MELSEC-L Analog-Digital Converter Module FB Library (CC-Link IE Field compatible) Reference Manual

Applicable module:
L60AD4

< CONTENTS >

Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M071-A	2016/04	First edition

1. Overview

1.1. Overview of the FB Library

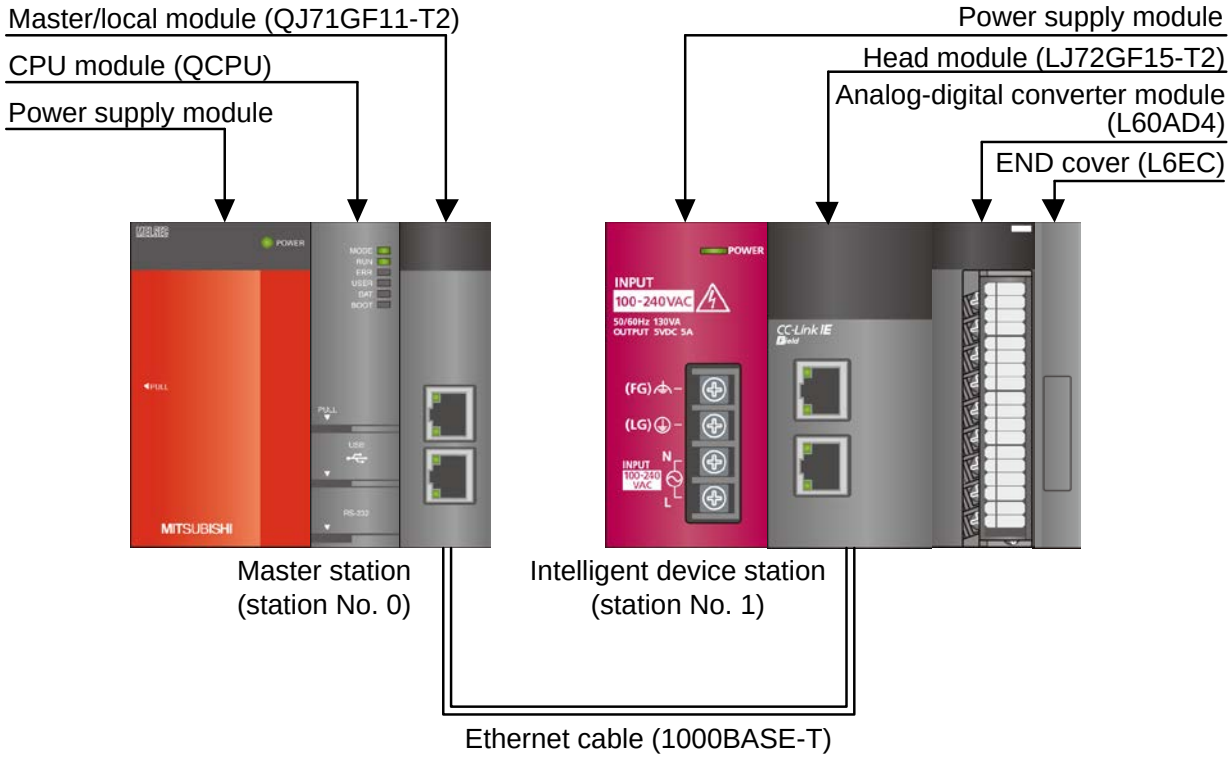
This FB library is for using the MELSEC-L L60AD4 analog-digital converter module through the MELSEC CC-Link IE field.

1.2. Function of the FB Library

Item	Description
M+L60AD4-IEF_ReadADVal	Reads the AD conversion data of a specified channel.
M+L60AD4-IEF_ReadAllADVal	Reads the AD conversion data of all specified channels.
M+L60AD4-IEF_ReadScalingVal	Reads the scaling value (digital operation value) of a specified channel.
M+L60AD4-IEF_ReadAllScalingVal	Reads the scaling values (digital operation values) of all channels.
M+L60AD4-IEF_SetConvertSpeed	Sets the conversion speed.
M+L60AD4-IEF_SetADConversion	Enables or disables AD conversion for a specified channel or all channels.
M+L60AD4-IEF_SetAverage	Performs averaging processing for a specified channel.
M+L60AD4-IEF_SetScaling	Configures scaling setting of a specified channel.
M+L60AD4-IEF_SetProcessAlarm	Configures process alarm setting of a specified channel.
M+L60AD4-IEF_SetInputSignalErr	Configures input signal error detection setting of a specified channel.
M+L60AD4-IEF_RequestSetting	Applies changes made to each function's settings.
M+L60AD4-IEF_SetOffsetVal	Sets the offset value of a specified channel to the current analog value.
M+L60AD4-IEF_SetGainVal	Sets the gain value of a specified channel to the current analog value.
M+L60AD4-IEF_ShiftOperation	Adds the shifting amount to conversion value to the digital value that was input.
M+L60AD4-IEF_DiffOperation	Outputs the difference obtained by subtracting the reference value from the input digital value.
M+L60AD4-IEF_ErrorOperation	Performs monitoring of error codes and error reset.
M+L60AD4-IEF_OGBackup	Reads the offset and gain values from the user range setting and saves them in a file.
M+L60AD4-IEF_OGRestore	Restores the user range offset/gain settings from a file to the module.
M+L60AD4-IEF_SetInputSignalErrEx	Configures input signal error detection extension setting of a specified channel.
M+L60AD4-IEF_SetDigitalClip	Enables or disables the digital clipping of a specified channel.

Item	Description
M+L60AD4-IEF_SetShift	Performs the shift setting of a specified channel.
M+L60AD4-IEF_SetLoggingPARAM	Performs the logging function of a specified channel.
M+L60AD4-IEF_SetFlowRatePARAM	Sets the flow amount integration function of a specified channel.
M+L60AD4-IEF_SaveLogging	Saves the logging data of a specified channel in a file.
M+L60AD4-IEF_MakeFlowRateReport	Saves the flow amount daily report data of all specified channels in a file.

1.3. System Configuration Example

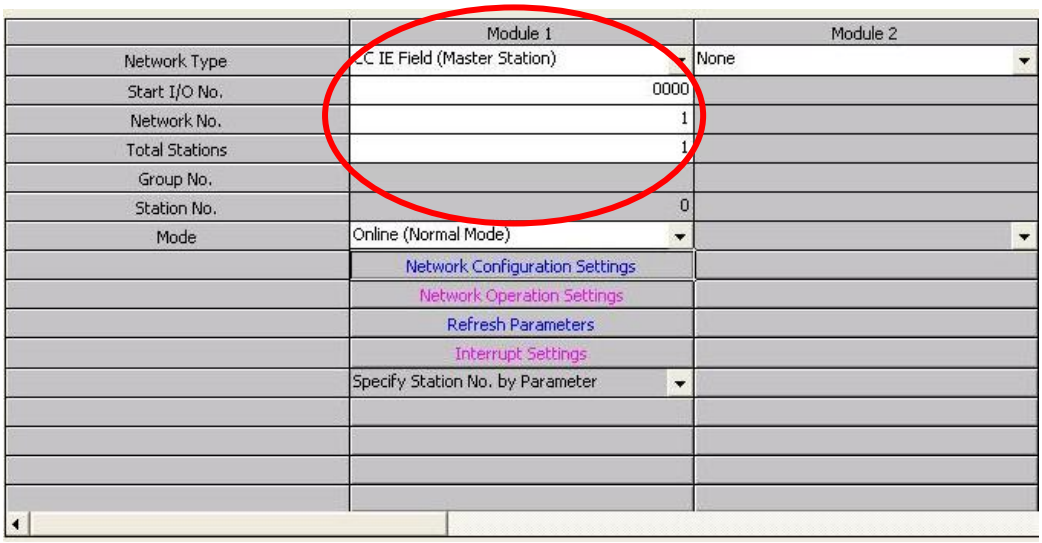


1.4. Setting the CC-Link IE Field Network Master/Local Module

This section explains the settings of QJ71GF11-T2 and LJ72GF11-T2 based on Section 1.3 "System Configuration Example". Set the following items using GX Works2.

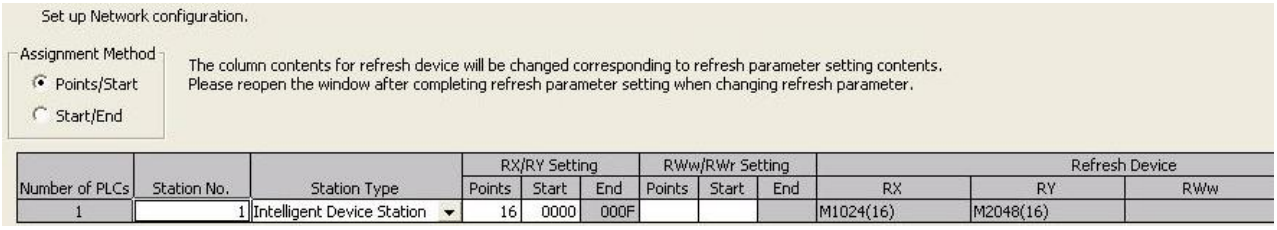
(1) Network parameters

Item	Description
Network Type	Select the CC IE Field (Master Station).
Start I/O No.	Set the start I/O number of the master/local module in increments of 16 points. Set "0000".
Network No.	Set the network number of the master/local module. Set "1".
Total Stations	Set the number of slave stations connected to the master station. Include the number of reserved slave stations. Set "1".



(2) Network configuration setting

Item	Description
Station No.	Set the station number of the slave connected to the master station. Set "1".
Station Type	Set the station type of the slave connected to the master station. Set "Intelligent Device Station".
RX/RY setting	Set assignment for RX/RY for the slave station connected to the master station. (a) Points Set "16". (b) Start Set "0000".

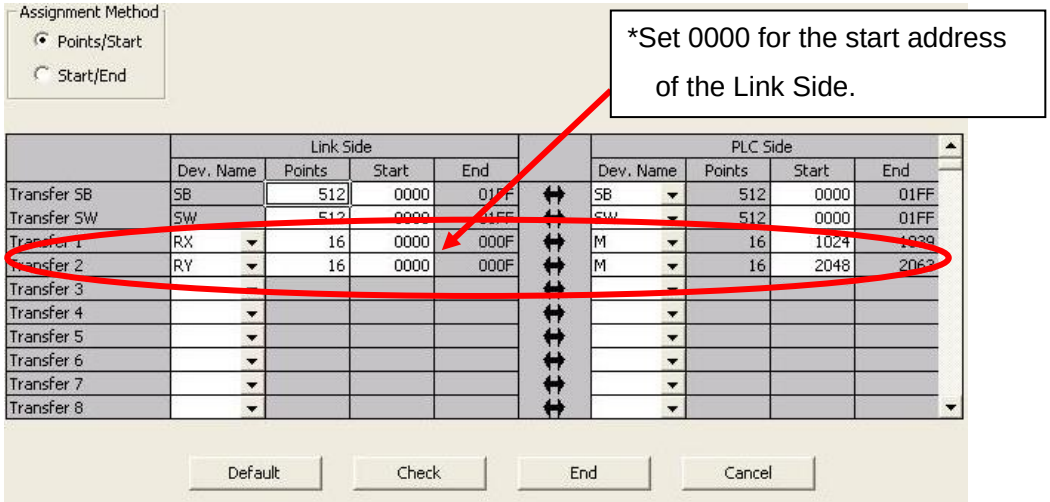


(3) Refresh Parameters

Item	Description	Setting value
Transfer SB	Select the link refresh range of SB device.	•"Link Side Points" : 512 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : SB •"PLC Side Start" : 0000
Transfer SW	Select the link refresh range of SW device.	•"Link Side Points" : 512 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : SW •"PLC Side Start" : 0000
Transfer 1	Select the link refresh range of RX device.	•"Link Side Dev. Name" : RX •"Link Side Points" : 16 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : M •"PLC Side Start" : 1024
Transfer 2	Select the link refresh range of RY device.	•"Link Side Dev. Name" : RY •"Link Side Points" : 16 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : M •"PLC Side Start" : 2048

*Make sure to set "0000" for the Start of the Link side.

