

MULTIPLE CPU FB LIBRARY REFERENCE MANUAL

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Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M050-A	2011/3/22	First edition

1.M+CPU-Multi_ReadCPUInfoArea (Operation information area read)

FB Name

M+CPU-Multi_ReadCPUInfoArea

Function Overview

Item	Description																												
Function overview	Reads the data from the operation information area when multiple CPU system is configured.																												
Symbol	<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; margin: 0;">M+CPU-Multi_ReadCPUInfoArea</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Execution command</td> <td style="width: 30%; padding: 5px;">B : FB_EN</td> <td style="width: 30%; padding: 5px;">FB_ENO : B</td> <td style="width: 10%; padding: 5px;">Execution status</td> </tr> <tr> <td style="padding: 5px;">CPU number</td> <td style="padding: 5px;">W : i_CPU_Number</td> <td style="padding: 5px;">FB_OK : B</td> <td style="padding: 5px;">Completed without error</td> </tr> <tr> <td style="padding: 5px;">Read start address</td> <td style="padding: 5px;">W : i_Top_Address</td> <td style="padding: 5px;">FB_ERROR : B</td> <td style="padding: 5px;">Error flag</td> </tr> <tr> <td style="padding: 5px;">No. of read data</td> <td style="padding: 5px;">W : i_Data_Num</td> <td style="padding: 5px;">ERROR_ID : W</td> <td style="padding: 5px;">Error code</td> </tr> <tr> <td></td> <td></td> <td style="padding: 5px;">o_UNIT_ERROR : B</td> <td style="padding: 5px;">Module error</td> </tr> <tr> <td></td> <td></td> <td style="padding: 5px;">o_UNIT_ERR_CODE : W</td> <td style="padding: 5px;">Module error code</td> </tr> <tr> <td></td> <td></td> <td style="padding: 5px;">o_OperationData : W</td> <td style="padding: 5px;">Operation information storage address</td> </tr> </table> </div>	Execution command	B : FB_EN	FB_ENO : B	Execution status	CPU number	W : i_CPU_Number	FB_OK : B	Completed without error	Read start address	W : i_Top_Address	FB_ERROR : B	Error flag	No. of read data	W : i_Data_Num	ERROR_ID : W	Error code			o_UNIT_ERROR : B	Module error			o_UNIT_ERR_CODE : W	Module error code			o_OperationData : W	Operation information storage address
Execution command	B : FB_EN	FB_ENO : B	Execution status																										
CPU number	W : i_CPU_Number	FB_OK : B	Completed without error																										
Read start address	W : i_Top_Address	FB_ERROR : B	Error flag																										
No. of read data	W : i_Data_Num	ERROR_ID : W	Error code																										
		o_UNIT_ERROR : B	Module error																										
		o_UNIT_ERR_CODE : W	Module error code																										
		o_OperationData : W	Operation information storage address																										
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="margin: 10px auto; width: 60%;"> <tr> <td rowspan="3" style="width: 30%; text-align: center; vertical-align: middle;">Q series</td> <td style="text-align: center;">High performance model</td> </tr> <tr> <td style="text-align: center;">Universal model</td> </tr> <tr> <td style="text-align: center;">*Except Q00UJCPU</td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p> <p>Compatible software: GX Works 2 Version 1.31H or later</p>	Q series	High performance model	Universal model	*Except Q00UJCPU																								
Q series	High performance model																												
	Universal model																												
	*Except Q00UJCPU																												
Programming language	Ladder																												
Number of steps (maximum value)	<p>For high performance model CPU: 221*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>																												

Item	Description
Function description	1) By turning ON FB_EN (Execution command), the data is read from the operation information area of the specified CPU number when multiple CPU system is configured. 2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) This FB uses index register Z9. Please do not use this index register in an interrupt program.
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples.
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	QCPU User's Manual (Multiple CPU System) QCPU User's Manual (Hardware Design, Maintenance and Inspection)

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct number, and turn OFF FB_EN and then ON again.
11	The read start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of read data is not valid. Set a correct number of read data, and turn OFF FB_EN and then ON again.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU No.	i_CPU_Number	W	1~4	Set the CPU number to read the operation information area.
Read start address	i_Top_Address	W	0~511	Set the start address from which the data is read.
No. of read data	i_Data_Num	W	1~512	Set the number of data to be read. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 512$.

■ Output labels

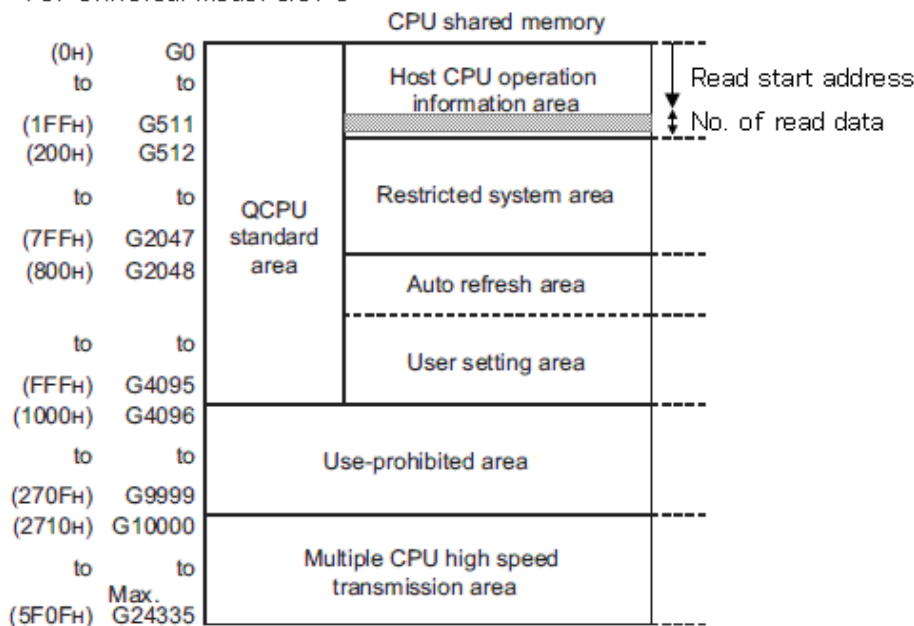
Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.

Name	Variable name	Data type	Initial value	Description
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.
Operation information storage address	o_OperationData	W	0	Store the start device address, which stores the read data. Store the data for i_Data_Num in addresses starting from this address.

Processing description

1) The data for the number of read data is read from the read start address from the operation information area of the specified CPU number.

For Universal model QCPU



2) The data that was read is stored in the device, which is specified with the operation information storage address.

Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_ReadCPUInfoArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

2.M+CPU-Multi_ReadSystemArea (System area read)

FB Name

M+CPU-Multi_ReadSystemArea

Function Overview

Item	Description																												
Function overview	Reads the data from the system area of other CPU when the multiple CPU system is configured.																												
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p style="text-align: center; margin: 0;">M+CPU-Multi_ReadSystemArea</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border: none;">Execution command</td> <td style="width: 30%; border: none;">B : FB_EN</td> <td style="width: 30%; border: none;">FB_ENO : B</td> <td style="width: 10%; border: none;">Execution status</td> </tr> <tr> <td style="border: none;">CPU number</td> <td style="border: none;">W : i_CPU_Number</td> <td style="border: none;">FB_OK : B</td> <td style="border: none;">Completed without error</td> </tr> <tr> <td style="border: none;">Read start address</td> <td style="border: none;">W : i_Top_Address</td> <td style="border: none;">FB_ERROR : B</td> <td style="border: none;">Error flag</td> </tr> <tr> <td style="border: none;">No. of read data</td> <td style="border: none;">W : i_Data_Num</td> <td style="border: none;">ERROR_ID : W</td> <td style="border: none;">Error code</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">o_UNIT_ERROR : B</td> <td style="border: none;">Module error</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">o_UNIT_ERR_CODE : W</td> <td style="border: none;">Module error code</td> </tr> <tr> <td style="border: none;"></td> <td style="border: none;"></td> <td style="border: none;">o_SystemData : W</td> <td style="border: none;">System area information storage address</td> </tr> </table> </div>	Execution command	B : FB_EN	FB_ENO : B	Execution status	CPU number	W : i_CPU_Number	FB_OK : B	Completed without error	Read start address	W : i_Top_Address	FB_ERROR : B	Error flag	No. of read data	W : i_Data_Num	ERROR_ID : W	Error code			o_UNIT_ERROR : B	Module error			o_UNIT_ERR_CODE : W	Module error code			o_SystemData : W	System area information storage address
Execution command	B : FB_EN	FB_ENO : B	Execution status																										
CPU number	W : i_CPU_Number	FB_OK : B	Completed without error																										
Read start address	W : i_Top_Address	FB_ERROR : B	Error flag																										
No. of read data	W : i_Data_Num	ERROR_ID : W	Error code																										
		o_UNIT_ERROR : B	Module error																										
		o_UNIT_ERR_CODE : W	Module error code																										
		o_SystemData : W	System area information storage address																										
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="margin-left: 20px;"> <tr> <td rowspan="2" style="width: 100px; text-align: center; vertical-align: middle;">Q series</td> <td style="padding: 2px;">High performance model</td> </tr> <tr> <td style="padding: 2px;">Universal model *Except Q00UJCPU</td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p> <p>Compatible software: GX Works 2 Version 1.31H or later</p>	Q series	High performance model	Universal model *Except Q00UJCPU																									
Q series	High performance model																												
	Universal model *Except Q00UJCPU																												
Programming language	Ladder																												
Number of steps (maximum value)	<p>For high performance model CPU: 226*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>																												



Item	Description
Function description	<p>1) By turning ON FB_EN (Execution command), the data is read from the system area of the specified CPU number when the multiple CPU system is configured.</p> <p>2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p>
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) This FB uses index register Z9. Please do not use this index register in an interrupt program.</p>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples.
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	<p>QCPU User's Manual (Multiple CPU System)</p> <p>QCPU User's Manual (Hardware Design, Maintenance and Inspection)</p>

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct number, and turn OFF FB_EN and then ON again.
11	The read start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of read data is not valid. Set the correct number of read data, and turn OFF FB_EN and then ON again.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU number	i_CPU_Number	W	1~4	Set the CPU number to read the system area.
Read start address	i_Top_Address	W	0~1535	Set the start address from which the data is read.
No. of read data	i_Data_Num	W	1~1536	Set the number of data to be read. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 1536$

■ Output labels

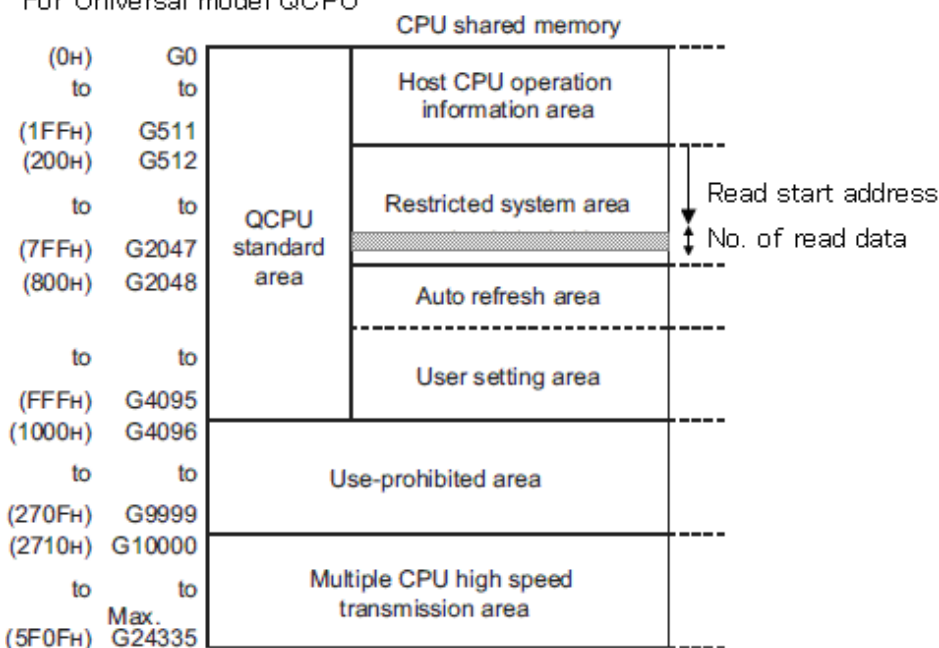
Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.

Name	Variable name	Data type	Initial value	Description
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.
System area information storage address	o_SystemData	W	0	Store the start device address, which stores the read data. Store the data for i_Data_Num in addresses starting from this address.

Processing description

1) The data for the number of read data is read from the read start address from the system area of the specified CPU number.

For Universal model QCPU



2) The data that was read is stored in the device, which is specified with the system area storage address.

Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_ReadSystemArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

3.M+CPU-Multi_ReadUserSettingArea (User setting area read)

FB Name

M+CPU-Multi_ReadUserSettingArea

Function Overview

Item	Description			
Function overview	Reads the data from the user setting area when the multiple CPU system is configured.			
Symbol	<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="width: 30%;"> <p>Execution command — B : FB_EN</p> <p>CPU number — W : i_CPU_Number</p> <p>Read start address — W : i_Top_Address</p> <p>No. of read data — W : i_Data_Num</p> </div> <div style="width: 35%; border: 1px solid black; padding: 5px; text-align: center;"> <p>M+CPU-Multi_ReadUserSettingArea</p> </div> <div style="width: 30%;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> <p>FB_ERROR : B — Error flag</p> <p>ERROR_ID : W — Error code</p> <p>o_UNIT_ERROR : B — Module error</p> <p>o_UNIT_ERR_CODE : W — Module error code</p> <p>o_FreeAreaData : W — User setting area information storage address</p> </div> </div>			
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 20%; text-align: center; vertical-align: middle;">Q series</td> <td style="text-align: center;">High performance model</td> </tr> <tr> <td style="text-align: center;">Universal model *Except Q00UJCPU</td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p> <p>Compatible software: GX Works 2 Version 1.31H or later</p>	Q series	High performance model	Universal model *Except Q00UJCPU
Q series	High performance model			
	Universal model *Except Q00UJCPU			
Programming language	Ladder			
Number of steps (maximum value)	<p>For high performance model CPU: 231*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>			
Function description	<p>1) By turning ON FB_EN (Execution command), the data is read from the user setting area of the specified CPU number when the multiple CPU system is configured.</p> <p>2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p>			



Item	Description
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) This FB uses index register Z9. Please do not use this index register in an interrupt program.</p>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples.
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	<p>QCPU User's Manual (Multiple CPU System)</p> <p>QCPU User's Manual (Hardware Design, Maintenance and Inspection)</p>

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct number, and turn OFF FB_EN and then ON again.
11	The read start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of read data is not valid. Set the correct number of read data, and turn OFF FB_EN and then ON again.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU number	i_CPU_Number	W	1~4	Set the CPU number to read the user setting area.
Read start address	i_Top_Address	W	0~2047	Set the start address from which the data is read.
No. of read data	i_Data_Num	W	1~2048	Set the number of data to be read. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 2048$.

