MELSEC-Q High Speed Analog-Digital Converter Module FB Library Reference Manual

Applicable module:
Q64ADH

< CONTENTS >

Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M086-A	2012/03/26	First edition

1. Overview

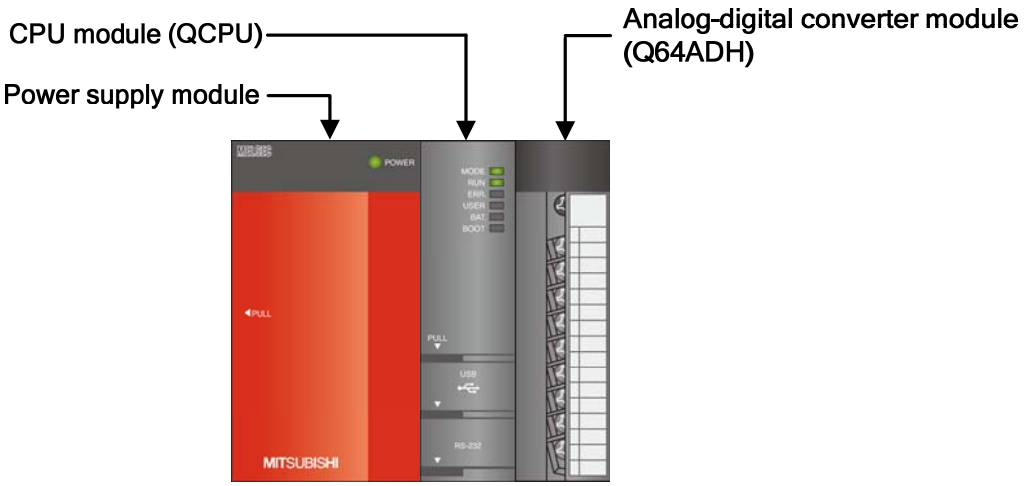
1.1 Overview of the FB Library

This FB library is for using the MELSEC-Q Q64ADH high speed analog-digital converter module.

1.2 Function of the FB Library

Item	Description
M+Q64ADH_ReadADVal	Read the AD conversion data of a specified channel.
M+Q64ADH_ReadAllADVal	Read the AD conversion data of all channels.
M+Q64ADH_ReadOperationVal	Read the digital operation value of a specified channel.
M+Q64ADH_ReadAllOperationVal	Read the digital operation values of all channels.
M+Q64ADH_SetConvertSpeed	Set the conversion speed.
M+Q64ADH_SetADConversion	Enable or disable AD conversion for a specified channel or all channels.
M+Q64ADH_SetAverage	Configure averaging processing settings of a specified channel.
M+Q64ADH_SetScaling	Configure scaling settings of a specified channel.
M+Q64ADH_SetProcessAlarm	Configure process alarm settings of a specified channel.
M+Q64ADH_SetInputSignalErr	Configure input signal error detection settings of a specified channel.
M+Q64ADH_RequestSetting	Apply changes made to each function's settings.
M+Q64ADH_SetOffsetVal	Set the offset value of a specified channel to the current analog value.
M+Q64ADH_SetGainVal	Set the gain value of a specified channel to the current analog value.
M+Q64ADH_SetShift	Perform the shift setting of a specified channel.
M+Q64ADH_ErrorOperation	Perform monitoring and reset of error codes.
M+Q64ADH_SetDigitalClip	Enable or disable the digital clipping of a specified channel.
M+Q64ADH_SetLoggingPARAM	Perform the logging function of a specified channel.
M+Q64ADH_SaveLogging	Save the logging data of a specified channel in a file.
M+Q64ADH_SetFlowRatePARAM	Set the flow amount integration function of a specified channel.
M+Q64ADH_MakeFlowRateDailyReport	Save the flow amount daily report data of all channels in a file.

1.3 System Configuration Example



1.4 Relevant Manuals

MELSEC-Q High Speed Analog-Digital Converter Module User's Manual

QCPU User's Manual(Hardware Design, Maintenance and Inspection)

GX Works2 Version 1 Operating Manual(Common)

GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

1.5 Note

Please make sure to read user's manuals for the corresponding products before using the products.

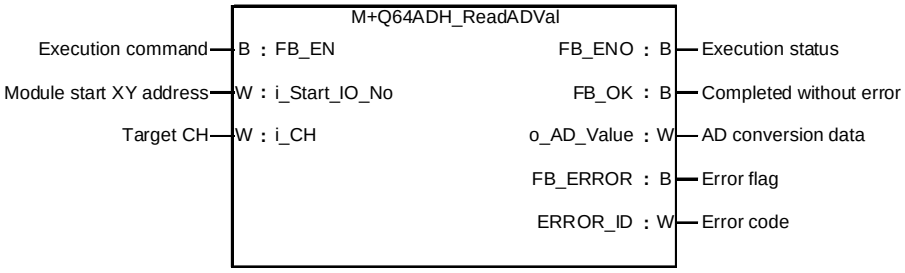
2. Details of the FB Library

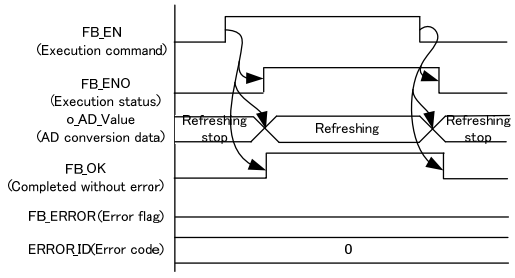
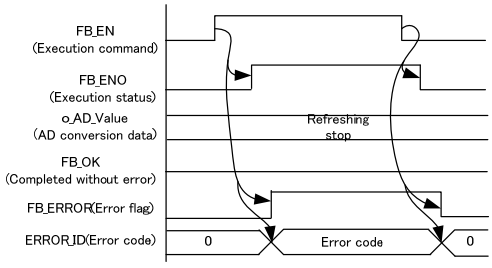
2.1 M+Q64ADH_ReadADVal(Read AD conversion data)

FB Name

M+Q64ADH_ReadADVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Read the AD conversion data of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">209 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Reads the AD conversion data of a specified channel when the FB_EN(Execution command) is turned ON. 2) The resulting AD conversion data depends on the input range setting. 3) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. Refer to the error code explanation section for details. 4) If the A/D converter module buffer memory is set to auto refresh the digital output value, it is unnecessary to use this FB.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs]  
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the AD conversion value read operation was successful.
AD conversion data	o_AD_Value	Word	0	AD conversion data output
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

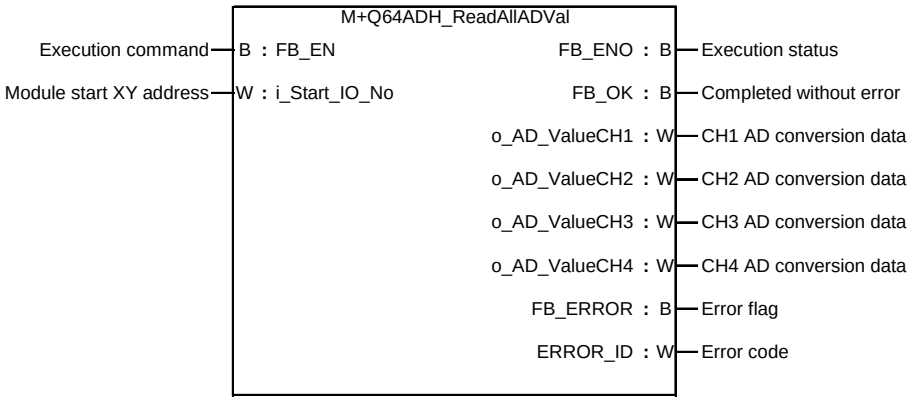
This chapter includes information related to the M+Q64ADH_ReadADVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

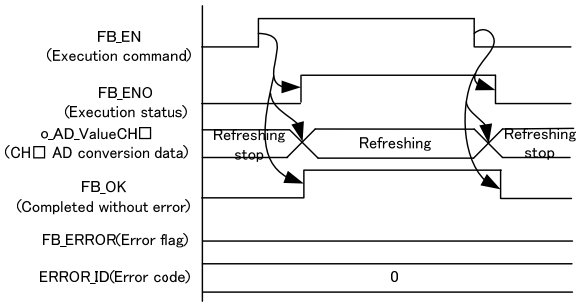
2.2 M+Q64ADH_ReadAllADVal(Read all AD conversion data)

FB Name

M+Q64ADH_ReadAllADVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Read the AD conversion data of all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="2">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">186 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Reads the AD conversion data of all channels when the FB_EN(Execution command) is turned ON. 2) The resulting AD conversion data depends on the input range setting. 3) If the A/D converter module buffer memory is set to auto refresh the digital output value, it is unnecessary to use this FB.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
None	None	None

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the AD conversion value read operation was successful.
CH1 AD conversion data	o_AD_ValueCH1	Word	0	CH1 AD conversion data output
CH2 AD conversion data	o_AD_ValueCH2	Word	0	CH2 AD conversion data output
CH3 AD conversion data	o_AD_ValueCH3	Word	0	CH3 AD conversion data output
CH4 AD conversion data	o_AD_ValueCH4	Word	0	CH4 AD conversion data output
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

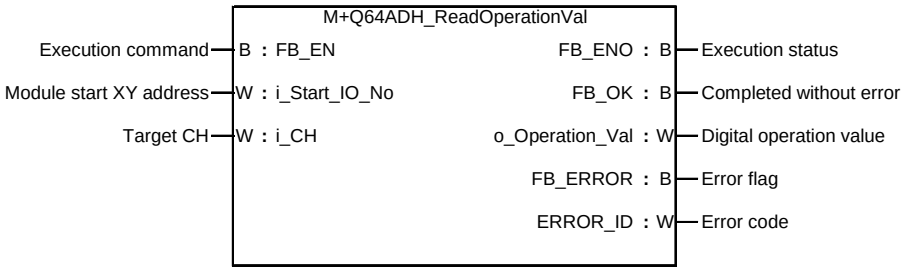
This chapter includes information related to the M+Q64ADH_ReadAllADVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

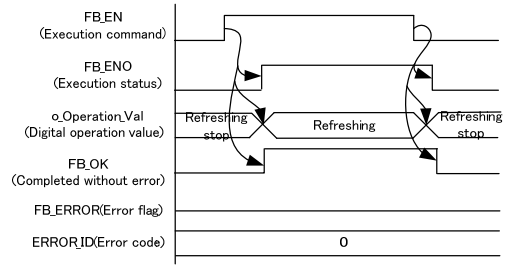
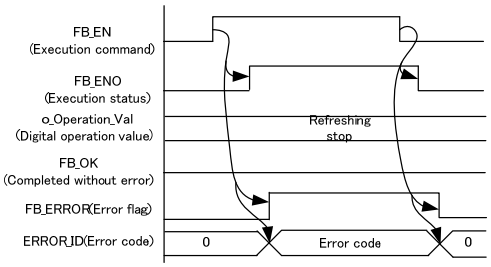
2.3 M+Q64ADH_ReadOperationVal(Read digital operation value)

FB Name

M+Q64ADH_ReadOperationVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Read the digital operation value of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">213 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Reads the digital operation value of a specified channel when the FB_EN(Execution command) is turned ON. 2) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. Refer to the error code explanation section for details. 3) If the A/D converter module buffer memory is set to auto refresh the digital operation value, it is unnecessary to use this FB.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs]  
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the digital operation value read operation was successful.
Digital operation value	o_Operation_Val	Word	0	Digital operation value output
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

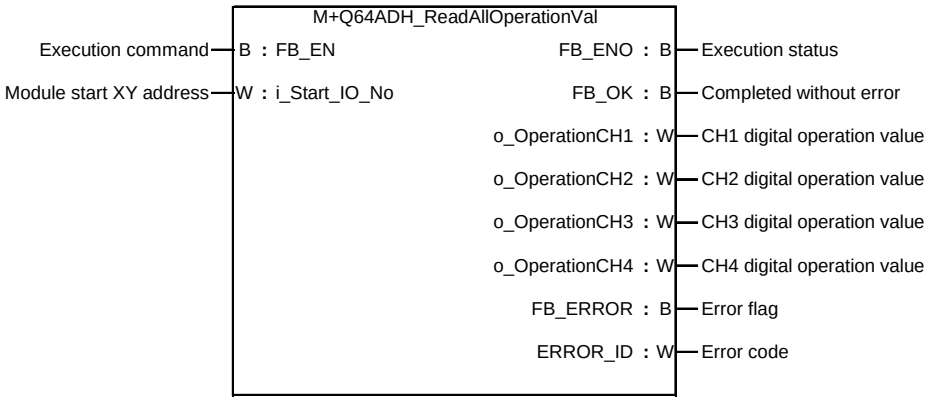
This chapter includes information related to the M+Q64ADH_ReadOperationVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.4 M+Q64ADH_ReadAllOperationVal(Read all digital operation values)

FB Name

M+Q64ADH_ReadAllOperationVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Read the digital operation values of all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="2">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
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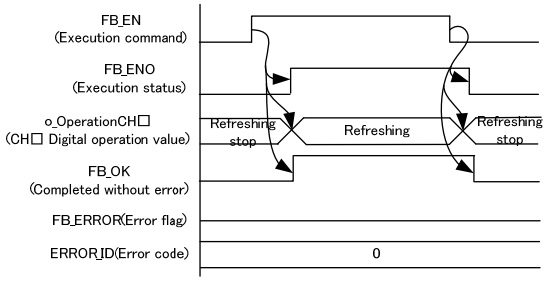
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">193 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Reads the digital operation values of all channels when the FB_EN(Execution command) is turned ON. 2) If the A/D converter module buffer memory is set to auto refresh the digital operation value, it is unnecessary to use this FB.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
None	None	None

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the digital operation value read operation was successful.
CH1 digital operation value	o_OperationCH1	Word	0	CH1 digital operation value output
CH2 digital operation value	o_OperationCH2	Word	0	CH2 digital operation value output
CH3 digital operation value	o_OperationCH3	Word	0	CH3 digital operation value output
CH4 digital operation value	o_OperationCH4	Word	0	CH4 digital operation value output
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

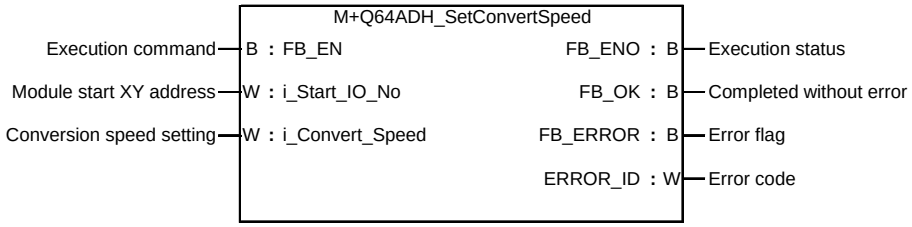
This chapter includes information related to the M+Q64ADH_ReadAllOperationVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.5 M+Q64ADH_SetConvertSpeed(Conversion speed setting)

FB Name

M+Q64ADH_SetConvertSpeed

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Set the conversion speed.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
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*1 Not applicable to QCPU(A mode)
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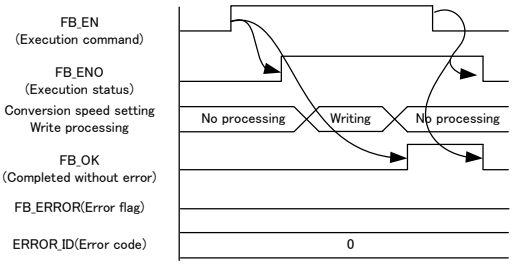
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">178 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Sets the conversion speed when the FB_EN(Execution command) is turned ON. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
None	None	None

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Conversion speed setting	i_Convert_Speed	Word	0_H: 20 μs 1_H: 80 μs 2_H: 1 ms	Specify the conversion speed.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the conversion speed setting has been completed.
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

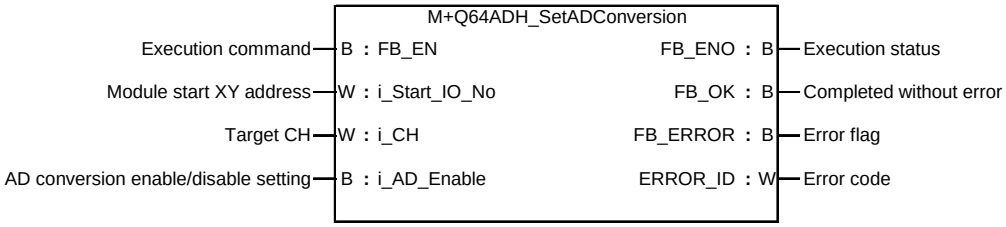
This chapter includes information related to the M+Q64ADH_SetConvertSpeed function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

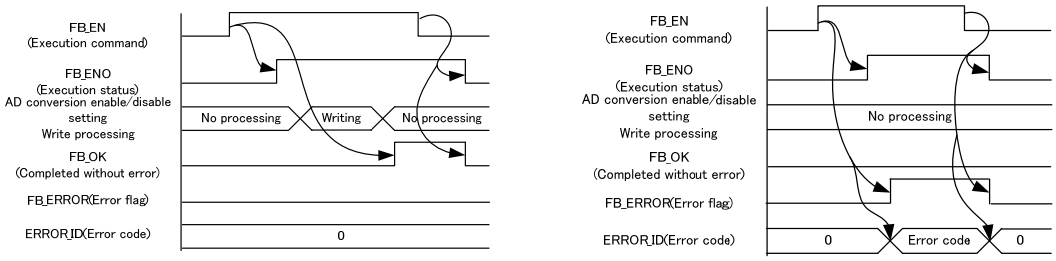
2.6 M+Q64ADH_SetADConversion(Enable/disable AD conversion)

FB Name

M+Q64ADH_SetADConversion

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Enable or disable AD conversion for a specified channel or all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">258 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Enables or disables AD conversion for a specified channel or all channels by turning ON FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4 or 15.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4, 15	1~4: Specify a channel number. 15: Specify all channels.
AD conversion enable/disable setting	i_AD_Enable	Bit	ON,OFF	ON: Enable the AD conversion value output. OFF: Disable the AD conversion value output.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the AD conversion disable/enable setting has been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

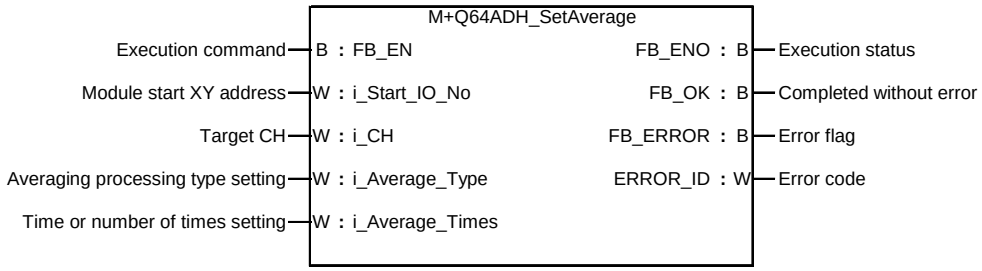
This chapter includes information related to the M+Q64ADH_SetADConversion function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

