a ladder program, if branches are placed consecutively with no device between them, the operation may not behave as intended. Please refer to Appendix C for details.
- 2) In the Ladder Window or Navigation Window, when moving across the ladder drawings using the up/down arrow keys, the cursor movement is slow.
- 3) When deleting a structure-type variable or modifying registers or structures, the register comments of member variables are deleted even if the option to retain comments is selected.
- 4) The following issues related to a model that supports multiple scans have been fixed:
 - When writing to the controller or reading from the controller/project, individual transfer of Motion/Sequence programs may fail.
 - When [Multiple Scan Settings] are selected during individual transfer, some selected items may not be transferred.
 - In [Control Device/Group Definition], Group No.16 may not be deletable even when no motion program is assigned to Group No. 16.
 - D registers in child drawings or grandchild drawings of a Scan□ are not displayed in [Auto Watch].
 - When hierarchical view is enabled in the Navigation Window and a P drawing has child drawings despite having no parent drawing, the program selection tree may display the parent program number as “P65535” or “P”.
- 5) In the playback mode of the Motion Recorder, if the recording data was captured with a fractional scan time, the real-time trace list does not reflect the fractional portion in the TIME column.
- 6) When the current comment type is set to something other than Standard Comments, registering, editing, or deleting variables in the variable editor launched from “Variables” in the System Window or Navigation Window may unintentionally change the current comment, or may fail to delete the Standard Comments.
- 7) When using the MP3100, connecting to a sub-CPU over a remote connection results in connection to the main CPU instead.

Appendix A: Compilation of Parallel Circuits

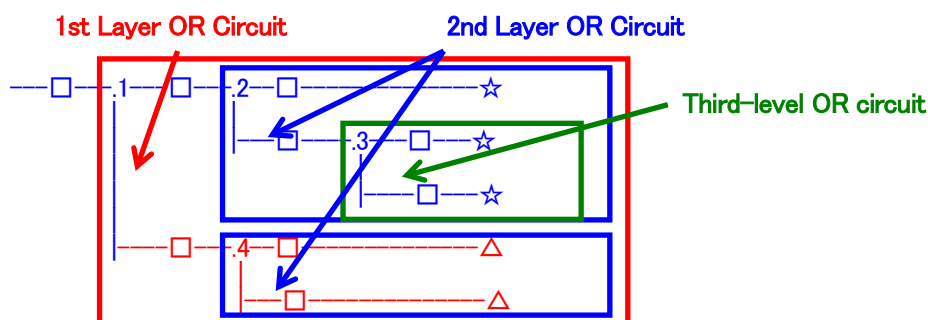
In the ladder program of MPE720 Ver.7.23 or earlier, the following symptoms may occur when using parallel circuits.

< 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.



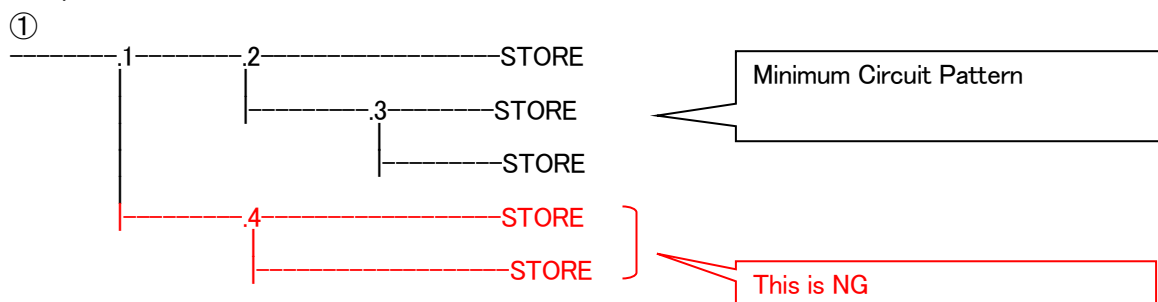
1st level OR circuit: OR circuit branched from Lang's busbar
 2nd layer OR circuit: OR circuit branched from within the 1st level OR circuit
 3rd level OR circuit: OR circuit branched from within the 2nd level OR circuit

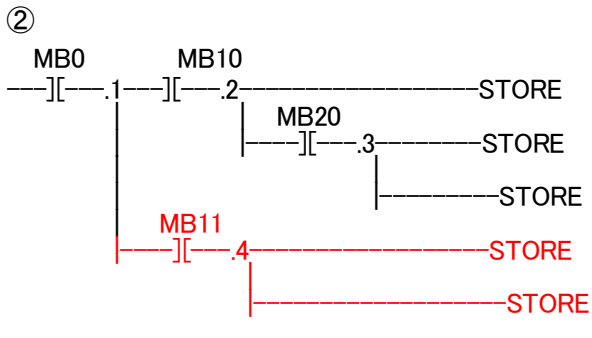
- (Conditional Instructions): A contact, B contact, comparison (=, !=, >, <) instructions, etc.
- * □ (conditional instructions) includes power wires (-----)
- ☆ (Output instructions): coils, block instructions (Expression, STORE, COPYW) instructions, etc.
- * However, if all ☆ are coil instructions, 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

