MITSUBISHI ELECTRIC

Programmable Controller

MELSEC iQ-F series

MELSEC iQ-F
Sample Ladder Reference for FX5 and Power Distribution Measuring Instrument with RS-485 Communication (MODBUS RTU Protocol) (Overseas)

CONTENTS

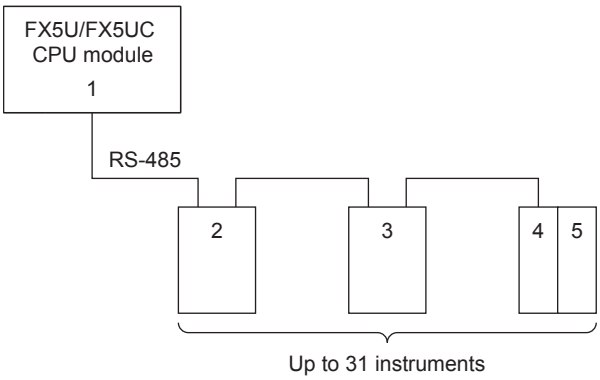
1 SAMPLE LADDER LIST

This program is sample ladder for a system where the MELSEC iQ-F series FX5U/FX5UC CPU module is connected to power distribution measuring instruments with RS-485 communication (MODBUSR RTU protocol) (hereafter "power distribution measuring instruments").

Name	Description	Version
Data Read	Reads measurement data from power distribution measuring instruments.	Ver.1.00A
Data Write	Writes setting values to power distribution measuring instruments.	Ver.1.00A

System configuration

The following figure shows the system configuration for this sample ladder.



No.	Name	Description
1	FX5U(C)	Built-in RS-485 port
	FX5U + FX5-485-BD	RS-485 communication expansion port
	FX5U(C) + FX5-485ADP	RS-485 communication expansion adapter
2	ME110SSR-MB ME96SSEA-MB ME96SSRA-MB ME96SSHA-MB	Electronic multi-measuring instrument
3	EMU4-BD1-MB EMU4-HD1-MB EMU4-FD1-MB	Energy measuring unit
4	EMU4-BM1-MB EMU4-HM1-MB EMU4-LG1-MB	Energy measuring unit
5	EMU4-A2	Mitsubishi energy measuring unit (energy measuring extension unit for same voltage system)
	EMU4-VA2	Mitsubishi energy measuring unit (energy measuring extension unit for different voltage system)
	EMU4-PX4	Mitsubishi energy measuring unit (pulse input unit)
	EMU4-AX4	Mitsubishi energy measuring unit (analog input unit)

Prerequisites for using sample ladder

The sample ladder is provided for the model whose name is included in the project name, shown as below.

Ex.

For the following project name, the FX5U/FX5UC model is applicable.

LD-FX5U_□□□_□□□_V100A_J

Operation of the provided project is not guaranteed for user systems. Check and set device assignments, parameters, and other settings in accordance with the user system specifications.

Wiring and communication setting

This program requires wiring and communication settings, such as setting station numbers of a CPU module and power distribution measuring instruments and transmission speed, before communications. For the details on the wiring and communication setting methods, refer to the operating manual of each power distribution measuring instrument, and for the CPU module to the 📖 MELSEC iQ-F FX5 User's Manual (MODBUS Communication).

Related manuals

📖 MELSEC iQ-F FX5 Programming Manual (Instructions, Standard Functions/Function Blocks)
📖 MELSEC iQ-F FX5 User's Manual (Application)
📖 MELSEC iQ-F FX5 User's Manual (MODBUS Communication)
📖 Electronic Multi-Measuring Instrument User's Manual: Detailed Edition (ME110SSR-MB Series)
📖 Electronic Multi-Measuring Instrument User's Manual: Detailed Edition (ME110SSR-MB Series) (Three phase 4-wire)
📖 Electronic Multi-Measuring Instrument MODBUS Interface specifications (ME110SSR-MB Series)
📖 Electronic Multi-Measuring Instrument User's Manual: Detailed Edition (ME96SSEA-MB Series)
📖 Electronic Multi-Measuring Instrument User's Manual: Detailed Edition (ME96SSRA-MB Series)
📖 Electronic Multi-Measuring Instrument User's Manual: Detailed Edition (ME96SSHA-MB Series)
📖 Electronic Multi-Measuring Instrument MODBUS Interface specifications (ME96SSEA-MB, ME96SSRA-MB, ME96SSHA-MB Series)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-BD1-MB, EMU4-HD1-MB)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-BM1-MB, EMU4-HM1-MB)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-LG1-MB)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-A2, EMU4-VA2)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-PX4, EMU4-AX4)
📖 Energy Measuring Unit EcoMonitorLight/EcoMonitorPlus MODBUS Interface specifications (EMU4-BD1-MB, EMU4-HD1-MB, EMU4-BM1-MB, EMU4-HM1-MB, EMU4-LG1-MB, EMU4-A2, EMU4-VA2, EMU4-PX4, EMU4-AX4)
📖 Energy Measuring Unit User's Manual (Details) (EMU4-FD1-MB)
📖 Energy Measuring Unit EcoMonitorLight MODBUS Interface specifications (EMU4-FD1-MB)

Notice

This manual includes information related to the functions of the sample ladder. It does not include information on restrictions of use such as combination with programmable controller, each expansion board, expansion adapter or expansion device. Please make sure to read user's manuals for the corresponding products before using the products.

2 SAMPLE LADDER

2.1 Data Read

Name

Data Read

Outline

Reads measurement data from power distribution measuring instruments.

Programs used

This program is used for the FX5U and FX5UC.

The following table shows the project used in this program.

No.	Project name	Program name	Remark
1	LD-FX5U_e-MEASURE-MB_V100A_J	01_Data Read	This project is created with the FX5U or FX5UC.

Devices used

The following table lists the devices used in this program.

■Input device

No.	Device name	Data type	Type	Device comment	Remark
1	M0	Bit	Input	Execution Command	ON: The program is activated. OFF: The program is not activated.
2	M1	Bit	Input	Dedicated Instruction Execute Flag	ON: The MODBUS communication is performed using dedicated instructions. OFF: The MODBUS communication is not performed.
3	D0	Word [Signed]	Input	Number of Settings	Specifies the number of the target power distribution measuring instruments to be set with Setting Parameter (R0 to R5099). [Setting range (decimal)] 1 to 255

No.	Device name	Data type	Type	Device comment	Remark
4	R0 to R5099	Word [Signed]	Input	Setting Parameter	Sets the parameters of the connected power distribution measuring instruments (station numbers, numbers of sends/receives, and register address of measurement item).

Register the setting data for the measurement circuits set with Number of Settings (D0). Setting Parameter uses 20 words for a single measurement circuit.
The following shows a configuration of the setting parameter data.

■Configuration of Setting Parameter

Device	Description	Setting range	
S1	Station number	1 to 32 (decimal)	Setting data for a single measurement circuit (setting 1)
S1+1	Number of sends/receives	0 to 16 (decimal)	
S1+2	Measurement item (1) register address	The setting range depends on the target power distribution measuring instrument. Refer to the MODBUS interface specifications of each power distribution measuring instrument.	
S1+3	Measurement item (2) register address		
S1+4	Measurement item (3) register address		
S1+5	Measurement item (4) register address		
S1+6	Measurement item (5) register address		
S1+7	Measurement item (6) register address		
S1+8	Measurement item (7) register address		
S1+9	Measurement item (8) register address		
S1+10	Measurement item (9) register address		
S1+11	Measurement item (10) register address		
S1+12	Measurement item (11) register address		
S1+13	Measurement item (12) register address		
S1+14	Measurement item (13) register address		
S1+15	Measurement item (14) register address		
S1+16	Measurement item (15) register address		
S1+17	Measurement item (16) register address		
S1+18	Spare		
S1+19	Spare		
S1+20	Station number		
S1+21	Number of sends/receives		
⋮			
S1+n×20-3	Measurement item (16) register address		Setting data for a single measurement circuit (setting n)
S1+n×20-2	Spare		
S1+n×20-1	Spare		

* S1 corresponds to R0. "n" indicates the number of settings in Number of Settings (D0).
When Number of Settings (D0) is set to 255, 5100 words are used for Setting Parameter (R0 to R5099).

■Output device

No.	Device name	Data type	Type	Device comment	Remark
1	M100	Bit	Output	Execution Status	ON: The execution command is on. OFF: The execution command is off.
2	M101	Bit	Output	Normal Completion	When this label is on, it indicates that the processing has been completed.
3	Y0	Bit	Output	Error Completion	When this label is on, it indicates that an error has occurred in the program.
4	D100	Word [Signed]	Output	Error Code	Stores the error code that occurred in the program.
5	R5100 to R13259	Word [Signed]	Output	Output Data	Outputs the measurement data of power distribution measuring instruments. [Initial value] Holds the previous value.

Output Data uses 32 words for a single setting.
When the measurement data cannot be obtained, the previous output data is held.
■Configuration of Output Data

Device	Description		
S2, S2+1	Setting 1	Measurement data of the measurement item (1)	Output data (setting 1)
S2+2, S2+3		Measurement data of the measurement item (2)	
S2+4, S2+5		Measurement data of the measurement item (3)	
S2+6, S2+7		Measurement data of the measurement item (4)	
S2+8, S2+9		Measurement data of the measurement item (5)	
S2+10, S2+11		Measurement data of the measurement item (6)	
S2+12, S2+13		Measurement data of the measurement item (7)	
S2+14, S2+15		Measurement data of the measurement item (8)	
S2+16, S2+17		Measurement data of the measurement item (9)	
S2+18, S2+19		Measurement data of the measurement item (10)	
S2+20, S2+21		Measurement data of the measurement item (11)	
S2+22, S2+23		Measurement data of the measurement item (12)	
S2+24, S2+25		Measurement data of the measurement item (13)	
S2+26, S2+27		Measurement data of the measurement item (14)	
S2+28, S2+29		Measurement data of the measurement item (15)	
S2+30, S2+31		Measurement data of the measurement item (16)	
S2+32, S2+33	Setting 2	Measurement data of the measurement item (1)	Output data (setting 2)
S2+34, S2+35		Measurement data of the measurement item (2)	
⋮			
S2+n×32-4, S2+n×32-3	Setting n	Measurement data of the measurement item (15)	Output data (setting n)
S2+n×32-2, S2+n×32-1		Measurement data of the measurement item (16)	

* S2 corresponds to R5100. "n" indicates the number of settings in Number of Settings (D0).
When Number of Settings (D0) is set to 255, 8160 words are used for Output Data (R5100 to R13259).

No.	Device name	Data type	Type	Device comment	Remark
6	R13260 to R13769	Word [Signed]	Output	Error Station Output	Outputs the error codes and error measurement items of the error station.

Error Station Output uses 2 words for a single setting.
■Configuration of Error Station Output

Device	Description															
S3	Setting 1 measurement item error bit The following shows the details of each bit and measurement item.															
	Bit	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0
	Measurement item	(16)	(15)	(14)	(13)	(12)	(11)	(10)	(9)	(8)	(7)	(6)	(5)	(4)	(3)	(2)	(1)
S3+1	Setting 1 error code																
S3+2	Setting 2 measurement item error bit																
S3+3	Setting 2 error code																
⋮																	
S3+n×2-2	Setting n measurement item error bit																
S3+n×2-1	Setting n error code																

* S3 corresponds to R13260. "n" indicates the number of settings in Number of Settings (D0).
When Number of Settings (D0) is set to 255, 510 words are used for Error Station Output (R13260 to R13769).
When an error occurs while the measurement items are being read, the bit corresponding to the measurement item with an error turns on.
Example: When an error occurs while the measurement data of the measurement item (1) in the setting 1
The setting 1 measurement item error bit (S3) turns on.
The error code is stored in the setting 1 error code (S3+1).
■Error Code

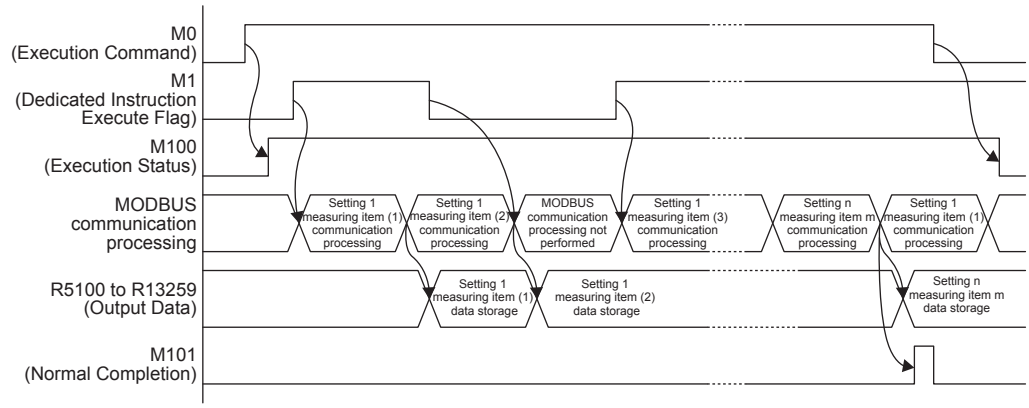
Error code (hexadecimal)	Description	Action
1001H	The station number in Setting Parameter (R0 to R5099) is out of the setting range.	Check the station number in Setting Parameter (R0 to R5099).
1002H	The number of sends/receives in Setting Parameter (R0 to R5099) is out of the setting range.	Check the number of sends/receives in Setting Parameter (R0 to R5099).
Serial communication error code	The error code is the same as that occurs in the MODBUS serial communication.	Refer to 📖 MELSEC iQ-F FX5 User's Manual (MODBUS Communication).

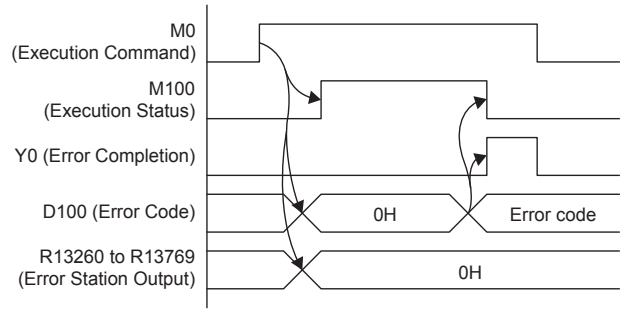
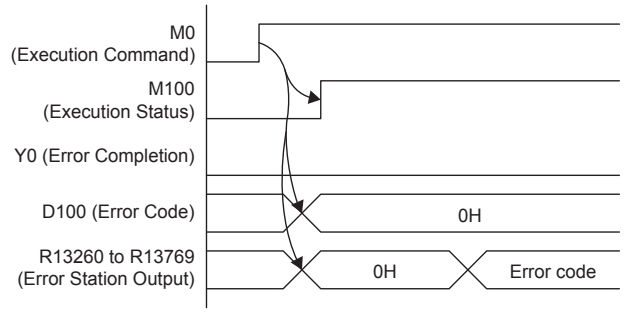
■Internal device

No.	Device name	Data type	Type	Device comment	Remark
1	M200	Bit	Internal	Setting Data Check Command	Holds the check command flag of setting data.
2	M202	Bit	Internal	Execution Command Before Start Main Process	Holds the execution command flag of the process before the start of main process.
3	M204	Bit	Internal	Main Process Execution Completed	Holds the execution completion flag of the main process.
4	M205	Bit	Internal	Program Error	Holds the error flag of the program.
5	M210	Bit	Internal	Program Completion Pulse	Holds the pulse flag of program completion.
6	M211	Bit	Internal	Setting Parameter Read	Holds the read flag of the setting parameter.
7	M212	Bit	Internal	Transition to Next Setting Parameter	Holds the transition flag of the next setting parameter.
8	M213	Bit	Internal	Confirm Program Completion	Holds the confirmation flag of program completion.
9	M214	Bit	Internal	Setting Parameter Error	Holds the error flag of the setting parameter.
10	M215	Bit	Internal	Data Send/Receive	Holds the data send/receive flag.
11	M216	Bit	Internal	Control Data Set	Holds the control data set flag.
12	M217	Bit	Internal	Register Address 4-Byte Data	Holds the flag of register address 4-byte data.
13	M218	Bit	Internal	Register Address Bit Data	Holds the flag of the register address bit data.
14	M219	Bit	Internal	ADPRW Instruction Execution	Holds the ADPRW instruction execution flag.
15	M220	Bit	Internal	ADPRW Instruction Executing	Holds the ADPRW instruction executing flag.
16	M221	Bit	Internal	Register Address H8000 or Higher	Holds the flag of register address H8000 or higher.
17	M222	Bit	Internal	Read Normal Completion	Holds the read normal completion flag.
18	M223	Bit	Internal	Read Error Completion	Holds the read error completion flag.
19	M224	Bit	Internal	Read Completion	Holds the read completion flag.
20	M225 to M227	Bit (0..2)	Internal	Instruction Completion Flag	Holds the instruction completion flag.
21	D50 to D51	Double word [Signed]	Internal	Setting Parameter Start Address	Holds the start address of the setting parameter.
22	D52 to D53	Double word [Signed]	Internal	Setting Parameter Address Offset	Holds the address offset of the setting parameter.
23	D54 to D55	Double word [Signed]	Internal	Output Data Start Address	Holds the start address of the output parameter.
24	D56 to D57	Double word [Signed]	Internal	Output Data Offset	Holds the offset of the output data.
25	D58 to D59	Double word [Signed]	Internal	Output Data Address Offset	Holds the address offset of the output data.
26	D60 to D61	Double word [Signed]	Internal	Output Data TMP	Holds the output data temporarily.
27	D62 to D63	Double word [Signed]	Internal	Error Station Output Start Address	Holds the output start address of the error station.
28	D64 to D65	Double word [Signed]	Internal	Error Station Output Address Offset	Holds the output address offset of the error station.
29	D66 to D67	Word [Signed] (0..1)	Internal	Error Station Output TMP	Holds the output from the error station temporarily.
30	D68 to D69	Word [Signed] (0..1)	Internal	Read Data Storage Device	Holds the read data from the connected devices.
31	D70 to D71	Word [Signed] (0..1)	Internal	Address Backup	Backs up the address.
32	D72 to D88	Word [Signed] (0..16)	Internal	Setting Data	Holds the setting data.
33	D89	Word [Signed]	Internal	Number of Settings	Holds the specified number.
34	D90	Word [Signed]	Internal	Access Points	Holds the access points.
35	D91	Word [Signed]	Internal	Read Register Address	Holds the read register address.
36	D92	Word [Signed]	Internal	Number of Data Processing Times	Holds the number of data processing times.
37	D93	Word [Signed]	Internal	Setting Read Count	Holds the setting read count.
38	D94	Word [Signed]	Internal	Error Station Output TMP	Holds the error station output TMP.
39	D95	Word [Signed]	Internal	Number of Transitions to Next Setting Parameter	Holds the number of transitions to the next setting parameters.

No.	Device name	Data type	Type	Device comment	Remark
40	D96	Word [Signed]	Internal	Setting Station Number	Holds the setting station number.
41	D99	Word [Signed]	Internal	For Z9 Register Backup	Backs up the register Z9.

Details of functions

Item	Description	
Applicable device	CPU module	FX5U CPU, FX5UC CPU
	Engineering tool	GX Works3 Version 1.031H or later
Language	Ladder	
Number of basic steps	1160 steps The number of steps of the FB in a program depends on the CPU module used, input and output definition, and the option setting in GX Works3. For the option setting in GX Works3, refer to GX Works3 Operating Manual.	
Processing	• When Execution Command (M0) and Dedicated Instruction Execute Flag (M1) are turned on, this program reads data from power distribution measuring instruments set with Setting parameter (R0 to R5099). • If an incorrect value is specified, Error Completion (Y0) turns on and the processing is suspended. In addition, the error code is stored in Error Code (D100). * Note: This sample ladder backs up or recovers the index register. When the index register value need not to be held in other programs, the backup/recovery processing is not required.	
Timing chart of I/O signals	[For normal completion]  • When Execution Command (M0) is turned on, Execution Status (M100) turns on and this program starts. • When Dedicated Instruction Execute Flag (M1) is turned on, the MODBUS communication processing starts. • When the MODBUS communication processing is completed on each measurement item, data is stored in Output Data (R5100 to R13259). • When Dedicated Instruction Execute Flag (M1) is turned on and off, the MODBUS communication processing stops after the current processing is completed. • When Dedicated Instruction Execute Flag (M1) is turned off and on again, the MODBUS communication processing restarts from the measurement item next to the item whose data has been obtained in the previous processing. • When the MODBUS communication processing is completed on the measurement item m in the setting n, the data is stored and Normal Completion (M101) turns on for one pulse. • When Execution Command (M0) is turned off, Execution Status (M100) turns off after the current MODBUS communication is completed. Consequently, this program ends.	

Item	Description
Timing chart of I/O signals	[For error completion]  [For MODBUS communication error]  • When Execution Command (M0) is turned on, Error Code (D100) and Error Station Output (R13260 to R13769) are reset (0). [For error completion] • When an error occurs in the setting parameter, the error code is stored in Error code (D100), Error Completion (Y0) turns on for one pulse, and Execution Status (M100) turns off. Consequently, this program ends. [For MODBUS communication error] • The error station and error code are output to Error Station Output (R13260 to R13769), and the next MODBUS communication processing is performed.
Restrictions and precautions	• This program does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • This program cannot be used as an interrupt program. • Do not use this program with programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because Execution Command (M0) cannot be turned off and the normal operation cannot be performed. Always use this program with programs that can turn off Execution Command (M0). • This program uses the index register Z9. • Setting Parameter (R0 to R5099) uses word devices of "value of Number of Settings (D0) × 20". • Output Data (R5100 to R13259) uses word devices of "value of Number of Settings (D0) × 36". • Error Station Output (R13260 to R13769) uses word devices of "value of Number of Settings (D0) × 2". • Do not use any device in the area where the internal user device, data register (D), and link register (W) are consecutive.