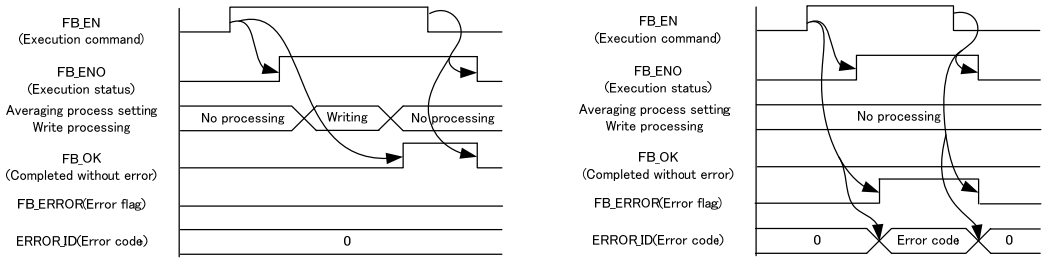
2.7 M+Q64ADH_SetAverage(Averaging process setting)

FB Name

M+Q64ADH_SetAverage

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Configure averaging processing settings of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">317 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Performs averaging processing for a specified channel by turning ON FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Averaging processing type setting	i_Average_Type	Word	0_H: Sampling processing 1_H: Time average 2_H: Count average 3_H: Moving average	Specify the averaging processing type.
Time or number of times setting	i_Average_Times	Word	Time average: 2~5,000(ms) Count average: 4~62,500(times) Moving average: 2~1,000(times)	Set the time average, count average and moving average of the specified channel.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the averaging processing settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

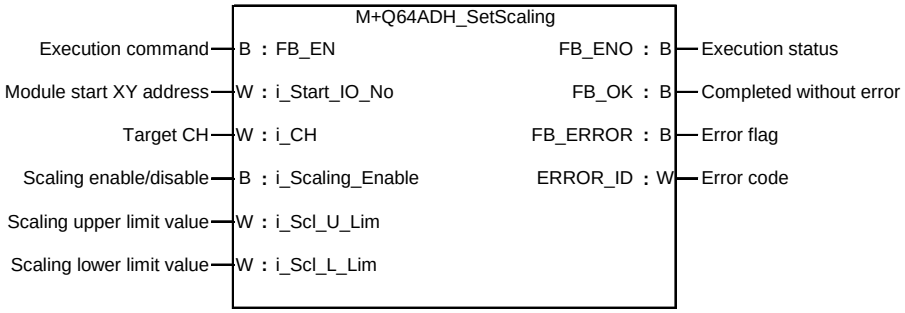
This chapter includes information related to the M+Q64ADH_SetAverage function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

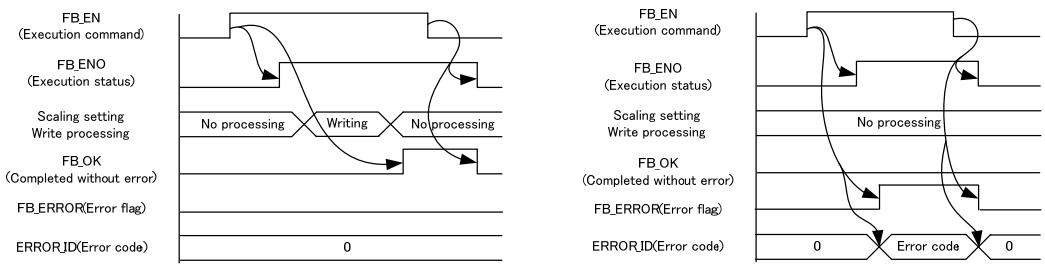
2.8 M+Q64ADH_SetScaling(Scaling setting)

FB Name

M+Q64ADH_SetScaling

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Configure scaling settings of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">253 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Configure scaling settings of a specified channel by turning on FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Scaling enable/disable	i_Scaling_Enable	Bit	ON,OFF	ON: Enable the scaling. OFF: Disable the scaling.
Scaling upper limit value	i_Scl_U_Lim	Word	-32,000~32,000	Specify the scaling upper limit value.
Scaling lower limit value	i_Scl_L_Lim	Word	-32,000~32,000	Specify the scaling lower limit value.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates the scaling settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

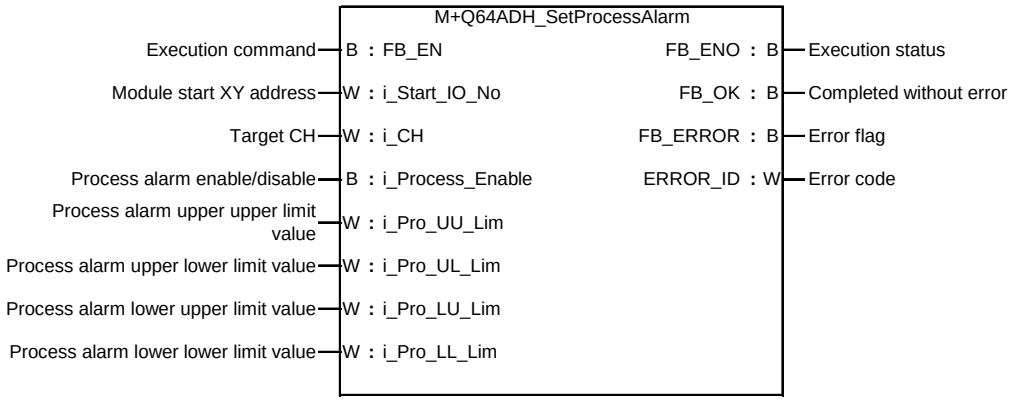
This chapter includes information related to the M+Q64ADH_SetScaling function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

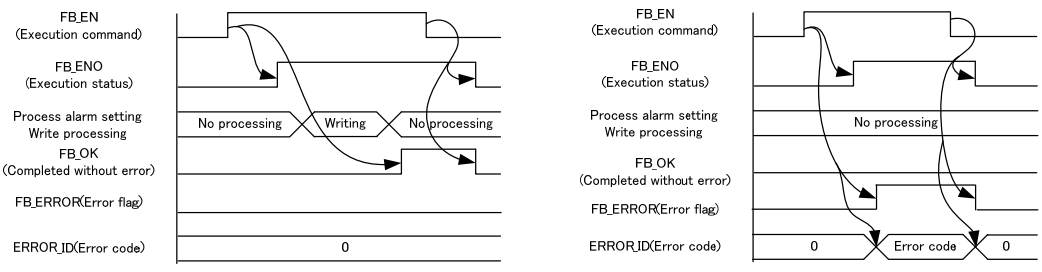
2.9 M+Q64ADH_SetProcessAlarm(Process alarm setting)

FB Name

M+Q64ADH_SetProcessAlarm

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Configure process alarm settings of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="2">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">248 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Configures process alarm settings of a specified channel by turning ON FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Process alarm enable/disable	i_Process_Enable	Bit	ON,OFF	ON: Enable the warning output of the process alarm. OFF: Disable the warning output of the process alarm.
Process alarm upper upper limit value	i_Pro_UU_Lim	Word	-32,768~32,767	Specify the process alarm upper upper limit value.
Process alarm upper lower limit value	i_Pro_UL_Lim	Word	-32,768~32,767	Specify the process alarm upper lower limit value.
Process alarm lower upper limit value	i_Pro_LU_Lim	Word	-32,768~32,767	Specify the process alarm lower upper limit value.
Process alarm lower lower limit value	i_Pro_LL_Lim	Word	-32,768~32,767	Specify the process alarm lower lower limit value.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the process alarm settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

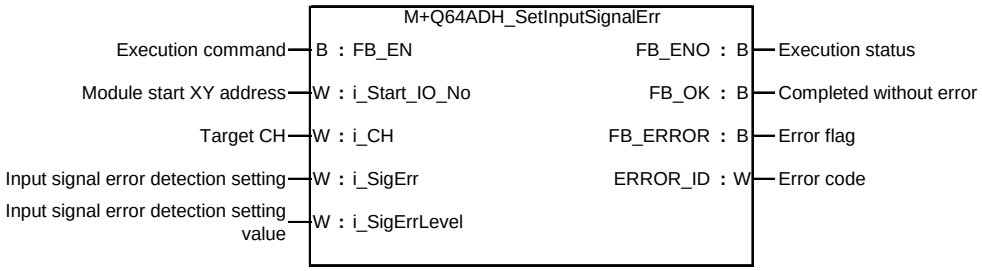
This chapter includes information related to the M+Q64ADH_SetProcessAlarm function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

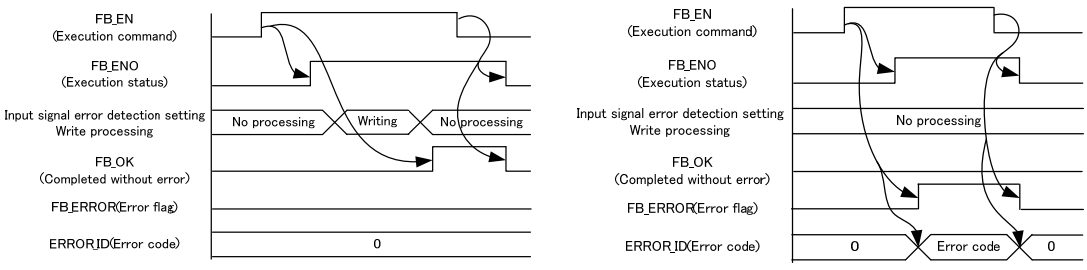
2.10 M+Q64ADH_SetInputSignalErr(Input signal error detection setting)

FB Name

M+Q64ADH_SetInputSignalErr

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Configure input signal error detection settings of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">290 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Configures input signal error detection setting of a specified channel by turning on FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers, Z6 Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.
11(Decimal)	The input signal error detection extension setting is not valid. The input signal error detection extension setting is not within the range of 0 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Input signal error detection setting	i_SigErr	Word	0_H: Disable 1_H: Upper and lower detection 2_H: Lower detection 3_H: Upper detection 4_H: Disconnection detection	Specify the input signal error detection method.

Name(comment)	Label name	Data type	Setting range	Description
Input signal error detection setting value	i_SigErrLevel	Word	0~250 (Unit: 0.1%)	Specify the input signal error detection setting value.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the input signal error detection settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

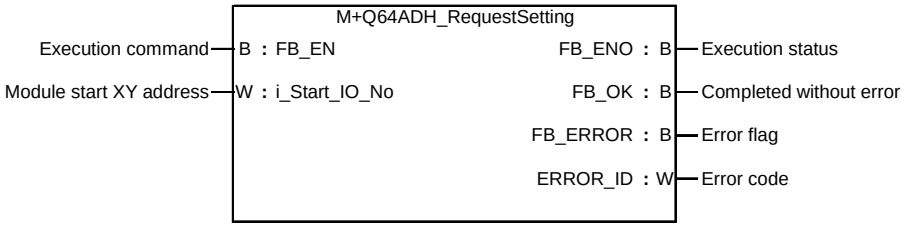
This chapter includes information related to the M+Q64ADH_SetInputSignalErr function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

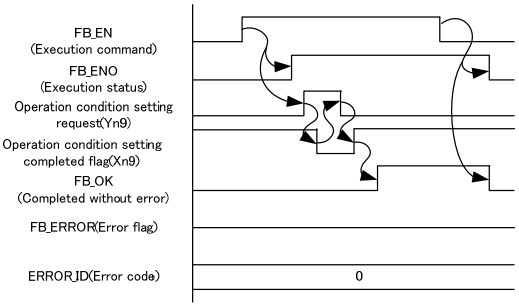
2.11 M+Q64ADH_RequestSetting(Operation condition setting request)

FB Name

M+Q64ADH_RequestSetting

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Apply changes made to each function's settings.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">170 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Enables settings of all channels by turning on FB_EN(Execution command). For information on the settings that are enabled, refer to the MELSEC-Q Analog-Digital Converter Module User's Manual. 2) When FB_EN is turned ON, the FB will continue to execute until the settings for each function are completed.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 3) The FB cannot be used in an interrupt program. 4) This FB uses index register Z9. Please do not use this index register in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) When this FB is executed, AD conversion processing is stopped. After turning ON FB_OK, the conversion processing resumes. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
None	None	None

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the operational condition settings have been completed.
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

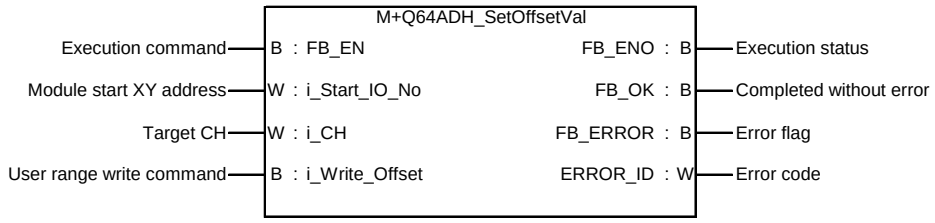
This chapter includes information related to the M+Q64ADH_RequestSetting function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.12 M+Q64ADH_SetOffsetVal(Offset setting)

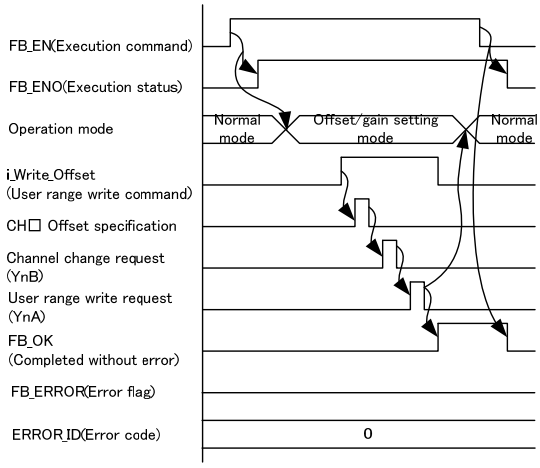
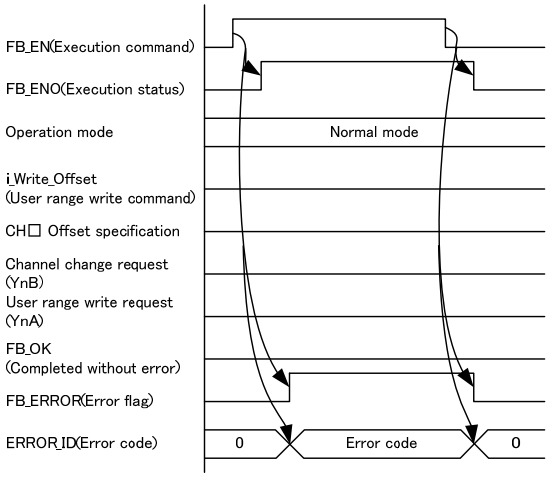
FB Name

M+Q64ADH_SetOffsetVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Set the offset value of a specified channel to the current analog value.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">369 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Sets the offset value of a specified channel to the current analog value by turning on FB_EN(Execution command). 2) To write the offset value, both FB_EN and the User range write command must be ON. 3) If the User range write command is ON when FB_EN is turned ON, the FB will continue to execute until the offset value of the specified channel is written. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 1 - FB Library Application examples".

Item	Description
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.

Name(comment)	Label name	Data type	Setting range	Description
User range write command	i_Write_Offset	Bit	ON,OFF	ON: Perform the user range write operation. OFF: Do not perform the user range write operation.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the offset settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

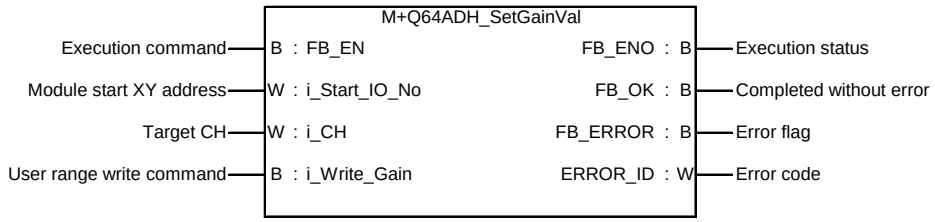
This chapter includes information related to the M+Q64ADH_SetOffsetVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.13 M+Q64ADH_SetGainVal(Gain setting)

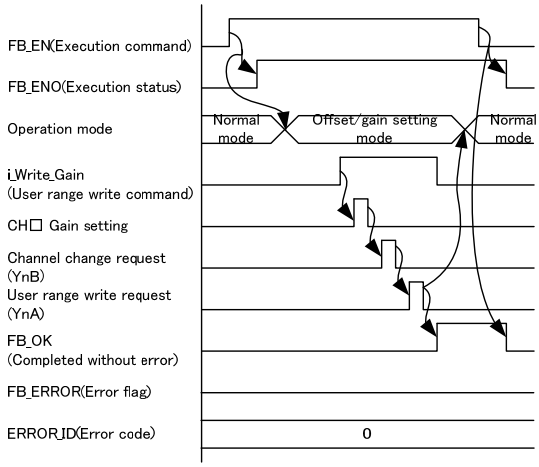
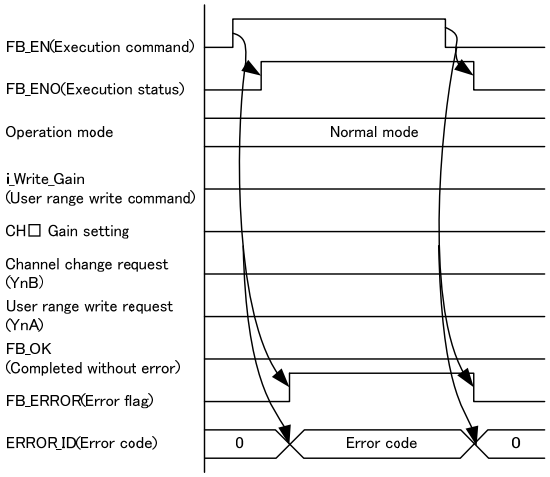
FB Name

M+Q64ADH_SetGainVal

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Set the gain value of a specified channel to the current analog value.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">356 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Sets the gain value of a specified channel to the current analog value by turning on FB_EN(Execution command). 2) To write the gain value, both FB_EN and the User range write command must be ON. 3) If the User range write command is ON when FB_EN is turned ON, the FB will continue to execute until the gain value of the specified channel is written. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 1 - FB Library Application examples".

Item	Description
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.