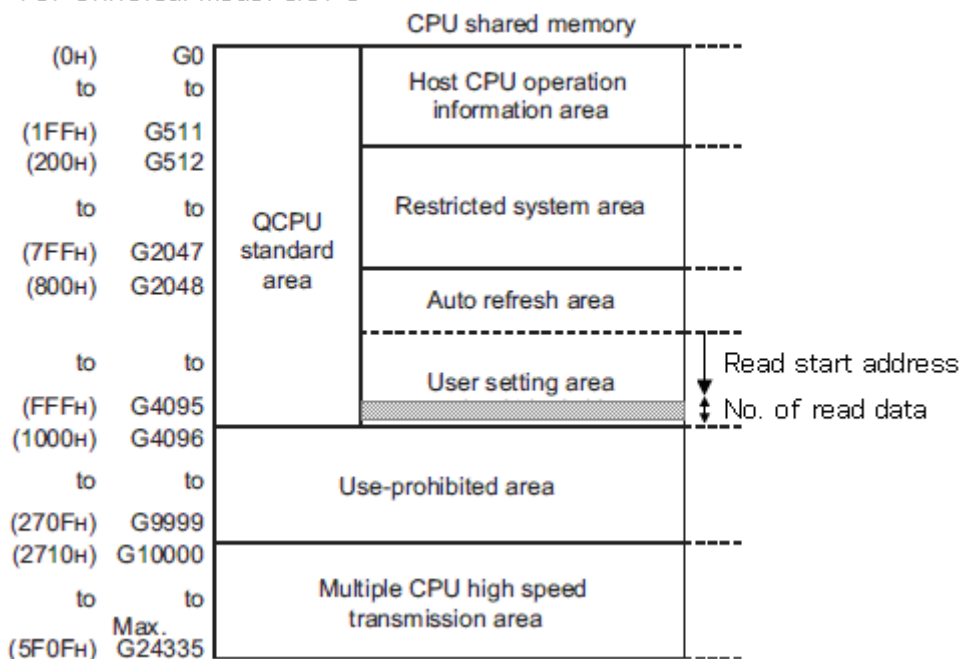
■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.
User setting area information storage address	o_FreeAreaData	W	0	Store the start device address, which stores the read data. Store the data for i_Data_Num in addresses starting from this address.

Processing description

- 1) The data for the number of read data is read from the read start address from the user setting area of the specified CPU number.

For Universal model QCPU



- 2) The data that was read is stored in the device, which is specified with the user setting area information storage address.

Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_ReadUserSettingArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

4.M+CPU-Multi_WriteUserSettingArea (User setting area write)

FB Name

M+CPU-Multi_WriteUserSettingArea

Function Overview

Item	Description																										
Function overview	Writes the data to the user setting area of the host CPU when the multiple CPU system is configured.																										
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">M+CPU-Multi_WriteUserSettingArea</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Execution command</td> <td>B : FB_EN</td> <td style="width: 30%; text-align: right;">FB_ENO : B</td> <td style="width: 30%;">Execution status</td> </tr> <tr> <td>CPU number</td> <td>W : i_CPU_Number</td> <td style="text-align: right;">FB_OK : B</td> <td>Completed without error</td> </tr> <tr> <td>Write start address</td> <td>W : i_Top_Address</td> <td style="text-align: right;">FB_ERROR : B</td> <td>Error flag</td> </tr> <tr> <td>Write data start device</td> <td>W : i_Data_Top</td> <td style="text-align: right;">ERROR_ID : W</td> <td>Error code</td> </tr> <tr> <td>No. write data</td> <td>W : i_Data_Num</td> <td style="text-align: right;">o_UNIT_ERROR : B</td> <td>Module error</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">o_UNIT_ERR_CODE : W</td> <td>Module error code</td> </tr> </tbody> </table>	M+CPU-Multi_WriteUserSettingArea		Execution command	B : FB_EN	FB_ENO : B	Execution status	CPU number	W : i_CPU_Number	FB_OK : B	Completed without error	Write start address	W : i_Top_Address	FB_ERROR : B	Error flag	Write data start device	W : i_Data_Top	ERROR_ID : W	Error code	No. write data	W : i_Data_Num	o_UNIT_ERROR : B	Module error			o_UNIT_ERR_CODE : W	Module error code
M+CPU-Multi_WriteUserSettingArea																											
Execution command	B : FB_EN	FB_ENO : B	Execution status																								
CPU number	W : i_CPU_Number	FB_OK : B	Completed without error																								
Write start address	W : i_Top_Address	FB_ERROR : B	Error flag																								
Write data start device	W : i_Data_Top	ERROR_ID : W	Error code																								
No. write data	W : i_Data_Num	o_UNIT_ERROR : B	Module error																								
		o_UNIT_ERR_CODE : W	Module error code																								
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 30%; text-align: center; vertical-align: middle;">Q series</td> <td style="text-align: center;">High performance model</td> </tr> <tr> <td style="text-align: center;">Universal model *Except Q00UJCPU</td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p> <p>Compatible software: GX Works 2 Version 1.31H or later</p>	Q series	High performance model	Universal model *Except Q00UJCPU																							
Q series	High performance model																										
	Universal model *Except Q00UJCPU																										
Programming language	Ladder																										
Number of steps (maximum value)	<p>For high performance model CPU: 244*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>																										
Function description	<p>1) By turning ON FB_EN (Execution command), the data for the number of write data is written from the write data start device to the specified address of the user setting area of the host CPU.</p> <p>2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p>																										

Item	Description
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) When two or more of these FBs are used, they cannot be executed simultaneously.</p> <p>4) This FB uses index register Z9. Please do not use this index register in an interrupt program.</p>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples.
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	QCPU User's Manual (Multiple CPU System)

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct number, and turn OFF FB_EN and then ON again.
11	The write start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of write data is not valid. Set the correct number of write data, and turn OFF FB_EN and then ON.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU number	i_CPU_Number	W	1~4	Set the number of the CPU to write to the user setting area.
Write start address	i_Top_Address	W	0~2047	Set the start address to which the data is written.
Write data start device	i_Data_Top	W	Valid device range	Set the start device that stores the data to be written.
No. of write data	i_Data_Num	W	1~2048	Set the number of data to be written. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 2048$.