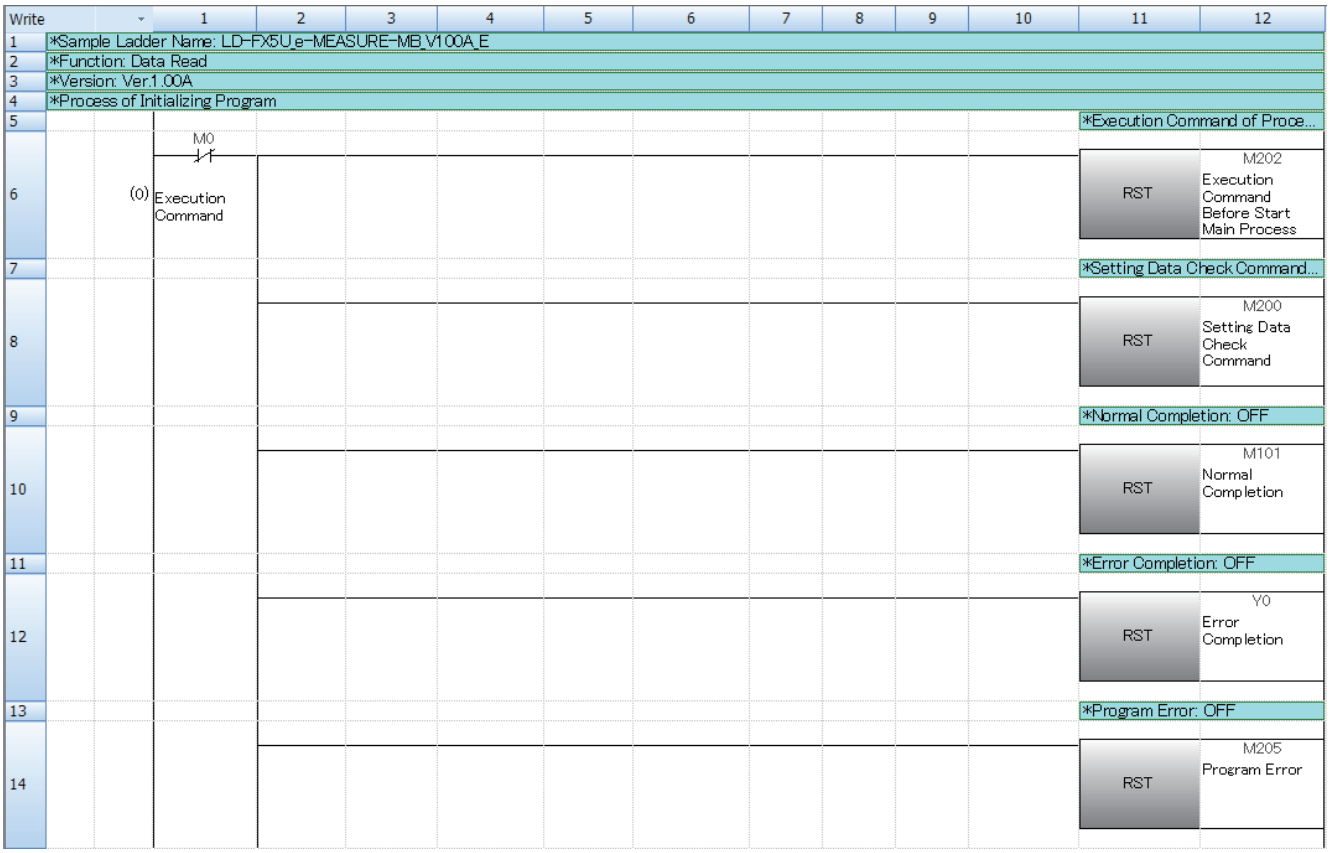
Error Code

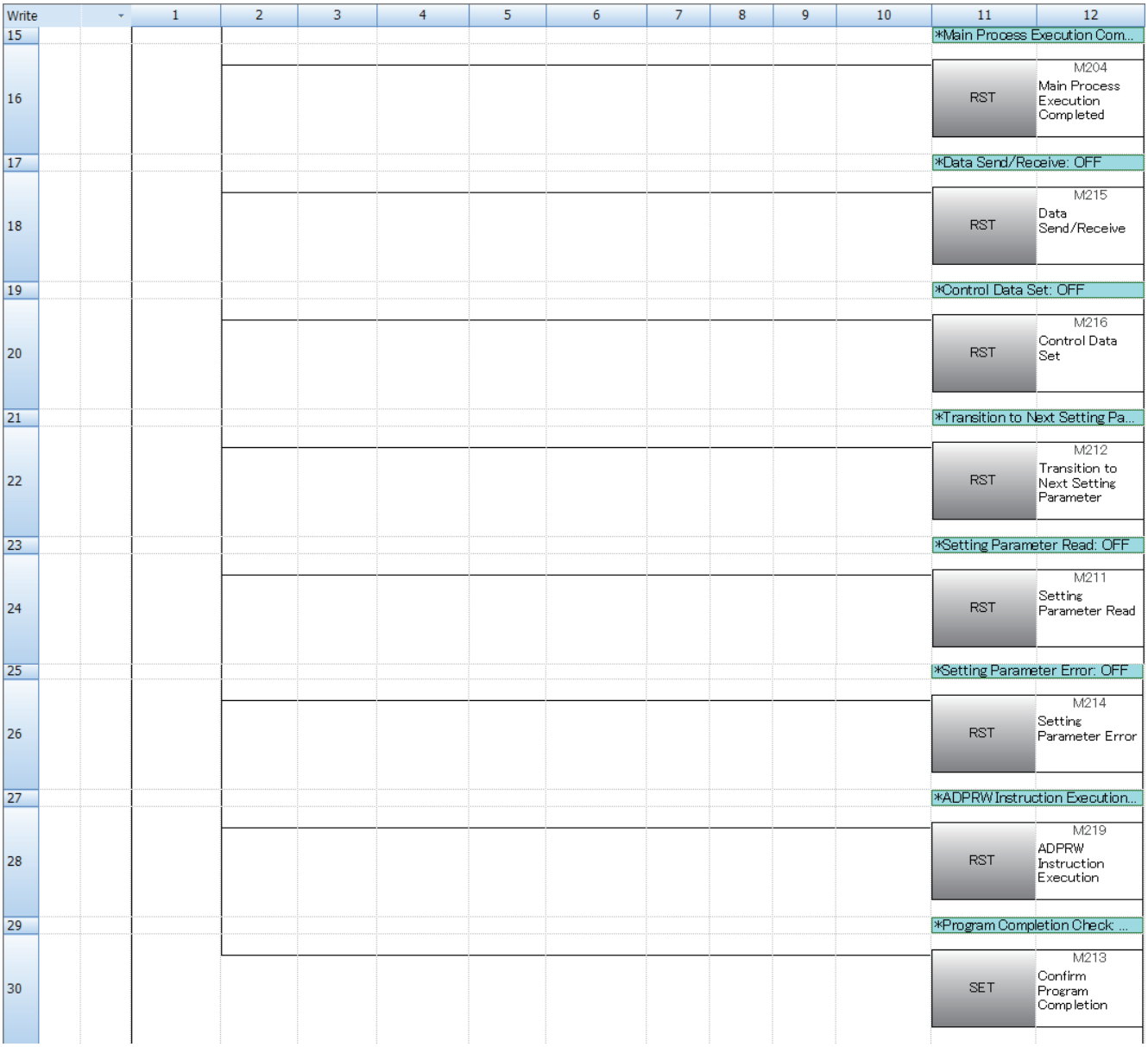
Error code (decimal)	Description	Action
11	A value out of the setting range is set in Number of Settings (D0).	Review Number of Settings (D0), and execute the program again.
13	No setting is configured in Setting Parameter (R0 to R5099).	Review the setting values (station number setting and number of sends/receives) of Setting Parameter (R0 to R5099), and execute the program again.

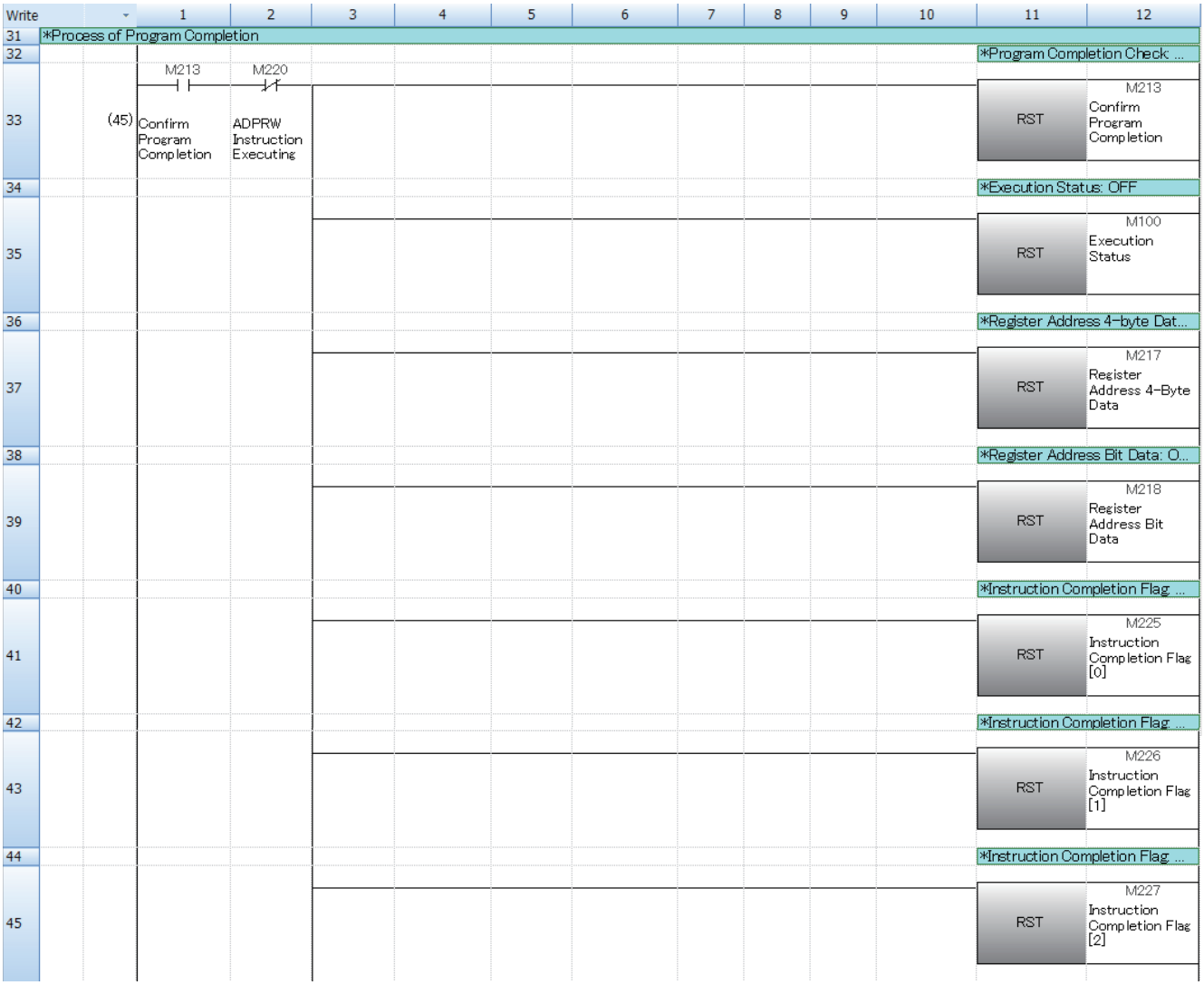
Version upgrade history

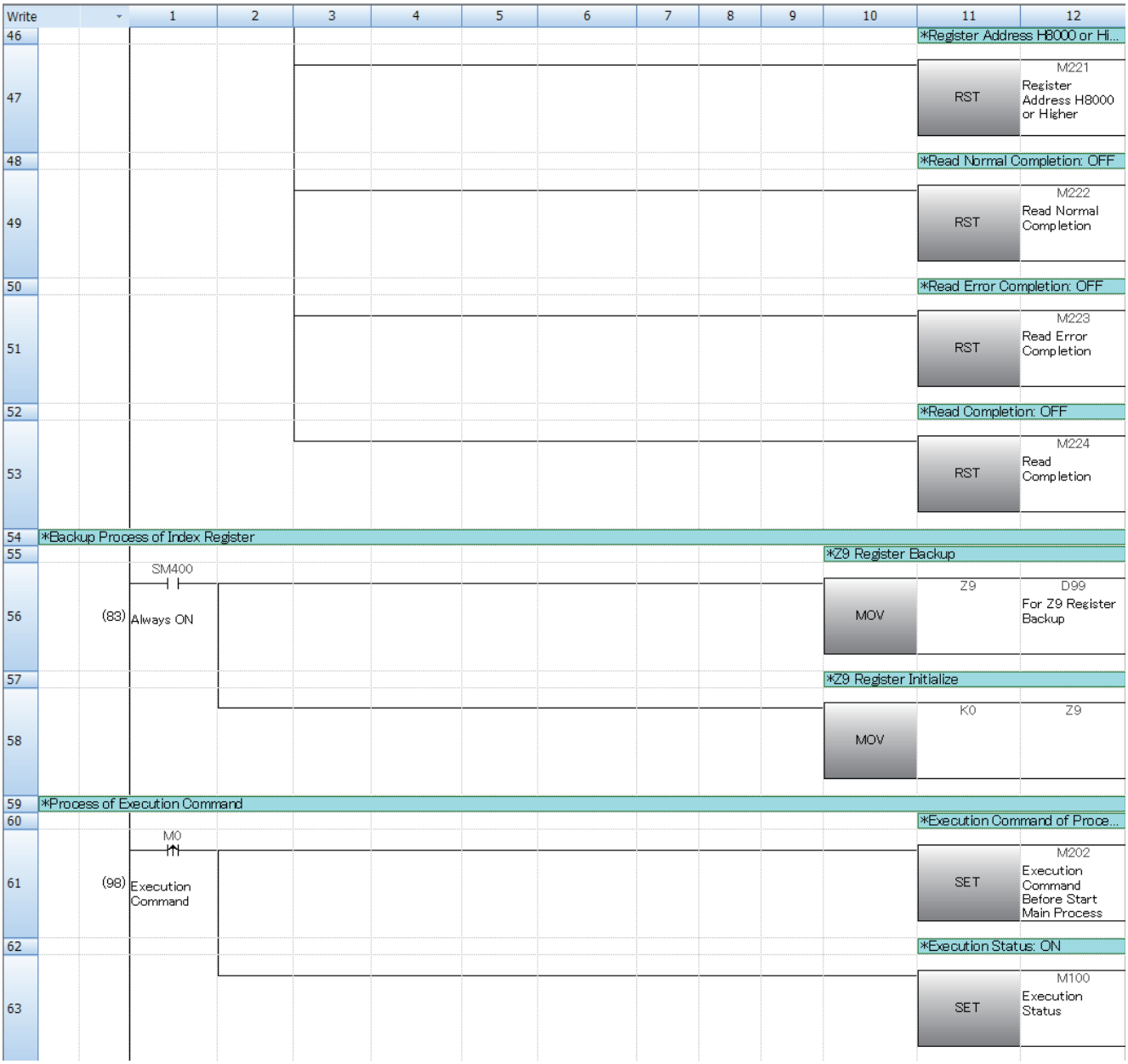
Version	Date	Description
Ver.1.00A	2017/3	First edition

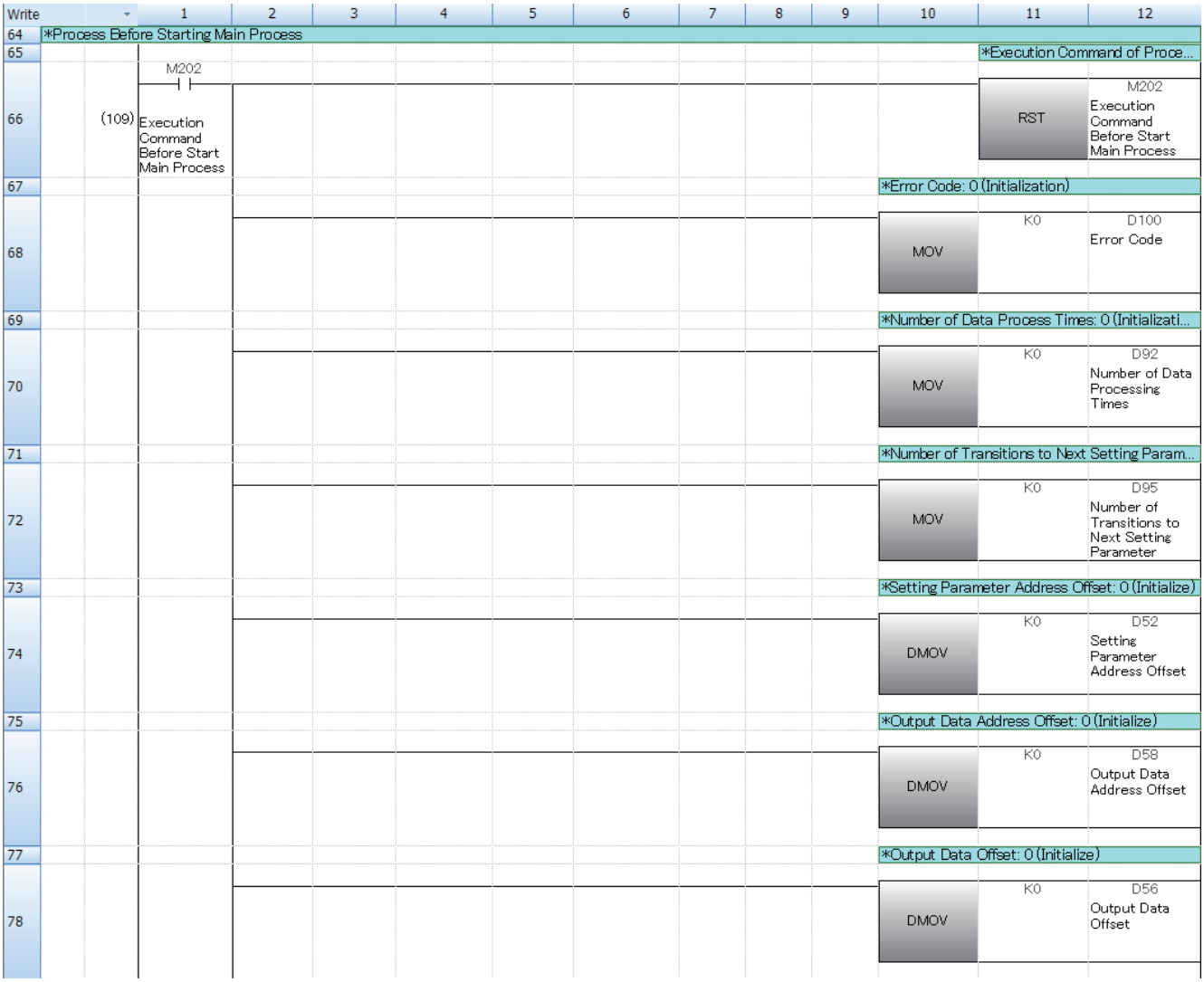
Program

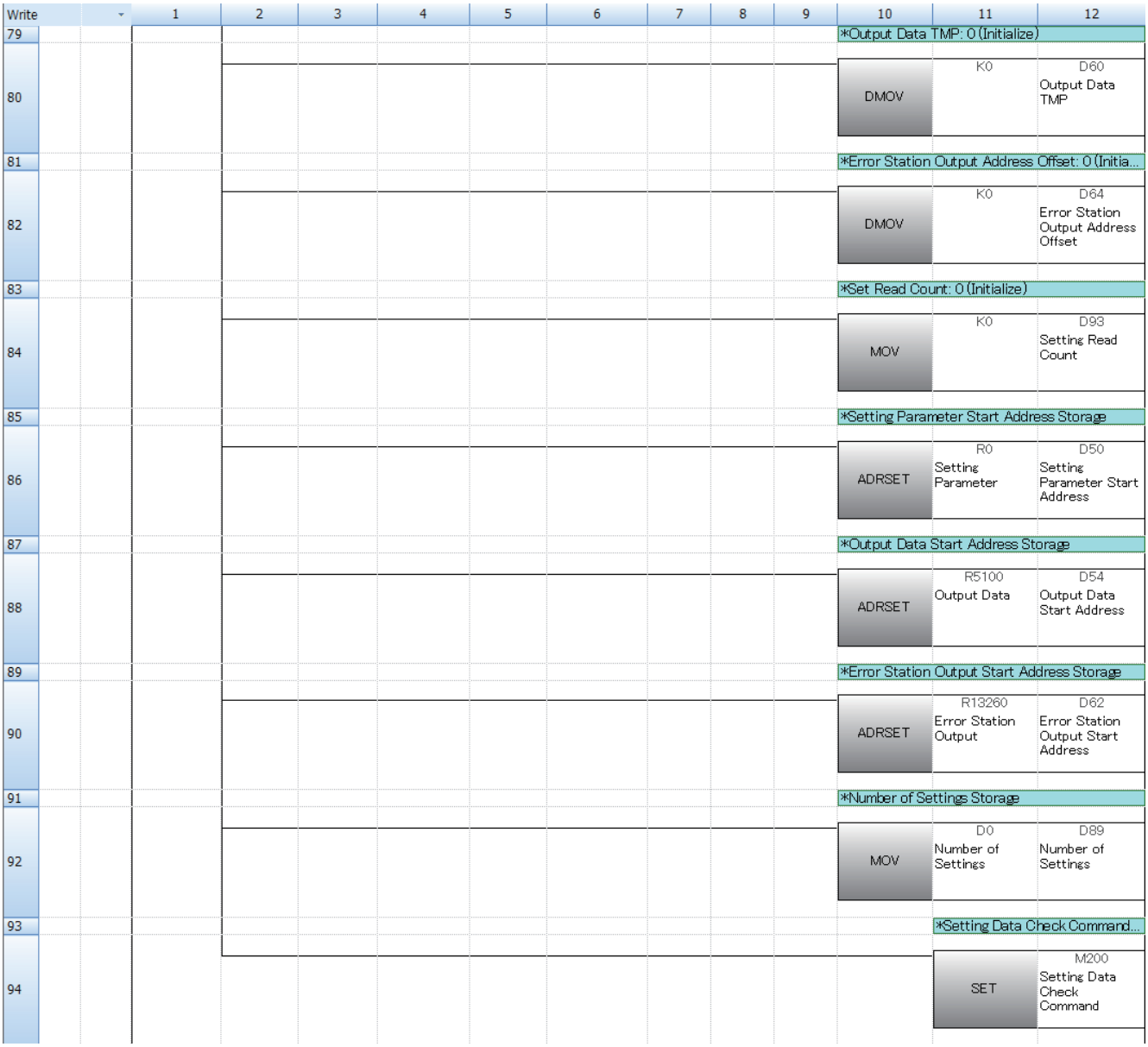

Write
1 2 3 4 5 6 7 8 9 10 11 12
*Sample Ladder Name: LD-FX5U_e-MEASURE-MB_V100A_E
*Function: Data Read
*Version: Ver.1.00A
*Process of Initializing Program
*Execution Command of Proce...
M0
(0)
Execution Command
RST
M202
Execution Command Before Start Main Process
*Setting Data Check Command...
RST
M200
Setting Data Check Command
*Normal Completion: OFF
RST
M101
Normal Completion
*Error Completion: OFF
RST
Y0
Error Completion
*Program Error: OFF
RST
M205
Program Error