Name(comment)	Label name	Data type	Setting range	Description
User range write command	i_Write_Gain	Bit	ON,OFF	ON: Perform the user range write operation. OFF: Do not perform the user range write operation.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the gain settings have been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

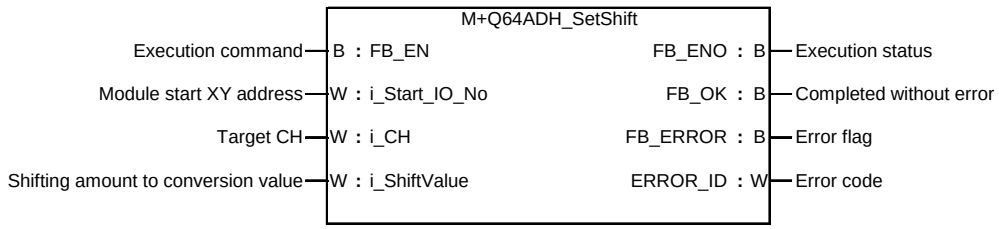
This chapter includes information related to the M+Q64ADH_SetGainVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

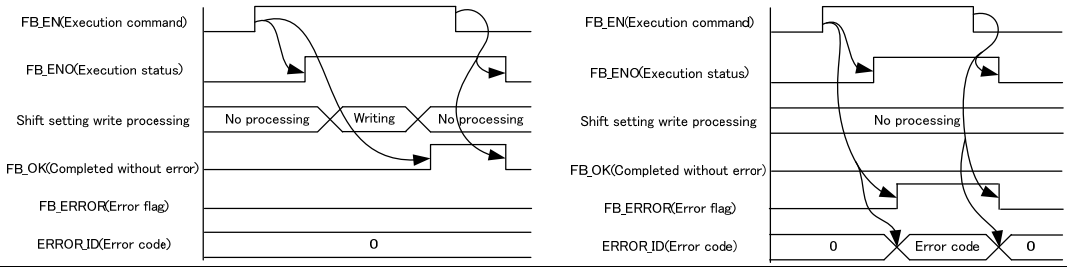
2.14 M+Q64ADH_SetShift(Shift setting)

FB Name

M+Q64ADH_SetShift

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Perform the shift setting of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">198 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Performs the shift setting of a specified channel when the FB_EN(Execution command) is turned ON. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Shifting amount to conversion value	i_ShiftValue	Word	-32,768~32,767	Specify the shifting amount to conversion value.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the shift setting has been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

This chapter includes information related to the M+Q64ADH_SetShift function block.

It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.

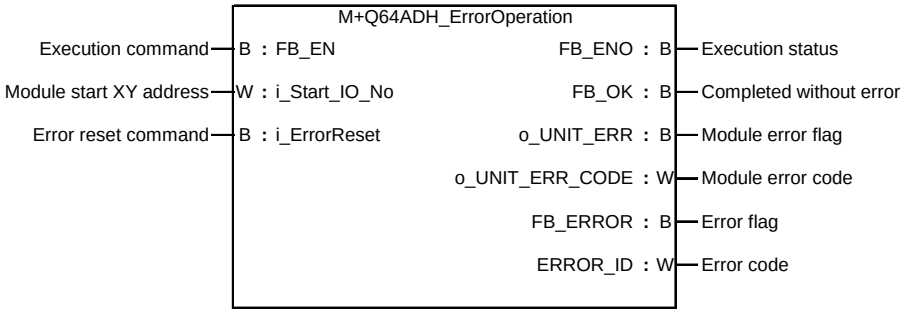
Before using any Mitsubishi products, please read all relevant manuals.

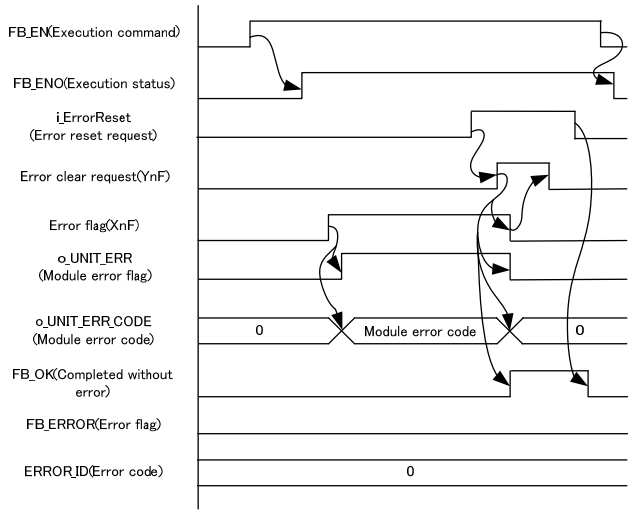
2.15 M+Q64ADH_ErrorOperation(Error operation)

FB Name

M+Q64ADH_ErrorOperation

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Perform monitoring and reset of error codes.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">224 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) By turning on FB_EN(Execution command), the current error code in the target intelligent function module is output. 2) After turning ON FB_EN, the error may be reset by turning ON i_ErrorReset(Error reset command) during the error occurrence.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
None	None	None

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Error reset command	i_ErrorReset	Bit	ON,OFF	ON: Turn ON the error clear request of the module. OFF: Turn OFF the error clear request of the module. *After error reset is completed, please turn this input OFF.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the error reset is completed.

Name(comment)	Label name	Data type	Initial value	Description
Module error flag	o_UNIT_ERR	Bit	OFF	When ON, it indicates the presence of a module error.
Module error code	o_UNIT_ERR_CODE	Word	0	Specified module error code output
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

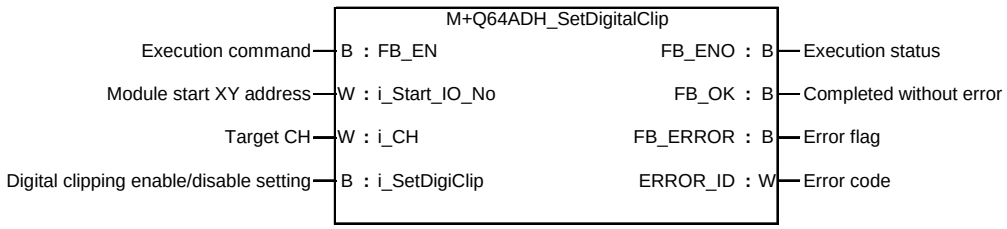
This chapter includes information related to the M+Q64ADH_ErrorOperation function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

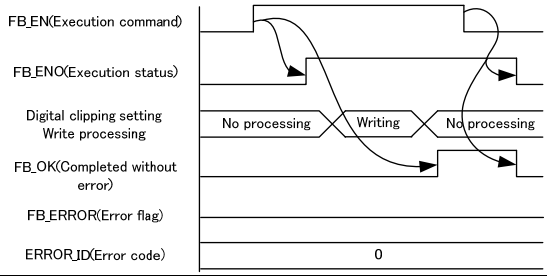
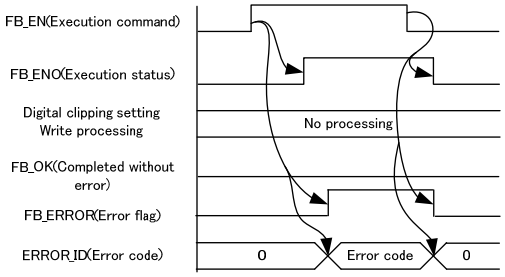
2.16 M+Q64ADH_SetDigitalClip(Digital clipping setting)

FB Name

M+Q64ADH_SetDigitalClip

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Enable or disable the digital clipping of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">215 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Enables or disables the digital clipping of a specified channel by turning ON the FB_EN(Execution command). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 5) Every input must be provided a value for proper FB operation. 6) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Digital clipping enable/disable setting	i_SetDigiClip	Bit	ON,OFF	ON: Enable the digital clipping function. OFF: Disable the digital clipping function.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the digital clipping setting has been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

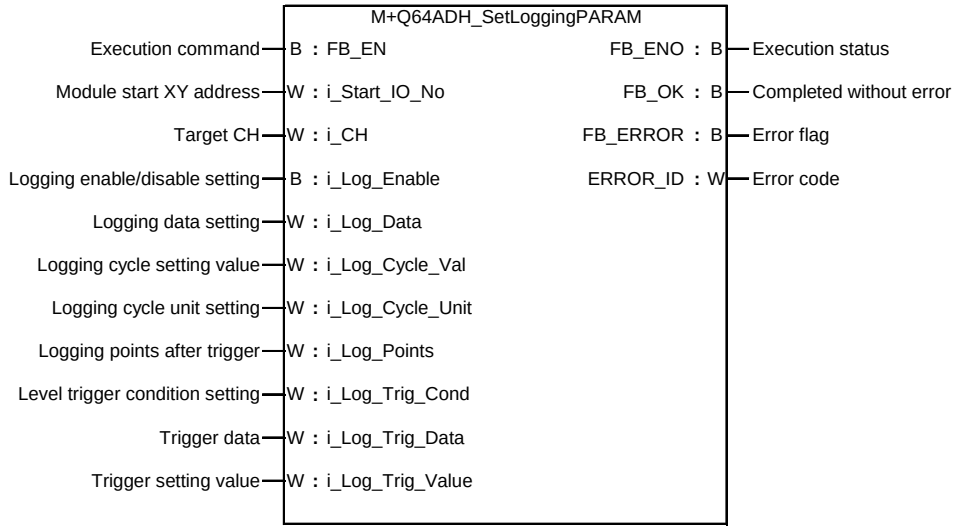
This chapter includes information related to the M+Q64ADH_SetDigitalClip function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

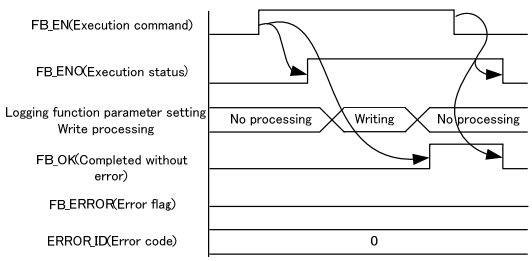
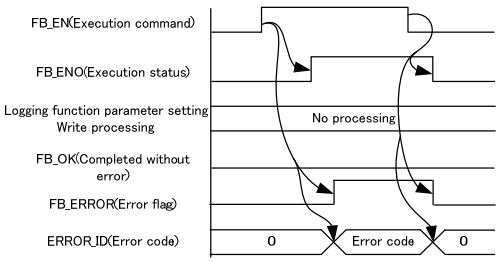
2.17 M+Q64ADH_SetLoggingPARAM(Logging function parameter setting)

FB Name

M+Q64ADH_SetLoggingPARAM

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Perform the logging function of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="2">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Applicable hardware and software</td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps	278 steps(for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.
Function description	1) Performs the logging function of a specified channel when the FB_EN(Execution command) is turned ON. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs]  

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Logging enable/disable setting	i_Log_Enable	Bit	ON,OFF	ON: Enable the logging function. OFF: Disable the logging function.
Logging data setting	i_Log_Data	Word	0: Digital output value 1: Digital operation value	Set the data to be logged.

Name(comment)	Label name	Data type	Setting range	Description
Logging cycle setting value	i_Log_Cycle_Val	Word	1) Logging cycle unit setting=0(μs): 80~32,767 2) Logging cycle unit setting =1(ms): 1~32,767 3) Logging cycle unit setting =2(s): 1~3,600	Set the cycle to store data.
Logging cycle unit setting	i_Log_Cycle_Unit	Word	0: μs 1: ms 2: s	Specify the cycle unit to store data.
Logging points after trigger	i_Log_Points	Word	1~10,000	Specify the number of data to be logged after the hold trigger occurs.
Level trigger condition setting	i_Log_Trig_Cond	Word	0: Disable 1: Above 2: Below 3: Pass through	Set whether to use the level trigger or not. If used, set the condition.
Trigger data	i_Log_Trig_Data	Word	0~4,999	Set the buffer memory address monitored for the level trigger.
Trigger setting value	i_Log_Trig_Value	Word	-32,768~32,767	Set the level at which the level trigger occurs.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the logging function parameter setting has been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

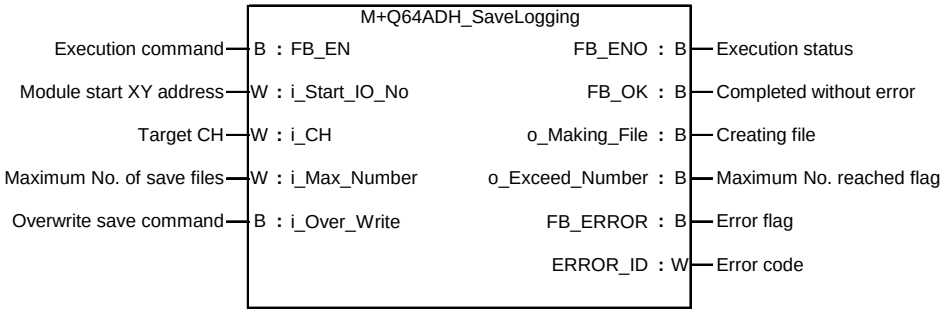
This chapter includes information related to the M+Q64ADH_SetLoggingPARAM function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.18 M+Q64ADH_SaveLogging(Logging data save)

FB Name

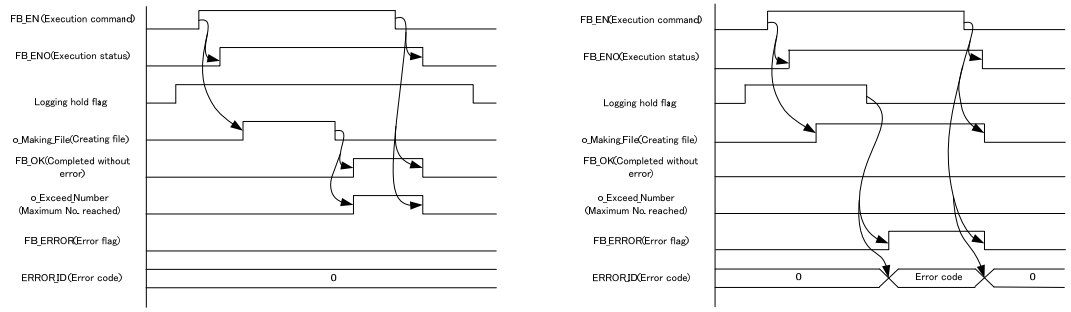
M+Q64ADH_SaveLogging

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Save the logging data of a specified channel in a file.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="2">MELSEC-Q Series *1</td><td>High performance model</td></tr>
<tr><td>Universal model *2</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
*2 Not applicable to Q00UJCPU, Q00UCPU, or Q01UCPU because memory cards cannot be mounted on them.
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">1737 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) When FB_EN(Execution command) and the logging hold flag are turned ON, the logging data from the start pointer for the number of the logging data are sorted chronologically. Then, the logging data and the trigger occurrence information are saved in CSV format in the ATA card mounted on the CPU. 2) When FB_EN is ON, the FB starts the save processing of the logging data each time the logging hold flag is turned ON. 3) It requires multiple scans to complete the save processing of the logging data. To check whether it is completed, check FB_OK(Completed without error). 4) The format for the file name that the FB saves in an ATA card is "AD" + "second and third digits of the module starting XY address that is expressed in 4 digits" + "Target channel" + "serial number" + " .CSV". The maximum serial number depends on i_Max_Number(Maximum No. of save files). If FB_EN is turned OFF, the serial number is reset and the serial number starts from 1 again. [File name example] The file name is "AD453006.CSV" in the following case. The module starting XY address is H0450, the target channel is 3, i_Max_Number(Maximum No. of save files) is 30, and the number of files this FB created is 6. 5) When the FB creates a CSV file in an ATA card, if the same file name is already in the ATA card, the existing file is replaced by a new file. 6) If i_Over_Write(Overwrite save command) is turned ON and the number of files the FB saved in the ATA card has exceeded i_Max_Number, the serial number returns to 1 and the FB continues to perform the save processing of the logging data. 7) If i_Over_Write is turned OFF and the number of files saved in the ATA card has reached i_Max_Number, the FB stops the save processing of the logging data. 8) If the number of files the FB saved in the ATA card has reached i_Max_Number, o_Exceed_Number(Maximum No. reached flag) is turned ON regardless of whether i_Over_Write is ON or OFF. 9) If there is an incorrect input in i_CH(Target CH) or i_Max_Number, FB_ERROR(Error flag) is turned ON and the FB processing is aborted. Then an error code is stored in ERROR_ID(error code).

Item	Description
Function description	10) If the FB is executed without mounting an ATA card, if the mounted ATA card does not have sufficient space, or if the number of files that can be saved is exceeded *1, a CPU error *2 occurs. When an error causes a stop error in the CPU module, FB_ERROR or ERROR_ID is not updated. When an error causes a continuation error in the CPU module, FB_ERROR is turned ON and the error code is stored in ERROR_ID. 11) For information on the format of the CSV file the FB creates, refer to the MELSEC-Q High Speed Analog-Digital Converter Module User's Manual. *1 For information on the size of ATA card and the number of files that can be saved, refer to the QCPU User's Manual(Hardware Design, Maintenance and Inspection). *2 The parameter can be used to set the CPU operation state(continue/stop) for when an access error to ATA card occurs.
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers, Z6, Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 5) This FB can save logging data in ATA card only. 6) This FB uses a SP.FWRITE instruction. Therefore, if an error occurs during execution of the SP.FWRITE instruction, a CPU error occurs. 7) When two or more of these FBs are used, implement an interlock to prevent them from being executed simultaneously. [Interlock example] When the target channels are set to channels 1 and 2 and their logging data are saved, confirm that FB_OK for channel 1 is turned ON before turning ON EB_EN for channel 2. 8) Every input must be provided a value for proper FB operation. 9) Pay attention to the size of the ATA card and the number of files that can be saved when determining i_Max_Number(Maximum No. of save files). If the size of the ATA card or the number of files that can be saved is exceeded when this FB is executed, a CPU error occurs. For information on the size of ATA card and the number of files that can be saved, refer to the QCPU User's Manual(Hardware Design, Maintenance and Inspection).

Item	Description
Restrictions and precautions	10) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.
11(Decimal)	The maximum number of save files is not valid. The maximum number of save files is not within the range of 1 to 511.	Please try again after confirming the setting.
20(Decimal)	The processing is aborted because the logging hold flag is turned OFF while the logging data is being saved. An incomplete CSV file is saved in the ATA card.	-
4-digit error code	CPU error code	For details on the error codes for errors occurring, refer to Appendix 1 Error Code List in the QCPU User's Manual(Hardware Design, Maintenance and Inspection).

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Maximum No. of save files	i_Max_Number	Word	1~511	Specify the maximum number of CSV files the FB saves.
Overwrite save command	i_Over_Write	Bit	ON,OFF	Set whether to overwrite a CSV file with the youngest serial number when the number of CSV files saved by this FB exceeds the maximum number of save files. (When OFF, the save processing of logging data stops.)

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the file saving has been completed. Turned OFF when the logging resumes.
Creating file	o_Making_File	Bit	OFF	When ON, it indicates that a file is being created.