*Change the Points of the Link Side and Dev. Name and Start of the PLC Side according to the system.
They must be the same as for "M_F_RX" and "M_F_RY" devices of the global label setting.



1.5. Setting Global Labels

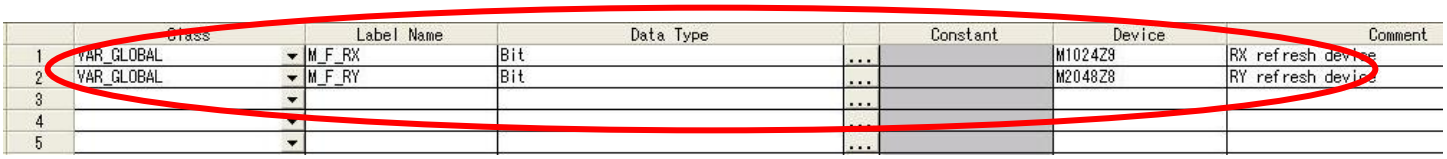
Global labels must be set before using this FB. This section explains global label settings.

(1) M_F_RX Set remote input (RX).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_F_RX".
Data Type	Select "Bit".
Device	Enter the refresh device set for the refresh parameter with a "Z9" prefix.

(2) M_F_RY Set remote output (RY).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_F_RY".
Data Type	Select "Bit".
Device	Enter the refresh device set for the refresh parameter with a "Z8" prefix.



	Class	Label Name	Data Type		Constant	Device	Comment
1	VAR_GLOBAL	M_F_RX	Bit	...		M1024Z9	RX refresh device
2	VAR_GLOBAL	M_F_RY	Bit	...		M2048Z8	RY refresh device
3				...			
4				...			
5				...			

1.6. Creating Interlock Programs

Interlock programs must be created for the FBs. The following are examples of interlock programs.

Set one interlock program to each cyclic transmission and transient transmission.

(Set a corresponding FB between MC and MCR instructions.)

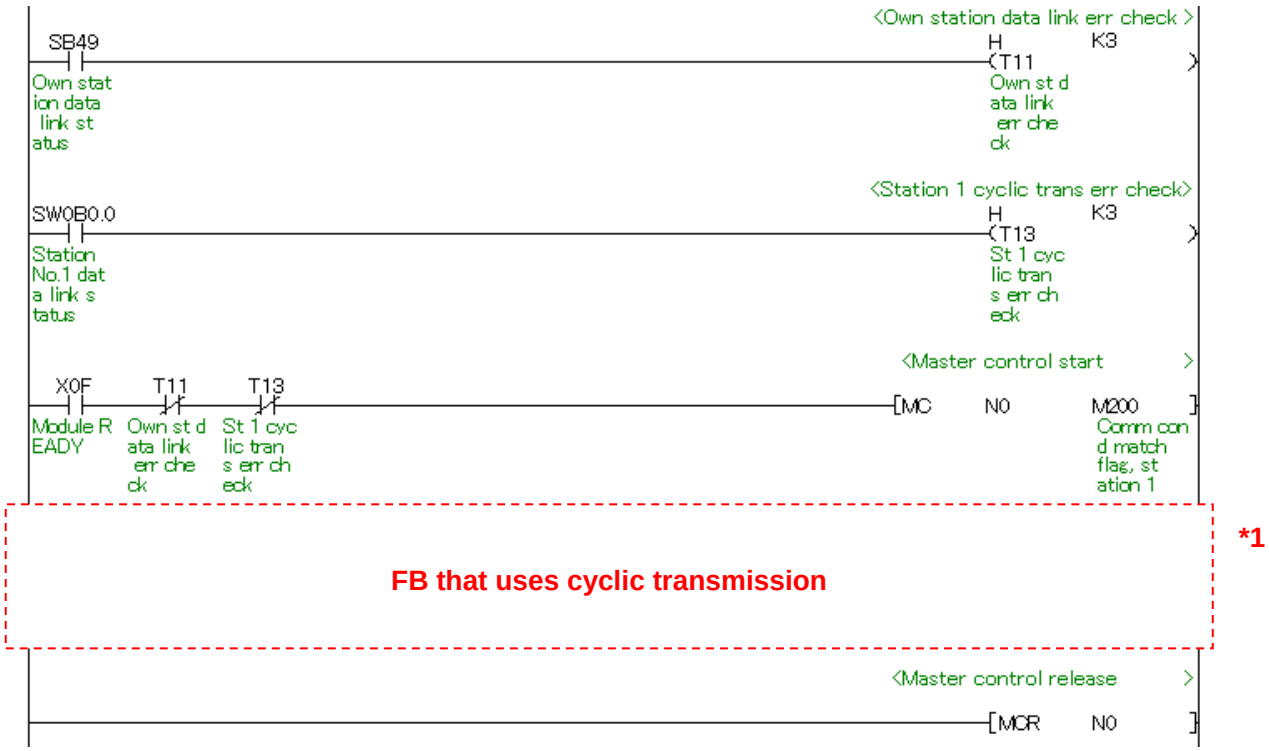
(For FBs that use both cyclic and transient transmission, refer to the application example.)

1.6.1. Cyclic Transmission Program

Use the following link special relay (SB) and link special register (SW) to create an interlock for cyclic transmission program.

- Own station data link status (SB0049)
- Each station data link status (SW00B0 to SW00B7)

Example: Interlock (station No.1)



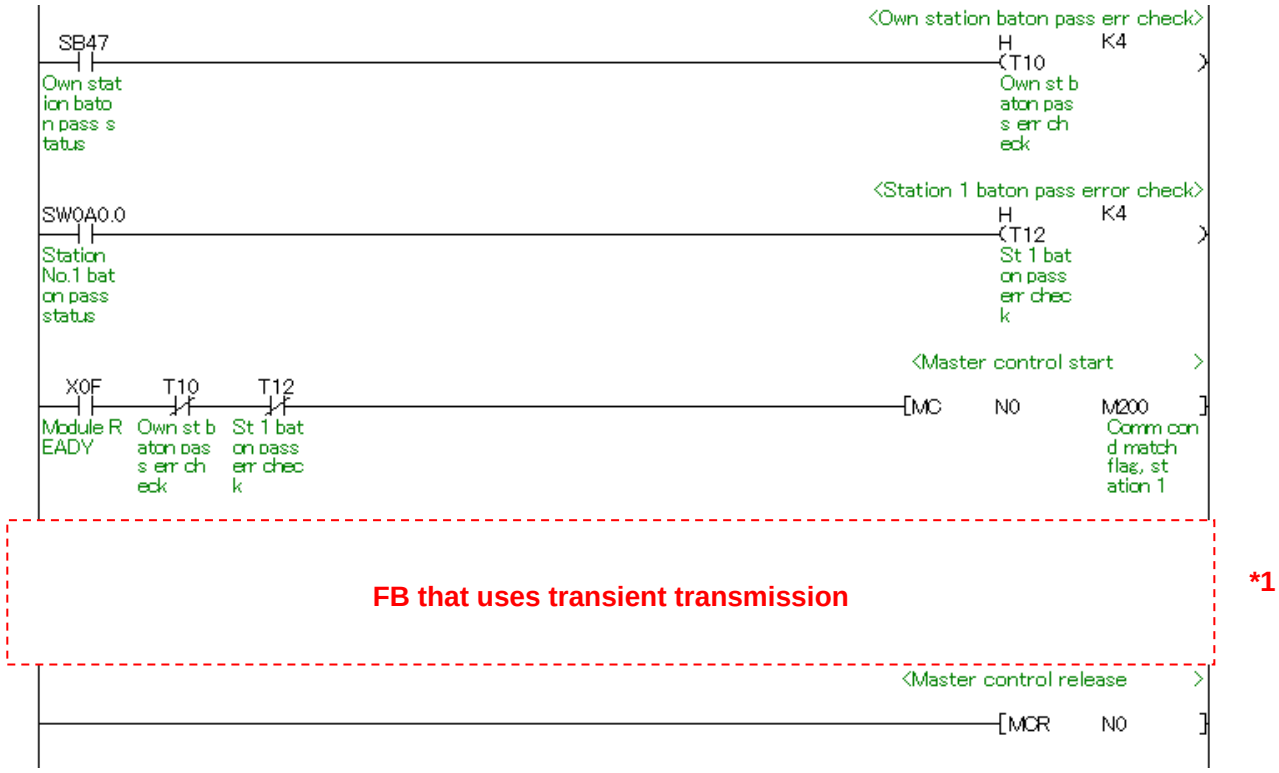
*1 For FB library that uses cyclic transmission, refer to 2.6.3 FB Transmission List.

1.6.2. Transient Transmission Program

Use link special relay (SB) and link special register (SW) to create an interlock for transient transmission program.

- Own station baton pass status (SB0047)
- Each station baton pass status (SW00A0 to SW00A7)

Example: Interlock (Station No.1)



*1 For FB library that uses transient transmission, refer to 1.6.3 FB Transmission List.

1.6.3. FB Transmission List

This table lists transmission types used for FBs.

FB name	Cyclic transmission	Transient transmission
M+L60AD4-IEF_ReadADVal	o	o
M+L60AD4-IEF_ReadAllADVal	o	o
M+L60AD4-IEF_ReadScalingVal	o	o
M+L60AD4-IEF_ReadAllScalingVal	o	o
M+L60AD4-IEF_SetConvertSpeed	o	o
M+L60AD4-IEF_SetADConversion	o	o
M+L60AD4-IEF_SetAverage	o	o
M+L60AD4-IEF_SetScaling	o	o
M+L60AD4-IEF_SetProcessAlarm	o	o
M+L60AD4-IEF_SetInputSignalErr	o	o
M+L60AD4-IEF_RequestSetting	o	-
M+L60AD4-IEF_SetOffsetVal	o	o
M+L60AD4-IEF_SetGainVal	o	o
M+L60AD4-IEF_ShiftOperation	-	-
M+L60AD4-IEF_DiffOperation	-	-
M+L60AD4-IEF_ErrorOperation	o	o
M+L60AD4-IEF_OGBackup	o	o
M+L60AD4-IEF_OGRestore	o	o
M+L60AD4-IEF_SetInputSignalErrEx	o	o
M+L60AD4-IEF_SetDigitalClip	o	o
M+L60AD4-IEF_SetShift	o	o
M+L60AD4-IEF_SetLoggingPARAM	o	o
M+L60AD4-IEF_SetFlowRatePARAM	o	o
M+L60AD4-IEF_SaveLogging	o	o
M+L60AD4-IEF_MakeFlowRateReport	o	o

-: Not used

o: Used

1.7. Relevant Manuals

MELSEC-L Analog-Digital Converter Module User's Manual

MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual

MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual

MELSEC-L CC-Link IE Field Network Head Module User's Manual

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

MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection)

GX Works2 Version1 Operating Manual (Common)

GX Works2 Version1 Operating Manual (Simple Project, Function Block)