■ Output labels

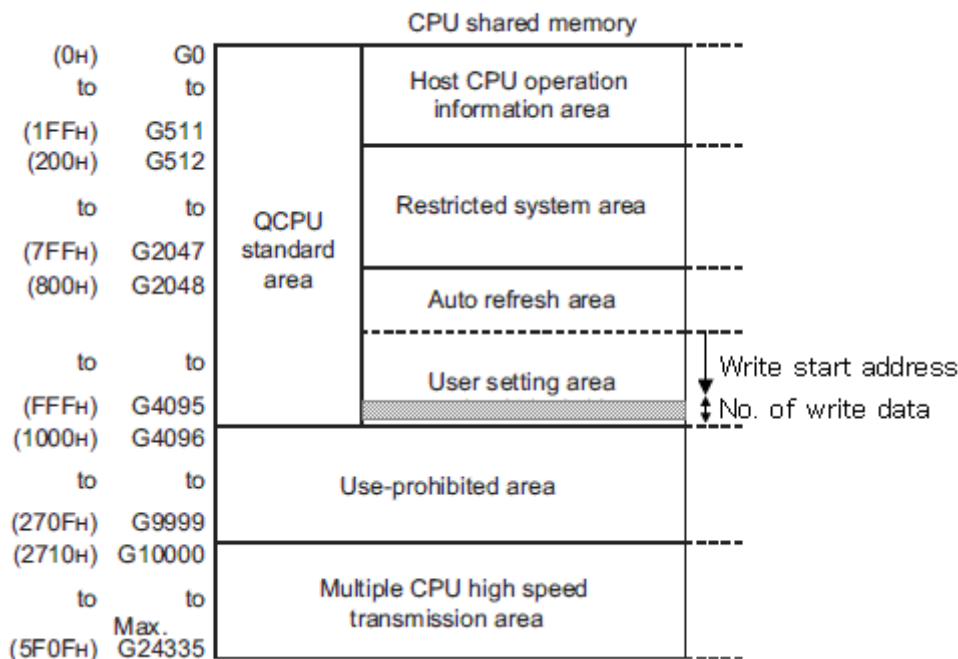
Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.

Name	Variable name	Data type	Initial value	Description
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.

Processing description

1) The data for the number of write data is written from the write data start device to the write start address of the user setting area of the specified CPU number.

For Universal model QCPU



Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_WriteUserSettingArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

5.M+CPU-Multi_ReadHighSpeedArea (Multiple CPU high speed transmission area read)

FB Name

M+CPU-Multi_ReadHighSpeedArea

Function Overview

Item	Description		
Function overview	Reads the data from the multiple CPU high speed transmission area when the multiple CPU system is configured.		
Symbol	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>Execution command — B : FB_EN</p> <p>CPU number — W : i_CPU_Number</p> <p>Read start address — W : i_Top_Address</p> <p>No. of read data — W : i_Data_Num</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>M+CPU-Multi_ReadHighSpeedArea</p> </div> <div style="margin-left: 20px;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> <p>FB_ERROR : B — Error flag</p> <p>ERROR_ID : W — Error code</p> <p>o_UNIT_ERROR : B — Module error</p> <p>o_UNIT_ERR_CODE : W — Module error code</p> <p>o_HighSpeedData : W — High speed transmission area information storage address</p> </div> </div>		
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Q series</td> <td> Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU </td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p>	Q series	Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU
	Q series	Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU	
Compatible software: GX Works 2 Version 1.31H or later			
Programming language	Ladder		
Number of steps (maximum value)	<p>For universal model CPU: 234*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>		
Function description	<p>1) By turning ON FB_EN (Execution command), the data is read from the multiple CPU high speed transmission area of the specified CPU number when the multiple CPU system is configured.</p> <p>2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p>		



Item	Description
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) This FB uses index register Z9. Please do not use these index registers in an interrupt program.</p>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples.
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	<p>QCPU User's Manual (Multiple CPU System)</p> <p>QCPU User's Manual (Hardware Design, Maintenance and Inspection)</p>

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct CPU number, and turn OFF FB_EN and then ON again.
11	The read start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of read data is not valid. Set the correct number of read data, and turn OFF FB_EN and then ON again.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU number	i_CPU_Number	W	1~4	Set the CPU number to read the multiple CPU high speed transmission area.
Read start address	i_Top_Address	W	0~14335	Set the start address from which the data is read.
No. of read data	i_Data_Num	W	1~14336	Set the number of data to be read. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 14336$.

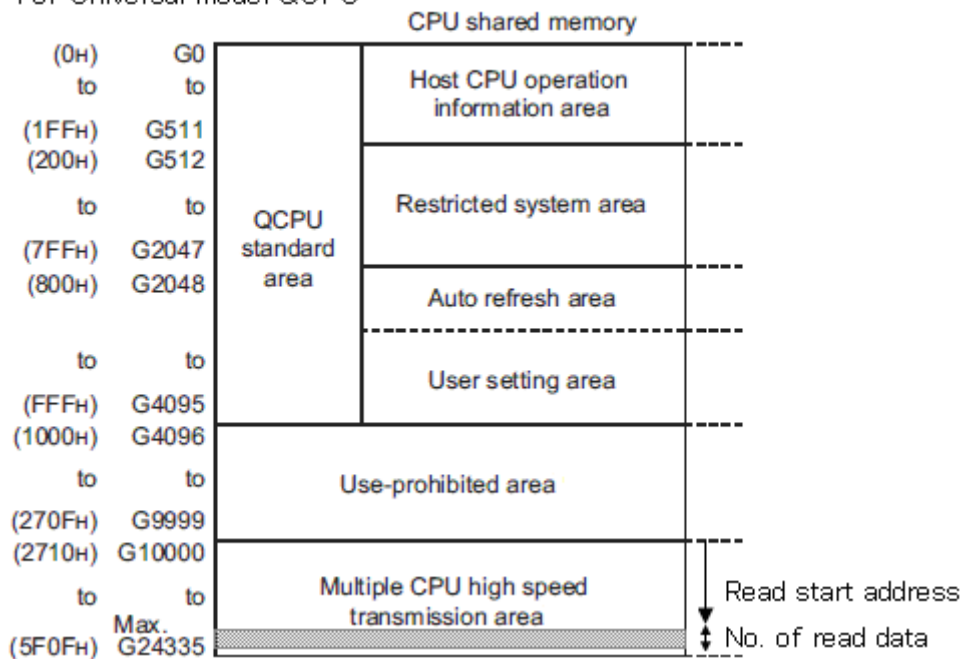
■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.
High speed transmission area information storage address	o_HighSpeedData	W	0	Store the start device address, which stores the read data. Store the data for i_Data_Num in addresses starting from this address.

Processing description

- 1) The data for the number of read data is read from the read start address of the multiple CPU high speed transmission area of the specified CPU number.

For Universal model QCPU



- 2) The data that was read is stored in the device, which is specified with the multiple CPU high speed transmission area information storage address.

Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_ReadHighSpeedArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

6.M+CPU-Multi_WriteHighSpeedArea (Multiple CPU high speed transmission area write)

FB Name

M+CPU-Multi_WriteHighSpeedArea

Function Overview

Item	Description																								
Function overview	Writes the data to the multiple CPU high speed transmission area of the host CPU when the multiple CPU system is configured.																								
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="text-align: center; margin: 0;">M+CPU-Multi_WriteHighSpeedArea</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;">Execution command</td> <td style="width: 30%; padding: 5px;">B : FB_EN</td> <td style="width: 30%; padding: 5px;">FB_ENO : B</td> <td style="width: 10%; padding: 5px;">Execution status</td> </tr> <tr> <td style="padding: 5px;">CPU number</td> <td style="padding: 5px;">W : i_CPU_Number</td> <td style="padding: 5px;">FB_OK : B</td> <td style="padding: 5px;">Completed without error</td> </tr> <tr> <td style="padding: 5px;">Write start address</td> <td style="padding: 5px;">W : i_Top_Address</td> <td style="padding: 5px;">FB_ERROR : B</td> <td style="padding: 5px;">Error flag</td> </tr> <tr> <td style="padding: 5px;">Write data start device</td> <td style="padding: 5px;">W : i_Data_Top</td> <td style="padding: 5px;">ERROR_ID : W</td> <td style="padding: 5px;">Error code</td> </tr> <tr> <td style="padding: 5px;">No. of write data</td> <td style="padding: 5px;">W : i_Data_Num</td> <td style="padding: 5px;">o_UNIT_ERROR : B</td> <td style="padding: 5px;">Module error</td> </tr> <tr> <td></td> <td></td> <td style="padding: 5px;">o_UNIT_ERR_CODE : W</td> <td style="padding: 5px;">Module error code</td> </tr> </table> </div>	Execution command	B : FB_EN	FB_ENO : B	Execution status	CPU number	W : i_CPU_Number	FB_OK : B	Completed without error	Write start address	W : i_Top_Address	FB_ERROR : B	Error flag	Write data start device	W : i_Data_Top	ERROR_ID : W	Error code	No. of write data	W : i_Data_Num	o_UNIT_ERROR : B	Module error			o_UNIT_ERR_CODE : W	Module error code
Execution command	B : FB_EN	FB_ENO : B	Execution status																						
CPU number	W : i_CPU_Number	FB_OK : B	Completed without error																						
Write start address	W : i_Top_Address	FB_ERROR : B	Error flag																						
Write data start device	W : i_Data_Top	ERROR_ID : W	Error code																						
No. of write data	W : i_Data_Num	o_UNIT_ERROR : B	Module error																						
		o_UNIT_ERR_CODE : W	Module error code																						
Applicable hardware and software	<p>Hardware details</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Q series</td> <td style="padding: 5px;">Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU</td> </tr> </table> <p>*Not applicable for QCPU (A mode)</p>	Q series	Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU																						
	Q series	Universal model * Except Q00UJCPU, Q00UCPU, Q01UCPU, and Q02UCPU																							
Compatible software: GX Works 2 Version 1.31H or later																									
Programming language	Ladder																								
Number of steps (maximum value)	<p>For universal model CPU: 237*</p> <p>*The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).</p>																								
Function description	<p>1) By turning ON FB_EN (Execution command), the data for the number of write data is written from the write data start device to the high speed transmission area of the specified CPU number when the multiple CPU system is configured.</p> <p>2) When the input value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</p>																								

Item	Description
Compiling method	Macro type
Restrictions and precautions	<p>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</p> <p>2) The FB cannot be used in an interrupt program.</p> <p>3) When two or more of these FBs are used, they cannot be executed simultaneously.</p> <p>4) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program.</p>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to Appendix - Application examples
Timing chart	<p>•Operation of I/O signals</p> <p>[When operation completes without error] [When an error occurs]</p> <p>[Module error]</p>
Relevant manuals	<p>QCPU User's Manual (Multiple CPU System)</p> <p>QCPU User's Manual (Hardware Design, Maintenance and Inspection)</p>

Error codes

■ Error code list

Error code	Description
10	The specified CPU number is not valid. Set a correct number, and turn OFF FB_EN and then ON again.
11	The write start address is not valid. Set a correct start address, and turn OFF FB_EN and then ON again.
12	The number of write data is not valid. Set the correct number of write data, and turn OFF FB_EN and then ON again.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
CPU number	i_CPU_Number	W	1~4	Set the number of the CPU to write to the multiple CPU high speed transmission area.
Write start address	i_Top_Address	W	0~14335	Set the start address to which the data is written.
Write data start device	i_Data_Top	W	Valid device range	Set the start device that stores the data to be written.
No. of write data	i_Data_Num	W	1~14336	Set the number of data to be written. It must be $1 \leq (i_Top_Address + i_Data_Num) \leq 14336$.

■ Output labels

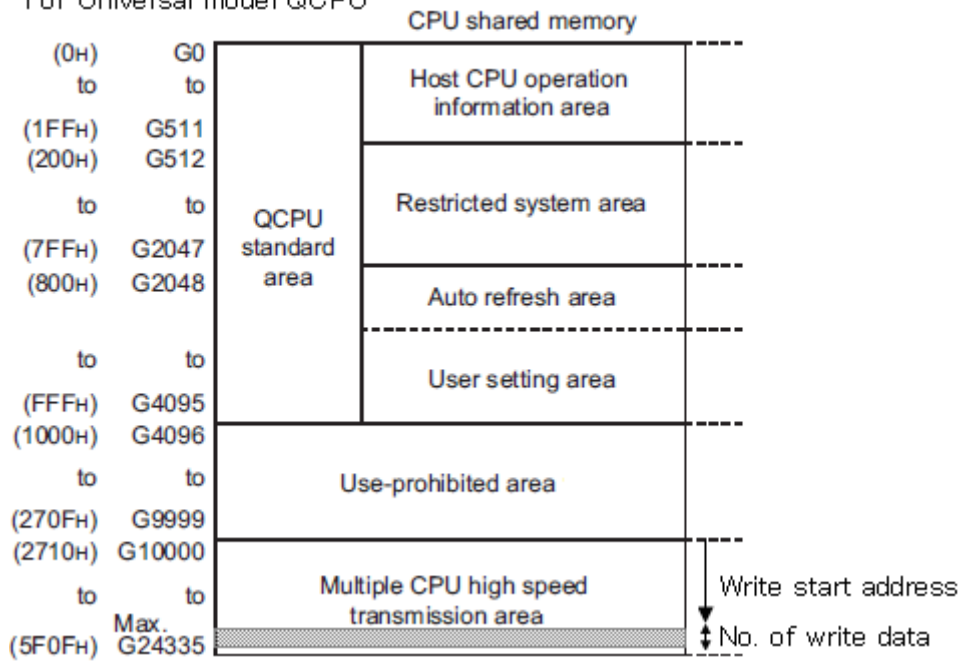
Name	Variable name	Data type	Initial value	Description
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Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the processing is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.
Module error	o_UNIT_ERROR	B	OFF	When ON, it indicates that a module error has occurred in the CPU where the function is executed.
Module error code	o_UNIT_ERR_CODE	W	0	Store a code for an error that is occurring. The module errors include all diagnostic errors which occur in the CPU where the function is executed. For details on errors, refer to the troubleshooting in the corresponding CPU user's manual.

Processing description

- 1) The data for the number of write data is written from the write data start device to the write start address of the multiple CPU high speed transmission area of the specified CPU number.

For Universal model QCPU



Version Upgrade History

Version	Date	Description
1.00A	2011/03/22	First edition

Note

This chapter includes information related to the M+CPU-Multi_WriteHighSpeedArea function block. It does not include information on restrictions of use such as combination with modules or programmable controller CPUs.

Before using any Mitsubishi products, please read all the relevant manuals.