Name(comment)	Label name	Data type	Initial value	Description
Maximum No. reached flag	o_Exceed_Number	Bit	OFF	When ON, it indicates that the number of CSV files saved by this FB has reached the maximum number of save files.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

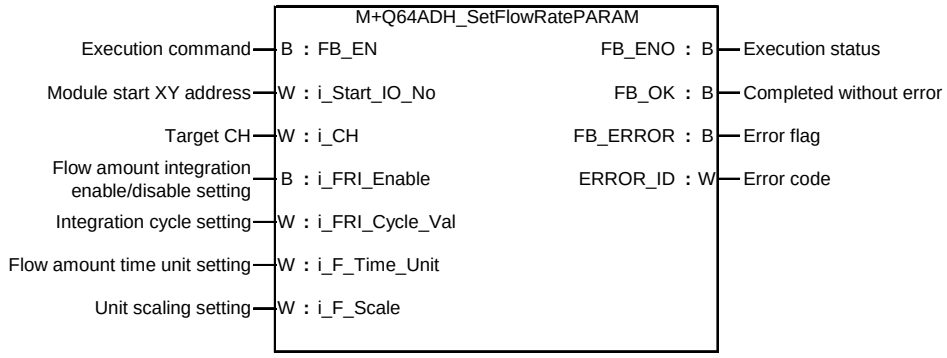
This chapter includes information related to the M+Q64ADH_SaveLogging function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

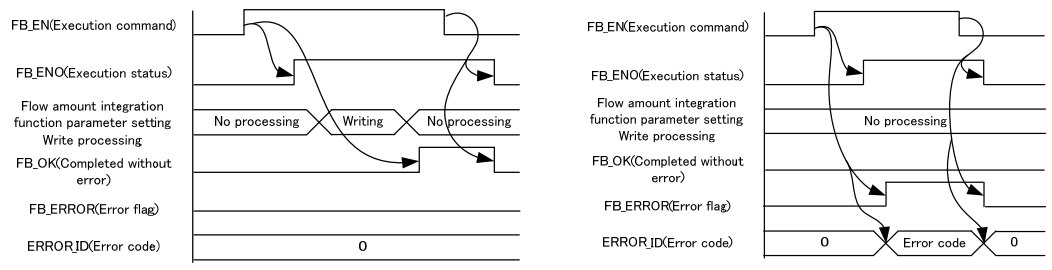
2.19 M+Q64ADH_SetFlowRatePARAM(Flow amount integration function parameter setting)

FB Name

M+Q64ADH_SetFlowRatePARAM

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Set the flow amount integration function of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series *1</td><td>Basic model</td></tr>
<tr><td>High performance model</td></tr>
<tr><td>Universal model</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">270 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) Sets the flow amount integration function of a specified channel when the FB_EN(Execution command) is turned ON. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The new setting value will not take effect until the 'operation condition setting request' signal(Yn9) is turned OFF->ON->OFF or the Operation condition setting request FB(M+Q64ADH_RequestSetting) is executed. 4) When the target channel setting value is out of range, the FB_ERROR output turns on, processing is interrupted, and the error code is stored in ERROR_ID. 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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 5) This FB uses index registers Z7, Z8, and Z9. Please do not use these index registers in an interrupt program. 6) Every input must be provided a value for proper FB operation. 7) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Pulsed execution(1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 4.	Please try again after confirming the setting.

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)
Target CH	i_CH	Word	1~4	Specify the channel number.
Flow amount integration enable/disable setting	i_FRI_Enable	Bit	ON,OFF	ON: Enable the flow amount integration function. OFF: Disable the flow amount integration function.
Integration cycle setting	i_FRI_Cycle_Val	Word	1~5,000(ms)	Set the cycle for flow amount integration.
Flow amount time unit setting	i_F_Time_Unit	Word	0: /s 1: /min 2: /h	Set the range(time unit) of the flow meter.

Name(comment)	Label name	Data type	Setting range	Description
Unit scaling setting	i_F_Scale	Word	0: ×1 1: ×10 2: ×100 3: ×1,000 4: ×10,000	Specify the unit scale to calculate the integrated flow amount.

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the flow amount integration function parameter setting has been completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

Note

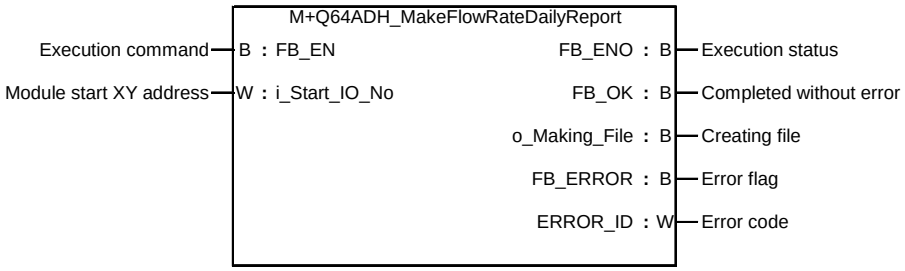
This chapter includes information related to the M+Q64ADH_SetFlowRatePARAM function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.20 M+Q64ADH_MakeFlowRateDailyReport(Flow amount daily report creation)

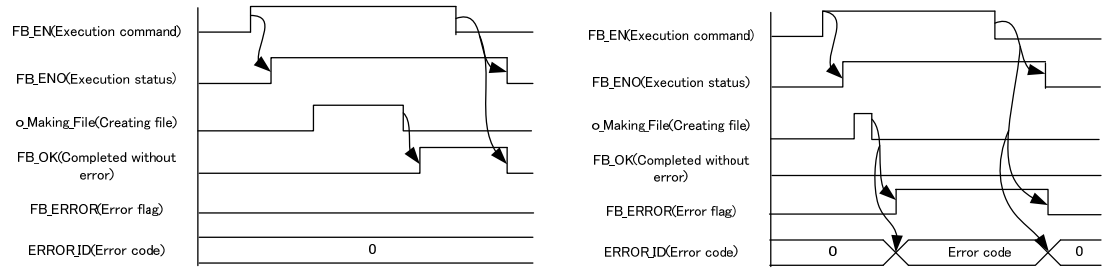
FB Name

M+Q64ADH_MakeFlowRateDailyReport

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Save the flow amount daily report data of all channels in a file.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>Q64ADH</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="2">MELSEC-Q Series *1</td><td>High performance model</td></tr>
<tr><td>Universal model *2</td></tr>
</table>
*1 Not applicable to QCPU(A mode)
*2 Not applicable to Q00UJCPU, Q00UCPU, or Q01UCPU because memory cards cannot be mounted on them.
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese version</td><td>Version1.49B or later</td></tr>
</table>
*1 For software versions applicable to the modules used, refer to "Relevant manuals".
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
<tr><td>Number of steps</td><td colspan="2">1565 steps(for MELSEC-Q series universal model CPU)
* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</td></tr>
</table>

Item	Description
Function description	1) By turning ON FB_EN(Execution command), the "flow amount per hour" that flows on the hour for 24 hours and the "total flow amount of the day" are calculated based on the integrated flow amount(Un\G1332~Un\G1339) of the Q64ADH. Then, they are saved in a flow amount daily report file in CSV format. The flow amount daily report is saved in the ATA card mounted on the CPU module. 2) When FB_EN is ON, a flow amount daily report is created at 12 am every day. The process to create a flow amount daily report starts when the FB detects the change from 11 pm to 12 am. 3) It requires multiple scans to complete the save processing of the flow amount daily report data. o_Making_File(Creating file) is turned ON while the flow amount daily report data is being saved. 4) By executing a single FB, a flow amount daily report for all channels of a module can be created. 5) The format for the file name that the FB saves in an ATA card is "second and third digits of the module starting XY address that is expressed in 4 digits" + "lower two digits of the year the daily report is created " + "month and day the daily report is created" +" .CSV". [File name example] The file name is "45110601.CSV" when the module starting XY address is H0450 and the daily report was created on June 1, 2011. 6) When the FB creates a CSV file in an ATA card, if the same file is already in the ATA card(e.g. the clock information of the CPU is changed), the existing file is replaced by a new file. 7) If the FB is executed without mounting an ATA card, if the mounted ATA card does not have sufficient space, or if the number of files that can be saved is exceeded *1, a CPU error *2 occurs. When an error causes a stop error in the CPU module, FB_ERROR or ERROR_ID is not updated. When an error causes a continuation error in the CPU module, FB_ERROR is turned ON and the error code is stored in ERROR_ID. 8) For information on the format of the CSV file the FB creates, refer to the MELSEC-Q High Speed Analog-Digital Converter Module User's Manual. *1 For information on the size of ATA card and the number of files that can be saved, refer to the QCPU User's Manual(Hardware Design, Maintenance and Inspection). *2 The parameter can be used to set the CPU operation state(continue/stop) for when an access error to ATA card occurs.
Compiling method	Macro type

Item	Description
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) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program. 5) This FB can save flow amount daily report data in ATA card only. 6) This FB uses a SP.FWRITE instruction. Therefore, if an error occurs during execution of the SP.FWRITE instruction, a CPU error occurs. 7) This FB uses the clock information of the CPU to calculate the "flow amount per hour" and "total flow amount of the day". If the clock information of the CPU is changed while this FB is being performed, the processing to create a flow amount daily report may not be performed normally. 8) Every input must be provided a value for proper FB operation. 9) If the size of ATA card or the number of files that can be saved is exceeded by executing this FB, a CPU error occurs. For information on the size of ATA card and the number of files that can be saved, refer to the QCPU User's Manual(Hardware Design, Maintenance and Inspection). 10) The input range settings must be properly configured to match devices connected to the Q64ADH module. Configure these settings by making the GX Works2 switch setting according to the application. For details on how to use the intelligent function module switch setting, refer to GX Works2 Version 1 Operating Manual(Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application examples".
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	MELSEC-Q High Speed Analog-Digital Converter Module User's Manual QCPU User's Manual(Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual(Common) GX Works2 Version 1 Operating Manual(Simple Project, Function Block)

Error Codes

● Error code list

Error code	Description	Action
4-digit error code	CPU error code	For details on the error codes for errors occurring, refer to Appendix 1 Error Code List in the QCPU User's Manual(Hardware Design, Maintenance and Inspection).

Labels

● Input labels

Name(comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address(in hexadecimal) where the Q64ADH module is mounted.(For example, enter H10 for X10.)

● Output labels

Name(comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the creation of the flow amount daily report has been completed.
Creating file	o_Making_File	Bit	OFF	When ON, it indicates that a file is being created.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output

FB Version Upgrade History

Version	Date	Description
1.00A	2012/03/26	First edition

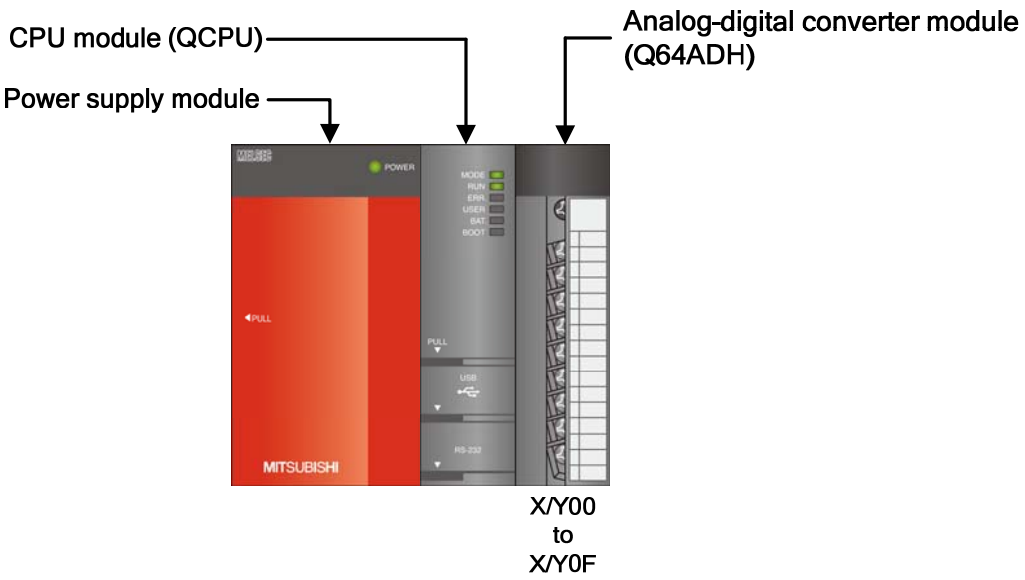
Note

This chapter includes information related to the M+Q64ADH_MakeFlowRateDailyReport function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

Appendix 1. FB Library Application examples

Q64ADH FB application example

System Configuration Examples



Reminder

1) Every input must be provided with a value for proper FB operation.
   If not set, the values will be unspecified.
2) Abbreviations may be used in the label comments due to the limitation on the number of the characters to display in GX Works2.

List of devices

External input (commands)

Device	FB function name	Application (ON details)
M0	Read AD conversion data	AD conversion data read request
M10	Read all AD conversion data	All AD conversion data read request
M20	Read digital operation value	Digital operation value read request
M30	Read all digital operation	All digital operation value read request
M40	Conversion speed setting	Conversion speed setting request
M50	Enable/disable AD conversion	AD conversion enable/disable setting request
M51		AD conversion enable/disable setting
M60	Averaging process setting	Averaging process setting request
M70	Scaling setting	Scaling setting request
M71		Scaling enable/disable
M80	Process alarm setting	Process alarm setting request
M81		Process alarm enable/disable
M90	Input signal error detection	Input signal error detection setting
M100	Operation condition setting request	Operation condition setting request
M110	Offset setting	Offset setting request
M111		Offset value write request
M120	Gain setting	Gain setting request
M121		Gain value write request
M130	Shift setting	Shift setting request
M140	Error operation	Error operation request
M141		Error reset request
M150	Digital clipping setting	Digital clipping setting request
M151		Digital clipping enable/disable setting
M160	Logging function parameter setting	Logging function parameter setting
M161		Logging enable/disable setting
M170	Logging data save	Logging data save request
M171		Logging file overwrite enable/disable
M180	Flow amount integration function parameter setting	Flow amount integration function parameter setting request
M181		Flow amount integration enable/disable setting
M190	Flow amount daily report	Daily report creation request

Data register

Device	FB function name	Application (ON details)
D0	Read AD conversion data	AD conversion data
D1		AD conversion data read FB error code
D10	Read all AD conversion data	CH1 AD conversion data
D11		CH2 AD conversion data
D12		CH3 AD conversion data
D13		CH4 AD conversion data
D20	Read digital operation value	Digital operation value
D21		Digital operation value FB error code
D30	Read all digital operation values	CH1 digital operation value
D31		CH2 digital operation value
D32		CH3 digital operation value
D33		CH4 digital operation value
D50	Enable/disable AD conversion	AD conversion enable/disable FB error code
D60	Averaging process setting	Averaging process setting FB error
D70	Scaling setting	Scaling setting FB error code
D80	Process alarm setting	Process alarm FB error code
D90	Input signal error detection	Input signal error detection FB error
D110	Offset setting	Offset setting FB error code
D120	Gain setting	Gain setting FB error code
D130	Shift setting	Shift setting FB error code
D140	Error operation	Module error code
D150	Digital clipping setting	Digital clipping FB error code
D160	Logging function parameter	Logging parameter FB error code
D170	Logging data save	Logging data save FB error code
D180	Flow amount integration function parameter setting	Flow amount integration parameter FB error code
D190	Flow amount daily report	Daily report creation FB error code

External output (checks)

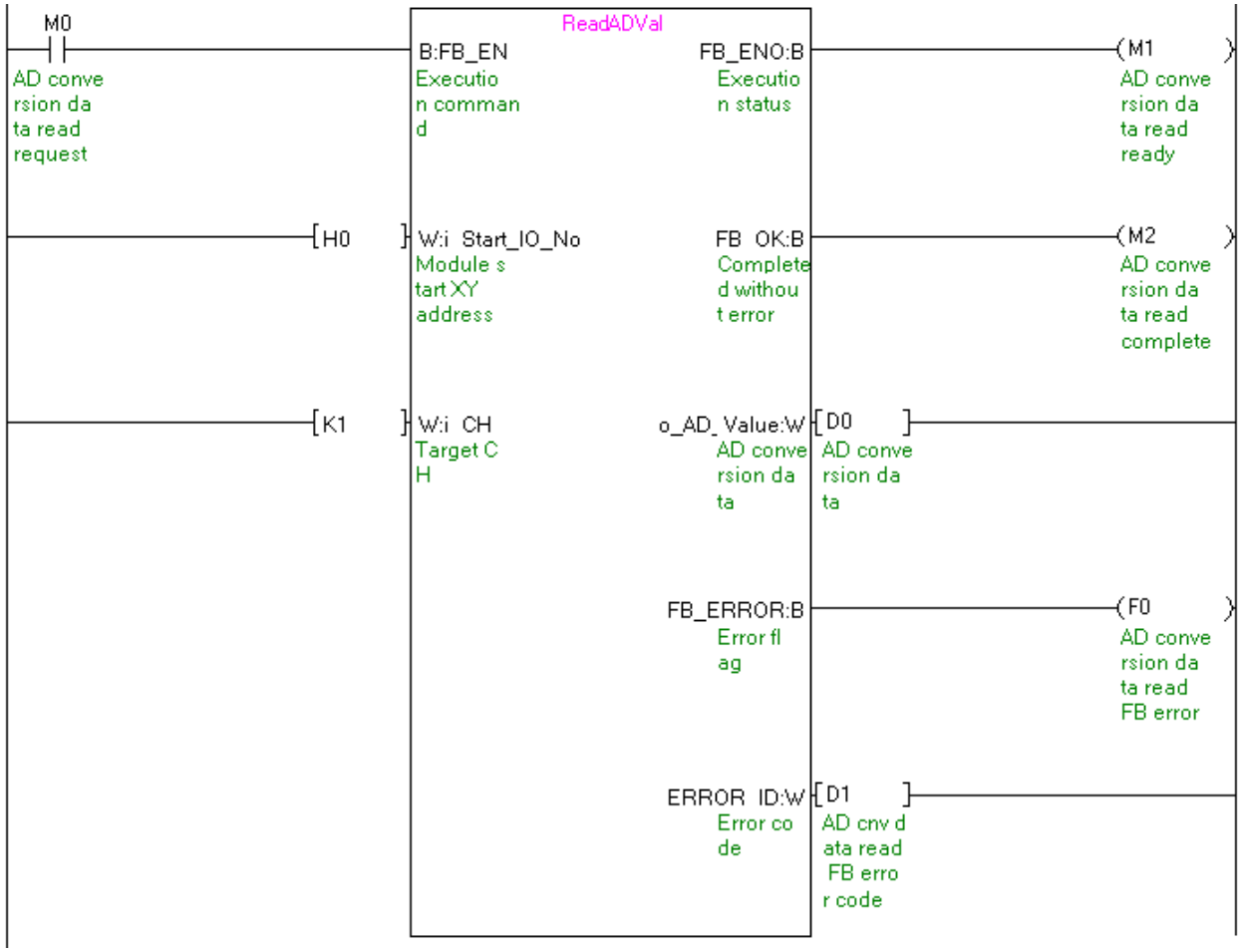
Device	FB function name	Application (ON details)
M1	Read AD conversion data	AD conversion data read ready
M2		AD conversion data read complete
F0		AD conversion data read FB error
M11	Read all AD conversion data	All AD conversion data read ready
M12		All AD conversion data read complete
M21	Read digital operation value	Digital operation value read ready
M22		Digital operation value read complete
F5		Digital operation value FB error
M31	Read all digital operation values	All digital operation value read ready
M32		All digital operation value read
M41	Conversion speed setting	Conversion speed setting ready
M42		Conversion speed setting complete
M52	Enable/disable AD conversion	AD conversion enable/disable setting
M53		AD conversion enable/disable setting request complete
F10		AD conversion enable/disable FB error
M61	Averaging process setting	Averaging process setting ready
M62		Averaging process setting complete
F15		Averaging process setting FB error
M72	Scaling setting	Scaling setting ready
M73		Scaling setting complete
F20		Scaling setting FB error
M82	Process alarm setting	Process alarm setting ready
M83		Process alarm setting complete
F25		Process alarm setting FB error
M91	Input signal error detection setting	Input signal error detection setting
M92		Input signal error detection setting complete
F30		Input signal error detection setting FB
M101	Operation condition setting request	Operation condition setting request ready
M102		Operation condition setting request setting complete
M112	Offset setting	Offset setting ready
M113		Offset setting complete
F35		Offset setting FB error
M122	Gain setting	Gain setting ready
M123		Gain setting complete
F40		Gain setting FB error
M131	Shift setting	Shift setting ready
M132		Shift setting complete
F45		Shift setting FB error
M142	Error operation	Error operation ready
M143		Error operation complete
M144		Module error flag
M152	Digital clipping setting	Digital clipping setting ready
M153		Digital clipping setting complete
F50		Digital clipping FB error
M162	Logging function parameter setting	Logging function parameter setting
M163		Logging function parameter setting complete
F55		Logging parameter FB error
M172	Logging data save	Logging data save ready complete
M173		Logging data save complete
M174		Logging data saving
M175		Maximum No. of logging files reached
F60		Logging data save FB error
M182	Flow amount integration function parameter setting	Flow amount integration function parameter setting ready
M183		Flow amount integration function parameter setting complete
F65		Flow amount integration parameter FB error
M191	Flow amount daily report creation	Daily report creation ready
M192		Daily report creation complete
M193		Daily report creating
F70		Daily report creation FB error

Program

M+Q64ADH_ReadADVal(Read AD conversion data)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.