1.8. Note

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

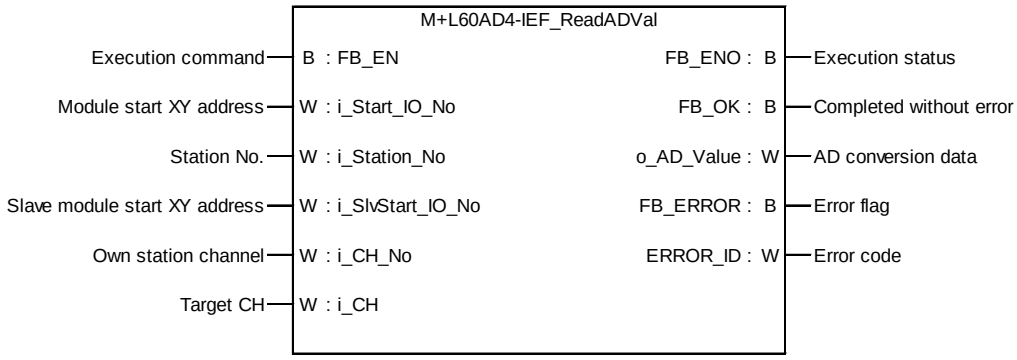
2. Details of the FB Library

2.1. M+L60AD4-IEF_ReadADVal (Read AD conversion data)

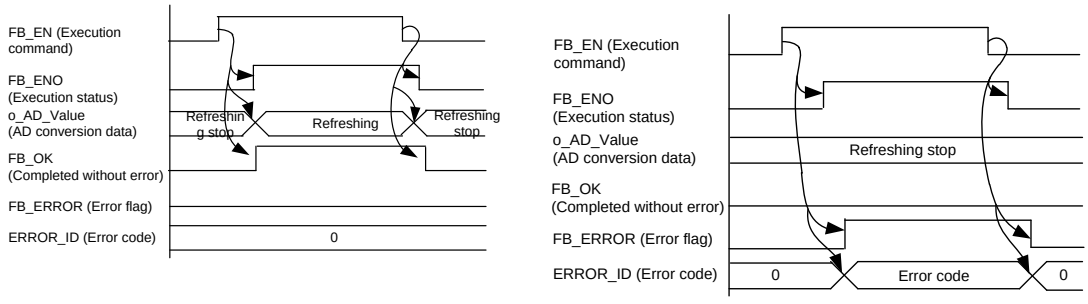
FB Name

M+L60AD4-IEF_ReadADVal

Function Overview

Item	Description	
Function overview	Reads the AD conversion data of a specified channel.	
Symbol		
Applicable hardware and software	Analog-Digital converter module	L60AD4
	CC-Link IE field network module	CC-Link IE field network master/local module CC-Link IE field network head module
	CPU module	Series: MELSEC-Q Series *1 — Model: Universal model QCPU *2 Series: MELSEC-L Series — Model: LCPU *3 *1 Not applicable to QCPU (A mode) *2 The first five digits of the serial number are "12012" or later *3 The first five digits of the serial number are "13012" or later.
	Engineering software	GX Works2 *1 Japanese version: Version1.86Q or later English version: Version1.24A or later Chinese (Simplified) version: Version1.49B or later Chinese (Traditional) version: Version1.49B or later Korean version: Version1.49B or later *1 For software versions applicable to the modules used, refer to "Relevant manuals".

Item	Description
Programming language	Ladder
Number of steps	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.
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 (Error code). 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 operation value, it is unnecessary to use this FB. 5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 9) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
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	2016/04	First edition

Note

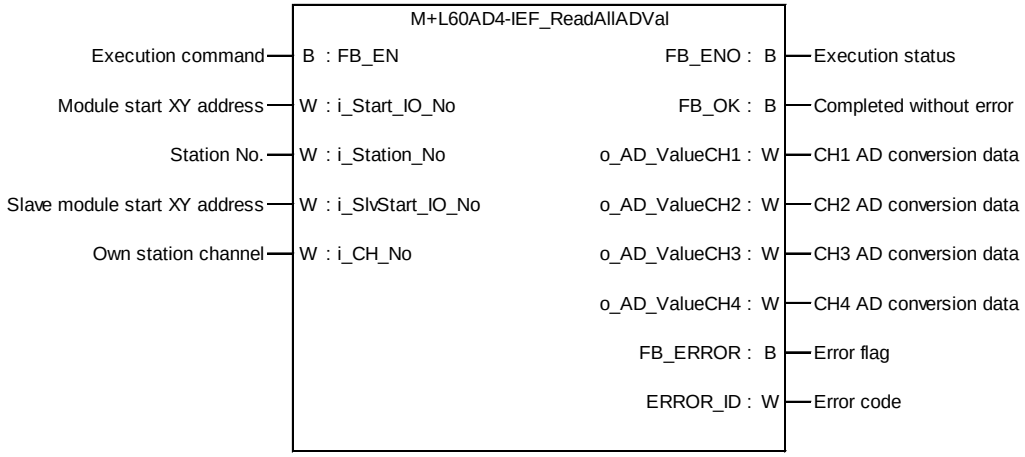
This chapter includes information related to the M+L60AD4-IEF_ReadADVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.2. M+L60AD4-IEF_ReadAllADVal (Read all AD conversion data)

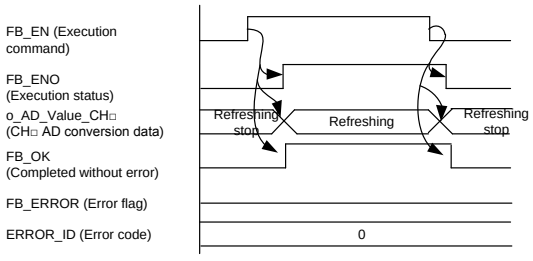
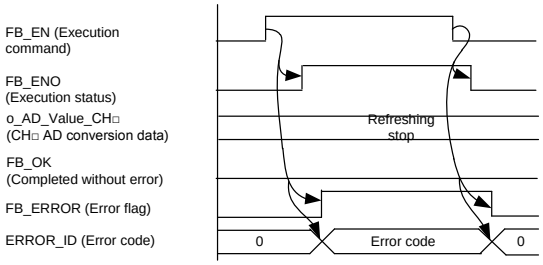
FB Name

M+L60AD4-IEF_ReadAllADVal

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Reads the AD conversion data of all specified 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">302 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>
<tr><td>Function description</td><td colspan="2">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 operation value, it is unnecessary to use this FB.
4) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID.
Refer to the error code explanation section for details.
5) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code).
Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 8) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 9) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 10) Set the global label setting according to Section 1.5. 11) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs]  

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.

Name (Comment)	Label name	Data type	Setting range	Description
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

●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	2016/04	First edition

Note

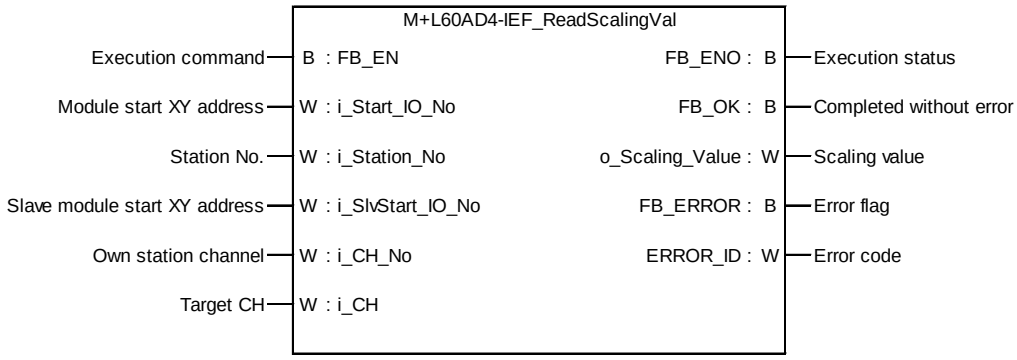
This chapter includes information related to the M+L60AD4-IEF_ReadAllADVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.3. M+L60AD4-IEF_ReadScalingVal (Read scaling value)

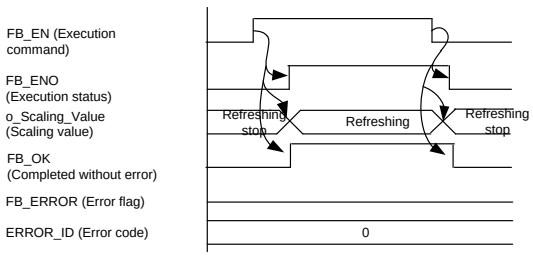
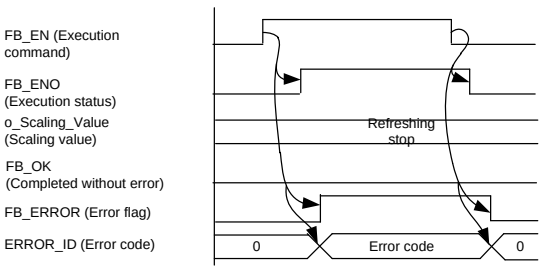
FB Name

M+L60AD4-IEF_ReadScalingVal

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Reads the scaling value (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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	306 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) Reads the scaling value (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 (Error code). Refer to the error code explanation section for details. 3) If the A/D converter module buffer memory is set to auto refresh the scaling value (digital operation value), it is unnecessary to use this FB. 4) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 5) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Operating Manual (Common). 9) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs]  

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
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 scaling value (digital operation value) read operation was successful.
Scaling value	o_Scaling_Value	Word	0	Scaling value (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	2016/04	First edition

Note

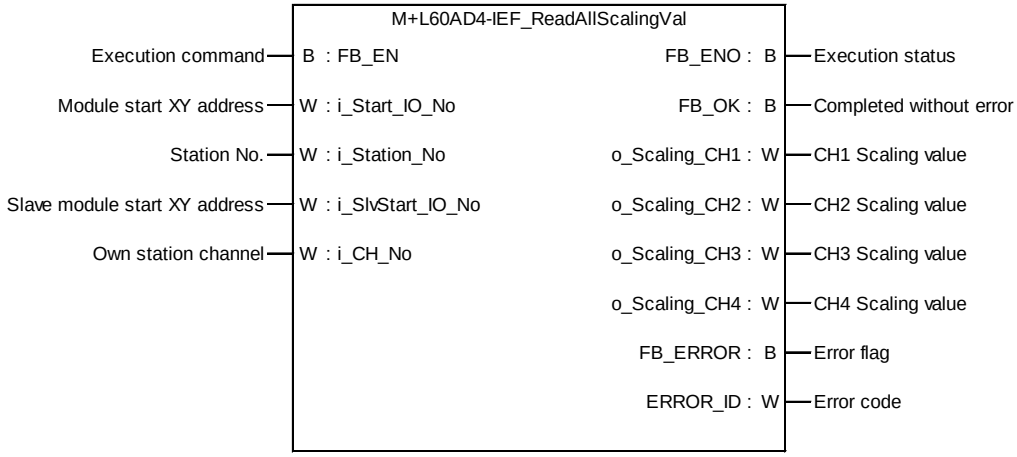
This chapter includes information related to the M+L60AD4-IEF_ReadScalingVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.4. M+L60AD4-IEF_ReadAllScalingVal (Read all scaling values)

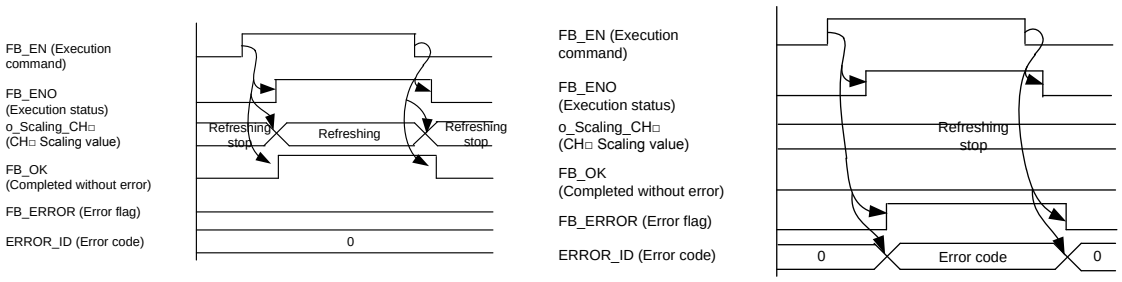
FB Name

M+L60AD4-IEF_ReadAllScalingVal

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Reads the scaling values (digital operation values) of 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">305 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>
<tr><td>Function description</td><td colspan="2">1) Reads the scaling values (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 scaling value (digital operation value), it is unnecessary to use this FB.
3) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID.
Refer to the error code explanation section for details.
4) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code).
Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 8) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 9) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 10) Set the global label setting according to Section 1.5. 11) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.