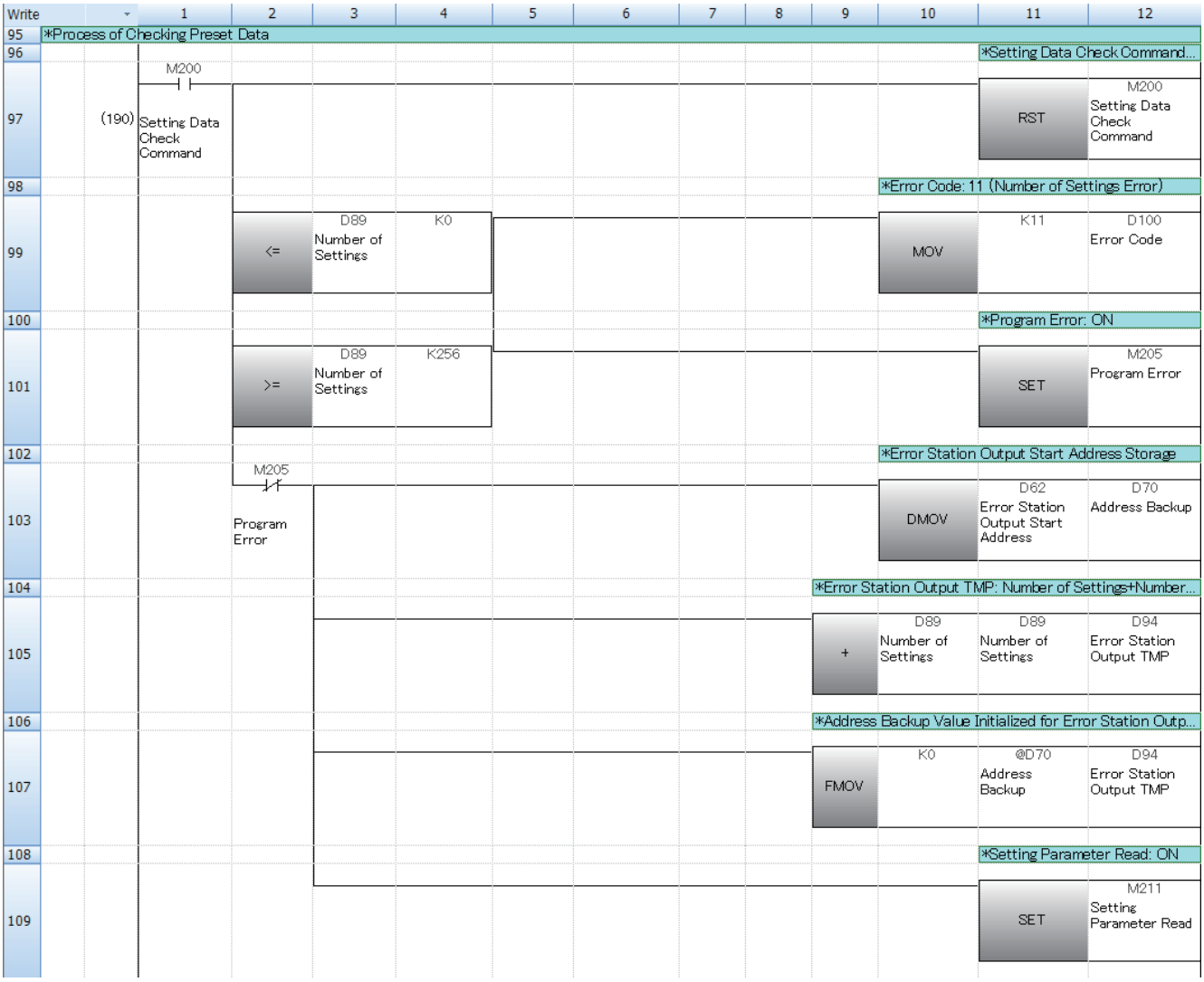

Write
1
2
3
4
5
6
7
8
9
10
11
12
15
*Main Process Execution Com...
16
RST
M204
Main Process Execution Completed
17
*Data Send/Receive: OFF
18
RST
M215
Data Send/Receive
19
*Control Data Set: OFF
20
RST
M216
Control Data Set
21
*Transition to Next Setting Pa...
22
RST
M212
Transition to Next Setting Parameter
23
*Setting Parameter Read: OFF
24
RST
M211
Setting Parameter Read
25
*Setting Parameter Error: OFF
26
RST
M214
Setting Parameter Error
27
*ADPRW Instruction Execution...
28
RST
M219
ADPRW Instruction Execution
29
*Program Completion Check ...
30
SET
M213
Confirm Program Completion

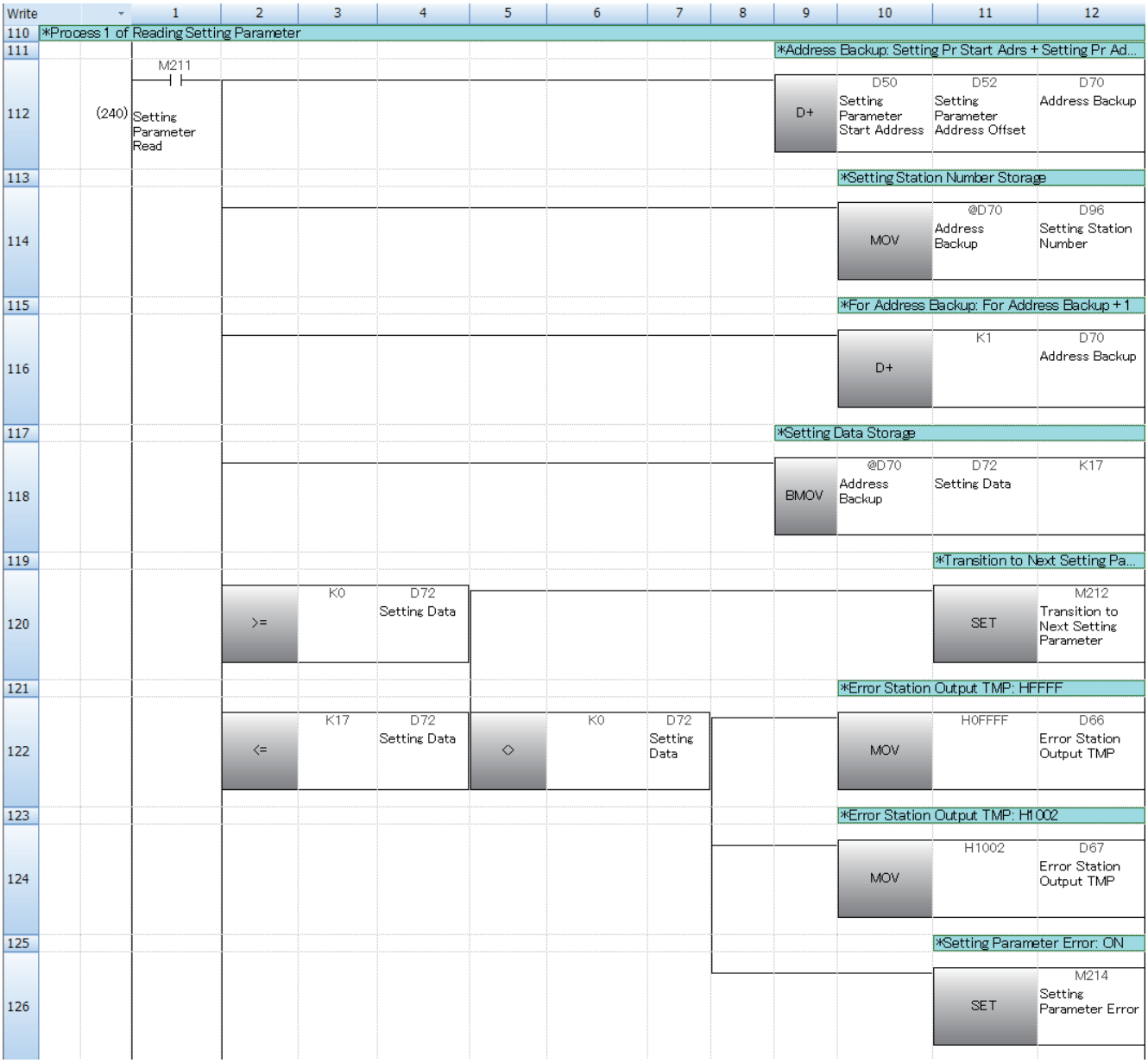

Write
1
2
3
4
5
6
7
8
9
10
11
12
31
*Process of Program Completion
32
*Program Completion Check: ...
M213
M220
33
(45)
Confirm Program Completion
ADPRW Instruction Executing
RST
M213
Confirm Program Completion
34
*Execution Status: OFF
35
RST
M100
Execution Status
36
*Register Address 4-byte Dat...
37
RST
M217
Register Address 4-Byte Data
38
*Register Address Bit Data: O...
39
RST
M218
Register Address Bit Data
40
*Instruction Completion Flag: ...
41
RST
M225
Instruction Completion Flag [0]
42
*Instruction Completion Flag: ...
43
RST
M226
Instruction Completion Flag [1]
44
*Instruction Completion Flag: ...
45
RST
M227
Instruction Completion Flag [2]

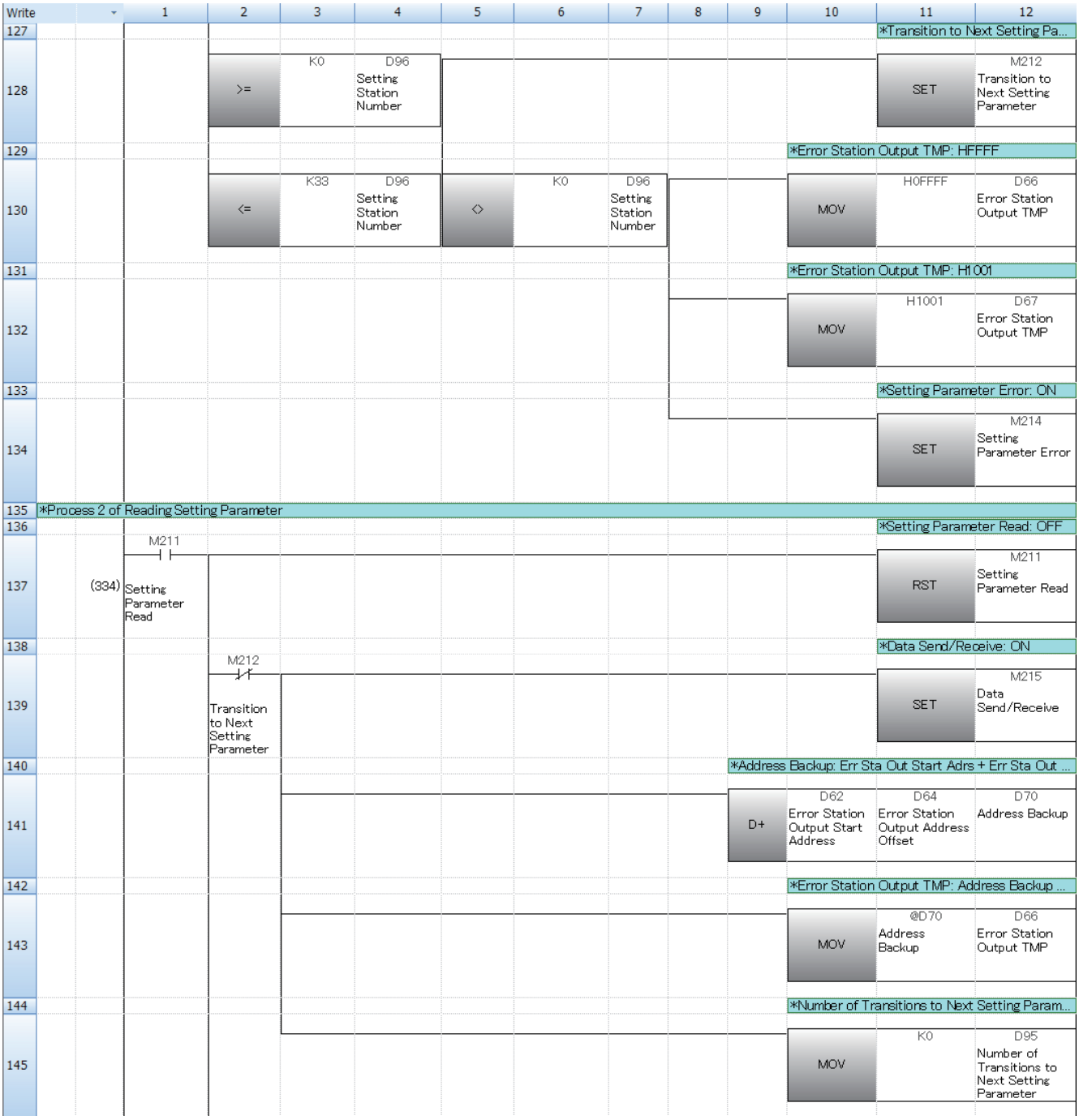

Write
1
2
3
4
5
6
7
8
9
10
11
12
46
*Register Address H8000 or Hi...
47
RST
M221
Register Address H8000 or Higher
48
*Read Normal Completion: OFF
49
RST
M222
Read Normal Completion
50
*Read Error Completion: OFF
51
RST
M223
Read Error Completion
52
*Read Completion: OFF
53
RST
M224
Read Completion
54
*Backup Process of Index Register
55
*Z9 Register Backup
56
SM400
(83)
Always ON
MOV
Z9
D99
For Z9 Register Backup
57
*Z9 Register Initialize
58
MOV
K0
Z9
59
*Process of Execution Command
60
*Execution Command of Proce...
61
M0
(98)
Execution Command
SET
M202
Execution Command Before Start Main Process
62
*Execution Status: ON
63
SET
M100
Execution Status

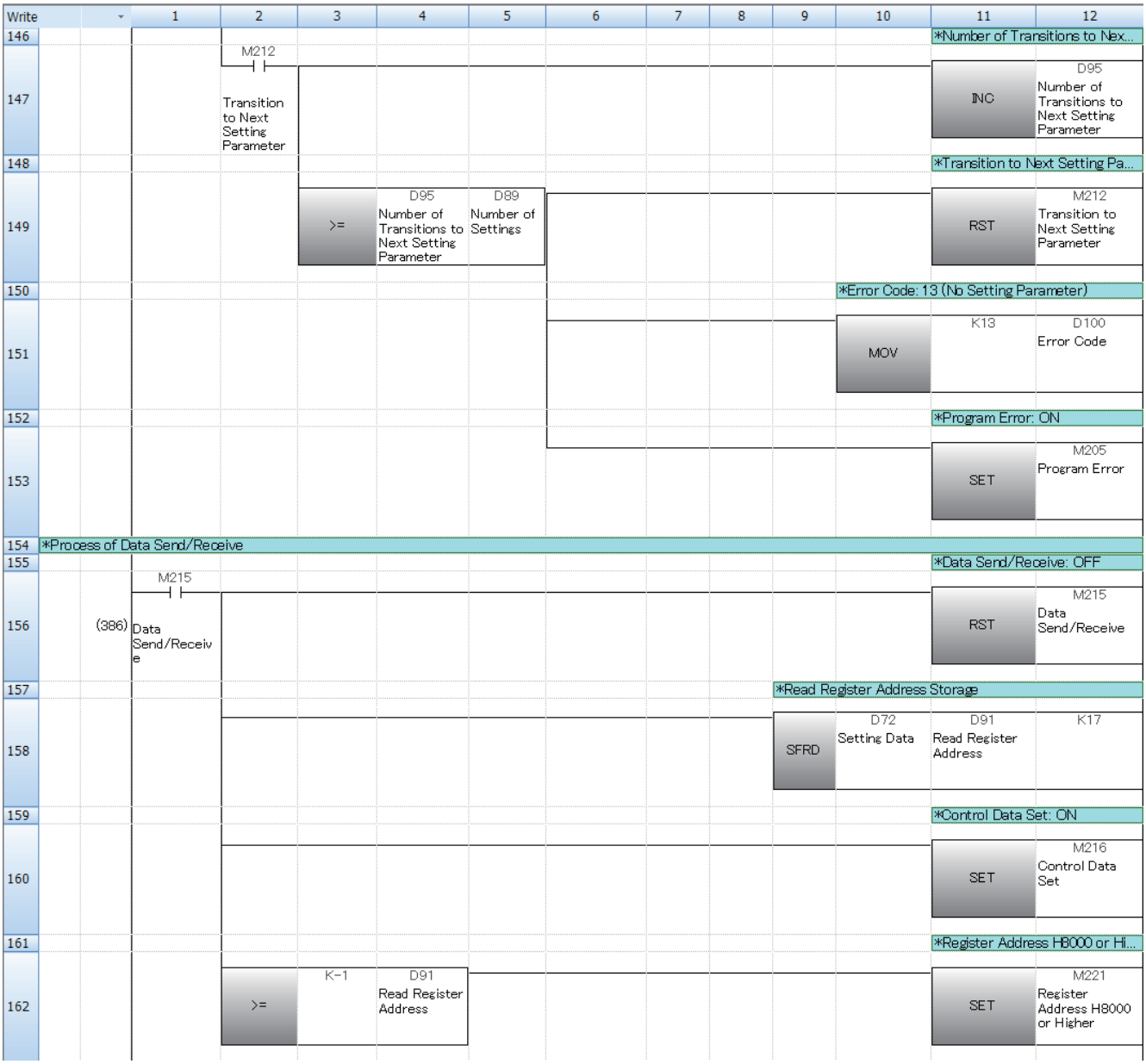

Write
1
2
3
4
5
6
7
8
9
10
11
12
64 *Process Before Starting Main Process
65 *Execution Command of Proce...
66 M202
(109)
Execution Command Before Start Main Process
RST
M202
Execution Command Before Start Main Process
67 *Error Code: 0 (Initialization)
68 MOV
K0
D100
Error Code
69 *Number of Data Process Times: 0 (Initializati...
70 MOV
K0
D92
Number of Data Processing Times
71 *Number of Transitions to Next Setting Param...
72 MOV
K0
D95
Number of Transitions to Next Setting Parameter
73 *Setting Parameter Address Offset: 0 (Initialize)
74 DMOV
K0
D52
Setting Parameter Address Offset
75 *Output Data Address Offset: 0 (Initialize)
76 DMOV
K0
D58
Output Data Address Offset
77 *Output Data Offset: 0 (Initialize)
78 DMOV
K0
D56
Output Data Offset