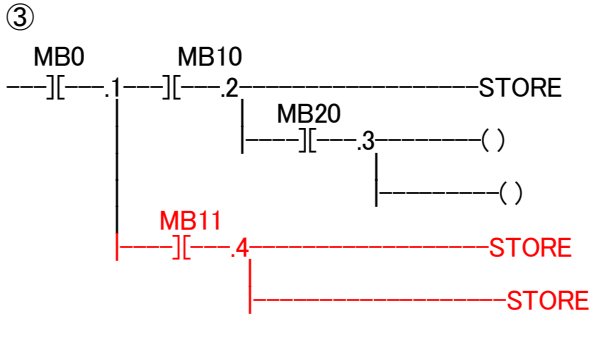
[NG pattern]





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

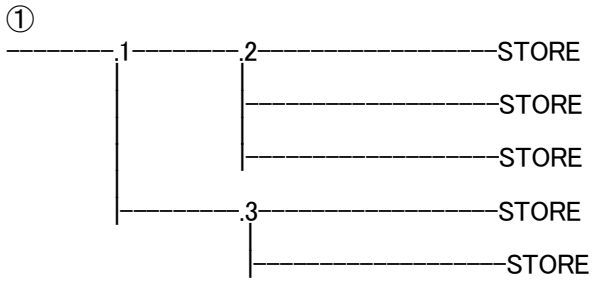
This is NG



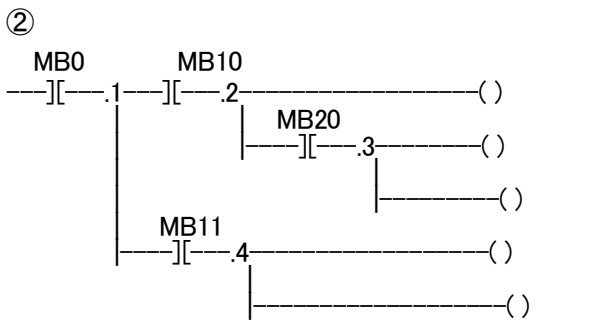
If there is even one block instruction (STORE instruction, etc.) here, it is NG

This is NG

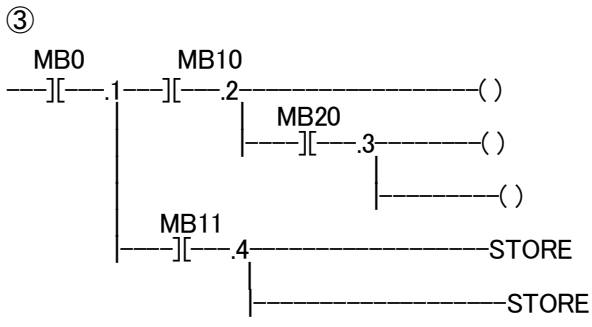
[OK pattern]



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



It's OK because it's all coils



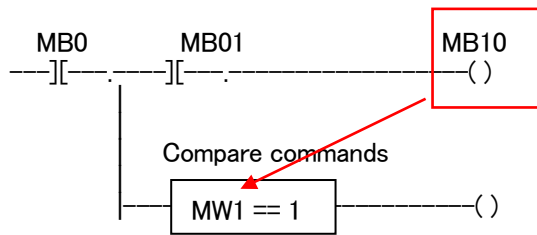
It's OK because it's all coils

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.

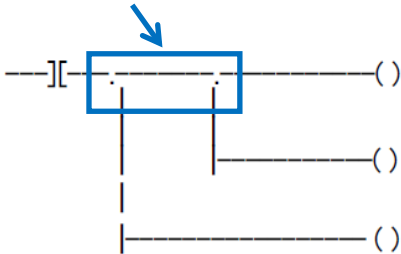
< measures >

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: 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.

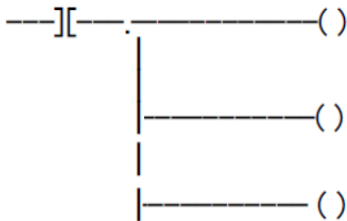
Using consecutive branches without any elements placed between them



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].



Appendix D: The selection range of the number of connected stations in the MECHATROLINK Detail Definition Window

The selection range for the number of connected stations is shown in the table below, and it depends on a combination of the transmission cycle, the number of retries, and the number of transmission bytes of the SERVOPACKs to be used.