Name (Comment)	Label name	Data type	Setting range	Description
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

●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 scaling value (digital operation value) read operation was successful.
CH1 Scaling value	o_Scaling_CH1	Word	0	CH1 scaling value (digital operation value) output
CH2 Scaling value	o_Scaling_CH2	Word	0	CH2 scaling value (digital operation value) output
CH3 Scaling value	o_Scaling_CH3	Word	0	CH3 scaling value (digital operation value) output
CH4 Scaling value	o_Scaling_CH4	Word	0	CH4 scaling value (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	2016/04	First edition

Note

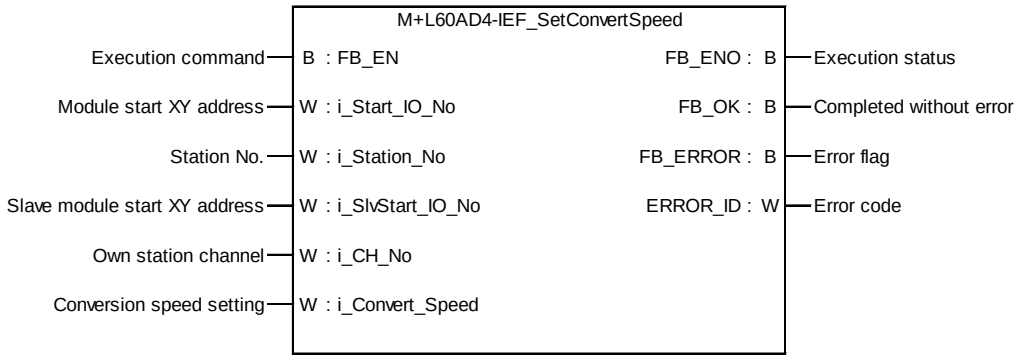
This chapter includes information related to the M+L60AD4-IEF_ReadAllScalingVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.5. M+L60AD4-IEF_SetConvertSpeed (Conversion speed setting)

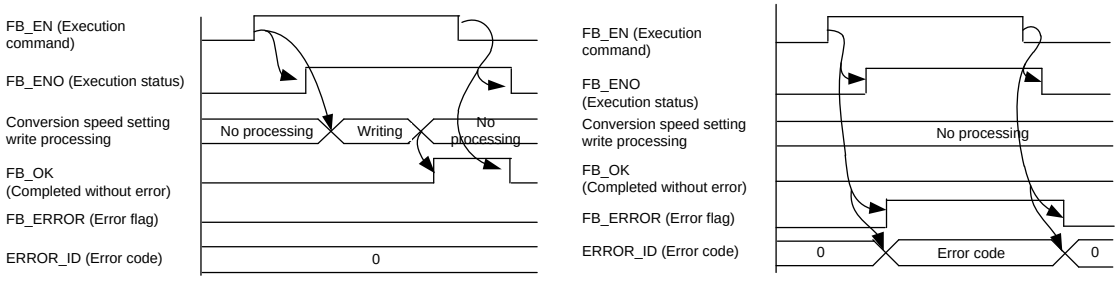
FB Name

M+L60AD4-IEF_SetConvertSpeed

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Sets 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	268 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) 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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_RequestSetting) is executed. 4) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 5) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 8) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 9) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.

Name (Comment)	Label name	Data type	Setting range	Description
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Conversion speed setting	i_Convert_Speed	Word	0,1,2	Specify the conversion speed. 0: 20 μs 1: 80 μs 2: 1 ms

●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	2016/04	First edition

Note

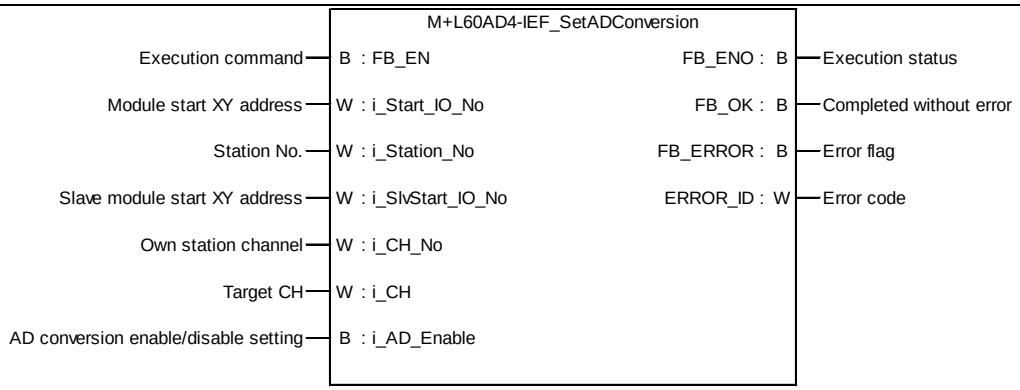
This chapter includes information related to the M+L60AD4-IEF_SetConvertSpeed function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.6. M+L60AD4-IEF_SetADConversion (Enable/disable AD conversion)

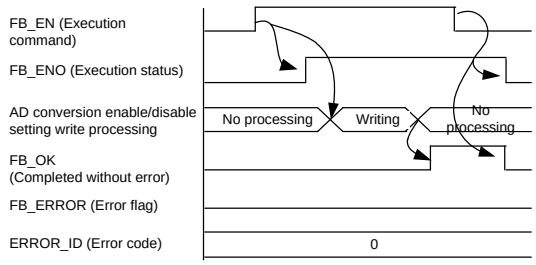
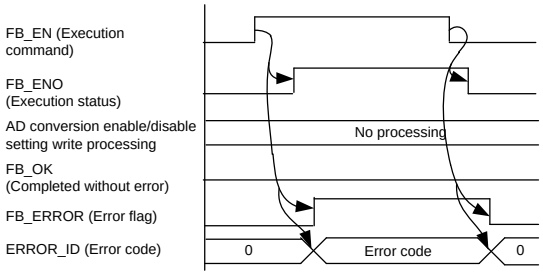
FB Name

M+L60AD4-IEF_SetADConversion

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Enables or disables 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	416 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) 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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details. 5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6, Z5 and Z4. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error]  [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
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 AD conversion. OFF: Disable AD conversion.

●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	2016/04	First edition

Note

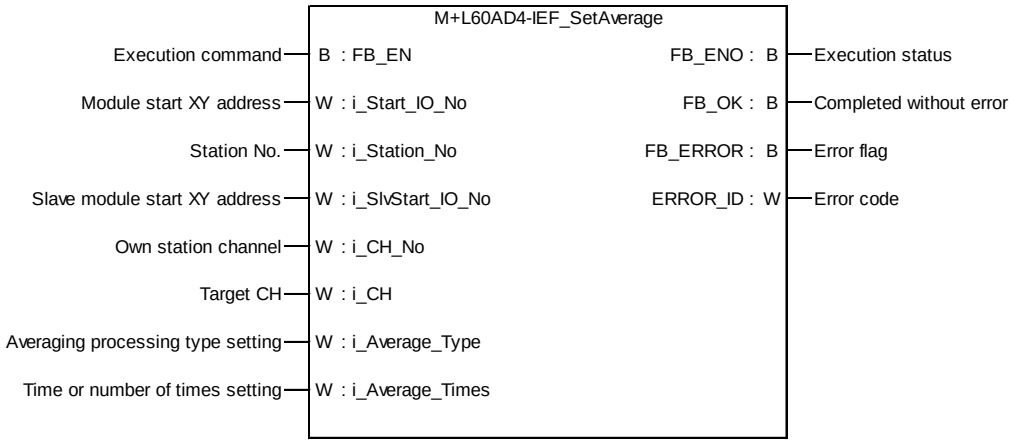
This chapter includes information related to the M+L60AD4-IEF_SetADConversion function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.7. M+L60AD4-IEF_SetAverage (Averaging process setting)

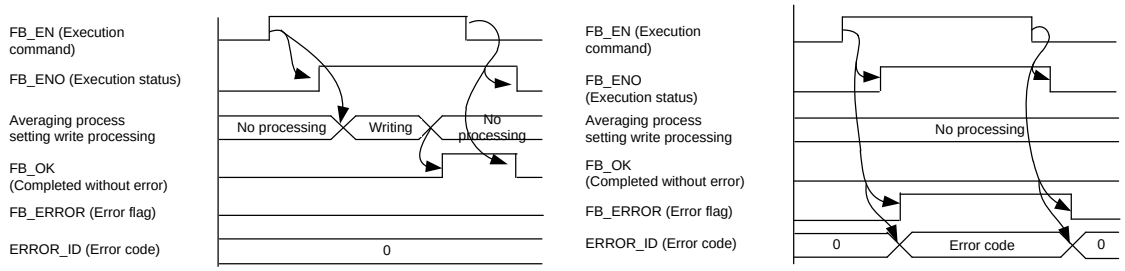
FB Name

M+L60AD4-IEF_SetAverage

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Performs averaging processing for 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">486 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>
<tr><td>Function description</td><td colspan="2">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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Averaging processing type setting	i_Average_Type	Word	0H,1H,2H,3H	Specify the averaging processing type. 0H: Sampling processing 1H: Time average 2H: Count average 3H: Moving average
Time or number of times setting	i_Average_Times	Word	As specified on the right.	Time average: 20μs: 2~1,500 (ms) 80μs/1ms: 2~5,000 (ms) Count average: 4~62,500 (times) Moving average: 2~1,000 (times)

●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 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	2016/04	First edition

Note

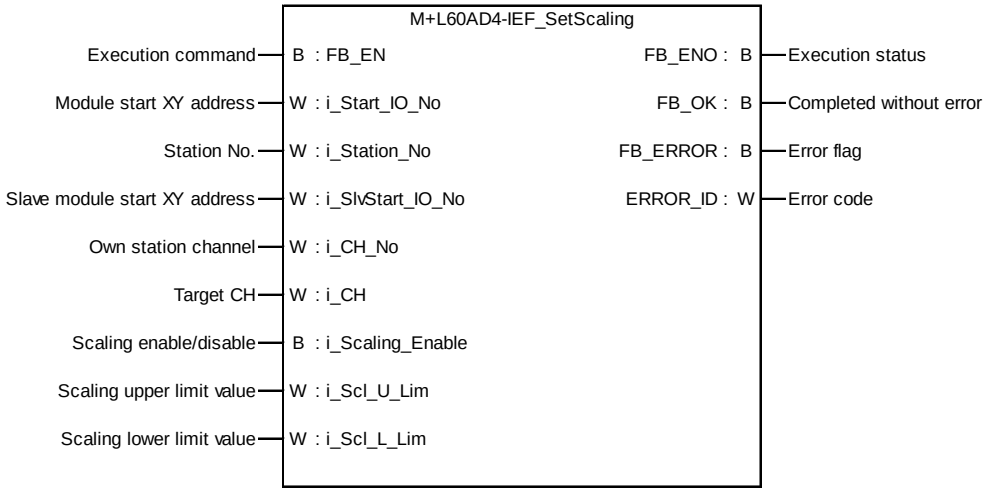
This chapter includes information related to the M+L60AD4-IEF_SetAverage function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.8. M+L60AD4-IEF_SetScaling (Scaling setting)