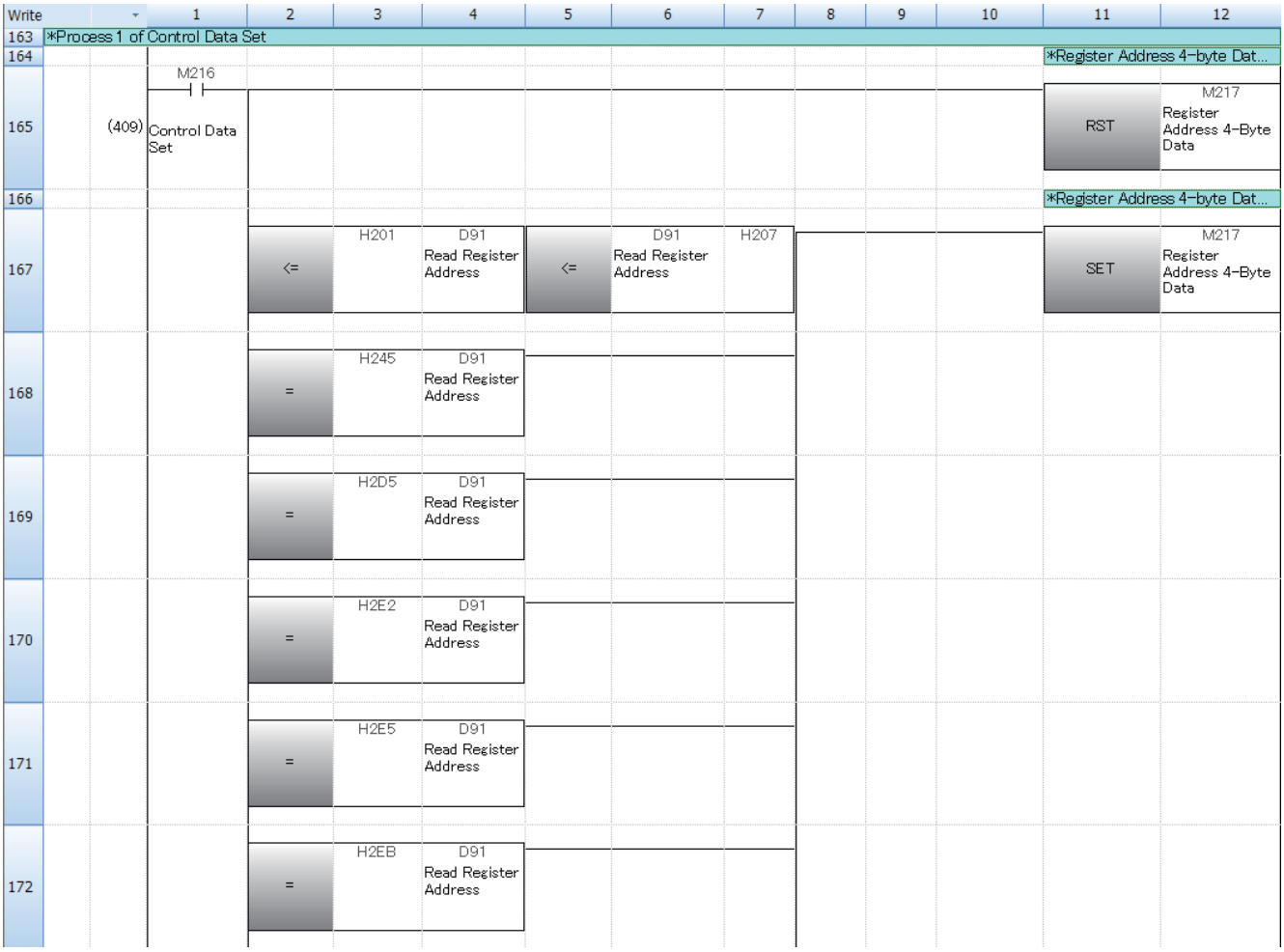

Write
1 2 3 4 5 6 7 8 9 10 11 12
79
*Output Data TMP: 0 (Initialize)
80
DMOV
K0
D60
Output Data TMP
81
*Error Station Output Address Offset: 0 (Initia...
82
DMOV
K0
D64
Error Station Output Address Offset
83
*Set Read Count: 0 (Initialize)
84
MOV
K0
D93
Setting Read Count
85
*Setting Parameter Start Address Storage
86
ADRSET
R0
Setting Parameter
D50
Setting Parameter Start Address
87
*Output Data Start Address Storage
88
ADRSET
R5100
Output Data
D54
Output Data Start Address
89
*Error Station Output Start Address Storage
90
ADRSET
R13260
Error Station Output
D62
Error Station Output Start Address
91
*Number of Settings Storage
92
MOV
D0
Number of Settings
D89
Number of Settings
93
*Setting Data Check Command...
94
SET
M200
Setting Data Check Command

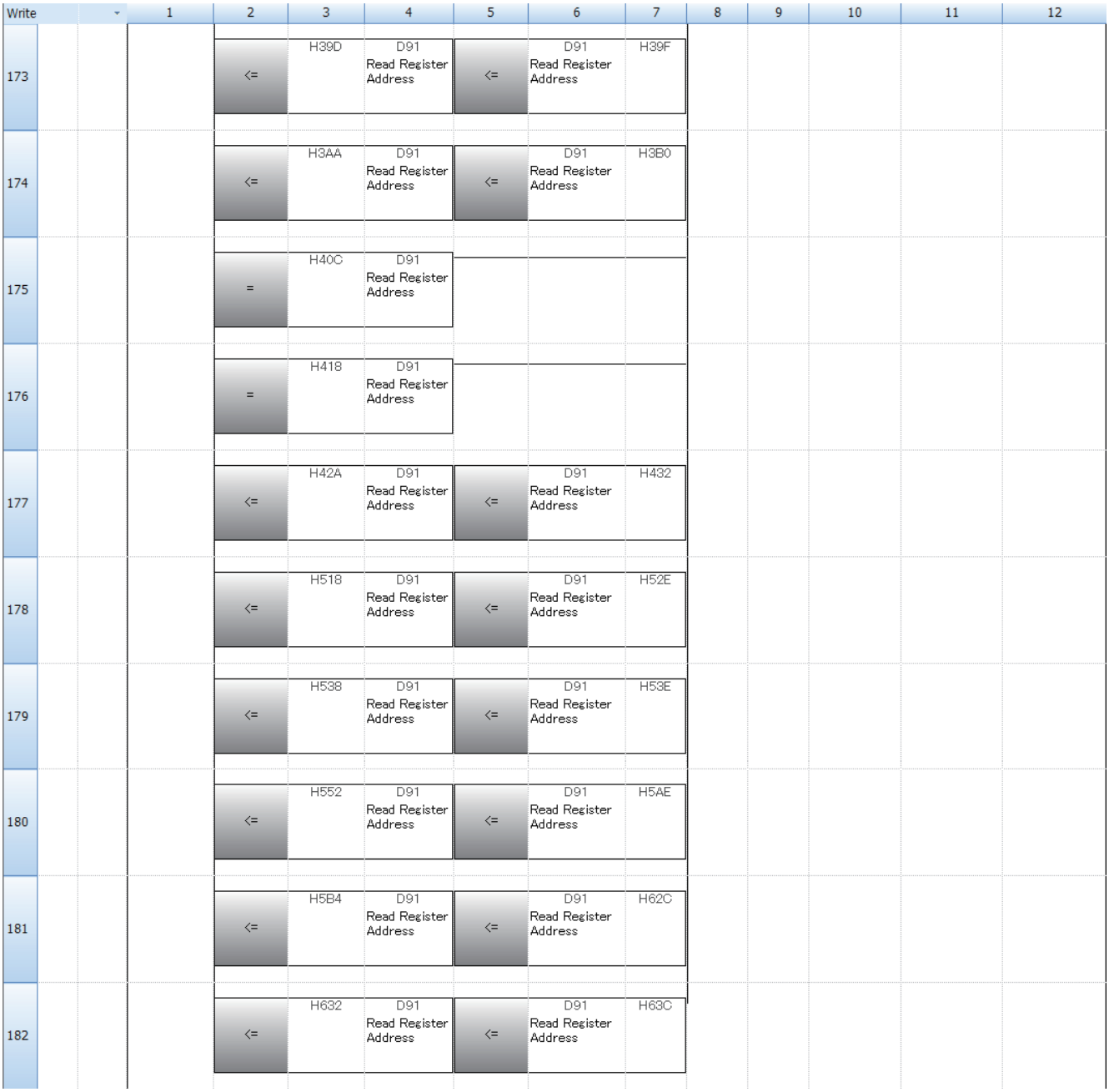

Write
1
2
3
4
5
6
7
8
9
10
11
12
95
*Process of Checking Preset Data
96
*Setting Data Check Command...
M200
97
(190)
Setting Data Check Command
RST
M200
Setting Data Check Command
98
*Error Code: 11 (Number of Settings Error)
99
D89
Number of Settings
K0
<=
MOV
K11
D100
Error Code
100
*Program Error: ON
101
D89
Number of Settings
K256
>=
SET
M205
Program Error
102
*Error Station Output Start Address Storage
M205
103
Program Error
DMOV
D62
Error Station Output Start Address
D70
Address Backup
104
*Error Station Output TMP: Number of Settings+Number...
105
+
D89
Number of Settings
D89
Number of Settings
D94
Error Station Output TMP
106
*Address Backup Value Initialized for Error Station Outp...
107
FMOV
K0
@D70
Address Backup
D94
Error Station Output TMP
108
*Setting Parameter Read: ON
109
SET
M211
Setting Parameter Read

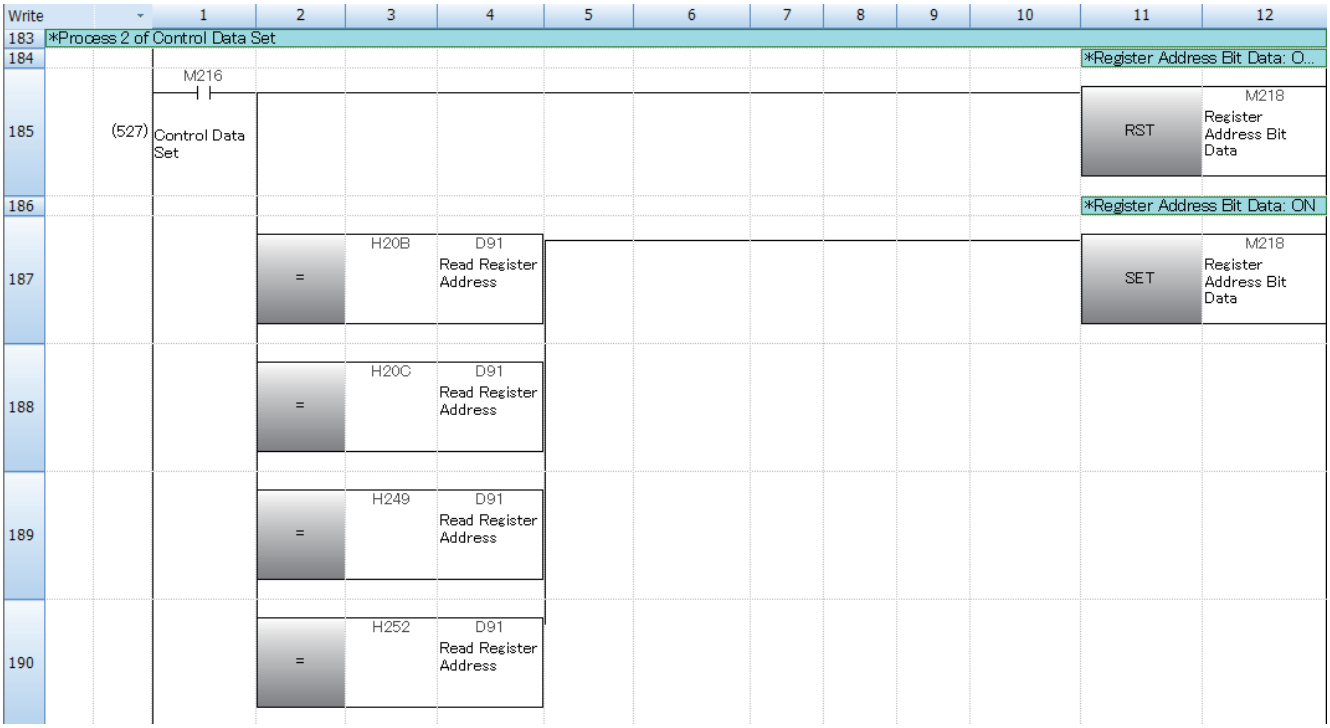

Write
1
2
3
4
5
6
7
8
9
10
11
12
110 *Process 1 of Reading Setting Parameter
111 *Address Backup: Setting Pr Start Adrs + Setting Pr Ad...
112 M211
(240)
Setting Parameter Read
D+
D50 Setting Parameter Start Address
D52 Setting Parameter Address Offset
D70 Address Backup
113 *Setting Station Number Storage
114 MOV
@D70 Address Backup
D96 Setting Station Number
115 *For Address Backup: For Address Backup + 1
116 D+
K1
D70 Address Backup
117 *Setting Data Storage
118 BMOV
@D70 Address Backup
D72 Setting Data
K17
119 *Transition to Next Setting Pa...
120 >=
K0
D72 Setting Data
SET
M212 Transition to Next Setting Parameter
121 *Error Station Output TMP: HFFFF
122 <=
K17
D72 Setting Data
<>
K0
D72 Setting Data
MOV
H0FFFF
D66 Error Station Output TMP
123 *Error Station Output TMP: H1002
124 MOV
H1002
D67 Error Station Output TMP
125 *Setting Parameter Error: ON
126 SET
M214 Setting Parameter Error


Write
1
2
3
4
5
6
7
8
9
10
11
12
127
*Transition to Next Setting Pa...
128
>=
K0
D96
Setting Station Number
SET
M212
Transition to Next Setting Parameter
129
*Error Station Output TMP: HFFFF
130
<=
K33
D96
Setting Station Number
<>
K0
D96
Setting Station Number
MOV
H0FFFF
D66
Error Station Output TMP
131
*Error Station Output TMP: H1001
132
MOV
H1001
D67
Error Station Output TMP
133
*Setting Parameter Error: ON
134
SET
M214
Setting Parameter Error
135
*Process 2 of Reading Setting Parameter
136
*Setting Parameter Read: OFF
137
M211
(334)
Setting Parameter Read
RST
M211
Setting Parameter Read
138
*Data Send/Receive: ON
139
M212
Transition to Next Setting Parameter
SET
M215
Data Send/Receive
140
*Address Backup: Err Sta Out Start Adrs + Err Sta Out ...
141
D+
D62
Error Station Output Start Address
D64
Error Station Output Address Offset
D70
Address Backup
142
*Error Station Output TMP: Address Backup ...
143
MOV
@D70
Address Backup
D66
Error Station Output TMP
144
*Number of Transitions to Next Setting Param...
145
MOV
K0
D95
Number of Transitions to Next Setting Parameter


Write
1
2
3
4
5
6
7
8
9
10
11
12
146
*Number of Transitions to Nex...
147
M212
Transition to Next Setting Parameter
INC
D95
Number of Transitions to Next Setting Parameter
148
*Transition to Next Setting Pa...
149
>=
D95
Number of Transitions to Next Setting Parameter
D89
Number of Settings
RST
M212
Transition to Next Setting Parameter
150
*Error Code: 13 (No Setting Parameter)
151
MOV
K13
D100
Error Code
152
*Program Error: ON
153
SET
M205
Program Error
154
*Process of Data Send/Receive
155
*Data Send/Receive: OFF
156
M215
(386)
Data Send/Receive
RST
M215
Data Send/Receive
157
*Read Register Address Storage
158
SFRD
D72
Setting Data
D91
Read Register Address
K17
159
*Control Data Set: ON
160
SET
M216
Control Data Set
161
*Register Address H8000 or Hi...
162
>=
K-1
D91
Read Register Address
SET
M221
Register Address H8000 or Higher

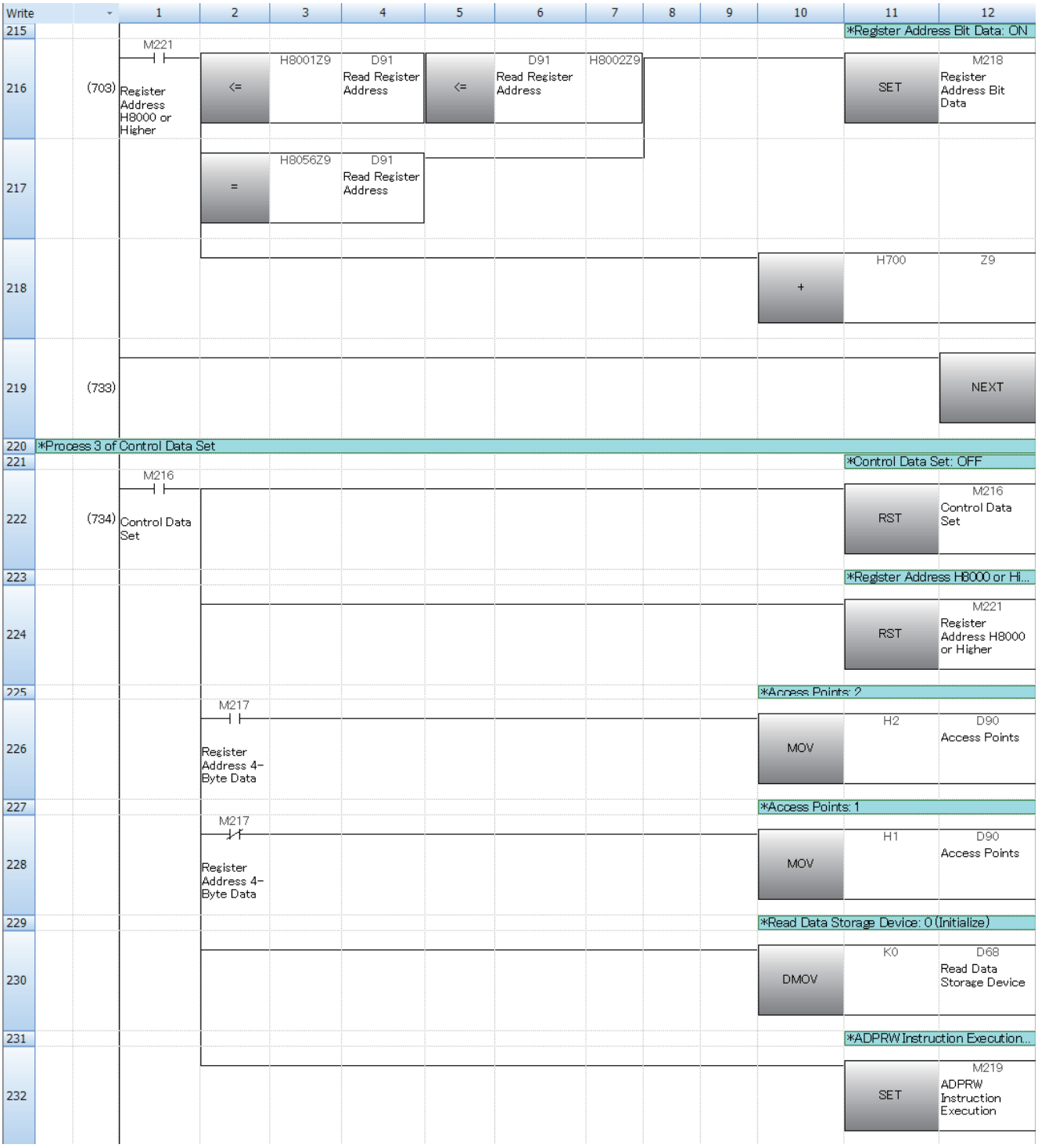

Write
1
2
3
4
5
6
7
8
9
10
11
12
163
*Process 1 of Control Data Set
164
*Register Address 4-byte Dat...
M216
165
(409)
Control Data Set
RST
M217
Register Address 4-Byte Data
166
*Register Address 4-byte Dat...
167
<=
H201
D91
Read Register Address
<=
D91
Read Register Address
H207
SET
M217
Register Address 4-Byte Data
168
=
H245
D91
Read Register Address
169
=
H2D5
D91
Read Register Address
170
=
H2E2
D91
Read Register Address
171
=
H2E5
D91
Read Register Address
172
=
H2EB
D91
Read Register Address

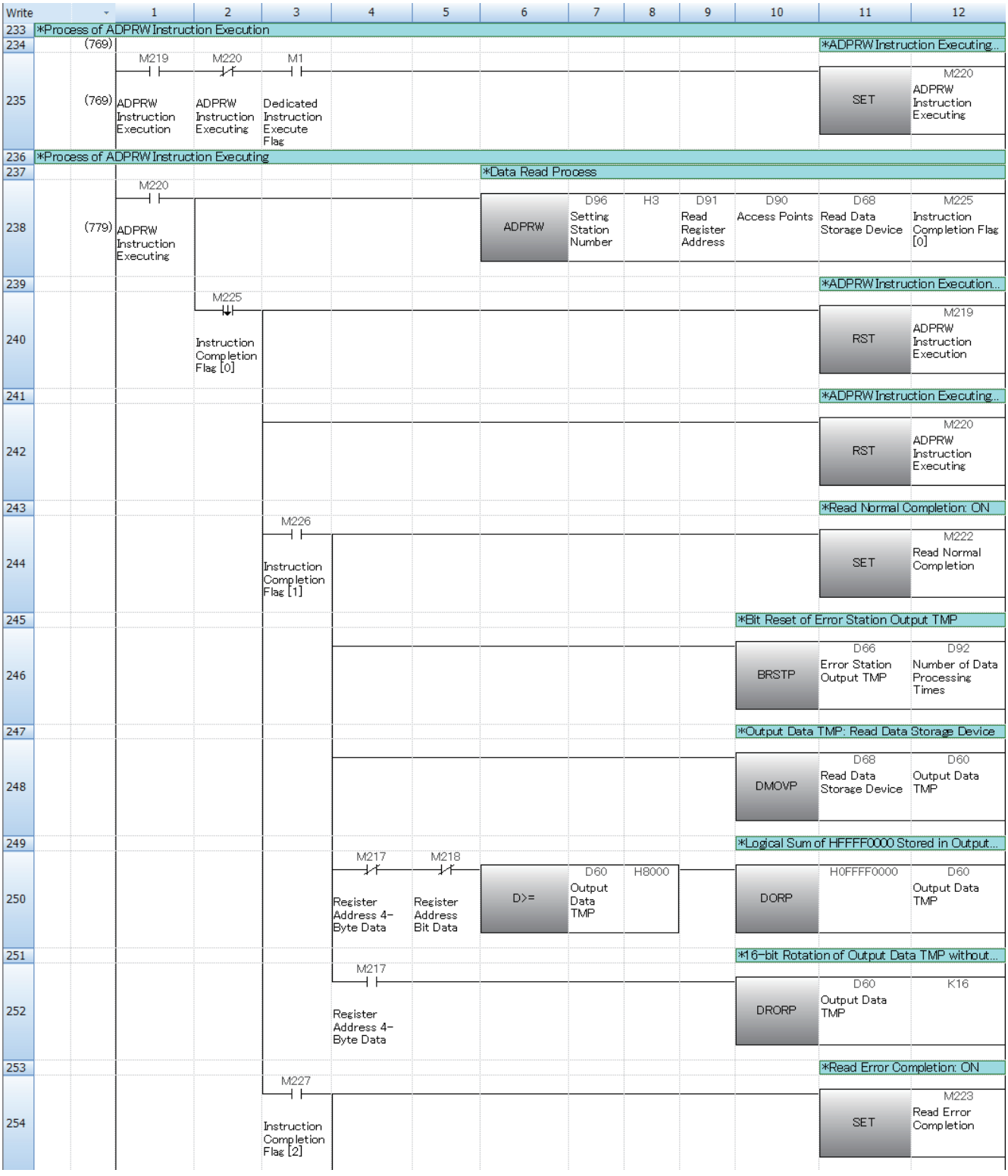

Write
1
2
3
4
5
6
7
8
9
10
11
12
173
<=
H39D
D91
Read Register Address
<=
D91
Read Register Address
H39F
174
<=
H3AA
D91
Read Register Address
<=
D91
Read Register Address
H3B0
175
=
H40C
D91
Read Register Address
176
=
H418
D91
Read Register Address
177
<=
H42A
D91
Read Register Address
<=
D91
Read Register Address
H432
178
<=
H518
D91
Read Register Address
<=
D91
Read Register Address
H52E
179
<=
H538
D91
Read Register Address
<=
D91
Read Register Address
H53E
180
<=
H552
D91
Read Register Address
<=
D91
Read Register Address
H5AE
181
<=
H5B4
D91
Read Register Address
<=
D91
Read Register Address
H62C
182
<=
H632
D91
Read Register Address
<=
D91
Read Register Address
H63C