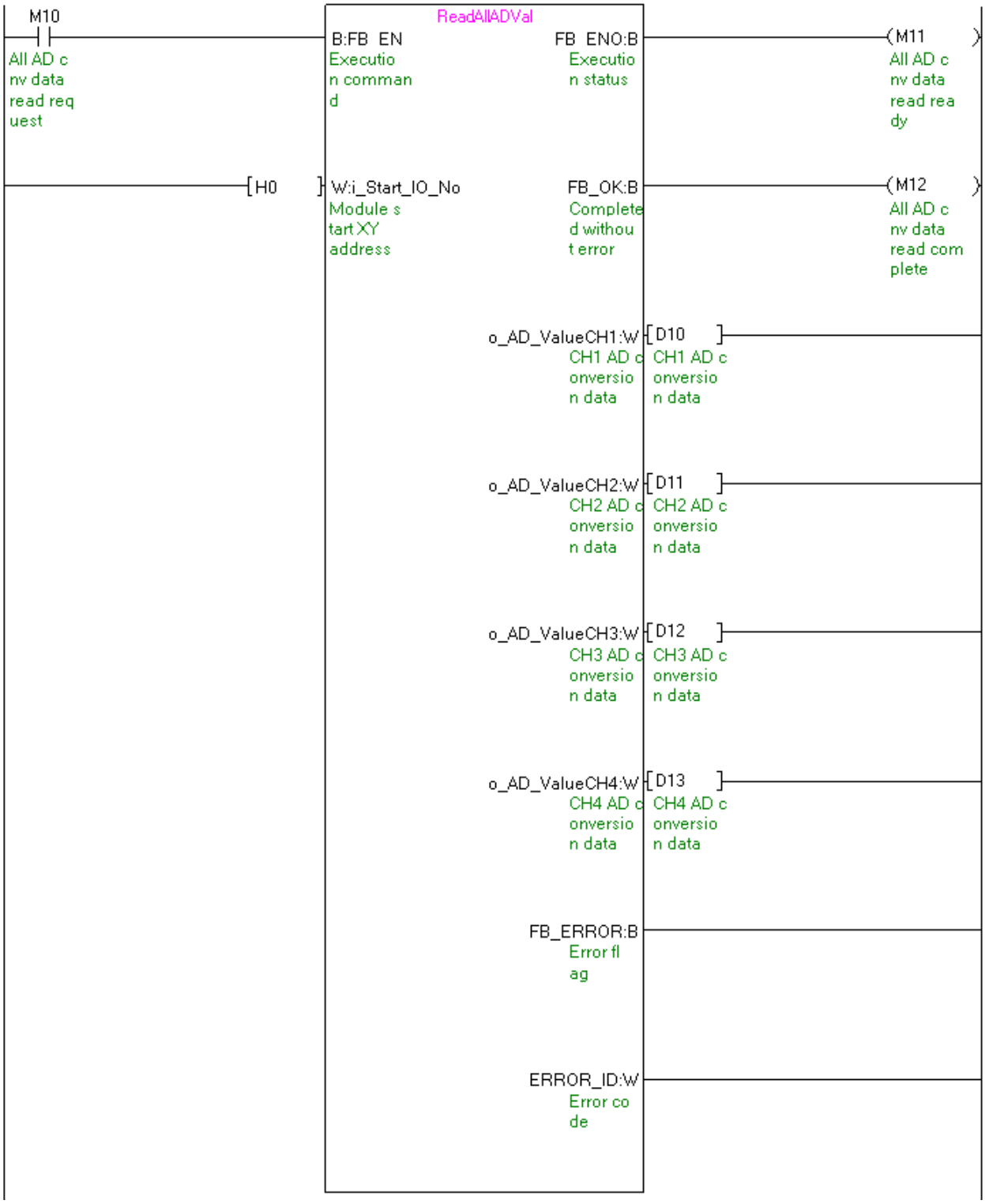
By turning ON M0, the AD conversion data of channel 1 is read.



M+Q64ADH_ReadAllADVal(Read all AD conversion data)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.

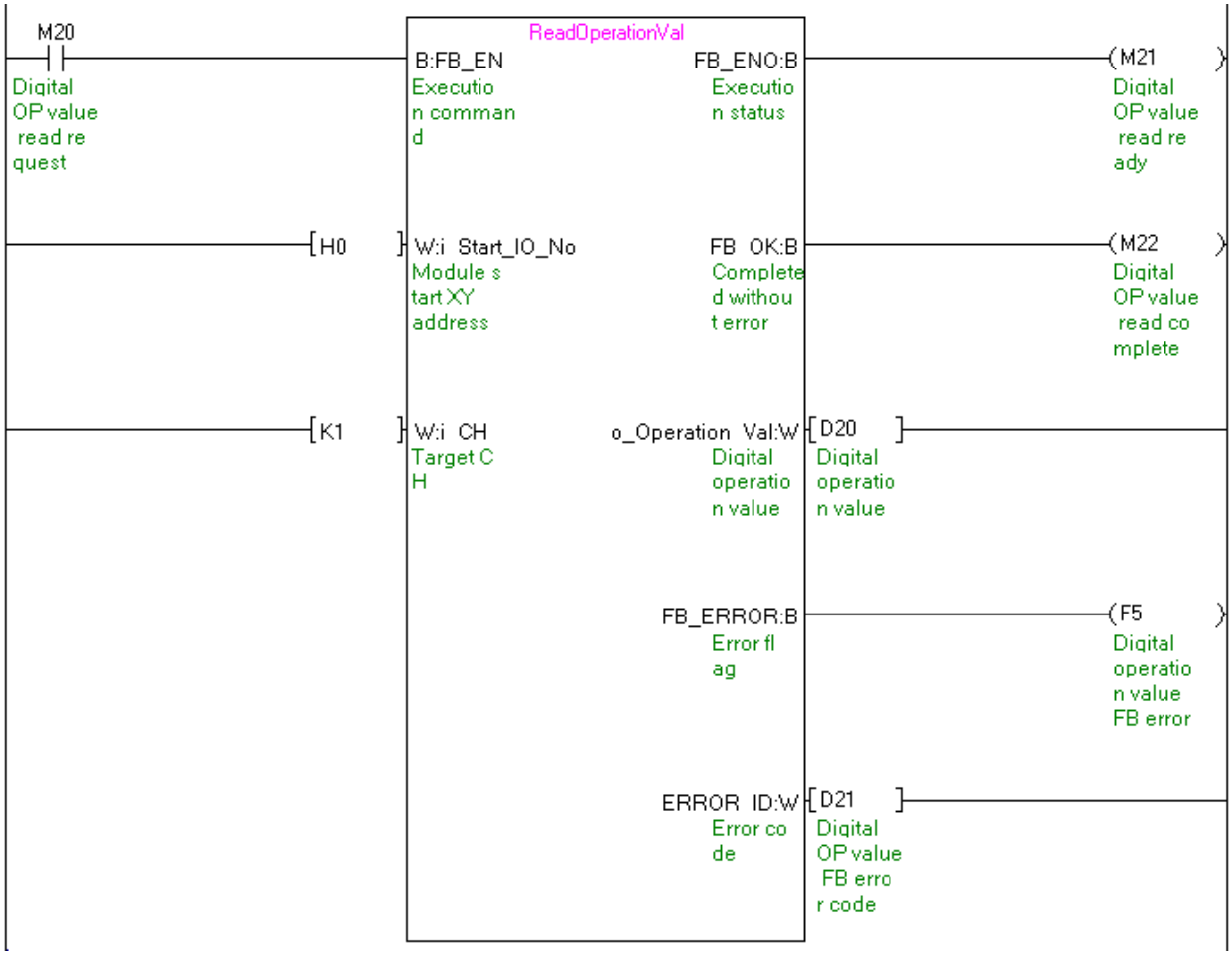
By turning ON M10, AD conversion data of all channels are read.



M+Q64ADH_ReadOperationVal(Read digital operation value)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.

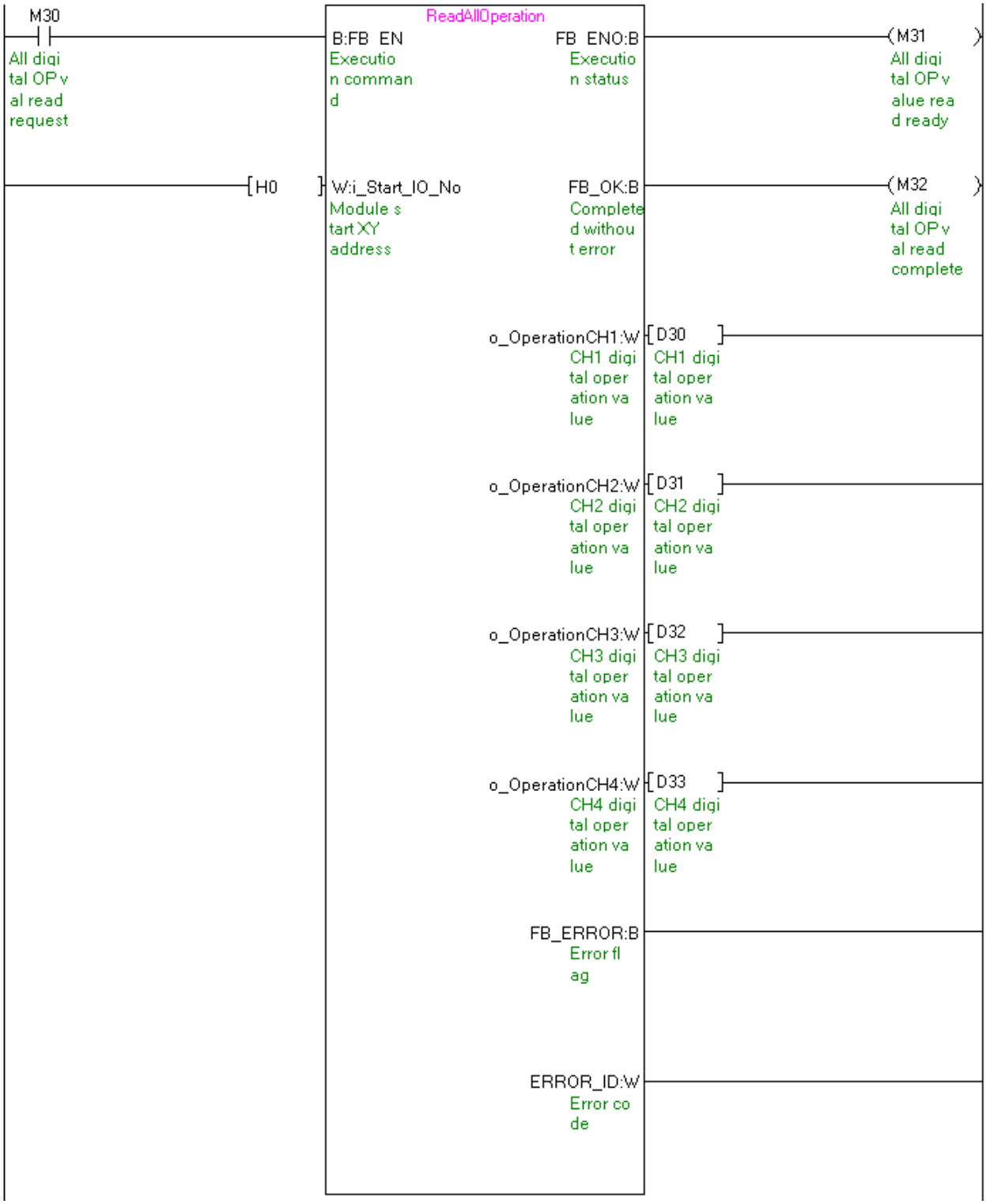
By turning ON M20, the digital operation value of channel 1 is read.



M+Q64ADH_ReadAllOperationVal(Read all digital operation values)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.

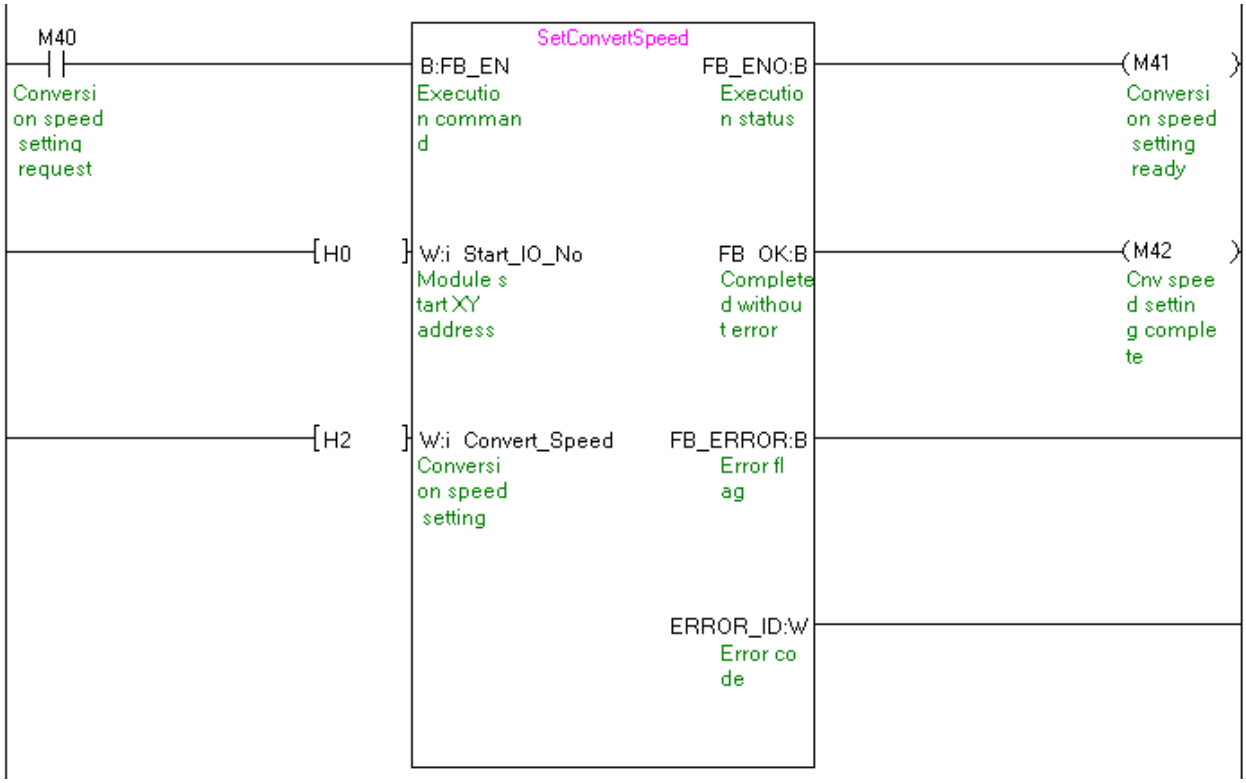
By turning ON M30, the digital operation values of all channels are read.



M+Q64ADH_SetConvertSpeed(Conversion speed setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_Convert_Speed	H2	Set the conversion speed of all channels to 1 ms.

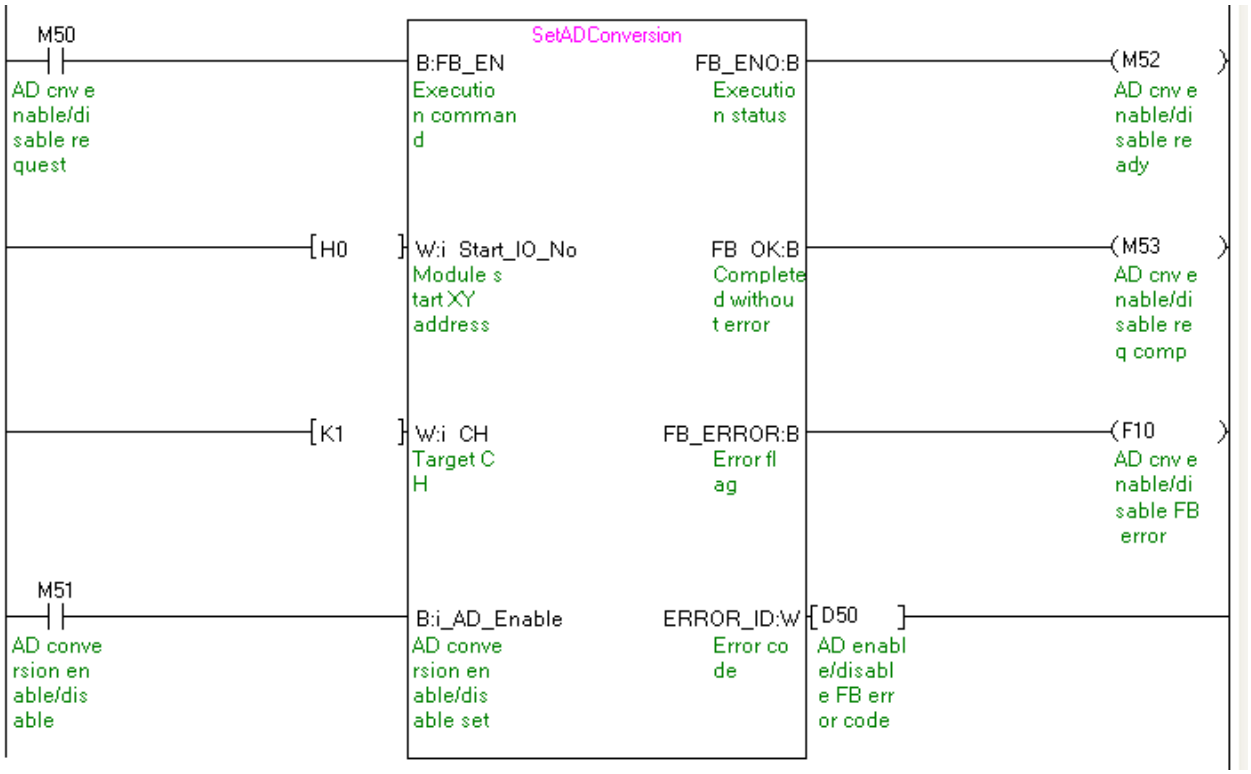
By turning ON M40, the conversion speed setting value is written to the buffer memory.