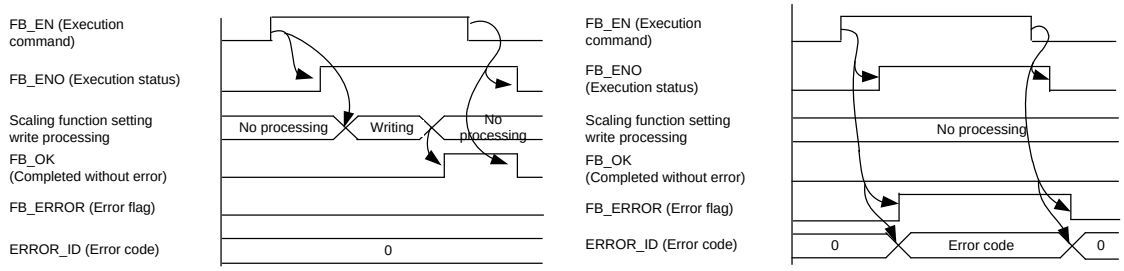
FB Name

M+L60AD4-IEF_SetScaling

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Configures scaling 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">447 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>
<tr><td>Function description</td><td colspan="2">1) Configures scaling 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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6, Z5 and Z4. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Scaling enable/disable	i_Scaling_Enable	Bit	ON,OFF	ON: Enable OFF: Disable
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 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	2016/04	First edition

Note

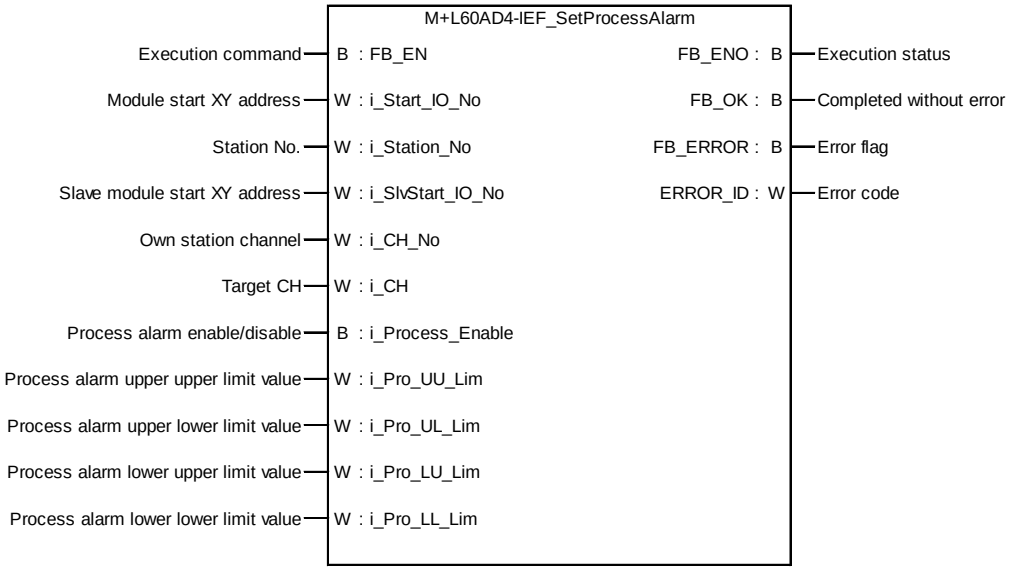
This chapter includes information related to the M+L60AD4-IEF_SetScaling function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.9. M+L60AD4-IEF_SetProcessAlarm (Process alarm setting)

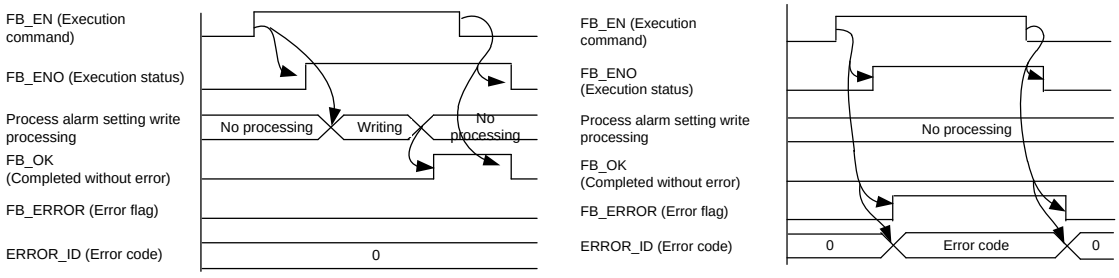
FB Name

M+L60AD4-IEF_SetProcessAlarm

Function Overview

Item	Description	
Function overview	Configures process alarm setting of a specified channel.	
Symbol		
Applicable hardware and software	Analog-Digital converter module	L60AD4
	CC-Link IE field network module	CC-Link IE field network master/local module CC-Link IE field network head module
	CPU Module	Series: MELSEC-Q Series *1 — Model: Universal model QCPU *2 Series: MELSEC-L Series — Model: LCPU *3 *1 Not applicable to QCPU (A mode) *2 The first five digits of the serial number are "12012" or later *3 The first five digits of the serial number are "13012" or later.

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">445 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>
<tr><td>Function description</td><td colspan="2">1) Configures process alarm 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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6, Z5 and Z4. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Process alarm enable/disable	i_Process_Enable	Bit	ON,OFF	ON: Enable OFF: Disable
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 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	2016/04	First edition

Note

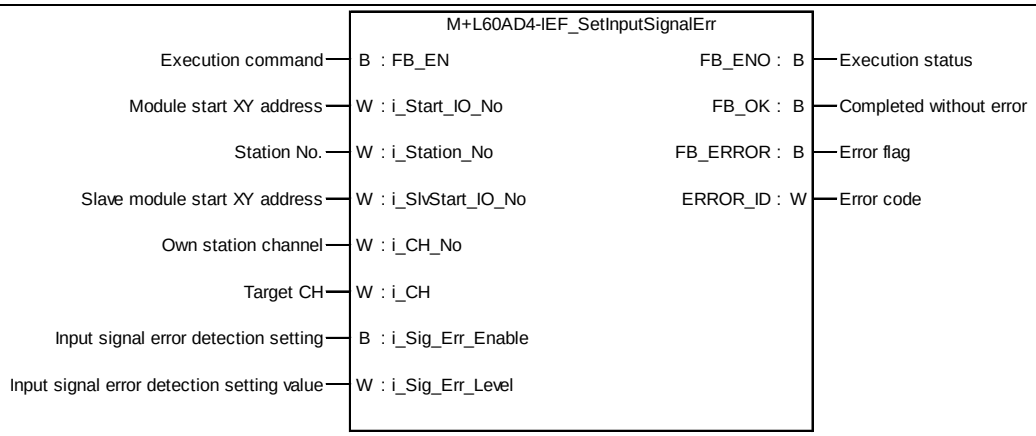
This chapter includes information related to the M+L60AD4-IEF_SetProcessAlarm function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.10. M+L60AD4-IEF_SetInputSignalErr (Input signal error detection setting)

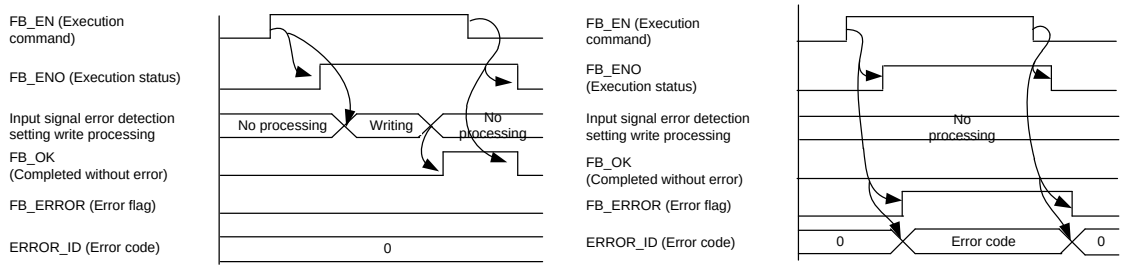
FB Name

M+L60AD4-IEF_SetInputSignalErr

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Configures input signal error detection setting of a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="4">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	426 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) 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 'operating condition setting request' signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details. 5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6, Z5 and Z4. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Input signal error detection setting	i_Sig_Err_Enable	Bit	ON,OFF	ON: Enable OFF: Disable
Input signal error detection setting value	i_Sig_Err_Level	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 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	2016/04	First edition

Note

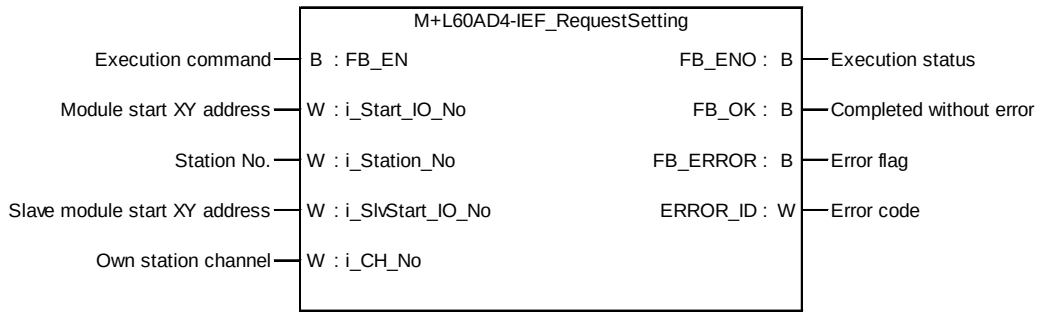
This chapter includes information related to the M+L60AD4-IEF_SetInputSignalErr function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.11. M+L60AD4-IEF_RequestSetting (Operating condition setting request)

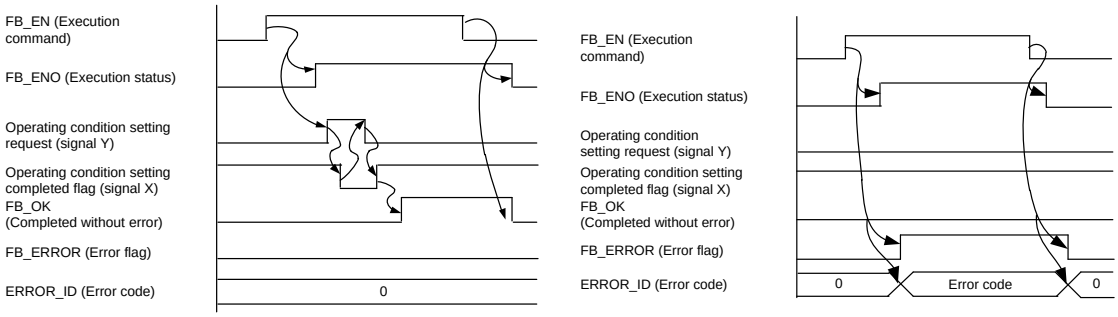
FB Name

M+L60AD4-IEF_RequestSetting

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Applies 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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	222 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) Enables settings of all channels by turning on FB_EN (Execution command). For information on the settings that are enabled, refer to the MELSEC-L 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. 3) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) When this FB is executed, A/D conversion processing stops. After turning ON FB_OK, the conversion processing resumes. 2) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 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 this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) The FB cannot be used in an interrupt program. 6) This FB uses index registers Z9, Z8 and Z7. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) 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. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common).