(A): When all connected SDevice devices have transmission bytes less than or equal to 48 bytes

(B): When one or more connected SDevice devices have transmission bytes that are greater than 48 bytes

– When the IP communication is disabled and the number of Ethernet switch tiers is set to 1

Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
125 μ s	0	2	1
250 μ s	0	10	7
	1	3	2
500 μ s	0	26	20
	1	12	8
	2	9	6
	3	6	4
	4	4	–
1ms	0	64	55
	1	30	23
	2	24	18
	3	20	15
	4	17	13
	5	14	11
	6	12	9
	7	10	7
	8	8	–
1.5ms	0	64	64
	1	55	43
	2	43	35
	3	35	29
	4	29	24
	5	25	21
	6	22	17
	7	19	15
	8	17	14
	9	15	12
	10	13	11
	11	12	–

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
2ms	0	64	64
	1		62
	2		52
	3	53	44
	4	45	38
	5	38	33
	6	33	28
	7	29	25
	8	26	22
	9	23	19
	10	21	17
	11	19	16
	12	17	14
	13	16	13
14	14	-	
3ms	0	64	64
	1		
	2		
	3		
	4		
	5	55	
	6	58	50
	7	51	45
	8	46	40
	9	41	37
	10	37	33
	11	34	30
	12	31	28
	13	29	26
	14	26	23
	15	25	22
	16	23	20
	17	21	18
	18	20	-
19	19	-	

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
4ms	0	64	64
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8	59	
	9	60	54
	10	55	49
	11	51	45
	12	47	42
	13	43	39
	14	40	36
	15	37	34
	16	35	32
	17	32	29
	18	30	28
	19	28	26
	20	27	24
	21	25	23
	22	24	-
23	23	-	

- When the IP communication is disabled and the number of Ethernet switch tiers is set to 2

Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
250 μ s	0	5	3
500 μ s	0	17	12
	1	7	4
	2	4	2
1ms	0	54	43
	1	20	14
	2	16	11
	3	13	9
	4	10	7
	5	8	6
	6	6	-

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
1.5ms	0	64	64
	1	38	30
	2	28	23
	3	24	17
	4	20	15
	5	17	13
	6	15	11
	7	13	9
	8	11	8
	9	9	-
2ms	0	64	64
	1	63	50
	2	50	40
	3	39	33
	4	32	27
	5	27	22
	6	24	18
	7	21	16
	8	18	14
	9	16	12
	10	14	11
	11	12	-
3ms	0	64	64
	1		
	2		
	3	64	62
	4		53
	5		46
	6		40
	7		35
	8		31
	9		27
	10		24
	11		21
	12		19
	13		17
	14		15
	15		-
	16		-

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
4ms	0	64	64
	1		
	2		
	3		
	4		
	5		
	6	62	
	7	63	55
	8	56	49
	9	50	44
	10	45	40
	11	41	36
	12	37	33
	13	34	30
	14	31	27
	15	28	25
	16	26	23
	17	24	21
	18	23	19
	19	21	-
20	20	-	

- When the IP communication is enabled and the number of Ethernet switch tiers is set to 1

Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
500 μ s	0	9	6
	1	2	1
1ms	0	46	37
	1	20	14
	2	16	12
	3	13	9
	4	10	8
	5	8	6
	6	6	-
1.5ms	0	64	64
	1	42	33
	2	32	26
	3	26	21
	4	22	17
	5	19	15
	6	17	13
	7	14	11
	8	12	10
	9	11	-

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
2ms	0	64	64
	1		52
	2		43
	3		36
	4		31
	5		26
	6		23
	7		20
	8		17
	9		15
	10		14
	11		12
	12		-
3ms	0	64	64
	1		
	2		
	3		
	4	57	
	5	58	50
	6	51	44
	7	45	40
	8	41	36
	9	36	32
	10	33	29
	11	30	26
	12	27	24
	13	25	22
	14	23	20
	15	22	18
	16	20	17
17	19	-	

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
4ms	0	64	64
	1		
	2		
	3		
	4		
	5		
	6		
	7	60	
	8	61	54
	9	55	49
	10	51	45
	11	46	42
	12	43	38
	13	39	35
	14	36	33
	15	34	31
	16	31	28
	17	29	27
	18	27	25
	19	26	23
	20	24	22
21	23	-	

- When the IP communication is enabled and the number of Ethernet switch tiers is set to 2

Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
1ms	0	23	16
	1	9	6
	2	7	4
	3	4	3
1.5ms	0	63	51
	1	23	16
	2	19	13
	3	15	11
	4	12	9
	5	10	7
6	7	-	

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Transmission Cycle	Number of Retry to SDevices	Number of Connections	
		(A)	(B)
2ms	0	64	64
	1	44	34
	2	33	27
	3	26	21
	4	23	16
	5	19	14
	6	17	12
	7	14	11
	8	12	9
	9	10	-
3ms	0	64	64
	1		60
	2		
	3	61	51
	4	51	43
	5	43	36
	6	37	31
	7	32	27
	8	27	23
	9	25	20
	10	22	18
	11	20	16
	12	18	14
	13	16	13
	14	15	-
4ms	0	64	64
	1		
	2		
	3		
	4		
	5	60	
	6	61	53
	7	54	47
	8	48	42
	9	43	37
	10	38	34
	11	34	30
	12	31	27
	13	28	25
	14	26	22
	15	24	20
	16	22	18
	17	21	17
	18	19	-