Appendix 1 - Application Examples

Multiple CPU FB application examples

System configuration

Power supply module	Q13UDH CPU (host)	Q03UDE CPU	CPU (empty)	CPU (empty)	Empty	QY40 (Y20~Y2F)
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Device list

External output (checks)

Device	FB function name	Application (ON details)
Y20	Operation information area read	Operation information area read FB error
Y21		Module error
Y22	System area read	System area read FB error
Y23		Module error
Y24	User setting area read	User setting area read FB error
Y25		Module error
Y26	User setting area write	User setting area write FB error
Y27		Module error
Y28	Multiple CPU high speed transmission area read	High speed transmission area read FB error
Y29		Module error
Y2A	Multiple CPU high speed transmission area write	High speed transmission area write FB error
Y2B		Module error

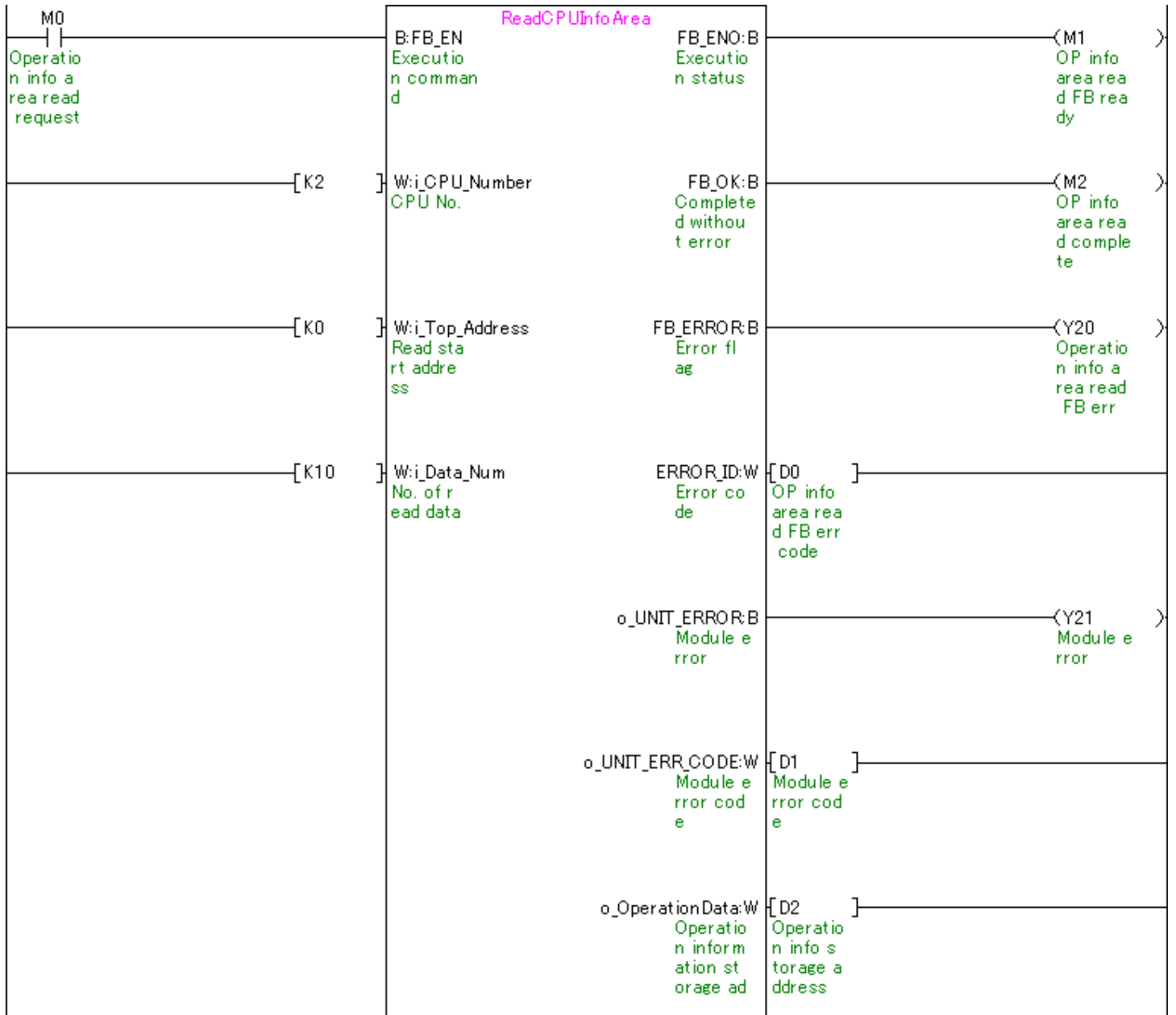
Relay

Device	FB function name	Application (ON details)
M0	Operation information area read	Operation information area read request
M1		Operation information area read FB ready
M2		Operation information area read complete
M3	System area read	System area read request
M4		System area read FB ready
M5		System area read complete
M6	User setting area read	User setting area read request
M7		User setting area read FB ready
M8		User setting area read complete
M9	User setting area write	User setting area write request
M10		User setting area write FB ready
M11		User setting area write complete
M12	Multiple CPU high speed transmission area read	High speed transmission area read request
M13		High speed transmission area read FB ready
M14		High speed transmission area read complete
M15	Multiple CPU high speed transmission area write	High speed transmission area write request
M16		High speed transmission area write FB ready
M17		High speed transmission area write complete