Item	Description
Restrictions and precautions	10) This FB uses cyclic transmission. Therefore, an interlock program for cyclic transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

●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 operating condition 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	2016/04	First edition

Note

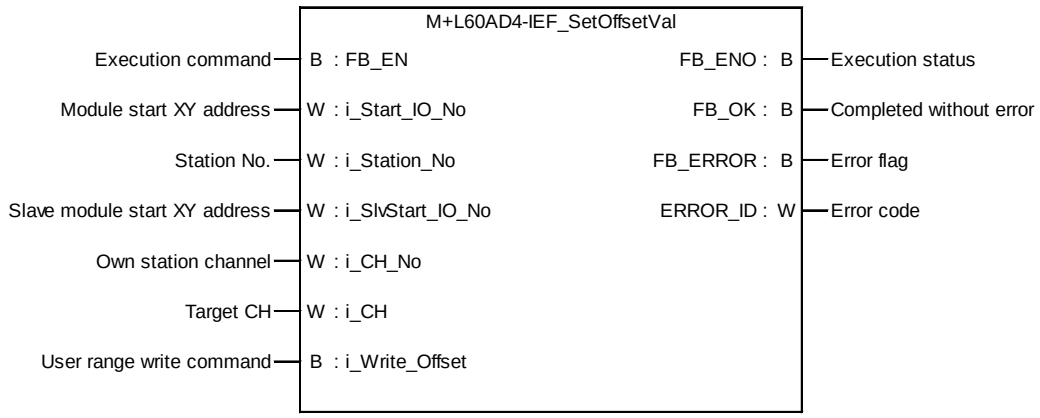
This chapter includes information related to the M+L60AD4-IEF_RequestSetting function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.12. M+L60AD4-IEF_SetOffsetVal (Offset setting)

FB Name

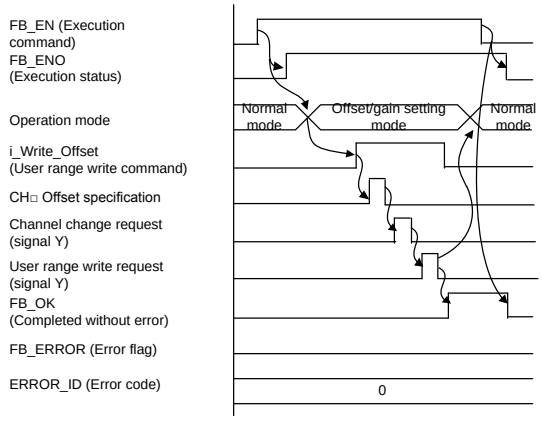
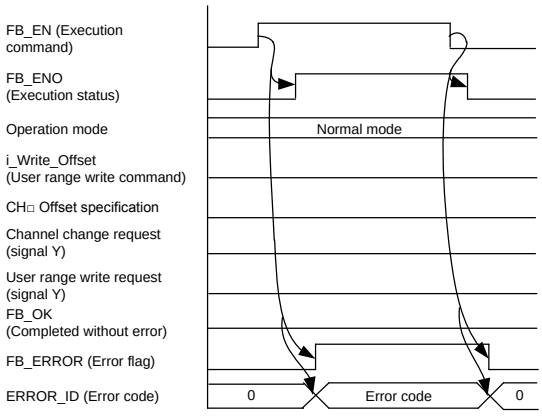
M+L60AD4-IEF_SetOffsetVal

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Sets 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">716 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>
<tr><td>Function description</td><td colspan="2">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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z8, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the offset settings are made using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) 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. 10) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 11) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 12) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 13) Set the global label setting according to Section 1.5. 14) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 2. FB Library Application Examples".

Item	Description
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
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 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	2016/04	First edition

Note

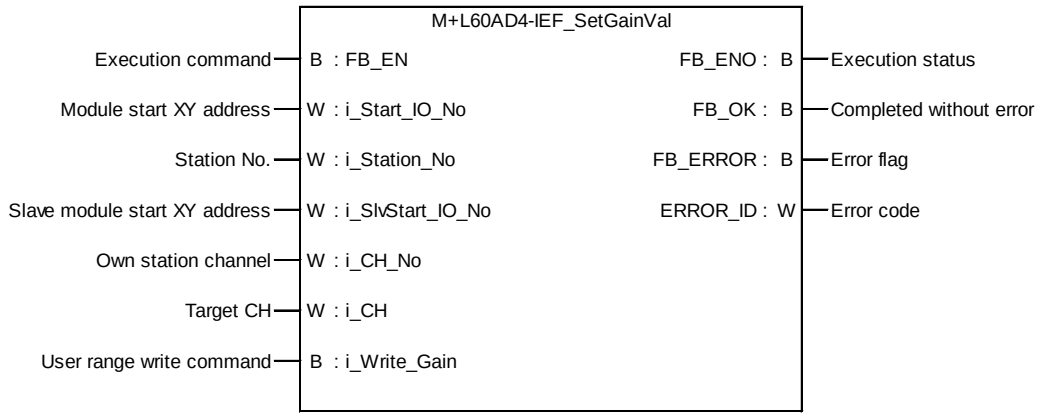
This chapter includes information related to the M+L60AD4-IEF_SetOffsetVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.13. M+L60AD4-IEF_SetGainVal (Gain setting)

FB Name

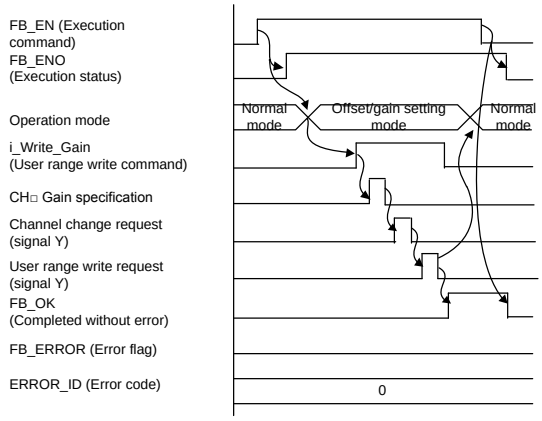
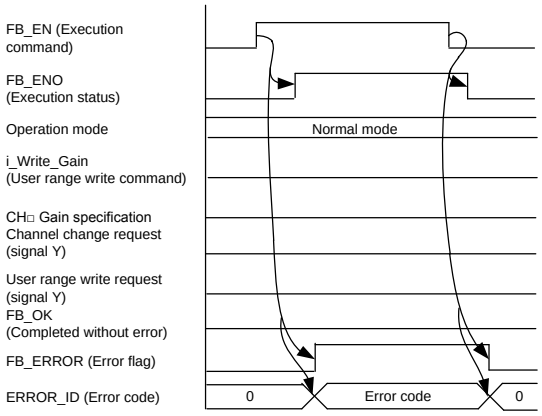
M+L60AD4-IEF_SetGainVal

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Sets 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	713 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) 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 (Error code). Refer to the error code explanation section for details. 5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z8, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the gain settings are made using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 9) 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. 10) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 11) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 12) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 13) Set the global label setting according to Section 1.5. 14) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 2. FB Library Application Examples".

Item	Description
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
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 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	2016/04	First edition

Note

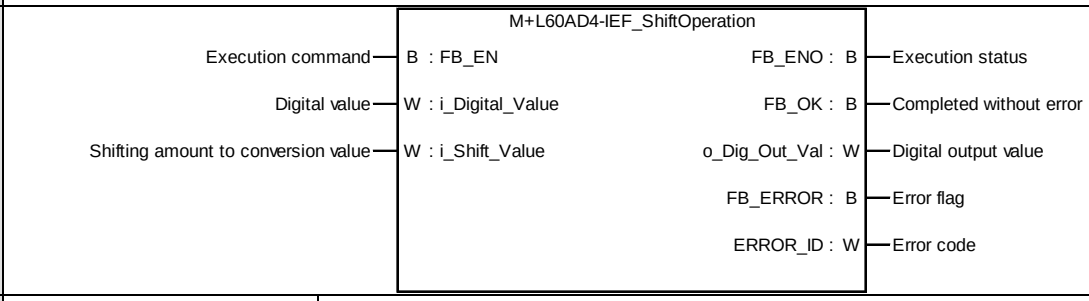
This chapter includes information related to the M+L60AD4-IEF_SetGainVal function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.14. M+L60AD4-IEF_ShiftOperation (Shift operation)

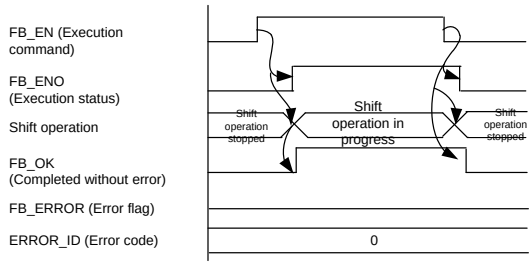
FB Name

M+L60AD4-IEF_ShiftOperation

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Adds the shifting amount to conversion value to the digital value that was input.</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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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	159 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) Adds i_Digital_Value (Digital value) and i_Shift_Value (shifting amount to conversion value) when the FB_EN (Execution command) is turned ON. 2) If a result of shift addition exceeds the range of -32768 to 32767, it is fixed to -32768 or 32767.
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 this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) A/D converter modules whose first five digits of serial number are 13041 or later have the shift function as a module function. When using the shift function of the module function, do not use this FB. 6) Every input must be provided with a value for proper FB operation. 7) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 8) o_Dig_Out_Val (Digital output value) is valid when FB_OK (Completed without error) is turned ON. 9) o_Dig_Out_Val (Digital output value) is cleared to 0 by turning OFF FB_EN. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".

Item	Description
Timing chart	[When operation completes without error] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
Digital value	i_Digital_Value	Word	-32,768~32,767	Specify a digital value to which to add the shifting amount to conversion value that was read.
Shifting amount to conversion value	i_Shift_Value	Word	-32,768~32,767	Specify an amount to shift.

●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 operation has been completed.
Digital output value	o_Dig_Out_Val	Word	0	Stores a sum obtained by adding the input digital value to the shifting amount to conversion value.
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	2016/04	First edition

Note

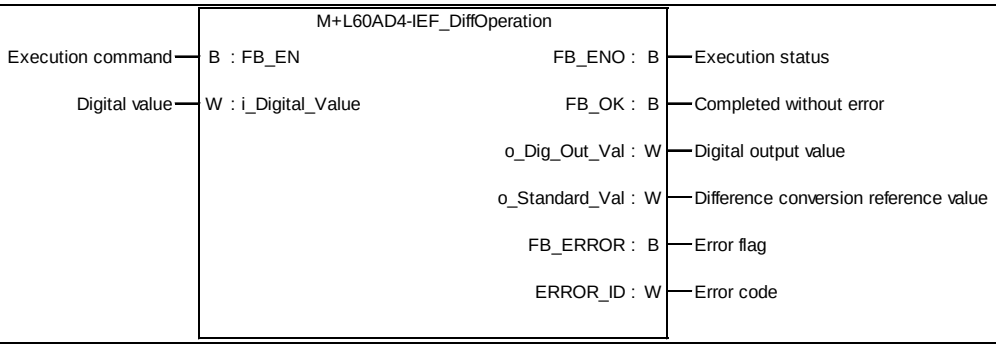
This chapter includes information related to the M+L60AD4-IEF_ShiftOperation function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.15. M+L60AD4-IEF_DiffOperation (Difference conversion process)

FB Name

M+L60AD4-IEF_DiffOperation

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Outputs the difference obtained by subtracting the reference value from the input digital 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
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</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
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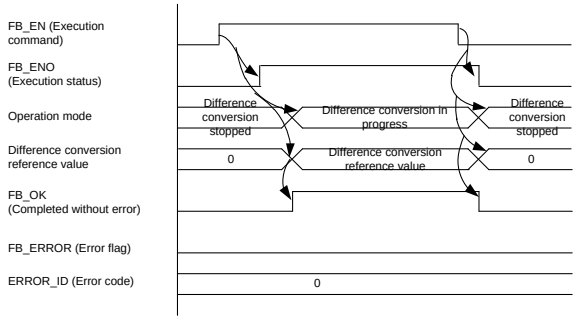
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	168 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 difference conversion process when the FB_EN (Execution command) is turned ON. 2) i_Digital_Value (Digital value) when FB_EN (Execution command) changes from OFF to ON is o_Standard_Val (Difference conversion reference value). As long as FB_EN (Execution command) remains ON, the difference obtained by subtracting o_Standard_Val (Difference conversion reference value) from i_Digital_Value (Digital value) is output.
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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) A/D converter modules whose first five digits of serial number are 13041 or later have the difference conversion function as a module function. When using the difference conversion function of the module function, do not use this FB. 6) Every input must be provided with a value for proper FB operation. 7) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 8) o_Dig_Out_Val (Digital output value) and o_Standard_Val (Difference conversion reference value) are valid when FB_OK (Completed without error) is turned ON. 9) o_Dig_Out_Val (Digital output value) and o_Standard_Val (Difference conversion reference value) are cleared to 0 by turning OFF FB_EN. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
Digital value	i_Digital_Value	Word	-32,768~32,767	Specify a digital value for which to perform the difference conversion.