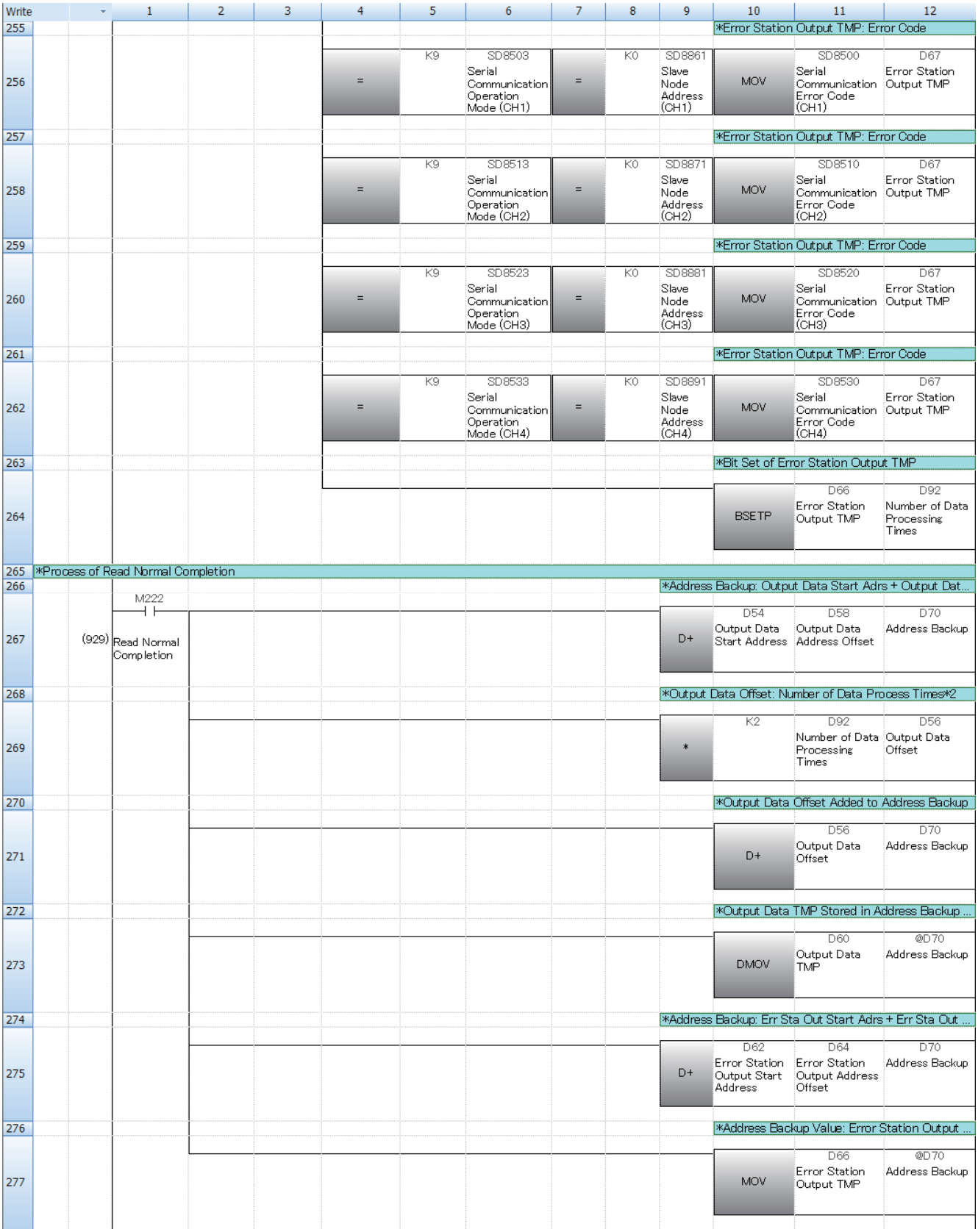

Write
1
2
3
4
5
6
7
8
9
10
11
12
183
*Process 2 of Control Data Set
184
*Register Address Bit Data: O...
185
M216
(527)
Control Data Set
RST
M218
Register Address Bit Data
186
*Register Address Bit Data: ON
187
=
H20B
D91
Read Register Address
SET
M218
Register Address Bit Data
188
=
H20C
D91
Read Register Address
189
=
H249
D91
Read Register Address
190
=
H252
D91
Read Register Address

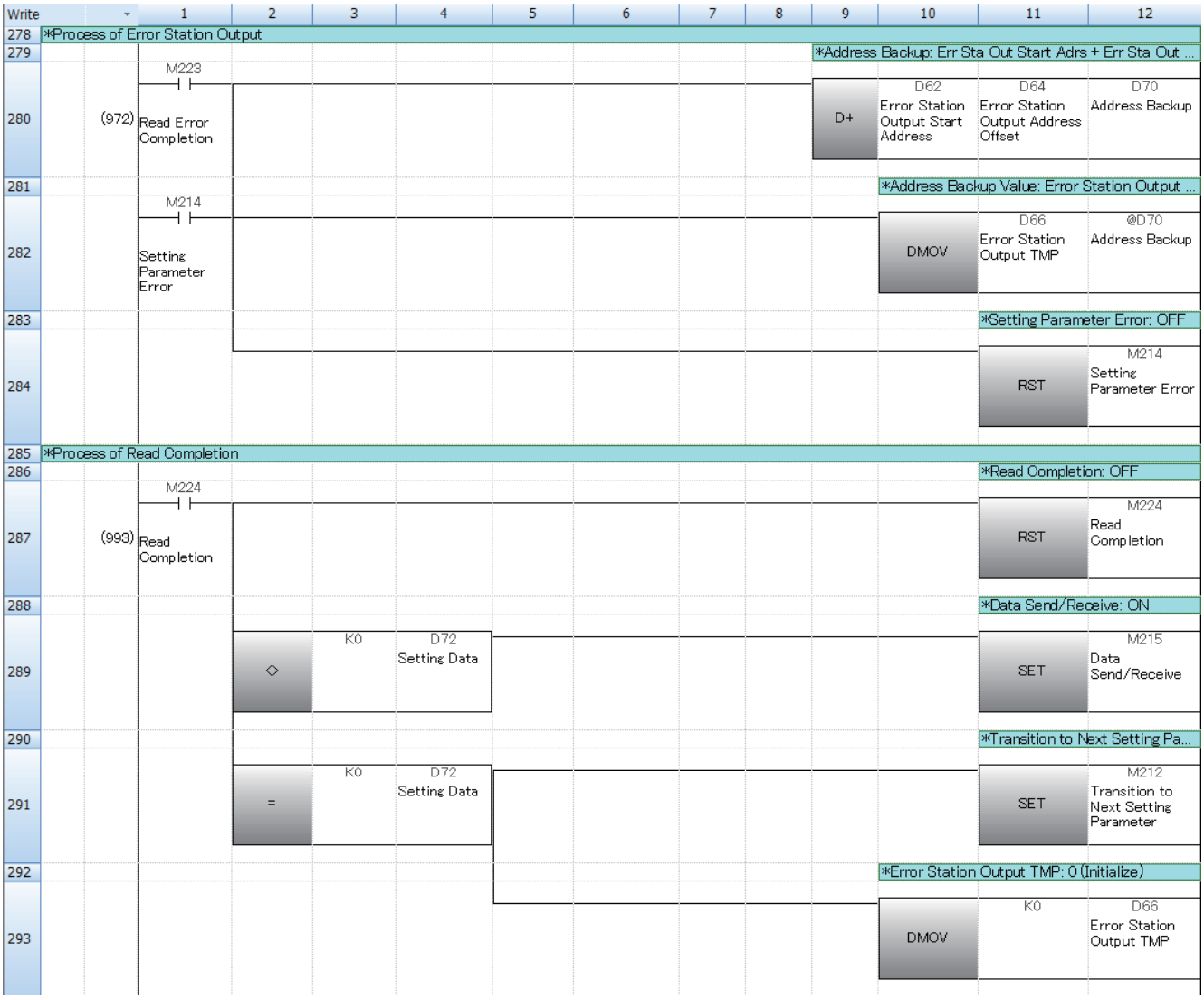

Write
1
2
3
4
5
6
7
8
9
10
11
12
191 *Process of Register Address H8000 or Higher
192 (553) FOR K7
193 *Register Address 4-byte Dat...
194 (557) M221 Register Address H8000 or Higher <= H800DZ9 D91 Read Register Address <= D91 Read Register Address H8011Z9 SET M217 Register Address 4-Byte Data
195 <= H8016Z9 D91 Read Register Address <= D91 Read Register Address H801AZ9
196 = H802BZ9 D91 Read Register Address
197 = H802EZ9 D91 Read Register Address
198 = H8031Z9 D91 Read Register Address
199 = H8034Z9 D91 Read Register Address
200 = H803EZ9 D91 Read Register Address
201 = H8042Z9 D91 Read Register Address
202 = H8046Z9 D91 Read Register Address
203 = H8075Z9 D91 Read Register Address

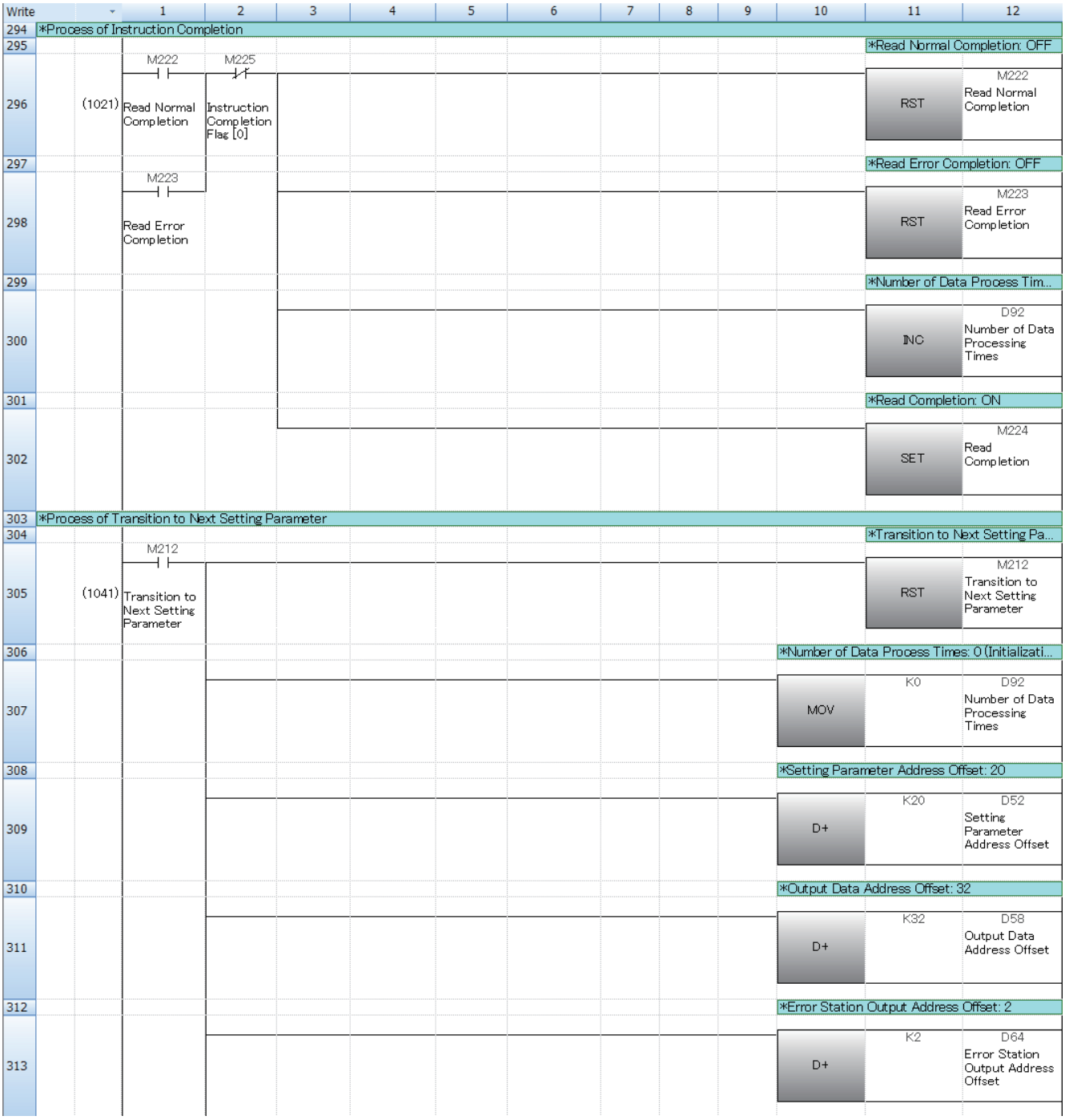

Write
1
2
3
4
5
6
7
8
9
10
11
12
204
=
H8078Z9
D91
Read Register Address
205
=
H807BZ9
D91
Read Register Address
206
=
H807EZ9
D91
Read Register Address
207
=
H8096Z9
D91
Read Register Address
208
=
H80A1Z9
D91
Read Register Address
209
=
H80A4Z9
D91
Read Register Address
210
=
H80A7Z9
D91
Read Register Address
211
<=
H8178Z9
D91
Read Register Address
<=
D91
Read Register Address
H817AZ9
212
<=
H8218Z9
D91
Read Register Address
<=
D91
Read Register Address
H8234Z9
213
<=
H823AZ9
D91
Read Register Address
<=
D91
Read Register Address
H8240Z9
214
<=
H8246Z9
D91
Read Register Address
<=
D91
Read Register Address
H828AZ9

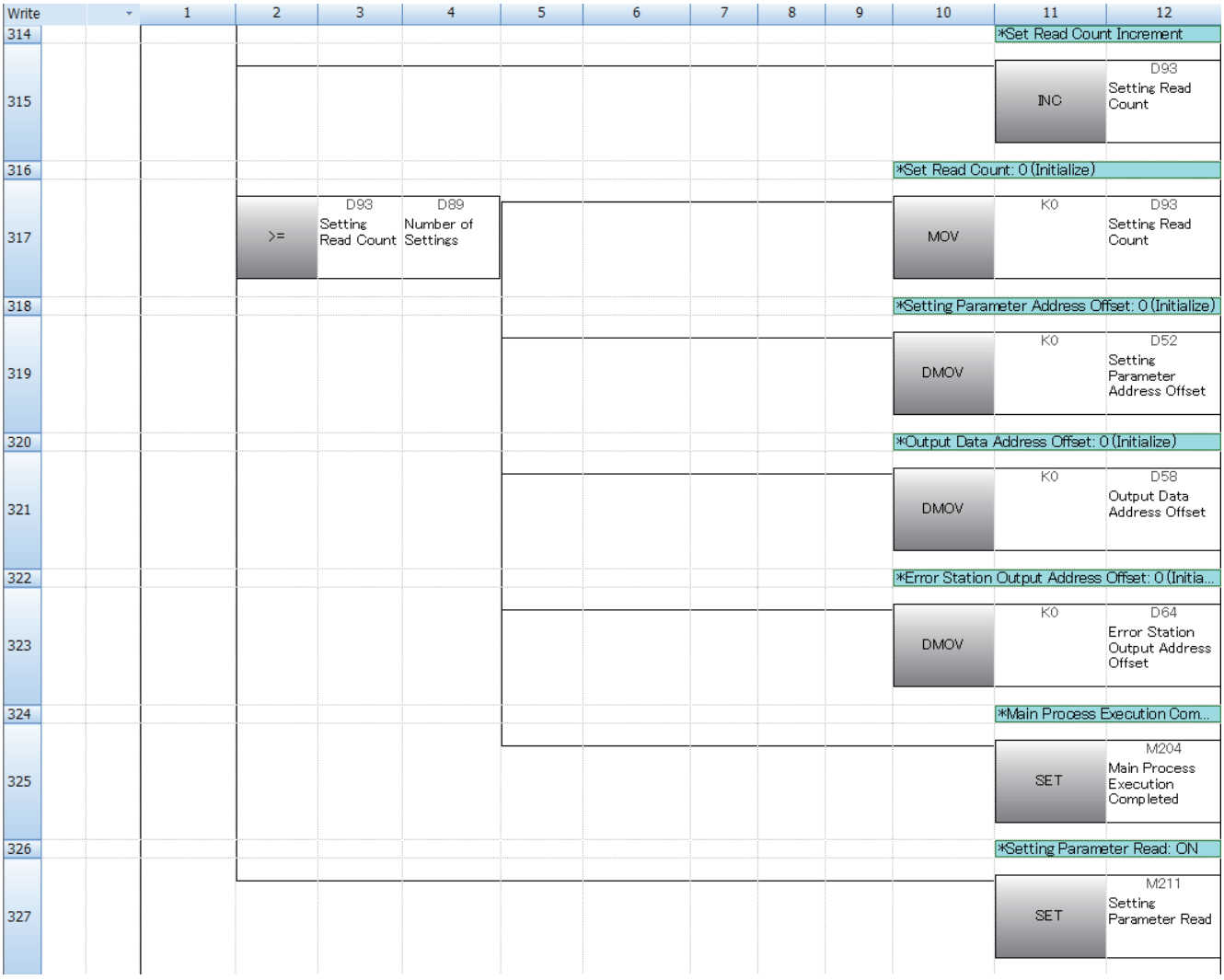

Write
1
2
3
4
5
6
7
8
9
10
11
12
215
*Register Address Bit Data: ON
M221
216
(703)
Register Address H8000 or Higher
<=
H8001Z9
D91
Read Register Address
<=
D91
Read Register Address
H8002Z9
SET
M218
Register Address Bit Data
217
=
H8056Z9
D91
Read Register Address
218
+
H700
Z9
219
(733)
NEXT
220
*Process 3 of Control Data Set
221
*Control Data Set: OFF
M216
222
(734)
Control Data Set
RST
M216
Control Data Set
223
*Register Address H8000 or Hi...
224
RST
M221
Register Address H8000 or Higher
225
*Access Points: 2
M217
226
Register Address 4-Byte Data
MOV
H2
D90
Access Points
227
*Access Points: 1
M217
228
Register Address 4-Byte Data
MOV
H1
D90
Access Points
229
*Read Data Storage Device: 0 (Initialize)
230
DMOV
K0
D68
Read Data Storage Device
231
*ADPRW Instruction Execution...
232
SET
M219
ADPRW Instruction Execution