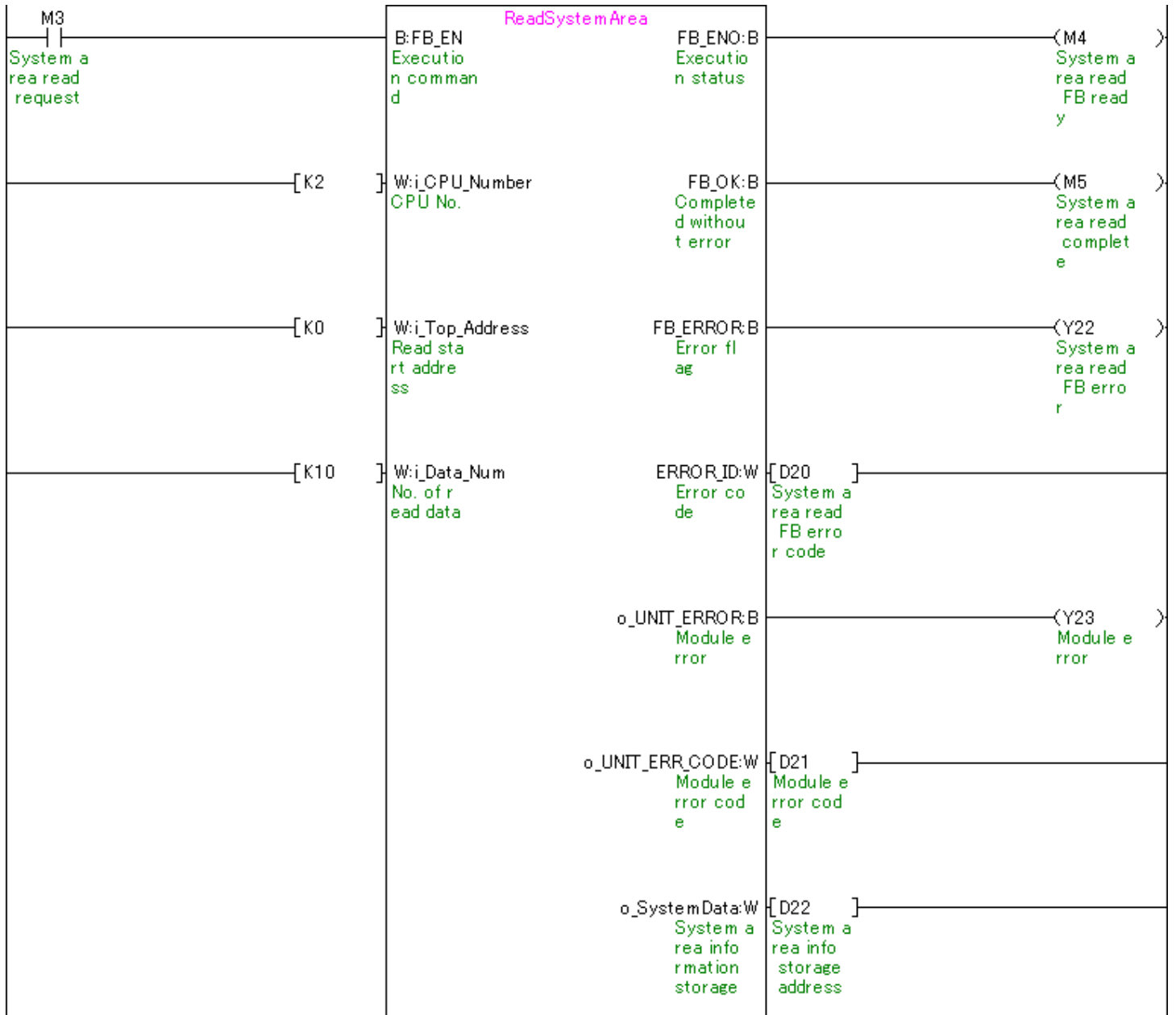
Data register

Device	FB function name	Application (ON details)
D0	Operation information area read	Operation information area read FB error code
D1		Module error code
D2		Operation information storage address
D20	System area read	System area read FB error code
D21		Module error code
D22		System area information storage address
D40	User setting area read	User setting area read FB error code
D41		Module error code
D42		User setting area information storage address
D60	User setting area write	User setting area write FB error code
D61		Module error code
D62		Write data start device
D80	Multiple CPU high speed transmission area read	High speed transmission area read FB error code
D81		Module error code
D82		High speed transmission area information storage address
D100	Multiple CPU high speed transmission area write	High speed transmission area write FB error code
D101		Module error code
D102		Write data start device

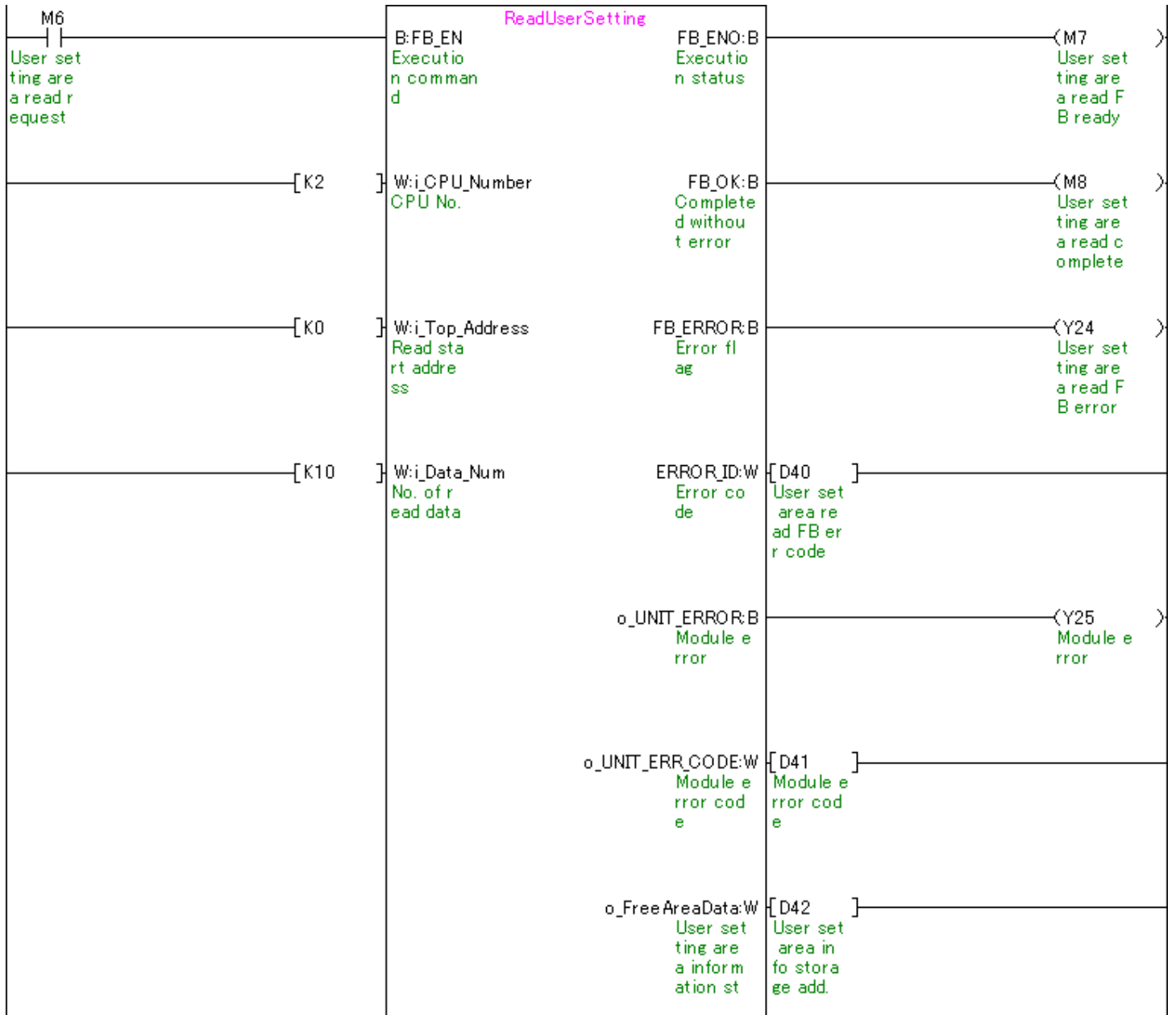
M+CPU-Multi_ReadCPUInfoArea (Operation information area read)