●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 difference conversion process has been completed.
Digital output value	o_Dig_Out_Val	Word	0	The result of subtracting the differential conversion reference value from the current digital value
Difference conversion reference value	o_Standard_Val	Word	0	The basis of comparison for differential processing. (This value is equal to the digital value when FB_EN changes from OFF to ON.
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	2016/04	First edition

Note

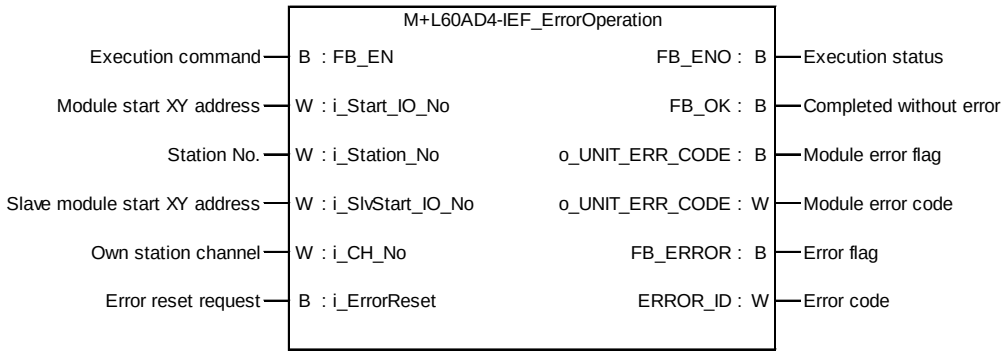
This chapter includes information related to the M+L60AD4-IEF_DiffOperation function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.16. M+L60AD4-IEF_ErrorOperation (Error operation)

FB Name

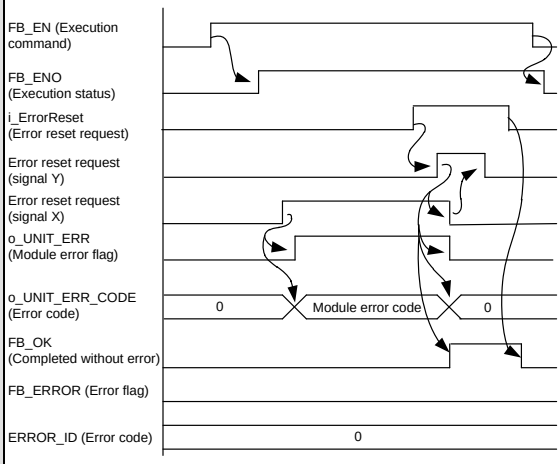
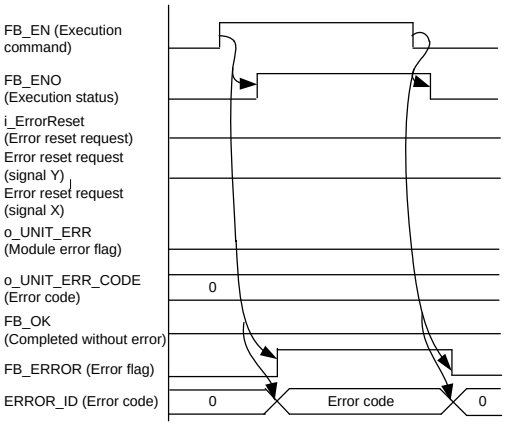
M+L60AD4-IEF_ErrorOperation

Function Overview

Item	Description	
Function overview	Performs monitoring of error codes and error reset.	
Symbol		
Applicable hardware and software	Analog-Digital converter module	L60AD4
	CC-Link IE field network module	CC-Link IE field network master/local module CC-Link IE field network head module
	CPU Module	Series: MELSEC-Q Series *1 — Model: Universal model QCPU *2 Series: MELSEC-L Series — Model: LCPU *3 *1 Not applicable to QCPU (A mode) *2 The first five digits of the serial number are "12012" or later *3 The first five digits of the serial number are "13012" or later.
	Engineering software	GX Works2 *1 Japanese version — Version1.86Q or later English version — Version1.24A or later Chinese (Simplified) version — Version1.49B or later Chinese (Traditional) version — Version1.49B or later Korean version — Version1.49B or later *1 For software versions applicable to the modules used, refer to "Relevant manuals".

Item	Description
Programming language	Ladder
Number of steps	377 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) 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 is reset by turning ON i_ErrorReset (Error reset request) during the error occurrence. 3) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 4) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z8, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) Every input must be provided with 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 the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 9) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".

Item	Description
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000~DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Error reset request	i_ErrorReset	Bit	ON,OFF	Turn ON to perform error reset. After error reset is completed, turn this OFF.

●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. (Module error being monitored) OFF: Execution command is OFF.
Completed without error	FB_OK	Bit	OFF	When ON, it indicates that the error reset is completed.
Module error flag	o_UNIT_ERROR	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	2016/04	First edition

Note

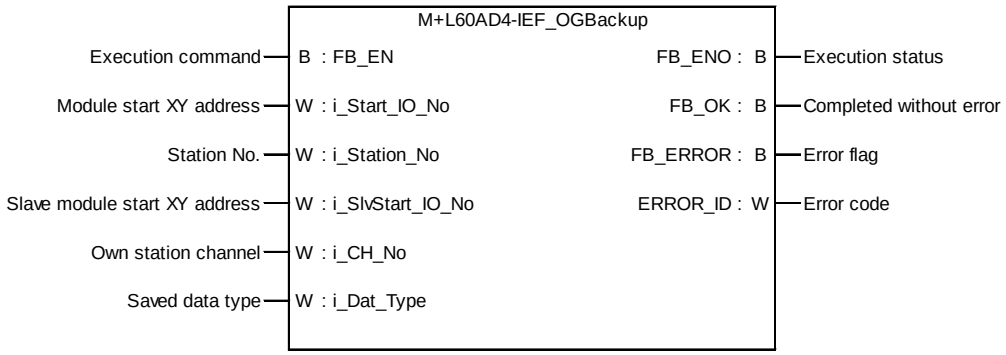
This chapter includes information related to the M+L60AD4-IEF_ErrorOperation function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.17. M+L60AD4-IEF_OGBackup (Offset/gain value save)

FB Name

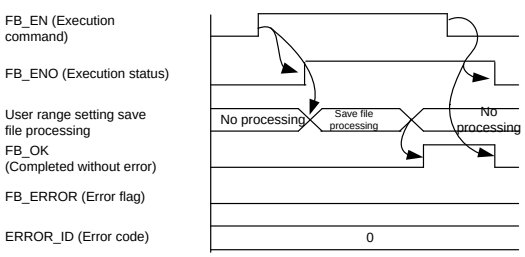
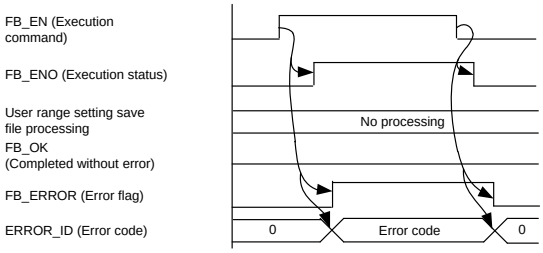
M+L60AD4-IEF_OGBackup

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Reads the offset and gain values from the user range setting and saves them 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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	639 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) By turning ON FB_EN (Execution command), the offset and gain user range settings are read from the CPU module and saved in the memory card *3 mounted on the CPU. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) The format for the file name that the FB saves in a memory card *3 is "LAD_" + "module start XY address" + ".BIN". 4) [File name example] The file name is "LAD_0120.BIN" when the module start XY address is H0120. 5) When the FB creates a BIN file in a memory card *3, if the same file name is already in the memory card *3, the existing file is replaced with a new file. 6) If the FB is executed without mounting a memory card*3 on the CPU, if the mounted memory card *3 does not have sufficient space, or if the number of files that can be saved *1 is exceeded, a CPU error *2 occurs. 7) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 8) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details. *1 For information on the size of memory card and the number of files that can be saved, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and MELSEC-L CPU Module 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 memory card occurs. *3 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z8, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) This FB can save the user range setting in a memory card only *1. 7) This FB uses a SP.FWRITE instruction. Therefore, if an error occurs during execution of the SP.FWRITE instruction, a CPU error occurs. 8) When processes for accessing the SD memory card, such as the data logging function of the LCPU, are executed simultaneously, the time for completing this FB may extend or an error 40 (timeout) may occur. For details, refer to Section 13.2.4 Troubleshooting on the entire system during operation of the data logging function of MELSEC-L CPU Module User's Manual (Data Logging Function). 9) Every input must be provided with a value for proper FB operation. 10) 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. 11) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 12) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 13) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 14) Set the global label setting according to Section 1.5. 15) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules". *1 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
FB operation type	Pulse execution type [multiple scan execution type]

Item	Description
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

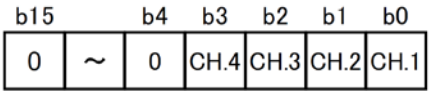
Error Codes

●Error code list

Error code	Description	Action
40 (Decimal)	The offset/gain value reading processing timeout occurred because accesses to the SD memory card are frequently made in addition to this FB.	Reduce the frequency of the access processing to the SD memory card.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Saved data type	i_Dat_Type	Word	0~Fh	Specify the type of data to be saved for each channel. 0: Voltage, 1: Current 

●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.
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	2016/04	First edition

Note

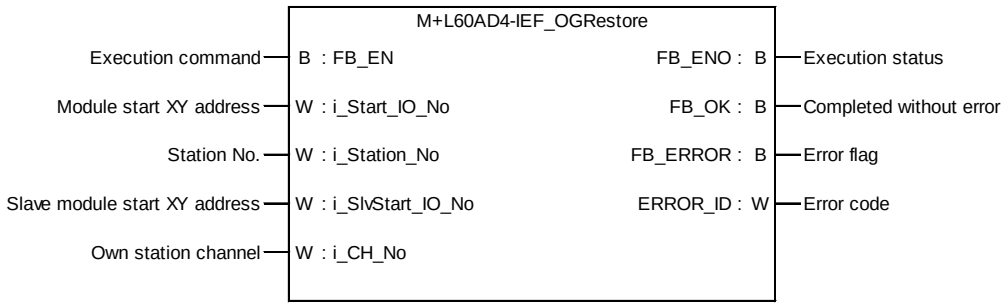
This chapter includes information related to the M+L60AD4-IEF_OGBackup function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.18. M+L60AD4-IEF_OGRestore (Offset/gain value restore)

FB Name

M+L60AD4-IEF_OGRestore

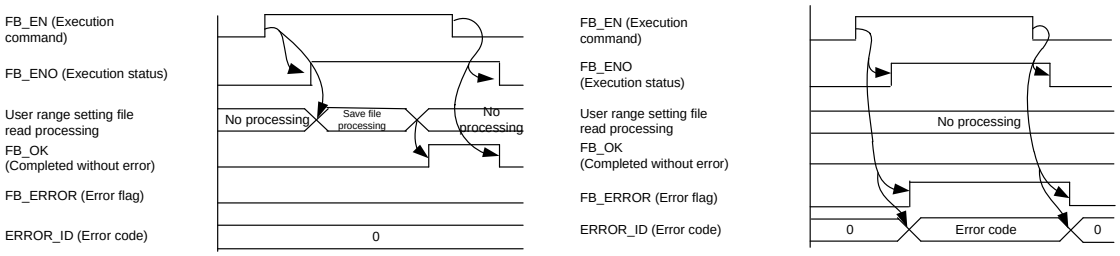
Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Restores the user range offset/gain settings from a file to the module.</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>L60AD4</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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	673 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) By turning ON FB_EN (Execution command), the offset and gain user range settings are read from the memory card *2 mounted on the CPU module and they are restored to the module. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) This FB operates only when conversion is disabled for all channels. 4) Execute M+L60AD4_OGBackup before executing this FB. If a file not created with M+L60AD4_OGBackup is read, a module error (error code: 163) occurs. 5) The format for the file name that the FB reads from a memory card is "LAD_" + "module start XY address" + ".BIN". 6) [File name example] The file name is "LAD_0120.BIN" when the module start XY address is H0120. 7) If the FB is executed without mounting a memory card *2 on the CPU or there is no target user range setting file in the mounted memory card *2, a CPU error *1 occurs. 8) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 9) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details. *1 The parameter can be used to set the CPU operation state (continue/stop) for when an access error to memory card occurs. *2 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
Compiling method	Macro type

Item	Description
Restrictions and precautions	1) Disable conversion of all channels before executing this FB. 2) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 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 this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) The FB cannot be used in an interrupt program. 6) This FB uses index registers Z9, Z8, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) This FB cannot restore any user range setting from a file created with other than M+L60AD4_OGBackup. 8) This FB uses a SP.FREAD instruction. Therefore, if an error occurs during execution of the SP.FREAD instruction, a CPU error occurs. 9) When processes for accessing the SD memory card, such as the data logging function of the LCPU, are executed simultaneously, the time for completing this FB may extend or an error 40 (timeout) may occur. For details, refer to Section 13.2.4 Troubleshooting on the entire system during operation of the data logging function of MELSEC-L CPU Module User's Manual (Data Logging Function). 10) Every input must be provided with a value for proper FB operation. 11) 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. 12) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 13) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 14) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 15) Set the global label setting according to Section 1.5. 16) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".