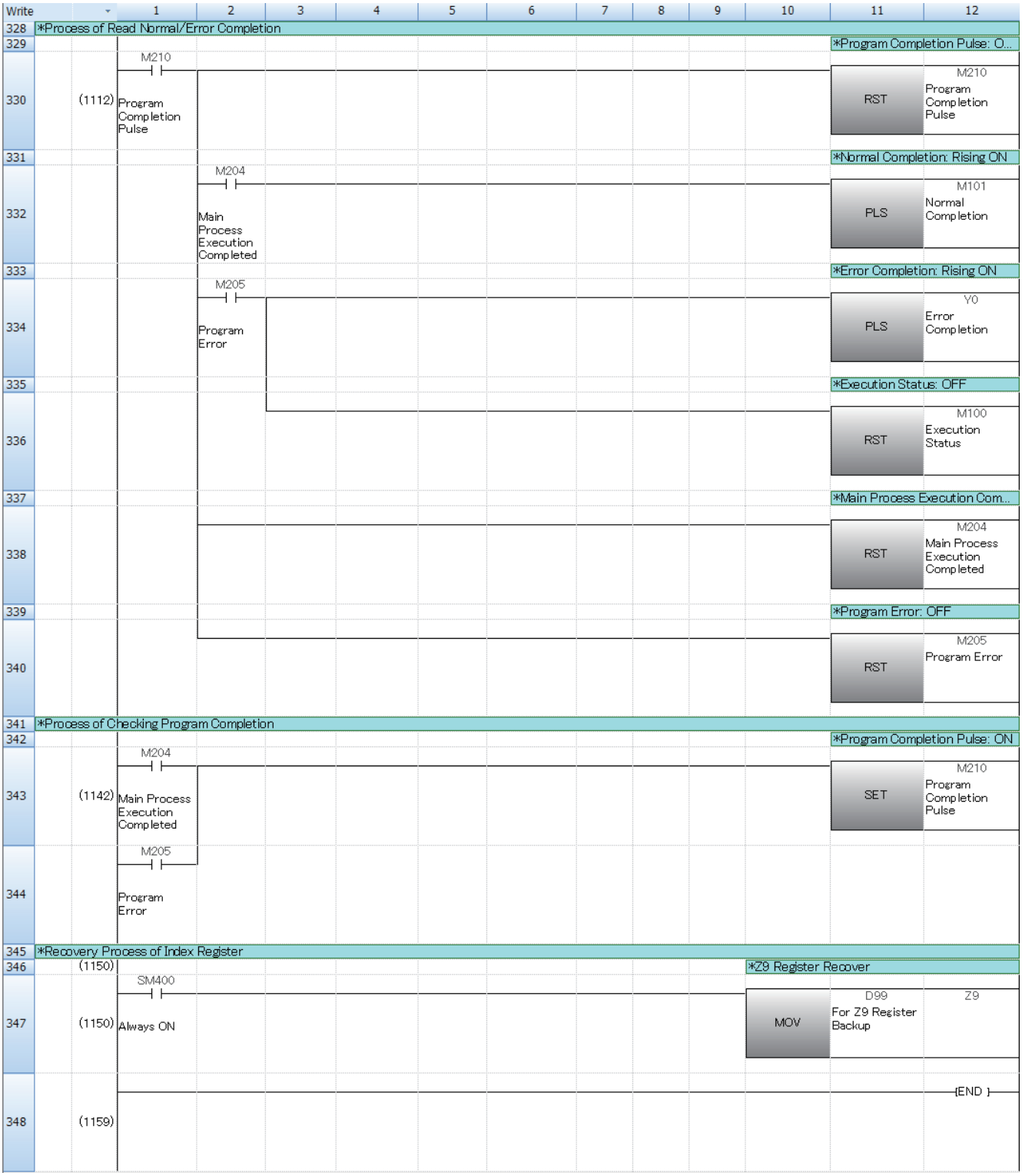

Write
1
2
3
4
5
6
7
8
9
10
11
12
233 *Process of ADPRW Instruction Execution
234 (769)
*ADPRW Instruction Executing...
235 (769) M219 ADPRW Instruction Execution
M220 ADPRW Instruction Executing
M1 Dedicated Instruction Execute Flag
SET M220 ADPRW Instruction Executing
236 *Process of ADPRW Instruction Executing
237 *Data Read Process
238 (779) M220 ADPRW Instruction Executing
ADPRW D96 Setting Station Number H3 D91 Read Register Address D90 Access Points D68 Read Data Storage Device M225 Instruction Completion Flag [0]
239 *ADPRW Instruction Execution...
240 M225 Instruction Completion Flag [0]
RST M219 ADPRW Instruction Execution
241 *ADPRW Instruction Executing...
242 RST M220 ADPRW Instruction Executing
243 *Read Normal Completion: ON
244 M226 Instruction Completion Flag [1]
SET M222 Read Normal Completion
245 *Bit Reset of Error Station Output TMP
246 BRSTP D66 Error Station Output TMP D92 Number of Data Processing Times
247 *Output Data TMP: Read Data Storage Device
248 DMOVP D68 Read Data Storage Device D60 Output Data TMP
249 *Logical Sum of HFFFF0000 Stored in Output...
250 M217 Register Address 4-Byte Data M218 Register Address Bit Data D>= D60 Output Data TMP H8000
DORP H0FFFF0000 D60 Output Data TMP
251 *16-bit Rotation of Output Data TMP without...
252 M217 Register Address 4-Byte Data
DRORP D60 Output Data TMP K16
253 *Read Error Completion: ON
254 M227 Instruction Completion Flag [2]
SET M223 Read Error Completion


Write
1
2
3
4
5
6
7
8
9
10
11
12
255
*Error Station Output TMP: Error Code
256
=
K9
SD8503
Serial Communication Operation Mode (CH1)
=
K0
SD8861
Slave Node Address (CH1)
MOV
SD8500
Serial Communication Error Code (CH1)
D67
Error Station Output TMP
257
*Error Station Output TMP: Error Code
258
=
K9
SD8513
Serial Communication Operation Mode (CH2)
=
K0
SD8871
Slave Node Address (CH2)
MOV
SD8510
Serial Communication Error Code (CH2)
D67
Error Station Output TMP
259
*Error Station Output TMP: Error Code
260
=
K9
SD8523
Serial Communication Operation Mode (CH3)
=
K0
SD8881
Slave Node Address (CH3)
MOV
SD8520
Serial Communication Error Code (CH3)
D67
Error Station Output TMP
261
*Error Station Output TMP: Error Code
262
=
K9
SD8533
Serial Communication Operation Mode (CH4)
=
K0
SD8891
Slave Node Address (CH4)
MOV
SD8530
Serial Communication Error Code (CH4)
D67
Error Station Output TMP
263
*Bit Set of Error Station Output TMP
264
BSETP
D66
Error Station Output TMP
D92
Number of Data Processing Times
265
*Process of Read Normal Completion
266
*Address Backup: Output Data Start Adrs + Output Dat...
267
M222
(929)
Read Normal Completion
D+
D54
Output Data Start Address
D58
Output Data Address Offset
D70
Address Backup
268
*Output Data Offset: Number of Data Process Times*2
269
*
K2
Number of Data Processing Times
D92
D56
Output Data Offset
270
*Output Data Offset Added to Address Backup
271
D+
D56
Output Data Offset
D70
Address Backup
272
*Output Data TMP Stored in Address Backup ...
273
DMOV
D60
Output Data TMP
@D70
Address Backup
274
*Address Backup: Err Sta Out Start Adrs + Err Sta Out ...
275
D+
D62
Error Station Output Start Address
D64
Error Station Output Address Offset
D70
Address Backup
276
*Address Backup Value: Error Station Output ...
277
MOV
D66
Error Station Output TMP
@D70
Address Backup


Write
1
2
3
4
5
6
7
8
9
10
11
12
278 *Process of Error Station Output
279 *Address Backup: Err Sta Out Start Adrs + Err Sta Out ...
280 M223
(972)
Read Error Completion
D+
D62
Error Station Output Start Address
D64
Error Station Output Address Offset
D70
Address Backup
281 *Address Backup Value: Error Station Output ...
282 M214
Setting Parameter Error
DMOV
D66
Error Station Output TMP
@D70
Address Backup
283 *Setting Parameter Error: OFF
284 RST
M214
Setting Parameter Error
285 *Process of Read Completion
286 *Read Completion: OFF
287 M224
(993)
Read Completion
RST
M224
Read Completion
288 *Data Send/Receive: ON
289 <>
K0
D72
Setting Data
SET
M215
Data Send/Receive
290 *Transition to Next Setting Pa...
291 =
K0
D72
Setting Data
SET
M212
Transition to Next Setting Parameter
292 *Error Station Output TMP: 0 (Initialize)
293 DMOV
K0
D66
Error Station Output TMP


Write
1
2
3
4
5
6
7
8
9
10
11
12
294 *Process of Instruction Completion
295 *Read Normal Completion: OFF
M222
M225
296 (1021) Read Normal Completion
Instruction Completion Flag [0]
RST
M222
Read Normal Completion
297 *Read Error Completion: OFF
M223
298 Read Error Completion
RST
M223
Read Error Completion
299 *Number of Data Process Tim...
300
INC
D92
Number of Data Processing Times
301 *Read Completion: ON
302
SET
M224
Read Completion
303 *Process of Transition to Next Setting Parameter
304 *Transition to Next Setting Pa...
M212
305 (1041) Transition to Next Setting Parameter
RST
M212
Transition to Next Setting Parameter
306 *Number of Data Process Times: 0 (Initializati...
307
MOV
K0
D92
Number of Data Processing Times
308 *Setting Parameter Address Offset: 20
309
D+
K20
D52
Setting Parameter Address Offset
310 *Output Data Address Offset: 32
311
D+
K32
D58
Output Data Address Offset
312 *Error Station Output Address Offset: 2
313
D+
K2
D64
Error Station Output Address Offset


Write
1
2
3
4
5
6
7
8
9
10
11
12
314
*Set Read Count Increment
315
INC
D93
Setting Read Count
316
*Set Read Count: 0 (Initialize)
317
>=
D93
Setting Read Count
D89
Number of Settings
MOV
K0
D93
Setting Read Count
318
*Setting Parameter Address Offset: 0 (Initialize)
319
DMOV
K0
D52
Setting Parameter Address Offset
320
*Output Data Address Offset: 0 (Initialize)
321
DMOV
K0
D58
Output Data Address Offset
322
*Error Station Output Address Offset: 0 (Initia...
323
DMOV
K0
D64
Error Station Output Address Offset
324
*Main Process Execution Com...
325
SET
M204
Main Process Execution Completed
326
*Setting Parameter Read: ON
327
SET
M211
Setting Parameter Read


Write
1
2
3
4
5
6
7
8
9
10
11
12
328 *Process of Read Normal/Error Completion
329
*Program Completion Pulse: O...
M210
330
(1112)
Program Completion Pulse
RST
M210
Program Completion Pulse
331
*Normal Completion: Rising ON
M204
332
Main Process Execution Completed
PLS
M101
Normal Completion
333
*Error Completion: Rising ON
M205
334
Program Error
PLS
Y0
Error Completion
335
*Execution Status: OFF
336
RST
M100
Execution Status
337
*Main Process Execution Com...
338
RST
M204
Main Process Execution Completed
339
*Program Error: OFF
340
RST
M205
Program Error
341 *Process of Checking Program Completion
342
*Program Completion Pulse: ON
M204
343
(1142)
Main Process Execution Completed
SET
M210
Program Completion Pulse
M205
344
Program Error
345 *Recovery Process of Index Register
346
(1150)
*Z9 Register Recover
SM400
347
(1150)
Always ON
MOV
D99
For Z9 Register Backup
Z9
END
348
(1159)

2.2 Data Write

Name

Data Write

Outline

Writes setting values to power distribution measuring instruments.

Programs used

This program is used for the FX5U and FX5UC.

The following table shows the project used in this program.

No.	Project name	Program name	Remark
1	LD-FX5U_e-MEASURE-MB_V100A_J	02_Data Write	This project is created with the FX5U or FX5UC.

Devices used

The following table lists the devices used in this program.

■Input device

No.	Device name	Data type	Type	Device comment	Remark
1	M300	Bit	Input	Execution Command	ON: The program is activated. OFF: The program is not activated.
2	D200 to D203	Word [Signed]	Input	Setting Parameter	Sets the data set to the power distribution measuring instrument.

■Configuration of Setting Parameter

Device	Description	Setting range	Remark
S4	Station number	0 to 32	When the station number is set to 0, broadcast communication is performed.
S4+1	Setting register address	The setting range depends on the target power distribution measuring instrument.	For the details on the setting register address and setting range of setting data, refer to the MODBUS interface specifications of each power distribution measuring instrument.
S4+2 to S4+3	Setting data	The setting range depends on the setting register address.	

* S4 corresponds to D200.

■Output device

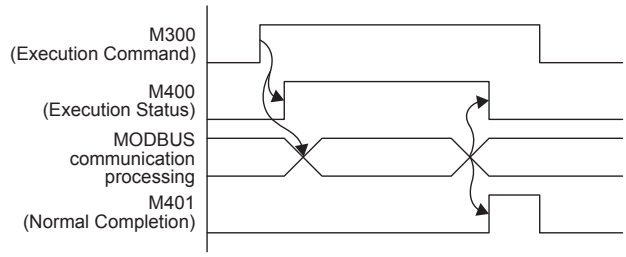
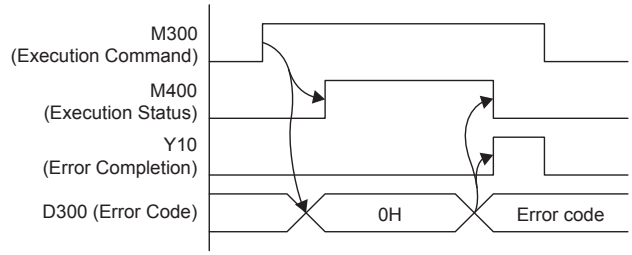
No.	Device name	Data type	Type	Device comment	Remark
1	M400	Bit	Output	Execution Status	ON: The execution command is on. OFF: The execution command is off.
2	M401	Bit	Output	Normal Completion	When this label is on, it indicates that the processing has been completed.
3	Y10	Bit	Output	Error Completion	When this label is on, it indicates that an error has occurred in the program.
4	D300	Word [Signed]	Output	Error Code	Stores the error code that occurred in the program.

■Internal device

No.	Device name	Data type	Type	Device comment	Remark
1	M500	Bit	Internal	Setting Data Check Command	Holds the check command flag of setting data.
2	M502	Bit	Internal	Execution Command Before Start Main Process	Holds the execution command flag of the process before the start of main process.
3	M505	Bit	Internal	Program Error	Holds the error flag of the program.
4	M510	Bit	Internal	Program Completion Pulse	Holds the completion pulse flag of the program.
5	M511	Bit	Internal	Confirm Program Completion	Holds the confirmation flag of program completion.
6	M512	Bit	Internal	Control Data Set	Holds the control data set flag.
7	M513	Bit	Internal	Register Address 4-Byte Data	Holds the flag of register address 4-byte data.

No.	Device name	Data type	Type	Device comment	Remark
8	M514 to M516	Bit (0..2)	Internal	Instruction Completion Flag	Holds the instruction completion flag.
9	M517	Bit	Internal	Write Normal Completion	Holds the write normal completion flag.
10	M518	Bit	Internal	Write Error Completion	Holds the write error completion flag.
11	M519	Bit	Internal	ADPRW Instruction Execution	Holds the ADPRW instruction execution flag.
12	D250 to D251	Double word [Signed]	Internal	Write Data Storage Device	Holds the data written to the connected devices.
13	D252	Word [Signed]	Internal	Access Points	Holds the access points.
14	D253 to D256	Word [Signed] (0..3)	Internal	Setting Parameter	Holds the setting parameter.
15	D299	Word [Signed]	Internal	For Z9 Register Backup	Backs up the register Z9.

Details of functions

Item	Description	
Applicable device	CPU module	FX5U CPU, FX5UC CPU
	Engineering tool	GX Works3 Version 1.031H or later
Language	Ladder	
Number of basic steps	550 steps The number of steps of the FB in a program depends on the CPU module used, input and output definition, and the option setting in GX Works3. For the option setting in GX Works3, refer to GX Works3 Operating Manual.	
Processing	• When Execution Command (M300) is turned on, the items of Setting Parameter (D200 to D203) are set to the power distribution measuring instrument. • If an incorrect value is specified, Error Completion (Y10) turns on and the processing is suspended. In addition, the error code is stored in Error Code (D300). * Note: This sample ladder backs up or recovers the index register. When the index register value need not to be held in other programs, the backup/recovery processing is not required.	
Timing chart of I/O signals	[For normal completion]  • When Execution Command (M300) is turned on, Execution Status (M400) turns on and the MODBUS communication processing is performed. • After the MODBUS communication processing is completed, Normal Completion (M401) turns on for one pulse and Execution Status (M400) turns off. Consequently, this program ends. [For error completion]  • When Execution Command (M300) is turned on, Error Code (D300) is reset (0). • The error code is stored in Error Code (D300), Error Completion (Y10) turns on for one pulse, and Execution Status (M400) turns off. Consequently, this program ends.	
Restrictions and precautions	• This program does not include the error recovery processing. Program the error recovery processing separately in accordance with the required system operation. • This program cannot be used as an interrupt program. • Do not use this program with programs that are executed only once, such as a subroutine program or FOR-NEXT loop, because Execution Command (M300) cannot be turned off and the normal operation cannot be performed. Always use this program with programs that can turn off Execution Command (M300). • This program uses the index register Z9.	

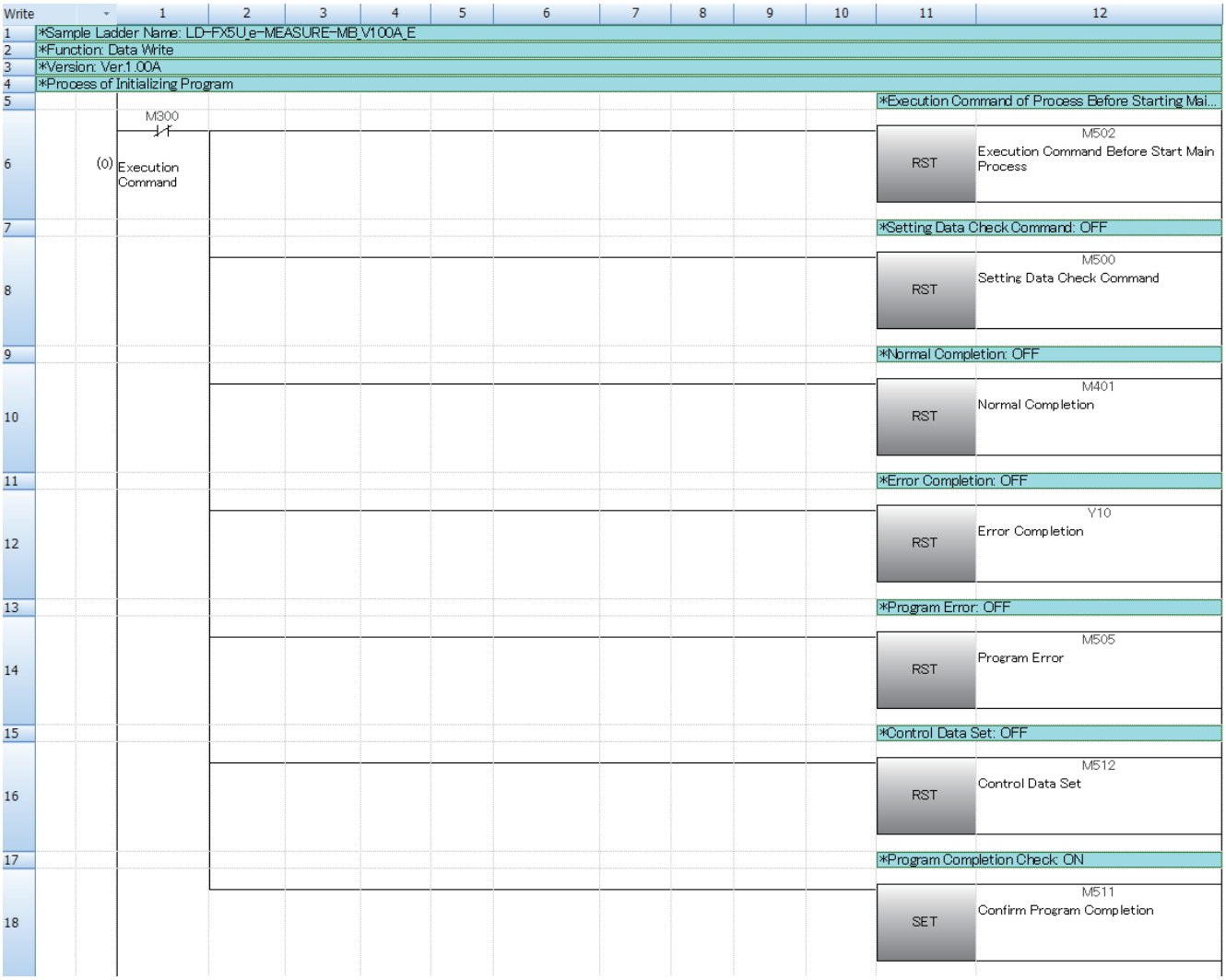
Error Code

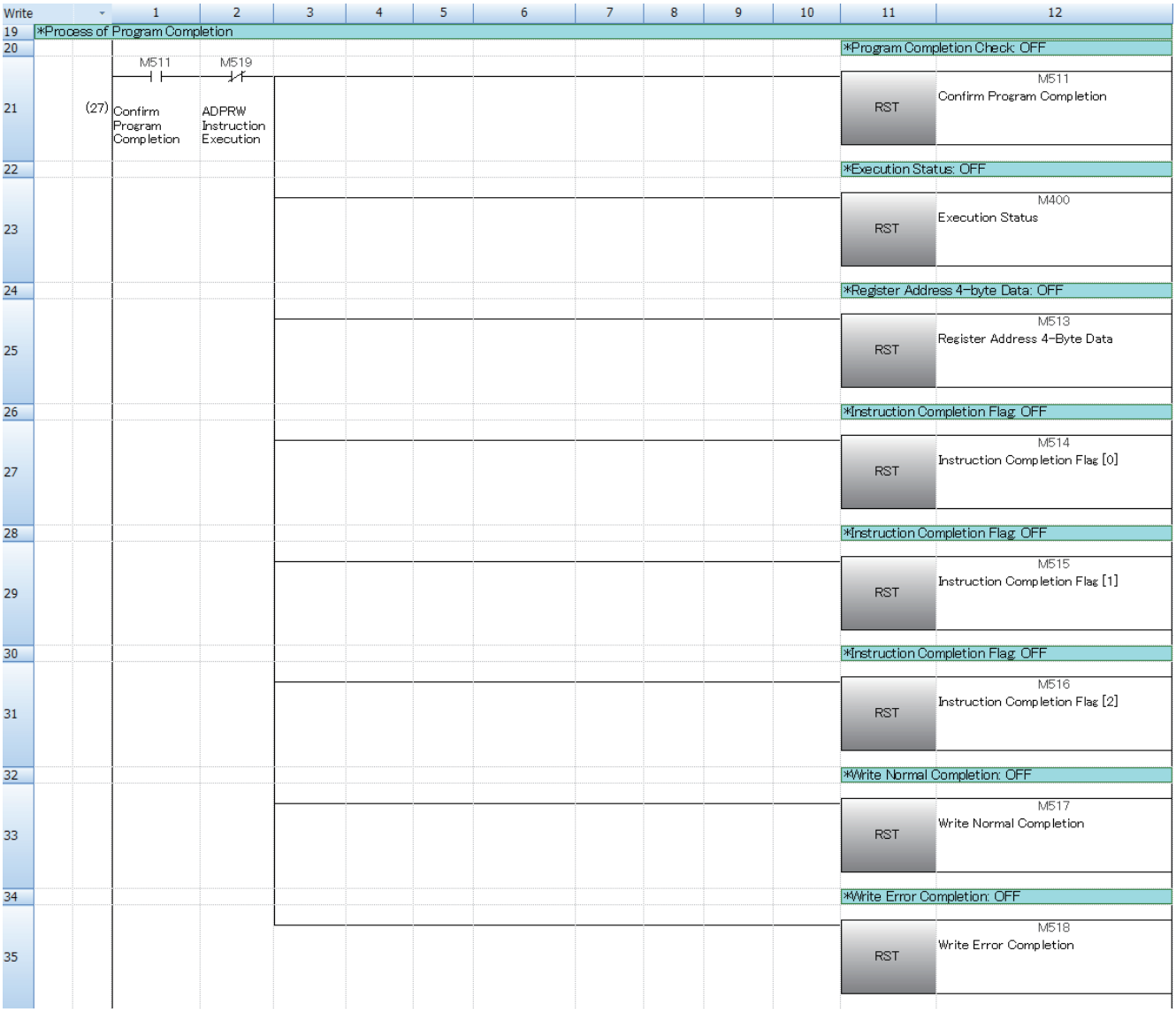
Error code (decimal)	Description	Action
14	A value out of the setting range is set in Setting Parameter (D200 to D203).	Review the station number setting of Setting Parameter (D200 to D203), and execute the program again.
Serial communication error code	The error code is the same as that occurs in the MODBUS serial communication.	Refer to MELSEC iQ-F FX5 User's Manual (MODBUS Communication).