M+Q64ADH_SetADConversion(Enable/disable AD conversion)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_AD_Enable	ON/OFF	Turn ON this parameter to enable the AD conversion of the target channel.

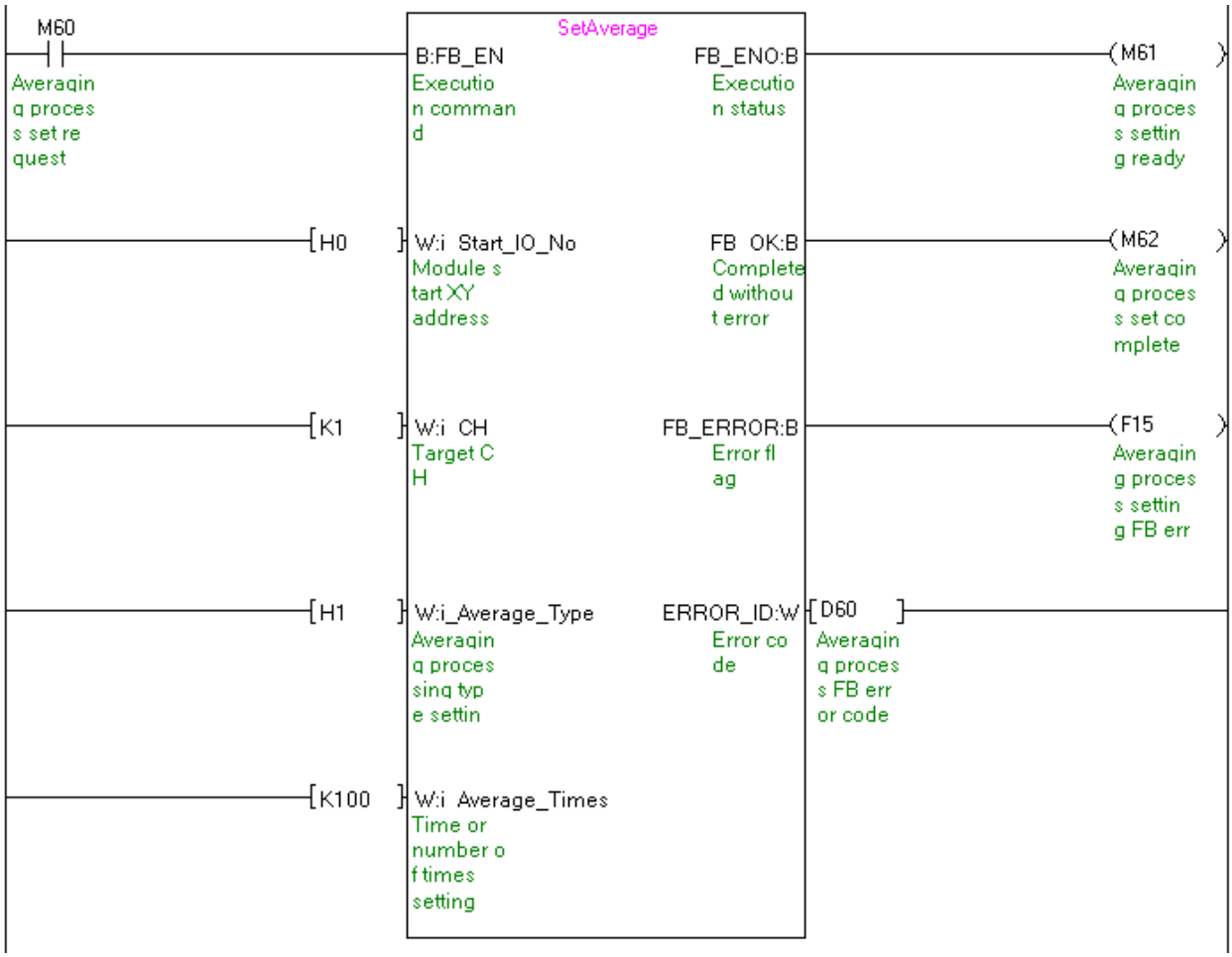
By turning ON M50, the AD conversion enable/disable setting value of channel 1 is written to the buffer memory.



M+Q64ADH_SetAverage(Averaging process setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Average_Type	H1	Set the averaging processing type to "Time average".
i_Average_Times	K100	Set the time average to 100.

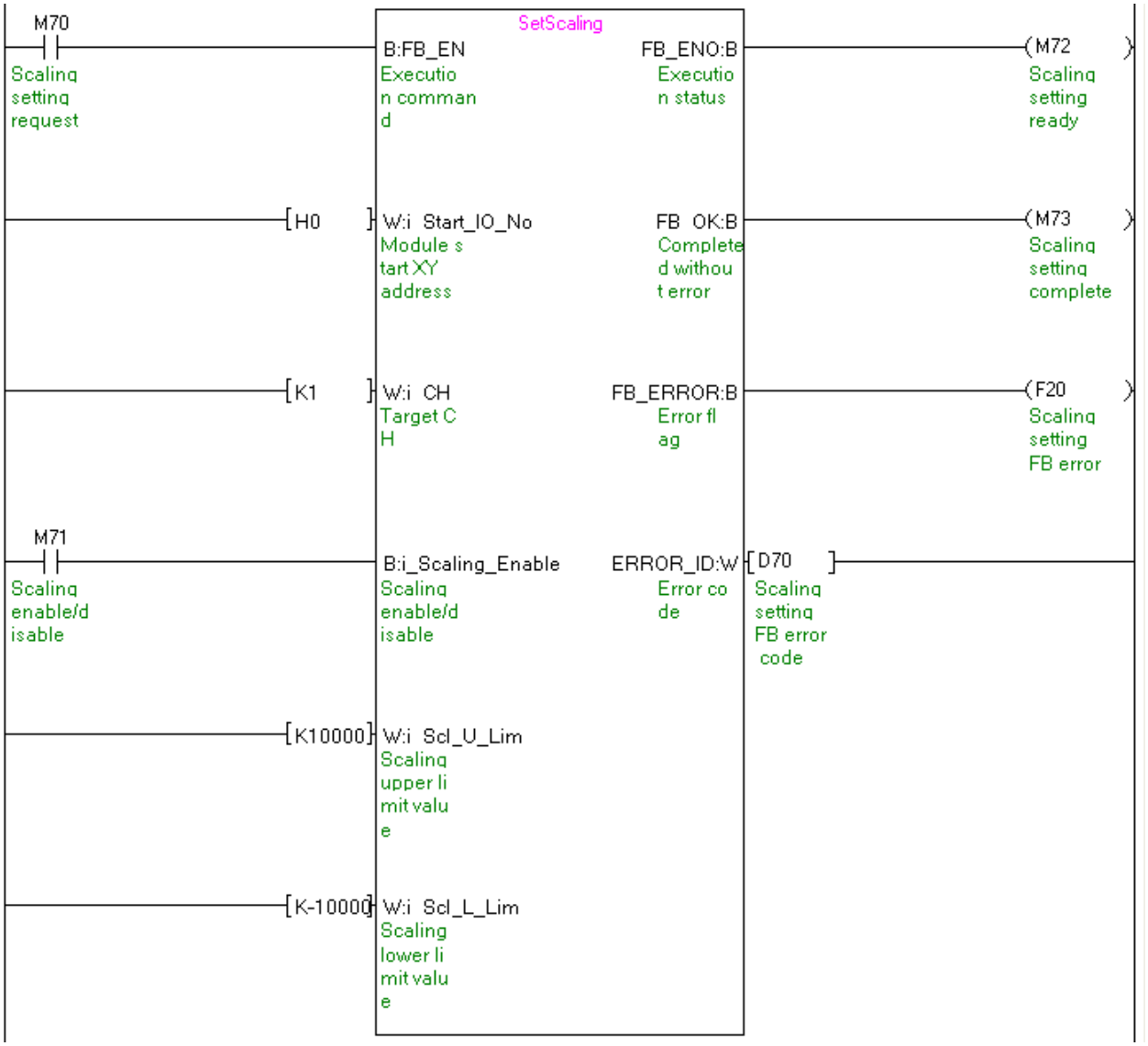
By turning ON M60, the averaging processing setting value of channel 1 is written to the buffer memory.



M+Q64ADH_SetScaling(Scaling setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Scaling_Enable	ON/OFF	Turn ON to enable the scaling.
i_Scl_U_Lim	K10000	Set the scaling upper limit value to 10,000.
i_Scl_L_Lim	K-10000	Set the scaling lower limit value to -10,000.

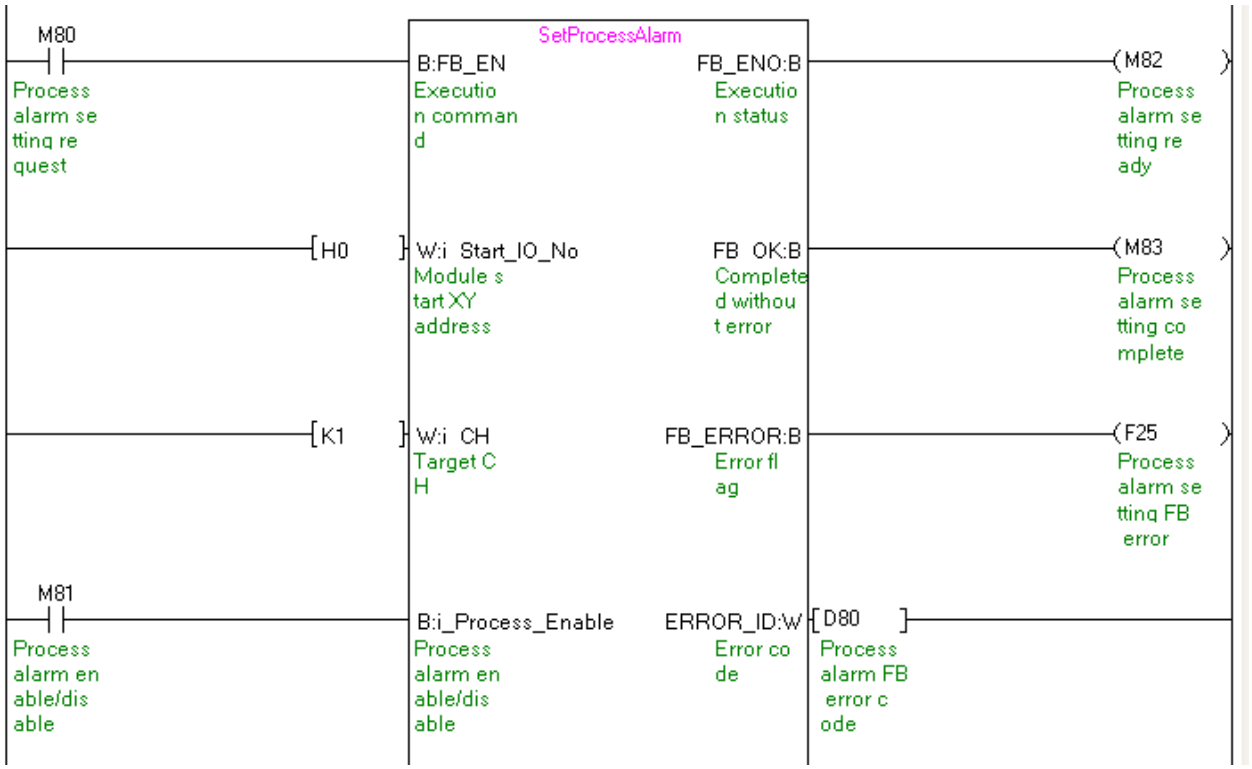
By turning ON M70, the scaling setting value of channel 1 is written to the buffer memory.



M+Q64ADH_SetProcessAlarm(Process alarm setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Process_Enable	ON/OFF	Turn ON to enable the warning output of the process alarm.
i_Pro_UU_Lim	K30000	Set the process alarm upper upper limit value to 30,000.
i_Pro_UL_Lim	K10000	Set the process alarm upper lower limit value to 10,000.
i_Pro_LU_Lim	K-10000	Set the process alarm lower upper limit value to -10,000.
i_Pro_LL_Lim	K-30000	Set the process alarm lower lower limit value to -30,000.

By turning ON M80, the process alarm setting value of channel 1 is written to the buffer memory.



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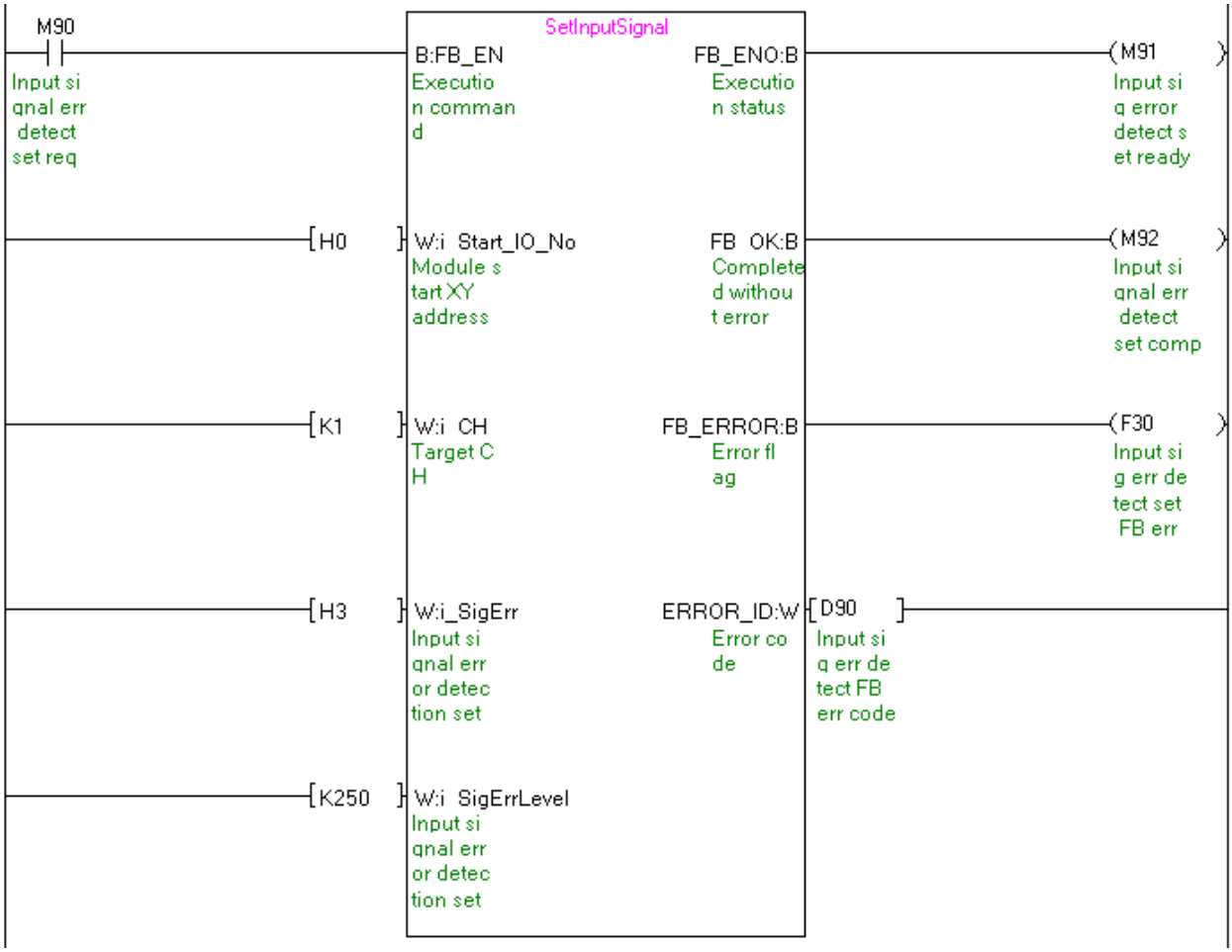
[K30000]
W:i Pro_UU_Lim
Process
alarm up
per uppe
r limit
[K10000]
W:i Pro_UL_Lim
Process
alarm up
per lowe
r limit
[K-10000]
W:i_Pro_LU_Lim
Process
alarm lo
wer uppe
r limit
[K-30000]
W:i Pro_LL_Lim
Process
alarm lo
wer lowe
r limit

M+Q64ADH_SetInputSignalErr(Input signal error detection setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_SigErr	H3	Set the input signal error detection setting to "Upper detection".
i_SigErrLevel	K250	Set the input signal error detection setting value to 25.0%.

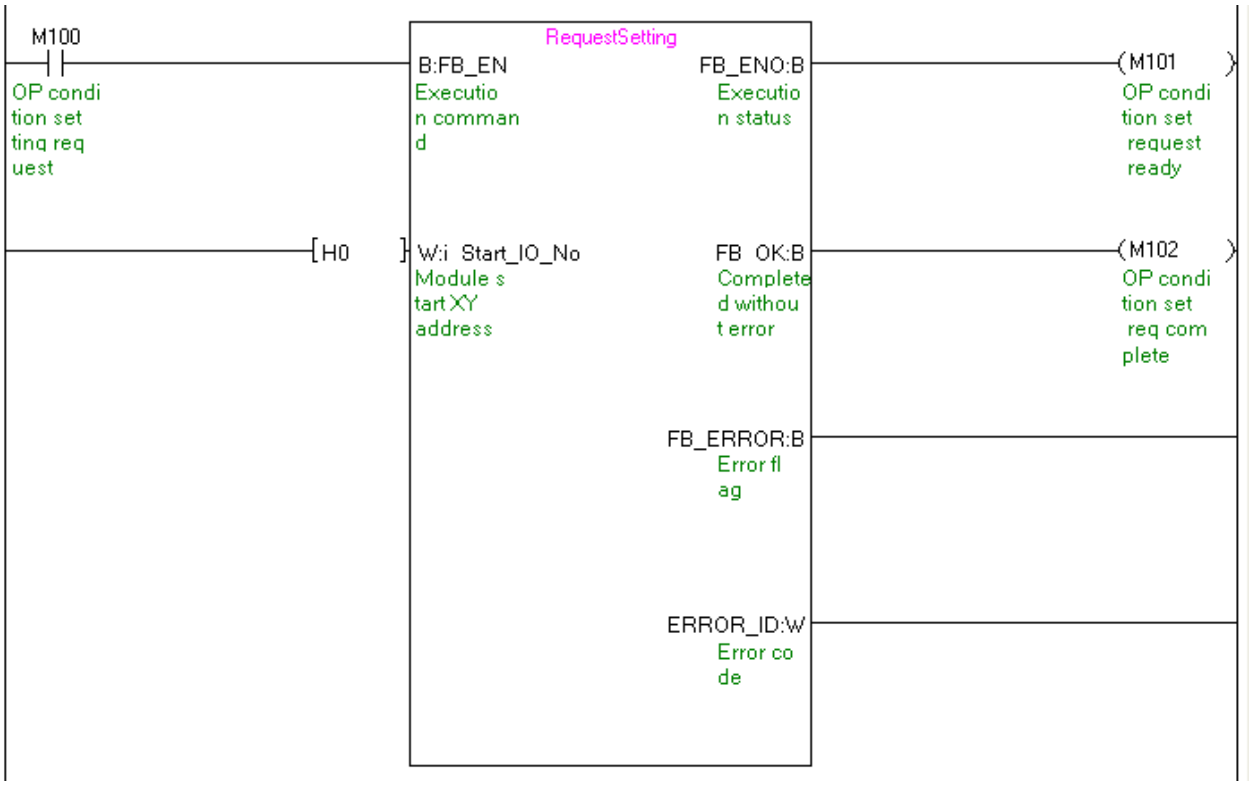
By turning ON M90, the input signal error detection setting value of channel 1 is written to the buffer memory.