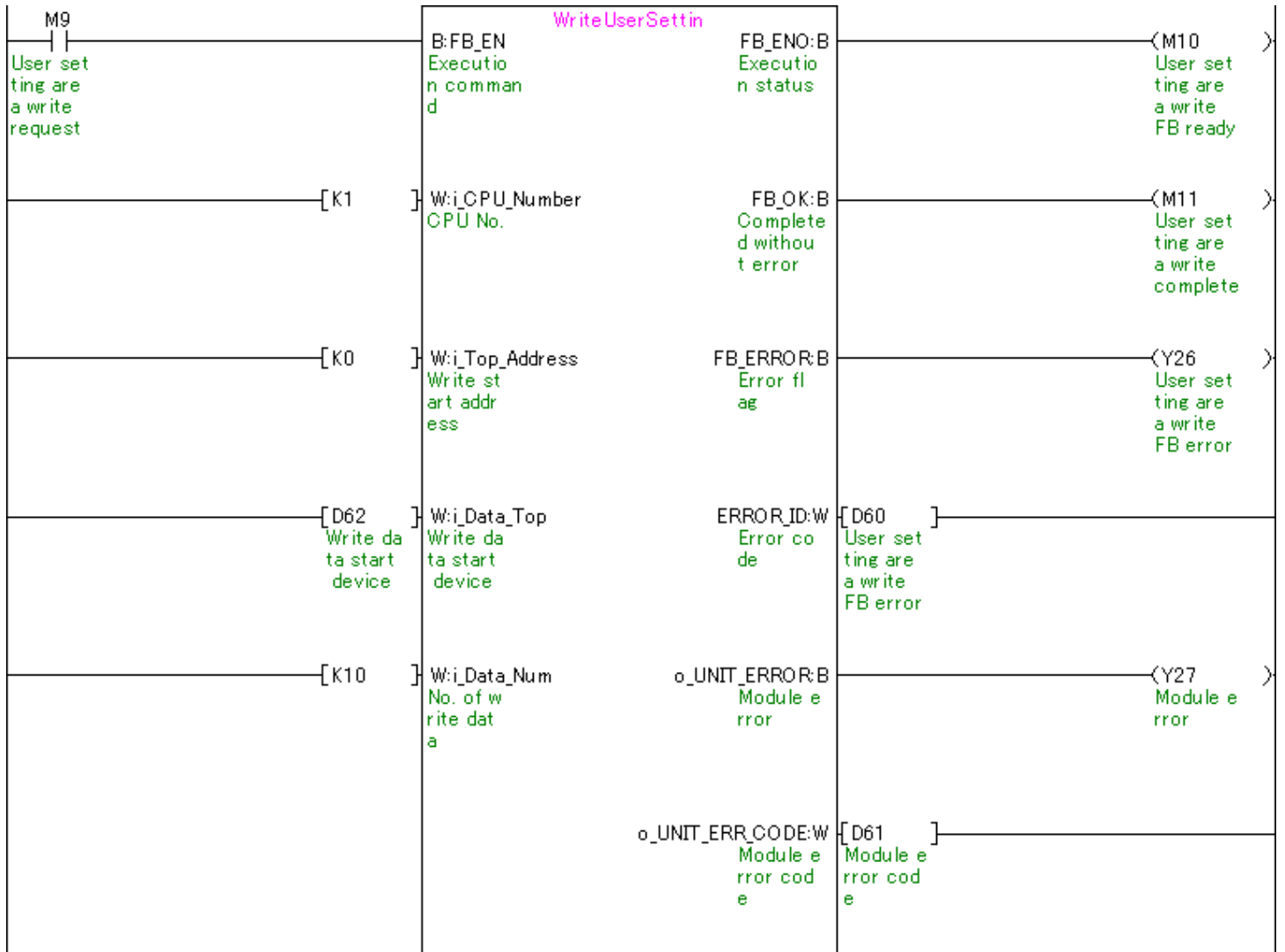
M+CPU-Multi_ReadSystemArea (System area read)



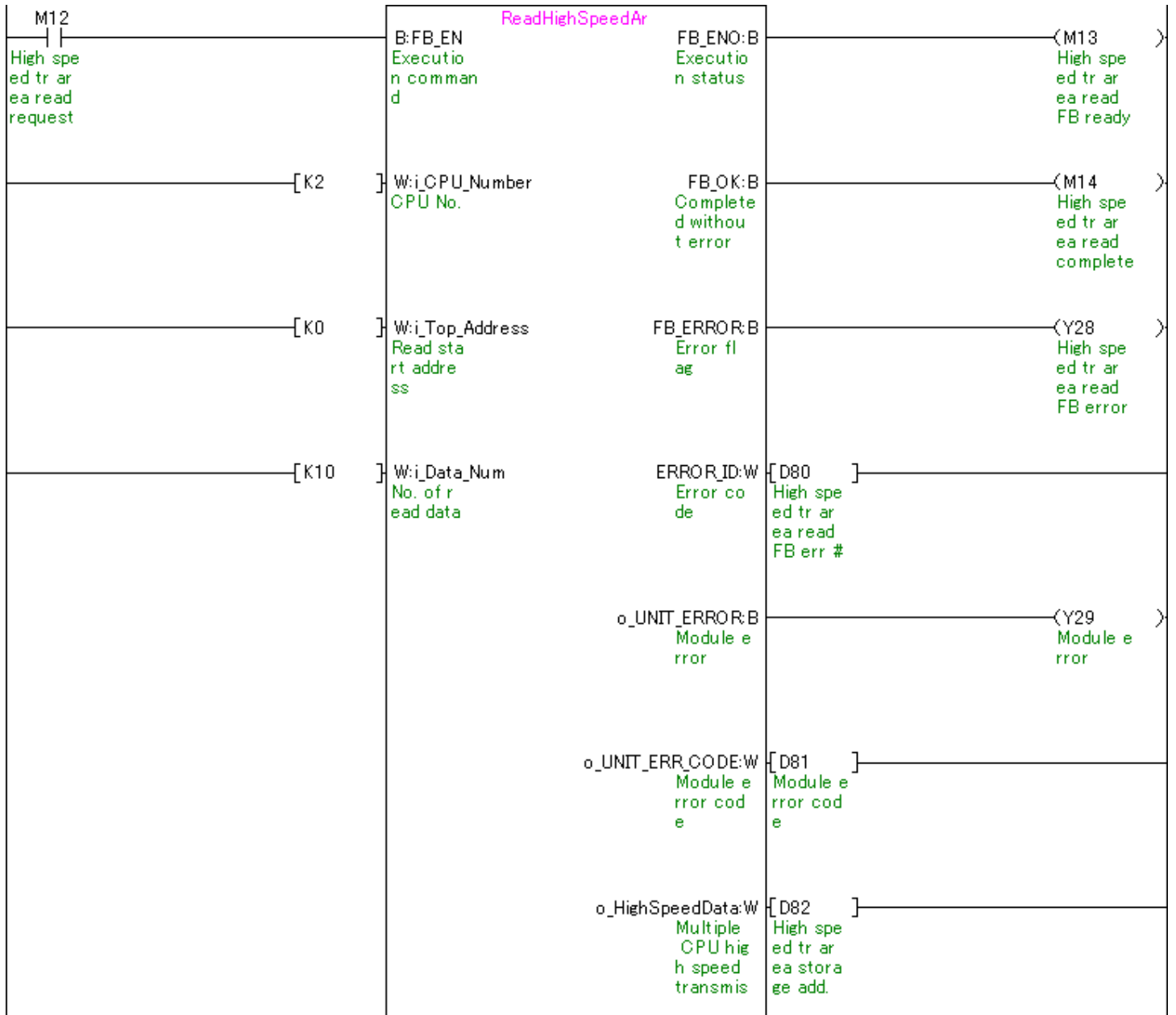
M+CPU-Multi_ReadUserSettingArea (User setting area read)



M+CPU-Multi_WriteUserSettingArea (User setting area write)



M+CPU-Multi_ReadHighSpeedArea (Multiple CPU high speed transmission area read)



M+CPU-Multi_WriteHighSpeedArea (Multiple CPU high speed transmission area write)