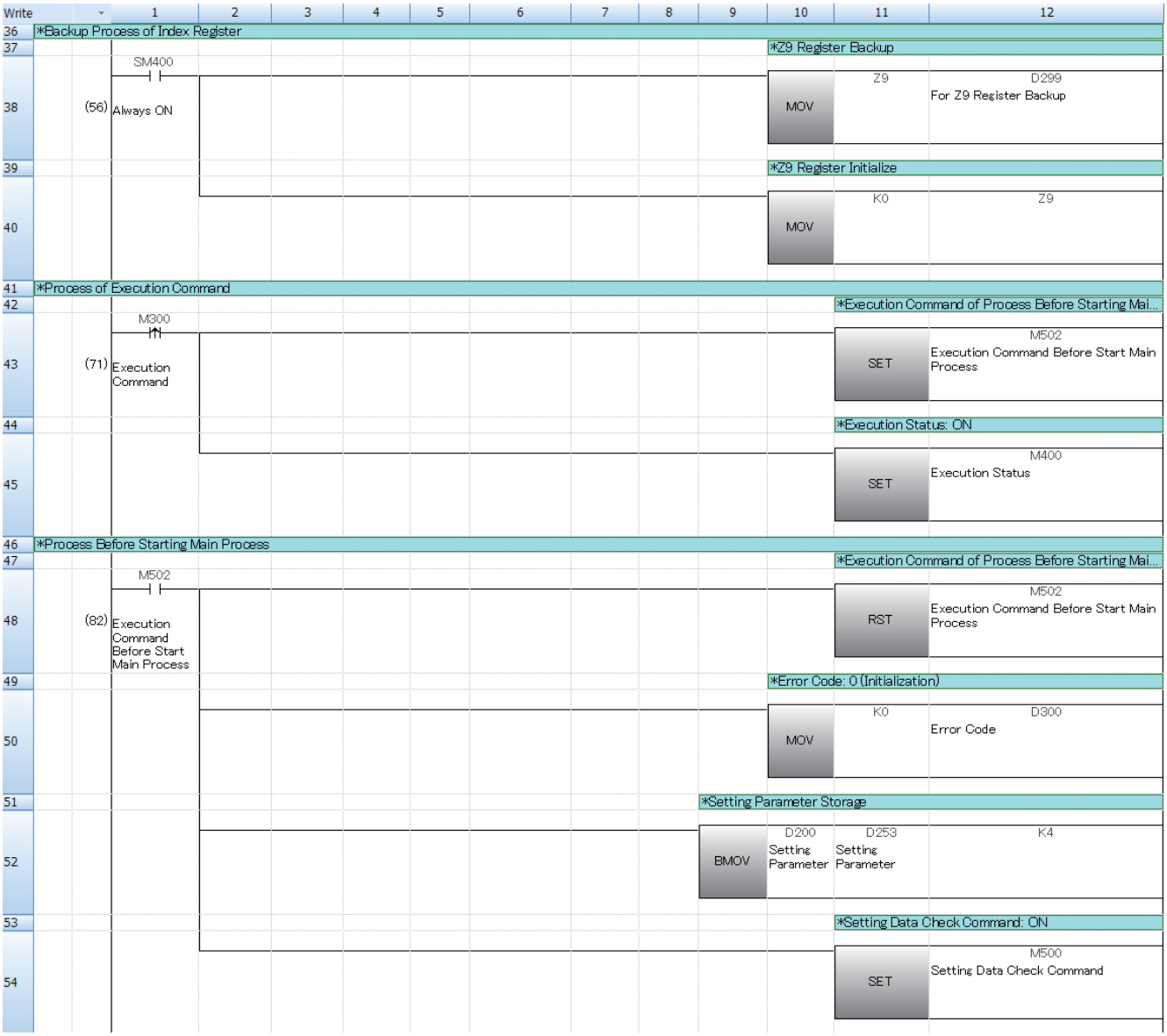
Version upgrade history

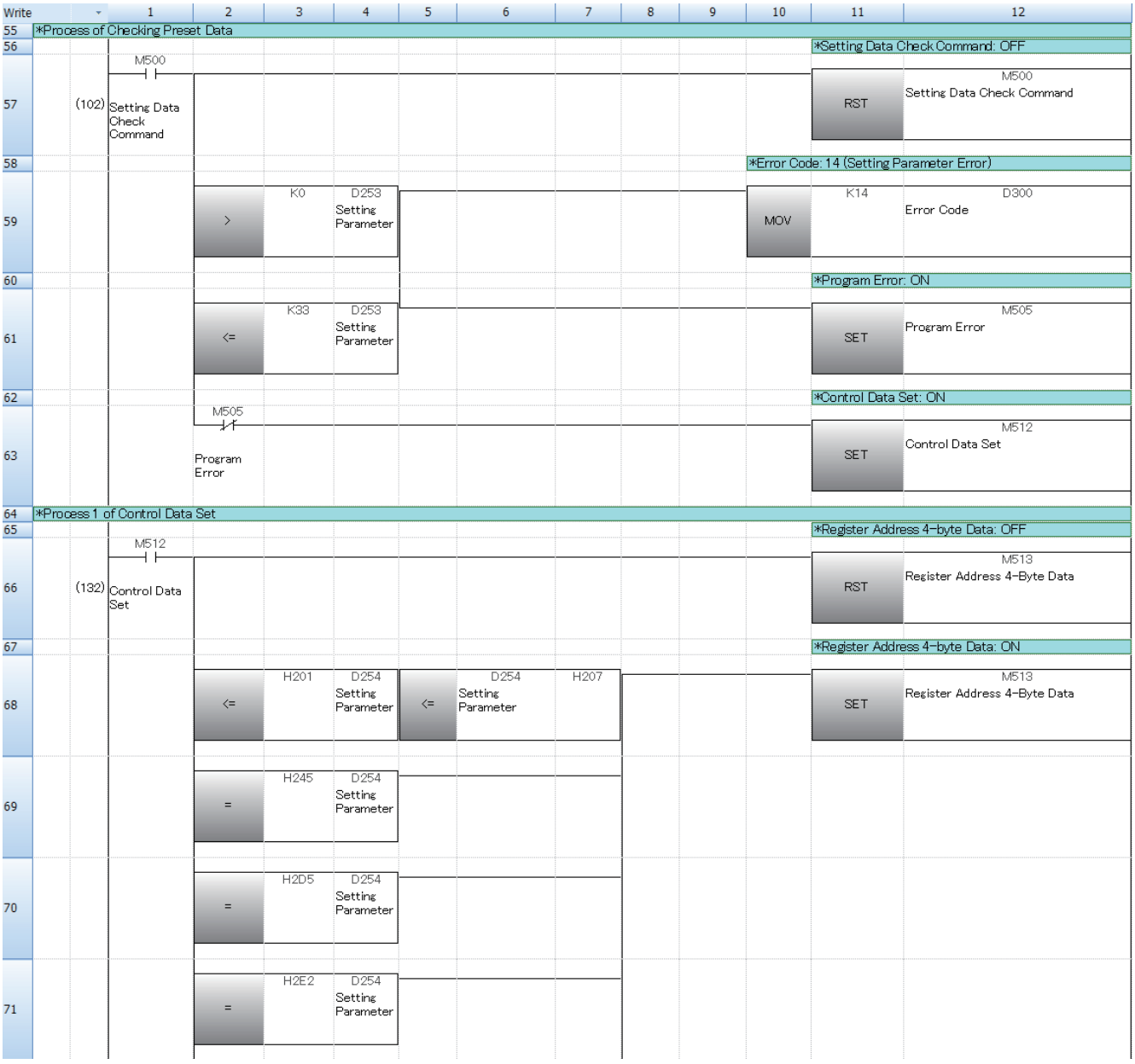
Version	Date	Description
Ver.1.00A	2017/3	First edition

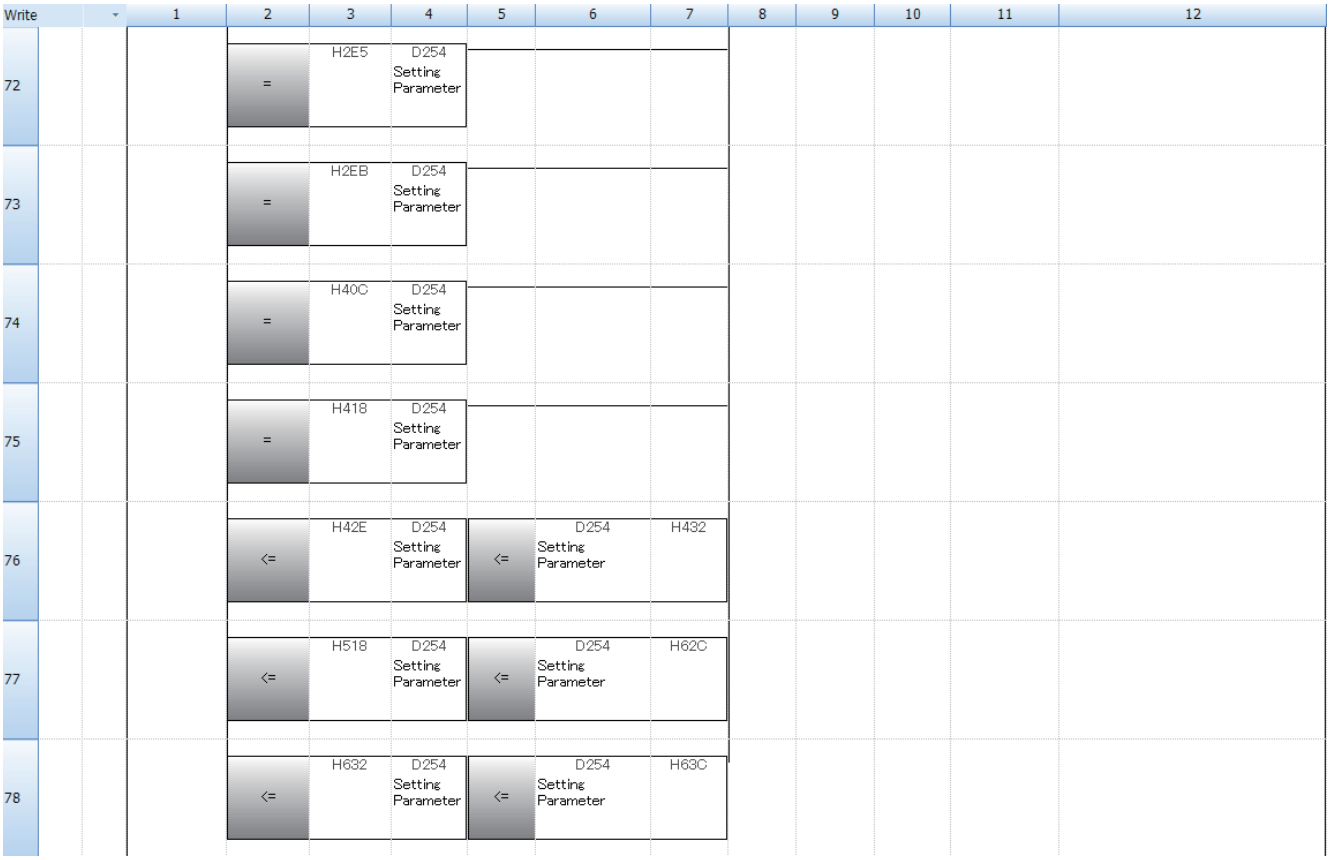
Program

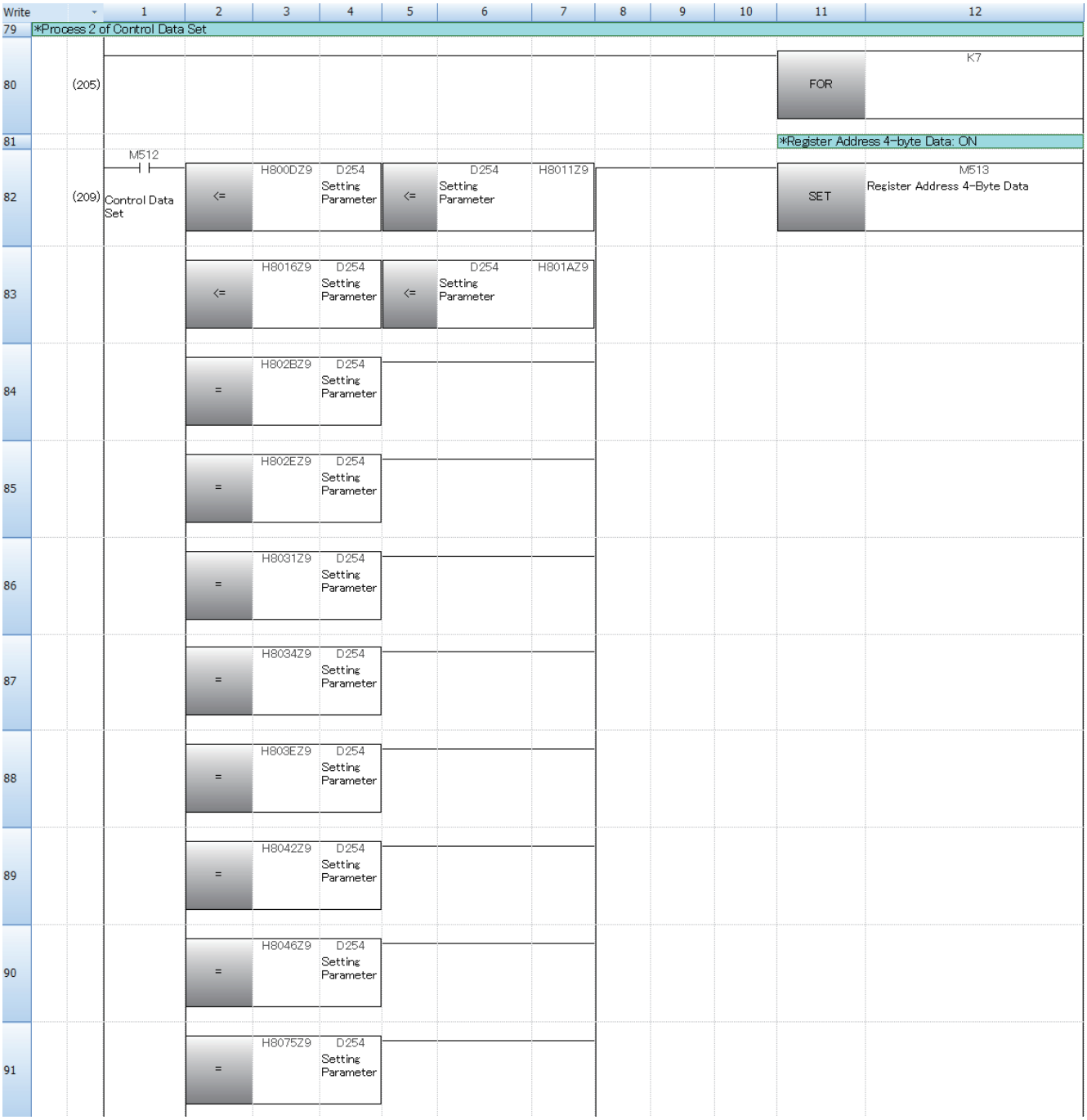


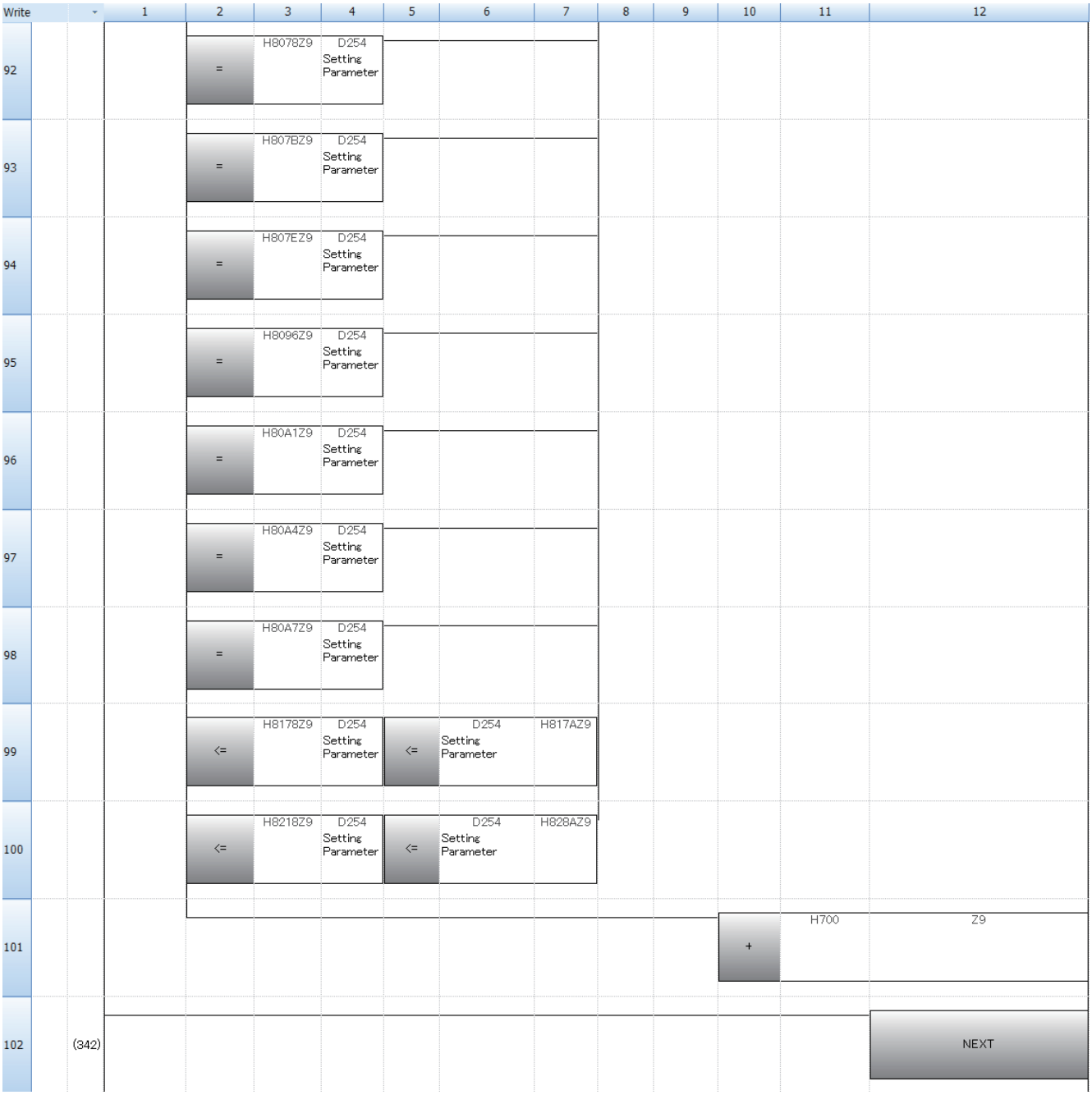

Write
1
2
3
4
5
6
7
8
9
10
11
12
19 *Process of Program Completion
20 *Program Completion Check: OFF
M511
M519
21 (27) Confirm Program Completion
ADPRW Instruction Execution
RST
M511
Confirm Program Completion
22 *Execution Status: OFF
23
RST
M400
Execution Status
24 *Register Address 4-byte Data: OFF
25
RST
M513
Register Address 4-Byte Data
26 *Instruction Completion Flag: OFF
27
RST
M514
Instruction Completion Flag [0]
28 *Instruction Completion Flag: OFF
29
RST
M515
Instruction Completion Flag [1]
30 *Instruction Completion Flag: OFF
31
RST
M516
Instruction Completion Flag [2]
32 *Write Normal Completion: OFF
33
RST
M517
Write Normal Completion
34 *Write Error Completion: OFF
35
RST
M518
Write Error Completion