M+Q64ADH_RequestSetting(Operation condition setting request)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.

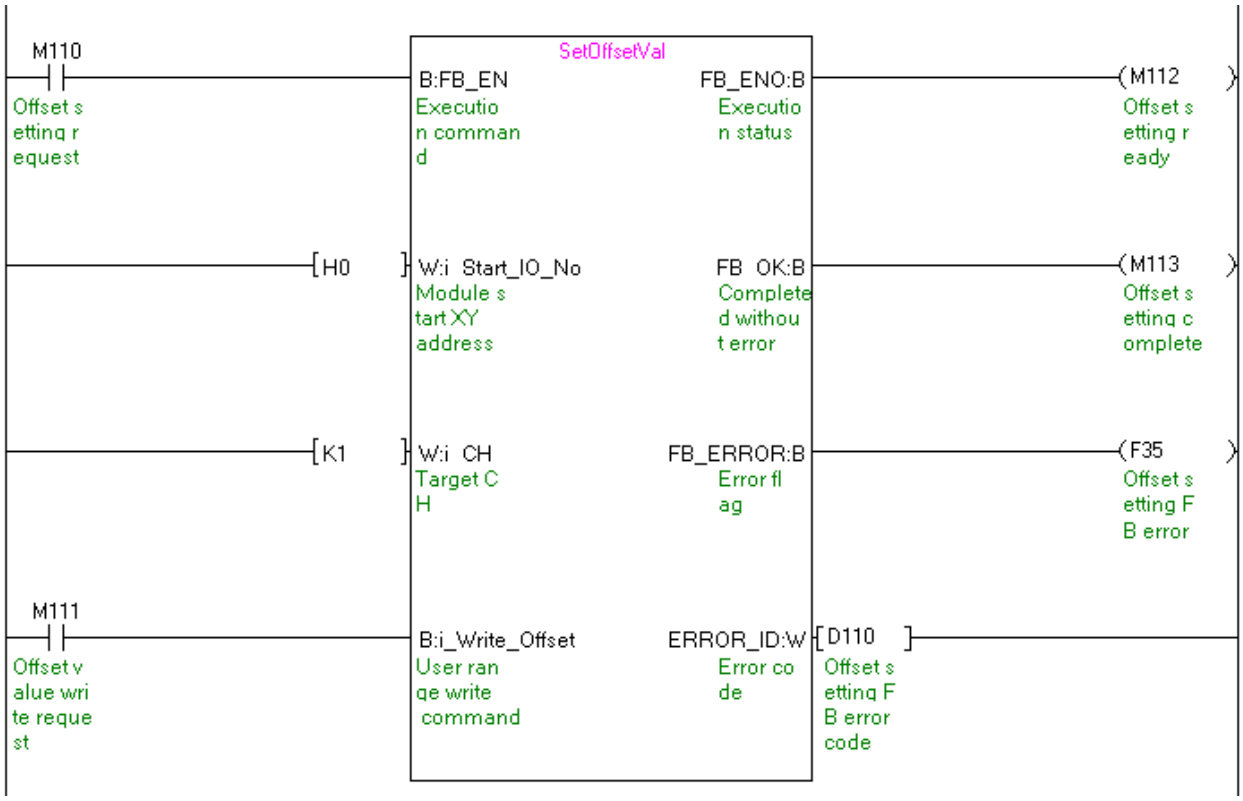
By turning ON M100, the settings of the enable/disable AD conversion, averaging processing setting, digital clipping setting, input signal error detection setting, conversion speed setting, warning output setting, scaling setting, process alarm setting, logging function parameter setting and flow amount integration function setting are enabled.



M+Q64ADH_SetOffsetVal(Offset setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Write_Offset	ON/OFF	Turn ON to perform the user range write operation.

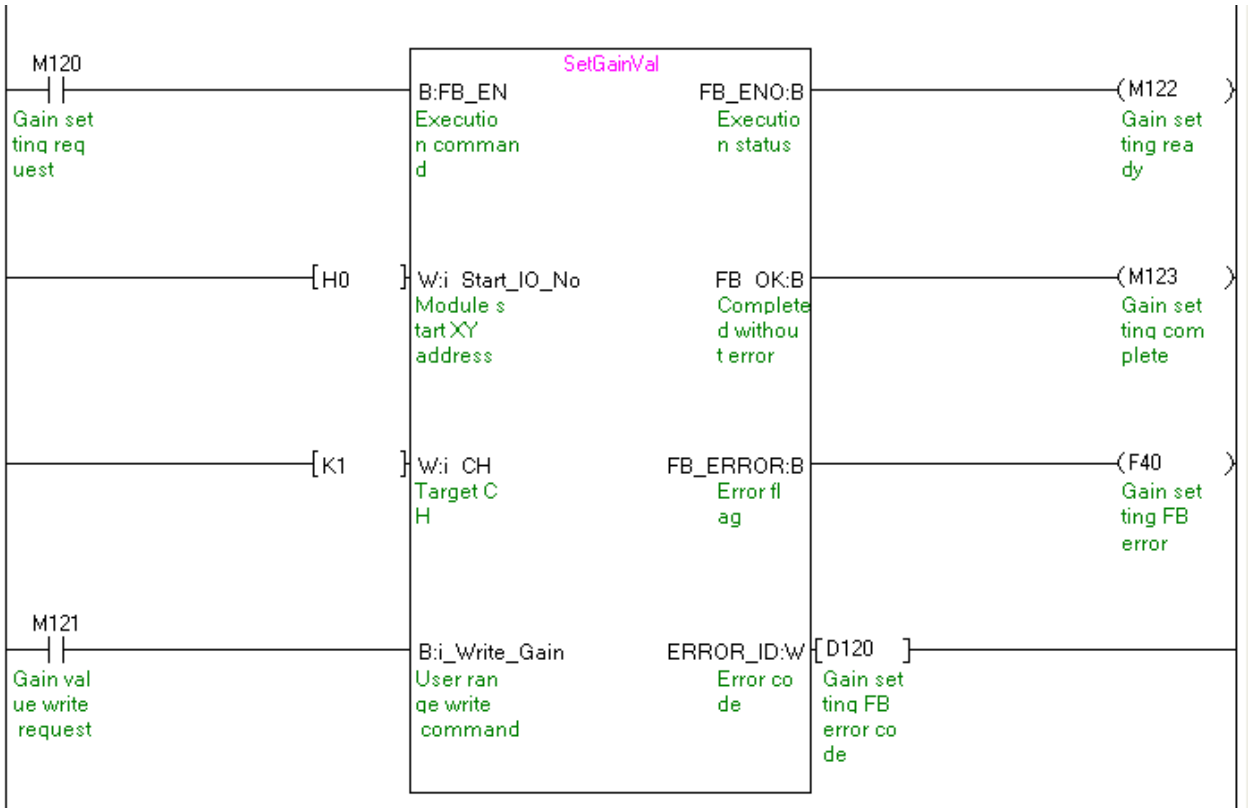
By turning ON M110 and then M111, the offset value of channel 1 is written.



M+Q64ADH_SetGainVal(Gain setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Write_Gain	ON/OFF	Turn ON to perform the user range write operation for channel 1.

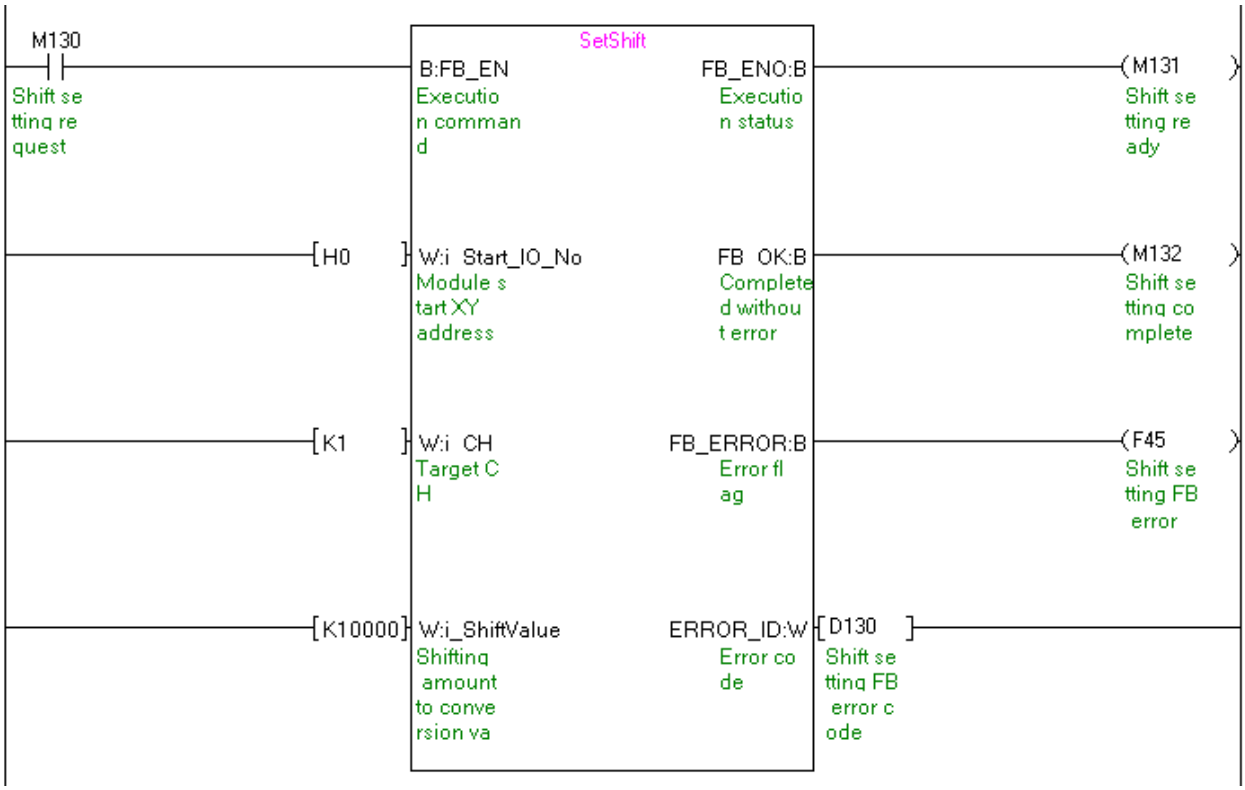
By turning ON M120 and then M121, the gain value of channel 1 is written.



M+Q64ADH_SetShift(Shift setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_ShiftValue	K10000	Set the shifting amount to conversion value to 10,000.

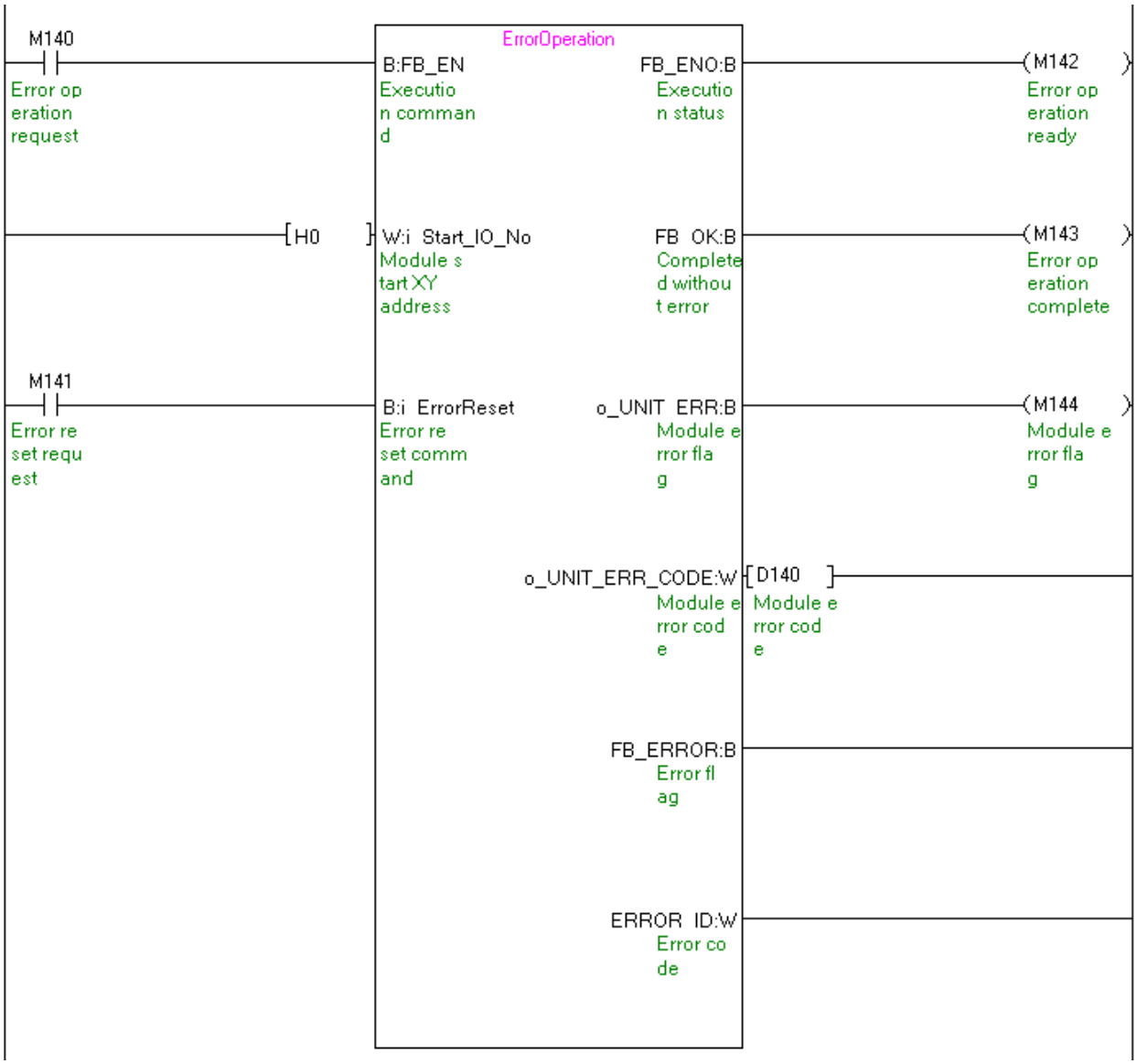
By turning ON M130, the shift setting value of channel 1 is written to the buffer memory.



M+Q64ADH_ErrorOperation(Error operation)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_ErrorReset	ON/OFF	Turn ON to reset errors.

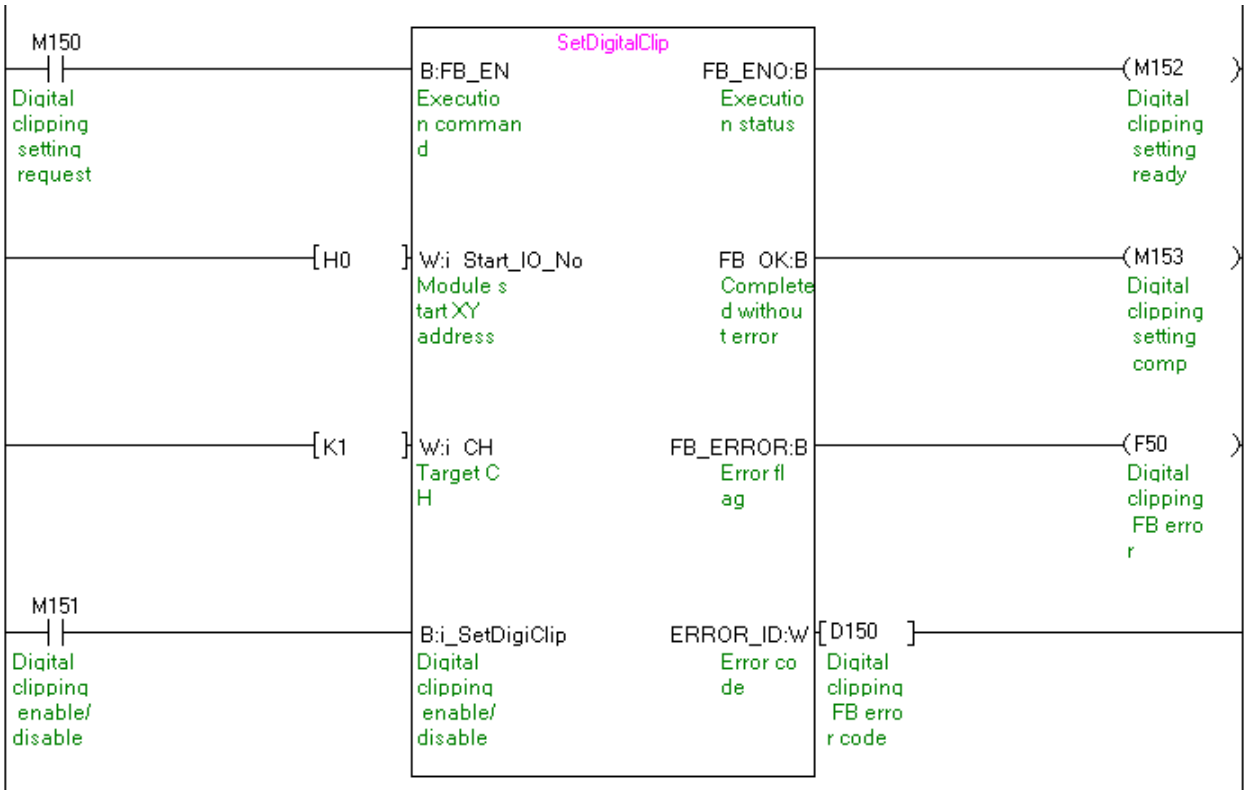
By turning ON M140, an error code is output if an error occurs. After an error output, by turning ON M141, the error is reset.



M+Q64ADH_SetDigitalClip(Digital clipping setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_SetDigiClip	ON/OFF	Turn ON to enable the digital clipping function.

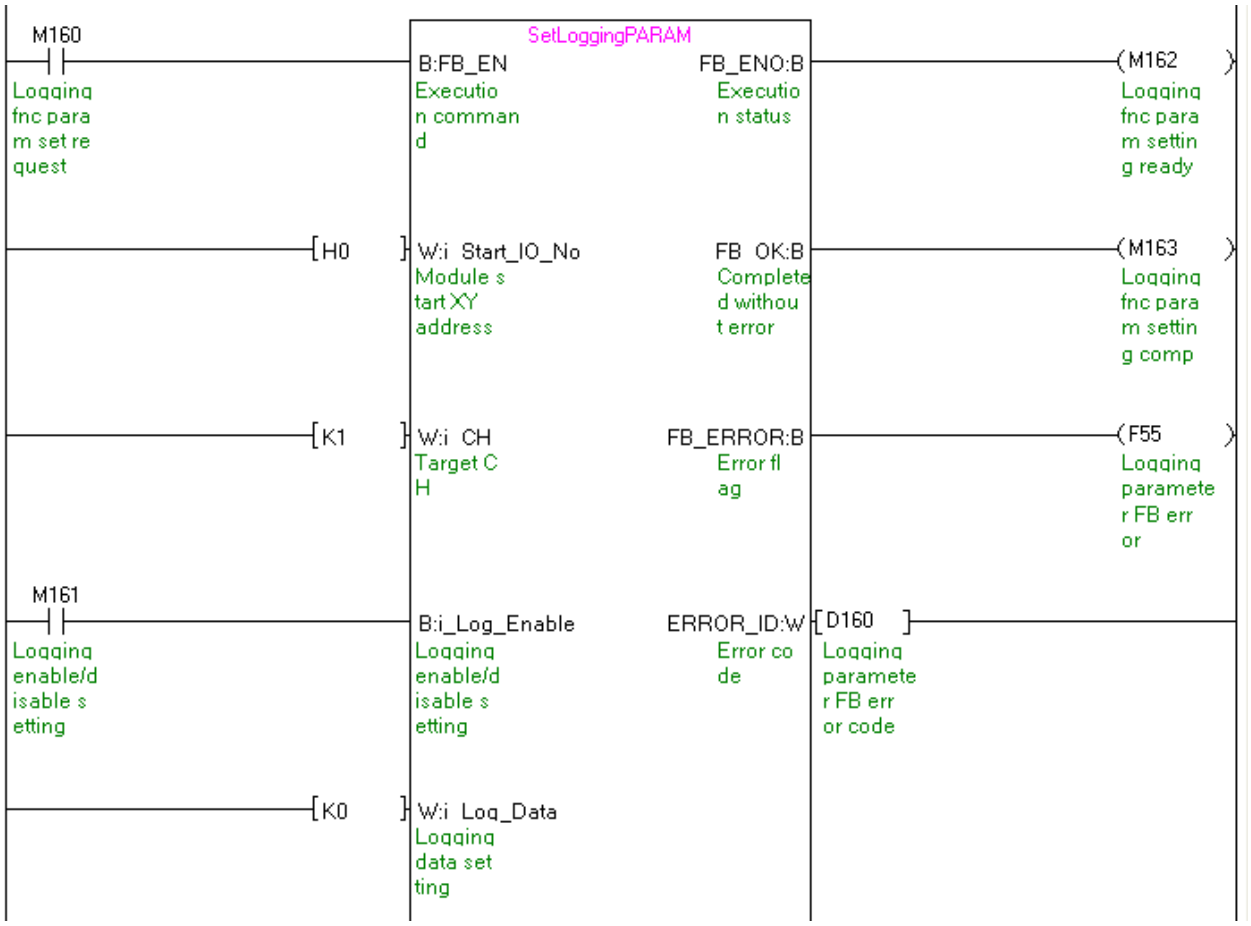
By turning ON M150, the digital clipping setting value of channel 1 is written to the buffer memory.



M+Q64ADH_SetLoggingPARAM(Logging function parameter setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Log_Enable	ON/OFF	Turn ON to enable the logging.
i_Log_Data	K0	Set the logging data to "Digital output value".
i_Log_Cycle_Val	K320	Set the cycle to save the logging data to 320 µs.
i_Log_Cycle_Unit	K0	Set the time unit of the logging cycle to "µs".
i_Log_Points	K1	Set the data points to record from when the hold trigger occurs until the logging function stops temporarily to 1.
i_Log_Trig_Cond	K1	Set the condition to cause the hold trigger "Above".
i_Log_Trig_Data	K12	Set the buffer memory address to operate the level trigger to 12.
i_Log_Trig_Value	K10000	Set the level at which the level trigger occurs to 10,000.

By turning ON M160, the logging function parameter setting value of channel 1 is written to the buffer memory.



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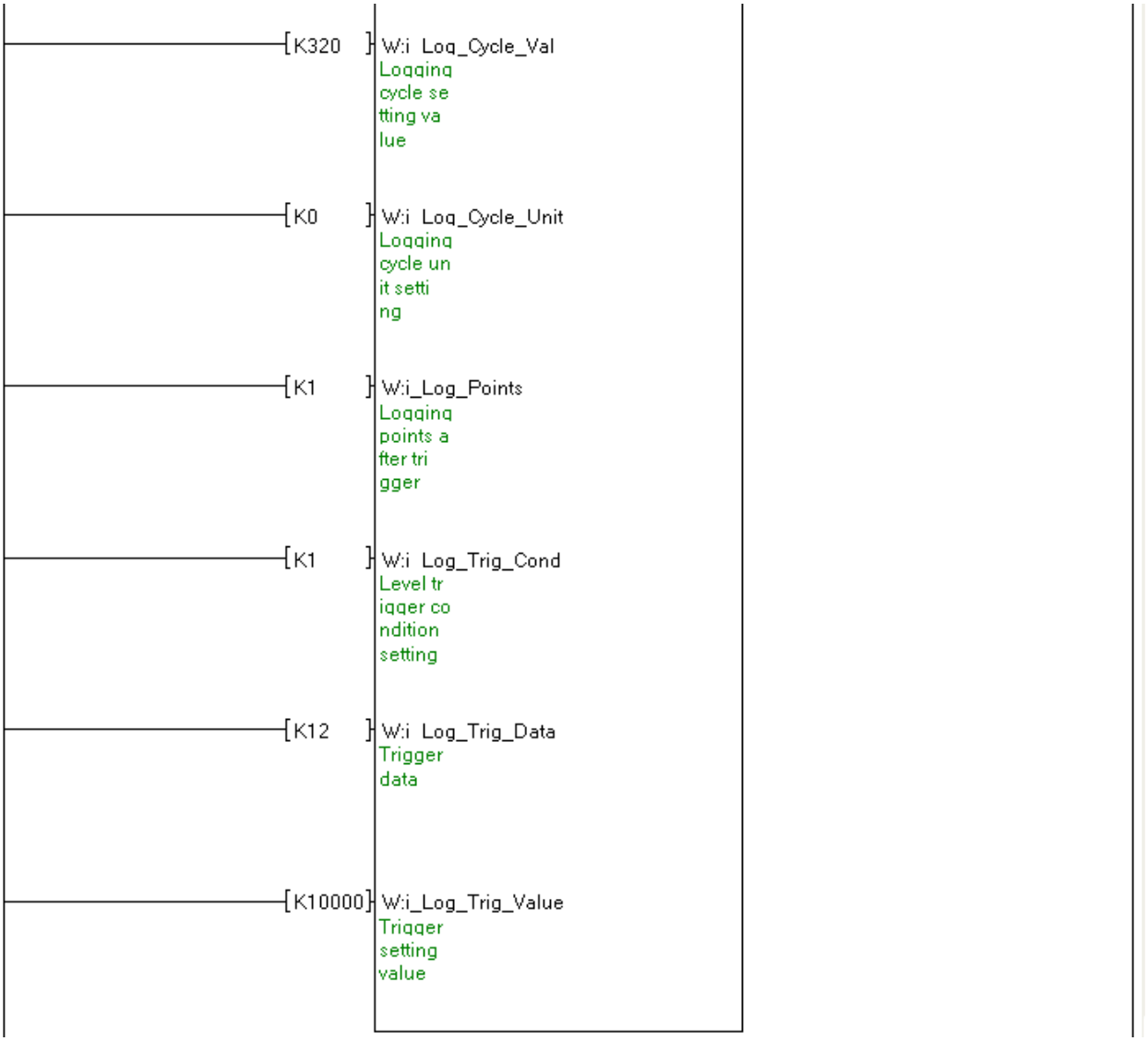
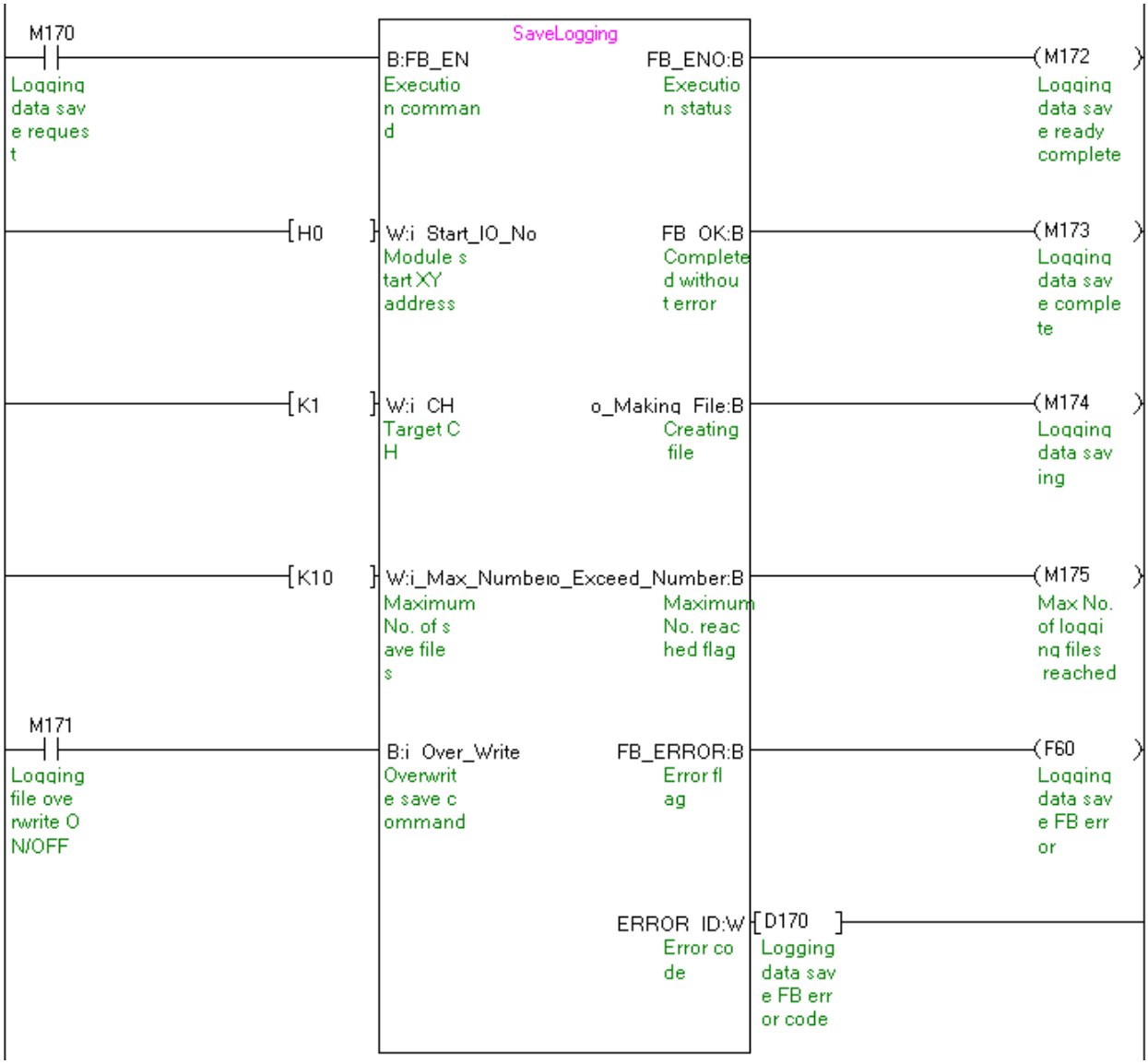

K320
W:i Log_Cycle_Val
Logging
cycle se
tting va
lue
K0
W:i Log_Cycle_Unit
Logging
cycle un
it setti
ng
K1
W:i_Log_Points
Logging
points a
fter tri
gger
K1
W:i Log_Trig_Cond
Level tr
igger co
ndition
setting
K12
W:i Log_Trig_Data
Trigger
data
K10000
W:i_Log_Trig_Value
Trigger
setting
value

M+Q64ADH_SaveLogging(Logging data save)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_Max_Number	K10	Set the maximum number of CSV files to be saved to 10.
i_Over_Write	ON/OFF	Set whether to overwrite the file to which the logging data is written.

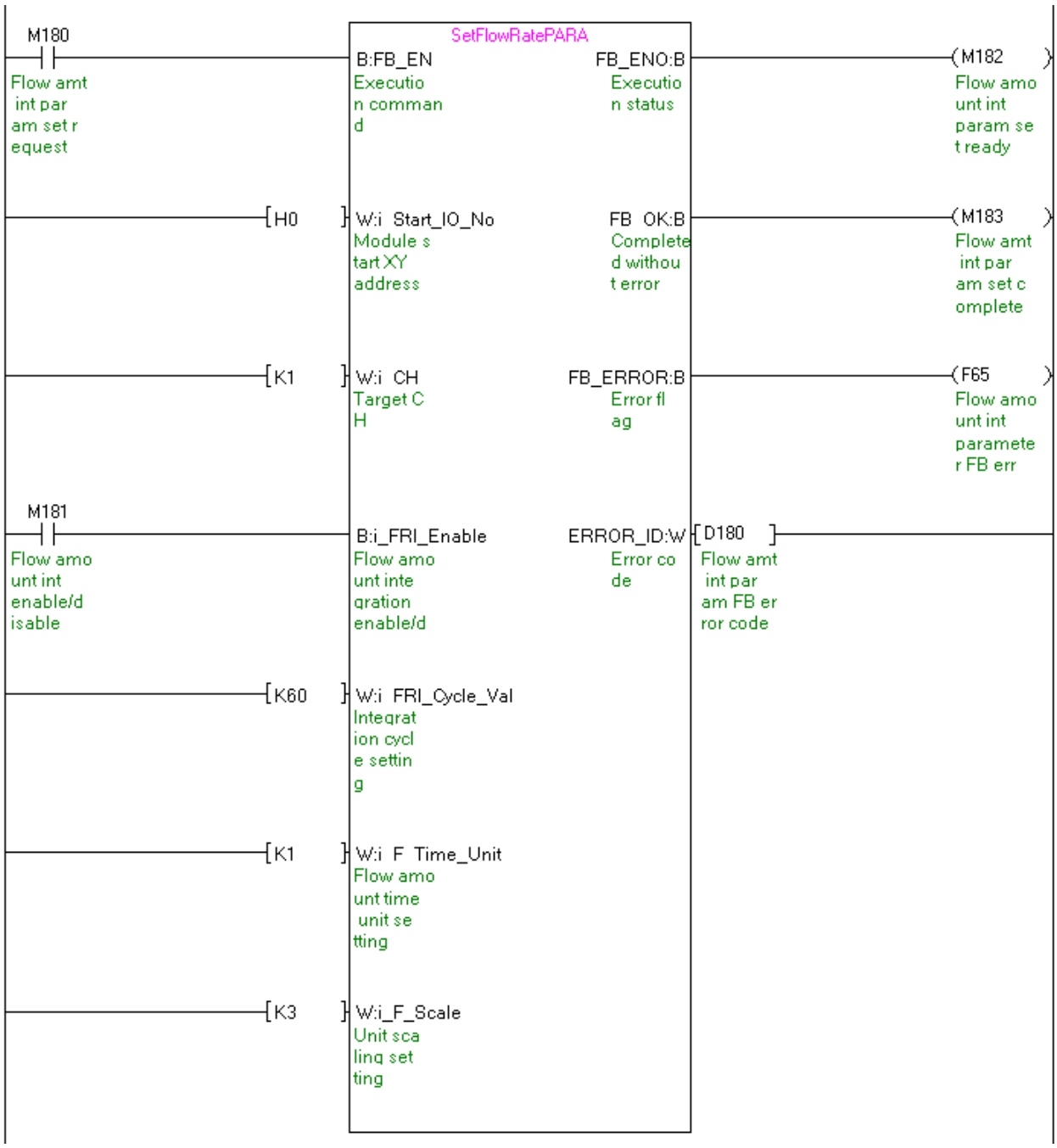
By turning ON M170, the logging data from the start pointer of channel 1 for the number of the logging data are sorted chronologically. Then, the logging data and the trigger occurrence information are saved in CSV format in the ATA card mounted on the CPU.



M+Q64ADH_SetFlowRatePARAM(Flow amount integration function parameter setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.
i_CH	K1	Set the target channel to channel 1.
i_FRI_Enable	ON/OFF	Turn ON to enable the flow amount integration function.
i_FRI_Cycle_Val	K60	Set the integration cycle of the connected flow meter to 60 ms.
i_F_Time_Unit	K1	Set the time unit of the flow meter to "min".
i_F_Scale	K3	Set the unit scale used to calculate the integrated flow amount to "×1000".

By turning ON M180, the flow amount integration function parameter setting value of channel 1 is written to the buffer memory.


M180
Flow amt int par am set r equest
SetFlowRatePARA
B:FB_EN
Executio n comman d
FB_ENO:B
Executio n status
M182
Flow amo unt int param se t ready
H0
W:i Start_IO_No
Module s tart XY address
FB OK:B
Complete d withou t error
M183
Flow amt int par am set c omplete
K1
W:i CH
Target C H
FB_ERROR:B
Error fl ag
F65
Flow amo unt int paramete r FB err
M181
Flow amo unt int enable/d isable
B:i_FRI_Enable
Flow amo unt inte gration enable/d
ERROR_ID:W
Error co de
D180
Flow amt int par am FB er ror code
K60
W:i FRI_Cycle_Val
Integrat ion cycl e settin g
K1
W:i F Time_Unit
Flow amo unt time unit se tting
K3
W:i_F_Scale
Unit sca ling set ting

M+Q64ADH_MakeFlowRateDailyReport(Flow amount daily report creation)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the Q64ADH module is mounted to 0H.

By turning ON M190, the "flow amount per hour" that flows on the hour for 24 hours and "total flow amount of the day" are calculated based on the integrated flow amount of the Q64ADH. Then, they are saved in a flow amount daily report file in CSV format in the ATA card mounted on the CPU module.