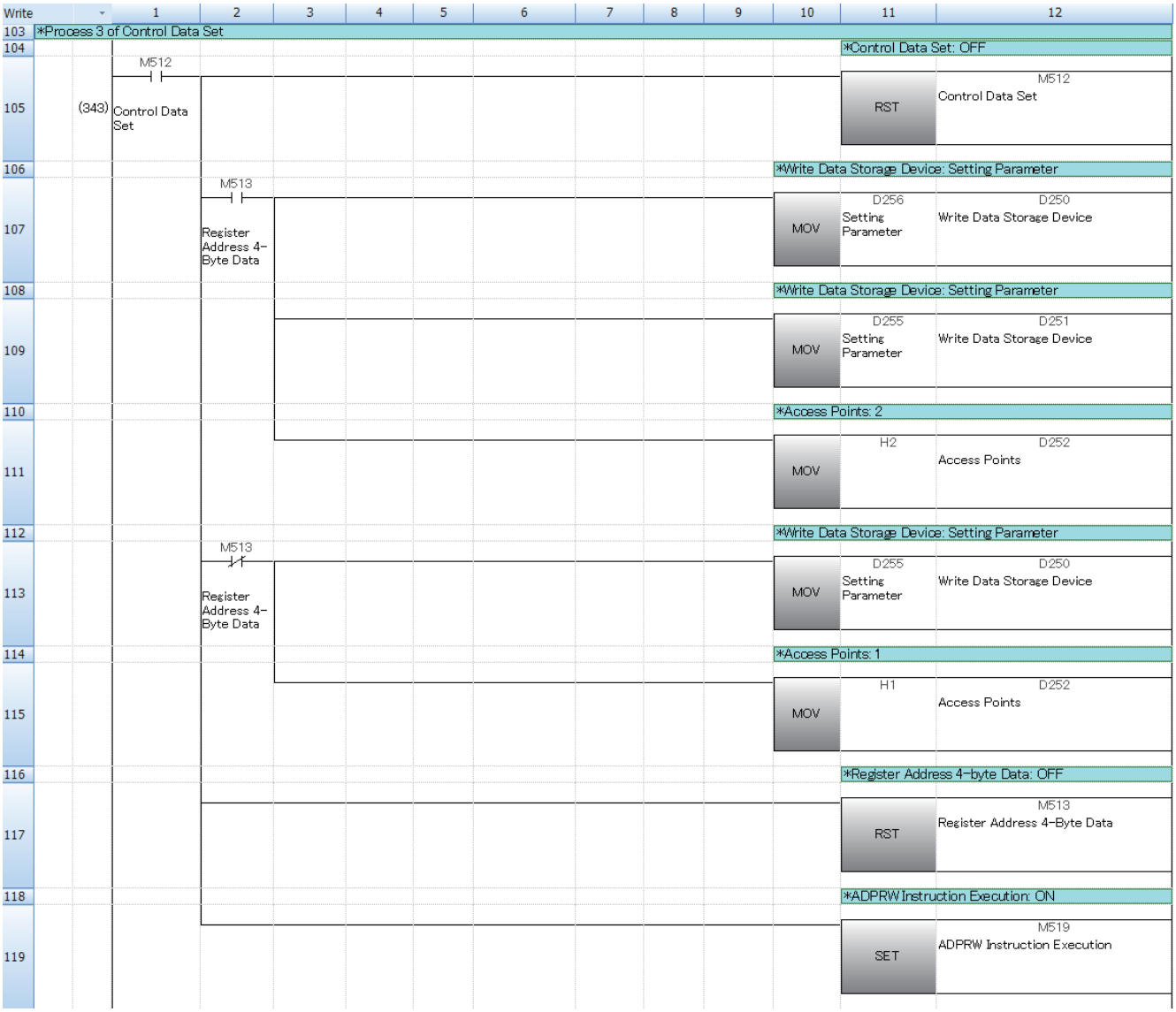

Write
1
2
3
4
5
6
7
8
9
10
11
12
36 *Backup Process of Index Register
37
*Z9 Register Backup
SM400
38
(56)
Always ON
MOV
Z9
D299
For Z9 Register Backup
39
*Z9 Register Initialize
40
MOV
K0
Z9
41 *Process of Execution Command
42
*Execution Command of Process Before Starting Mai...
M300
43
(71)
Execution Command
SET
M502
Execution Command Before Start Main Process
44
*Execution Status: ON
45
SET
M400
Execution Status
46 *Process Before Starting Main Process
47
*Execution Command of Process Before Starting Mai...
M502
48
(82)
Execution Command Before Start Main Process
RST
M502
Execution Command Before Start Main Process
49
*Error Code: 0 (Initialization)
50
MOV
K0
D300
Error Code
51
*Setting Parameter Storage
52
BMOV
D200
Setting Parameter
D253
Setting Parameter
K4
53
*Setting Data Check Command: ON
54
SET
M500
Setting Data Check Command

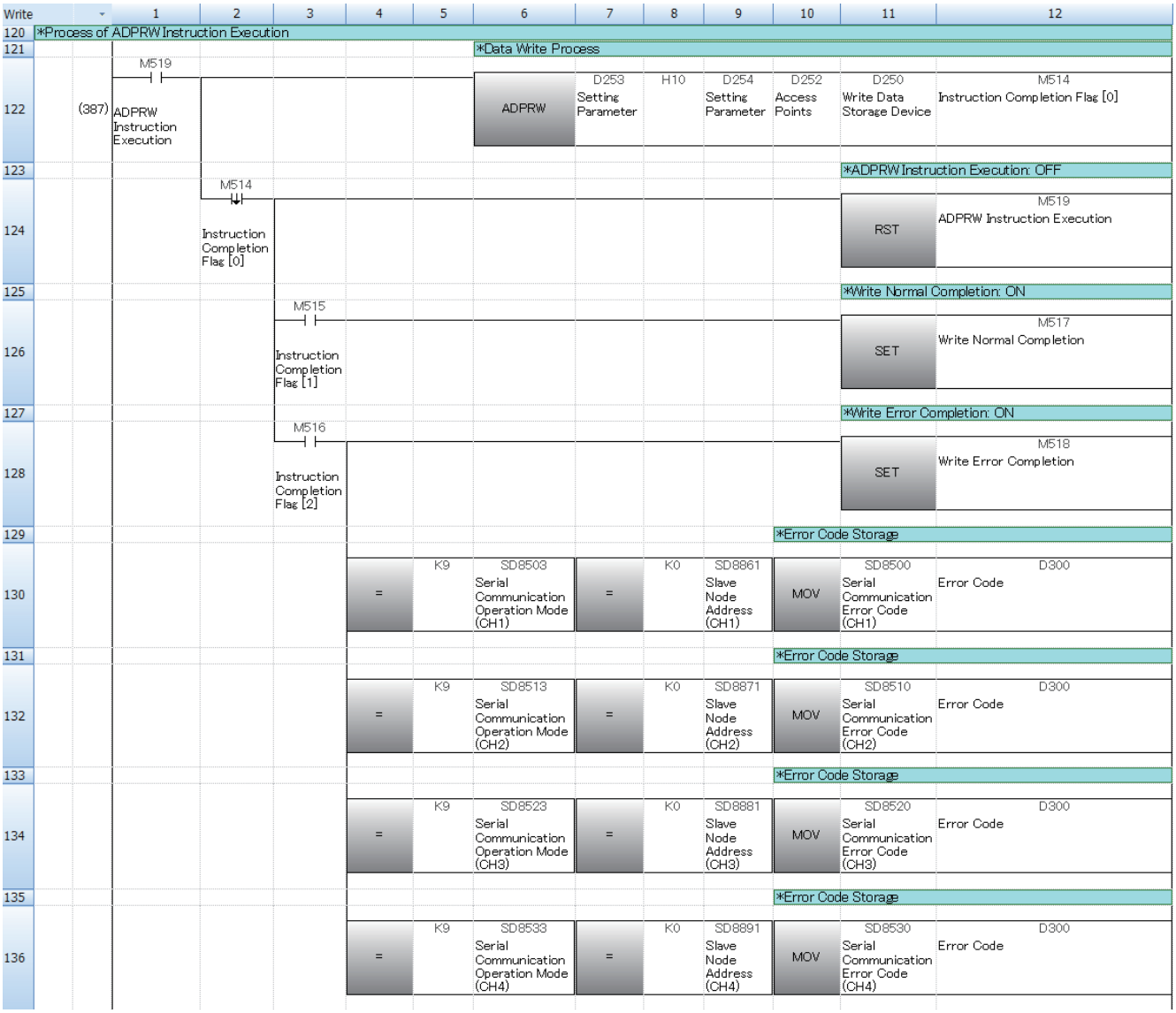

Write
1
2
3
4
5
6
7
8
9
10
11
12
55 *Process of Checking Preset Data
56
*Setting Data Check Command: OFF
M500
57
(102)
Setting Data Check Command
RST
M500
Setting Data Check Command
58
*Error Code: 14 (Setting Parameter Error)
59
>
K0
D253
Setting Parameter
MOV
K14
D300
Error Code
60
*Program Error: ON
61
<=
K33
D253
Setting Parameter
SET
M505
Program Error
62
*Control Data Set: ON
M505
63
Program Error
SET
M512
Control Data Set
64 *Process 1 of Control Data Set
65
*Register Address 4-byte Data: OFF
M512
66
(132)
Control Data Set
RST
M513
Register Address 4-Byte Data
67
*Register Address 4-byte Data: ON
68
<=
H201
D254
Setting Parameter
<=
D254
Setting Parameter
H207
SET
M513
Register Address 4-Byte Data
69
=
H245
D254
Setting Parameter
70
=
H2D5
D254
Setting Parameter
71
=
H2E2
D254
Setting Parameter

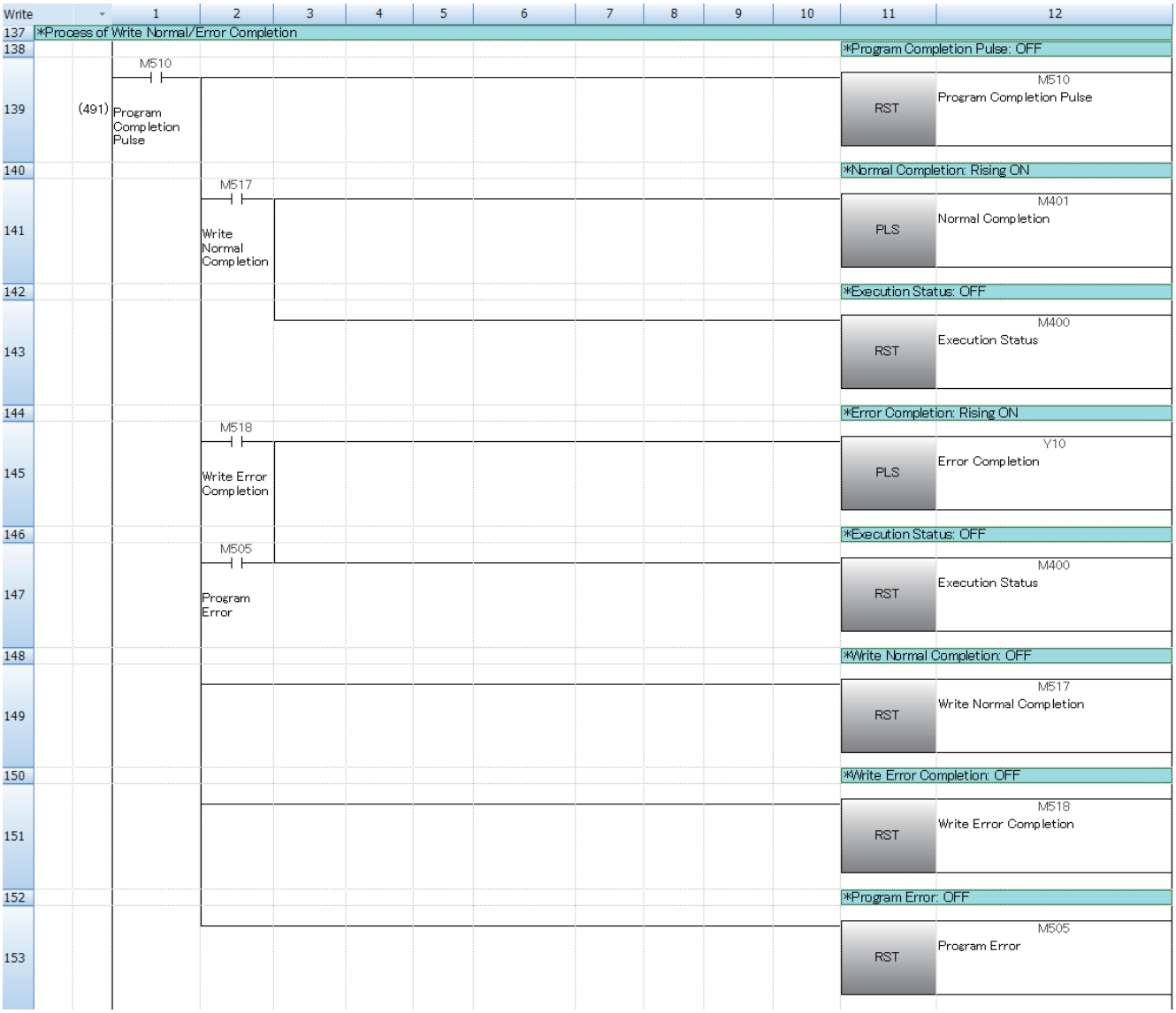

Write
1
2
3
4
5
6
7
8
9
10
11
12
72
=
H2E5
D254
Setting
Parameter
73
=
H2EB
D254
Setting
Parameter
74
=
H40C
D254
Setting
Parameter
75
=
H418
D254
Setting
Parameter
76
<=
H42E
D254
Setting
Parameter
<=
D254
Setting
Parameter
H432
77
<=
H518
D254
Setting
Parameter
<=
D254
Setting
Parameter
H62C
78
<=
H632
D254
Setting
Parameter
<=
D254
Setting
Parameter
H63C

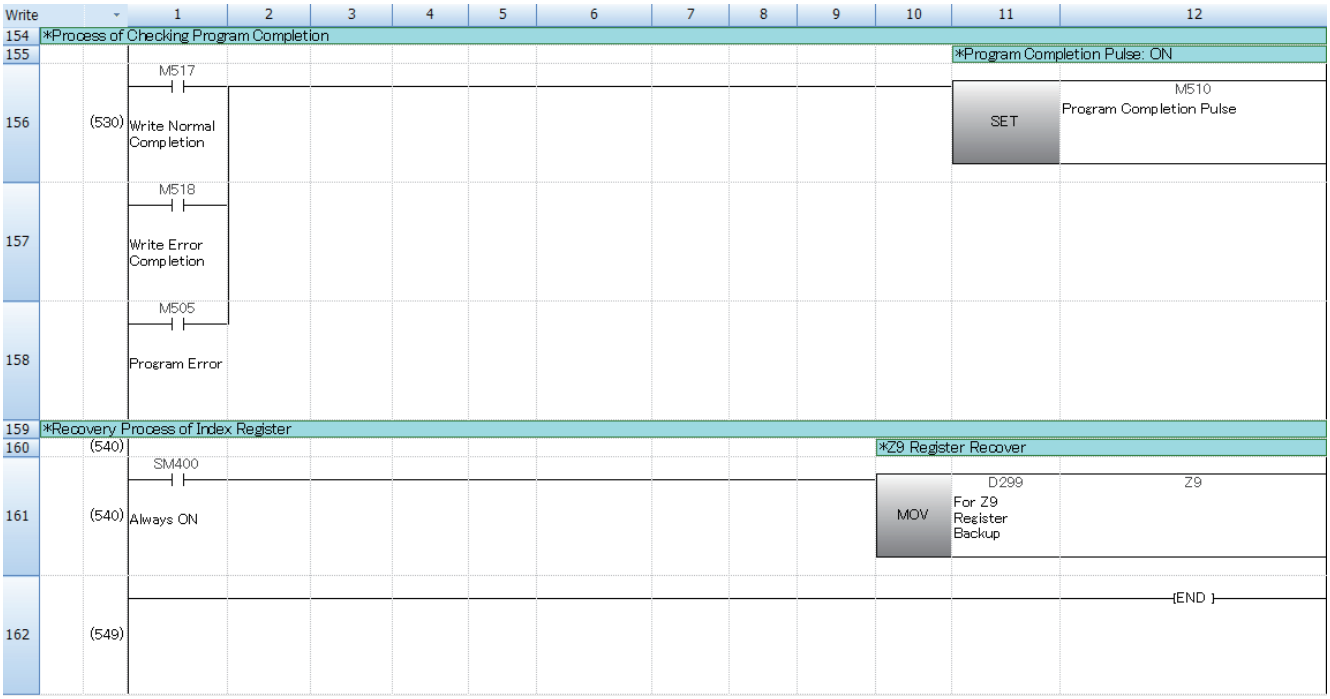

Write
1
2
3
4
5
6
7
8
9
10
11
12
79 *Process 2 of Control Data Set
80 (205)
FOR
K7
81 *Register Address 4-byte Data: ON
82 (209)
M512
Control Data Set
<=
H800DZ9
D254
Setting Parameter
<=
D254
Setting Parameter
H8011Z9
SET
M513
Register Address 4-Byte Data
83
<=
H8016Z9
D254
Setting Parameter
<=
D254
Setting Parameter
H801AZ9
84
=
H802BZ9
D254
Setting Parameter
85
=
H802EZ9
D254
Setting Parameter
86
=
H8031Z9
D254
Setting Parameter
87
=
H8034Z9
D254
Setting Parameter
88
=
H803EZ9
D254
Setting Parameter
89
=
H8042Z9
D254
Setting Parameter
90
=
H8046Z9
D254
Setting Parameter
91
=
H8075Z9
D254
Setting Parameter


Write
1
2
3
4
5
6
7
8
9
10
11
12
92
=
H8078Z9
D254
Setting
Parameter
93
=
H807BZ9
D254
Setting
Parameter
94
=
H807EZ9
D254
Setting
Parameter
95
=
H8096Z9
D254
Setting
Parameter
96
=
H80A1Z9
D254
Setting
Parameter
97
=
H80A4Z9
D254
Setting
Parameter
98
=
H80A7Z9
D254
Setting
Parameter
99
<=
H8178Z9
D254
Setting
Parameter
<=
D254
Setting
Parameter
H817AZ9
100
<=
H8218Z9
D254
Setting
Parameter
<=
D254
Setting
Parameter
H828AZ9
101
+
H700
Z9
102
(342)
NEXT


Write
1
2
3
4
5
6
7
8
9
10
11
12
103 *Process 3 of Control Data Set
104
*Control Data Set: OFF
M512
105
(343)
Control Data Set
RST
M512
Control Data Set
106
*Write Data Storage Device: Setting Parameter
M513
107
Register Address 4-Byte Data
MOV
D256
Setting Parameter
D250
Write Data Storage Device
108
*Write Data Storage Device: Setting Parameter
109
MOV
D255
Setting Parameter
D251
Write Data Storage Device
110
*Access Points: 2
111
MOV
H2
D252
Access Points
112
*Write Data Storage Device: Setting Parameter
M513
113
Register Address 4-Byte Data
MOV
D255
Setting Parameter
D250
Write Data Storage Device
114
*Access Points: 1
115
MOV
H1
D252
Access Points
116
*Register Address 4-byte Data: OFF
117
RST
M513
Register Address 4-Byte Data
118
*ADPRW Instruction Execution: ON
119
SET
M519
ADPRW Instruction Execution


Write
*Process of ADPRW Instruction Execution
*Data Write Process
M519
(387)
ADPRW Instruction Execution
ADPRW
D253 Setting Parameter
H10
D254 Setting Parameter
D252 Access Points
D250 Write Data Storage Device
M514 Instruction Completion Flag [0]
*ADPRW Instruction Execution: OFF
M514
Instruction Completion Flag [0]
RST
M519 ADPRW Instruction Execution
*Write Normal Completion: ON
M515
Instruction Completion Flag [1]
SET
M517 Write Normal Completion
*Write Error Completion: ON
M516
Instruction Completion Flag [2]
SET
M518 Write Error Completion
*Error Code Storage
=
K9
SD8503 Serial Communication Operation Mode (CH1)
=
K0
SD8861 Slave Node Address (CH1)
MOV
SD8500 Serial Communication Error Code (CH1)
D300 Error Code
*Error Code Storage
=
K9
SD8513 Serial Communication Operation Mode (CH2)
=
K0
SD8871 Slave Node Address (CH2)
MOV
SD8510 Serial Communication Error Code (CH2)
D300 Error Code
*Error Code Storage
=
K9
SD8523 Serial Communication Operation Mode (CH3)
=
K0
SD8881 Slave Node Address (CH3)
MOV
SD8520 Serial Communication Error Code (CH3)
D300 Error Code
*Error Code Storage
=
K9
SD8533 Serial Communication Operation Mode (CH4)
=
K0
SD8891 Slave Node Address (CH4)
MOV
SD8530 Serial Communication Error Code (CH4)
D300 Error Code


Write
1
2
3
4
5
6
7
8
9
10
11
12
137 *Process of Write Normal/Error Completion
138
*Program Completion Pulse: OFF
M510
139
(491)
Program Completion Pulse
RST
M510
Program Completion Pulse
140
*Normal Completion: Rising ON
M517
141
Write Normal Completion
PLS
M401
Normal Completion
142
*Execution Status: OFF
143
RST
M400
Execution Status
144
*Error Completion: Rising ON
M518
145
Write Error Completion
PLS
Y10
Error Completion
146
*Execution Status: OFF
M505
147
Program Error
RST
M400
Execution Status
148
*Write Normal Completion: OFF
149
RST
M517
Write Normal Completion
150
*Write Error Completion: OFF
151
RST
M518
Write Error Completion
152
*Program Error: OFF
153
RST
M505
Program Error


Write
1
2
3
4
5
6
7
8
9
10
11
12
154 *Process of Checking Program Completion
155
*Program Completion Pulse: ON
M517
156 (530) Write Normal Completion
SET
M510
Program Completion Pulse
M518
157 Write Error Completion
M505
158 Program Error
159 *Recovery Process of Index Register
160 (540)
*Z9 Register Recover
SM400
161 (540) Always ON
MOV
D299
For Z9 Register Backup
Z9
162 (549)
END

MEMO

REVISIONS

Revision date	Revision	Description
March 2017	A	First edition

Japanese manual number: JY997D74701A

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