Item	Description
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 2. FB Library Application Examples".

Item	Description
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
40 (Decimal)	The offset/gain value reading processing timeout occurred because accesses to the SD memory card are frequently made in addition to this FB.	Reduce the frequency of the access processing to the SD memory card.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
90 (Decimal)	There is a channel for which conversion is enabled.	Please try again after confirming the setting.
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

●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.
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	2016/04	First edition

Note

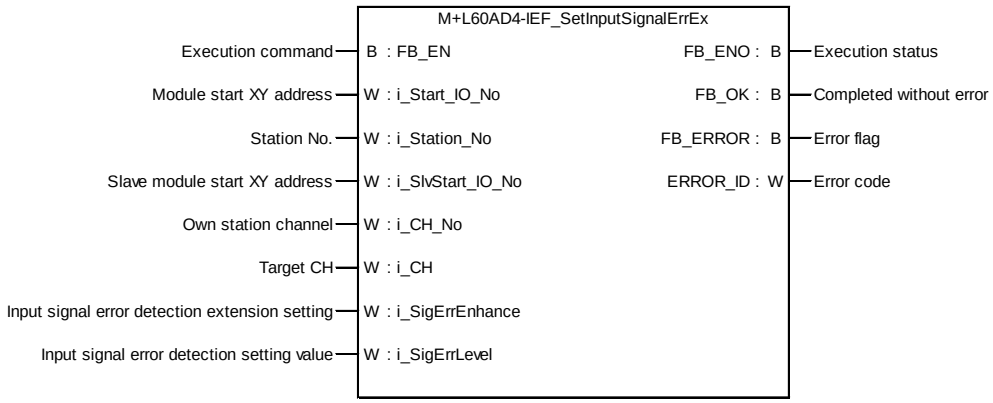
This chapter includes information related to the M+L60AD4-IEF_OGRestore function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.19. M+L60AD4-IEF_SetInputSignalErrEx (Input signal error detection extension setting)

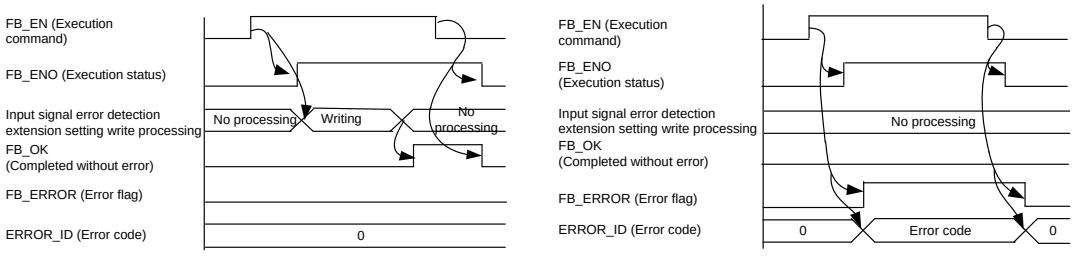
FB Name

M+L60AD4-IEF_SetInputSignalErrEx

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Configures input signal error detection extension 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>L60AD4
* Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">451 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>
<tr><td>Function description</td><td colspan="2">1) Configures input signal error detection extension 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 'operating condition setting request signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_RequestSetting) is executed.
4) When the target channel setting value or the input signal error detection extension 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.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID.
Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code).
Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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.

Name (Comment)	Label name	Data type	Setting range	Description
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Input signal error detection extension setting	i_SigErrEnhance	Word	0: Disable 1: Upper and lower detection 2: Lower detection 3: Upper detection 4: Disconnection detection	Set the input signal error detection extension setting.
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 extension 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	2016/04	First edition

Note

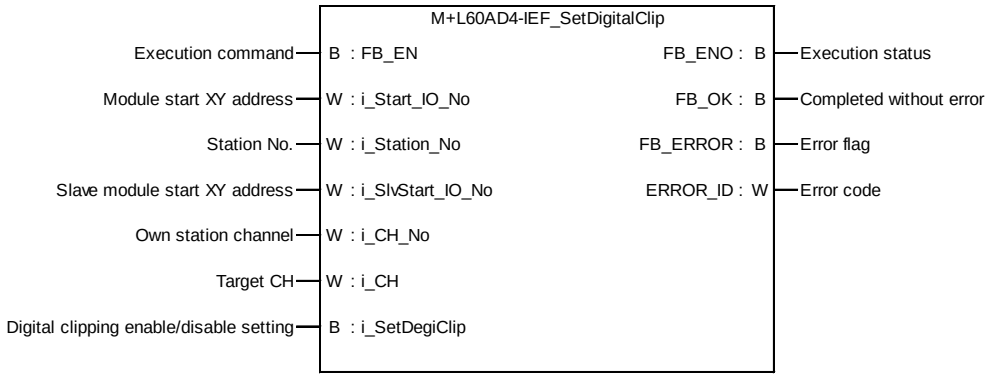
This chapter includes information related to the M+L60AD4-IEF_SetInputSignalErrEx function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.20. M+L60AD4-IEF_SetDigitalClip (Digital clipping setting)

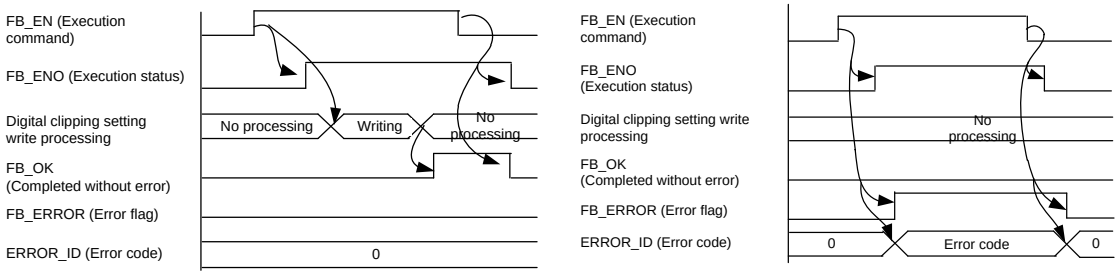
FB Name

M+L60AD4-IEF_SetDigitalClip

Function Overview

Item	Description	
Function overview	Enables or disables the digital clipping of a specified channel.	
Symbol		
Applicable hardware and software	Analog-Digital converter module	L60AD4 *Applicable to A/D converter module whose first five digits of the product information are "13041" or later
	CC-Link IE field network module	CC-Link IE field network master/local module CC-Link IE field network head module
	CPU Module	Series: MELSEC-Q Series *1 — Model: Universal model QCPU *2 Series: MELSEC-L Series — Model: LCPU *3 *1 Not applicable to QCPU (A mode) *2 The first five digits of the serial number are "12012" or later *3 The first five digits of the serial number are "13012" or later.
	Engineering software	GX Works2 *1 Japanese version: Version1.86Q or later English version: Version1.24A or later Chinese (Simplified) version: Version1.49B or later Chinese (Traditional) version: Version1.49B or later Korean version: Version1.49B or later *1 For software versions applicable to the modules used, refer to "Relevant manuals".

Item	Description
Programming language	Ladder
Number of steps	386 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) 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 'operating condition setting request signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details. 5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6, Z5 and Z4. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) If the parameters are set using GX Configurator-AD or the configuration function of GX Works 2, using this FB is unnecessary. 8) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 9) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 10) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 11) Set the global label setting according to Section 1.5. 12) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Digital clipping enable/disable setting	i_SetDegiClip	Bit	ON,OFF	ON: Enable OFF: Disable

●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 enable/disable 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	2016/04	First edition

Note

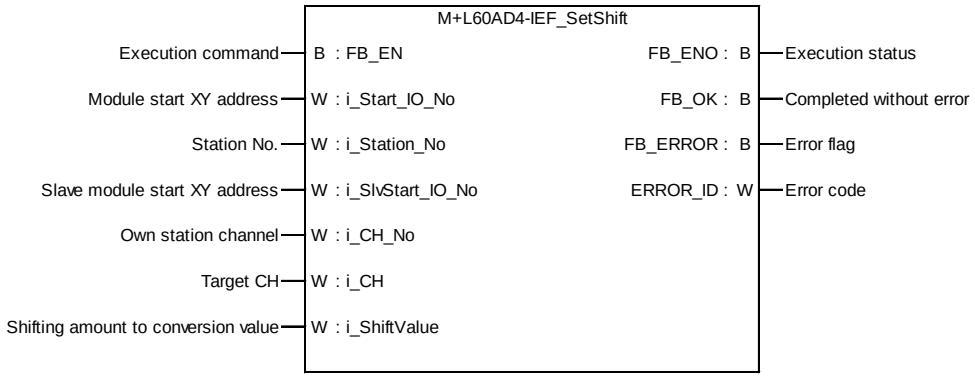
This chapter includes information related to the M+L60AD4-IEF_SetDigitalClip function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.21. M+L60AD4-IEF_SetShift (Shift setting)

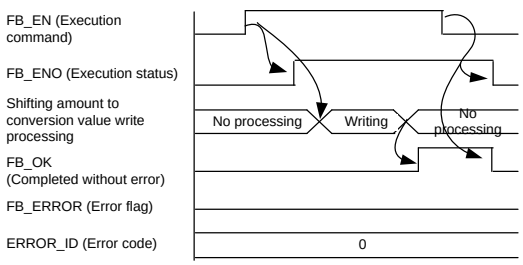
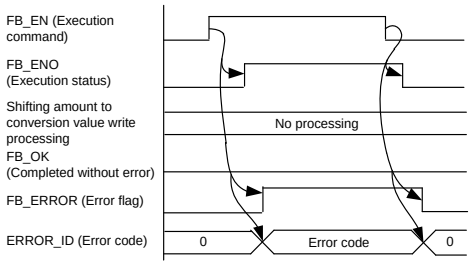
FB Name

M+L60AD4-IEF_SetShift

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Performs 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>L60AD4
*Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td><table><tr><th>Series</th><th>Model</th></tr><tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr><tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr></table>*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1<table><tr><th>Language</th><th>Software version</th></tr><tr><td>Japanese version</td><td>Version1.86Q or later</td></tr><tr><td>English version</td><td>Version1.24A or later</td></tr><tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr><tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr><tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	284 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 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 (Error code). Refer to the error code explanation section for details. 4) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 5) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs]  

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
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	2016/04	First edition

Note

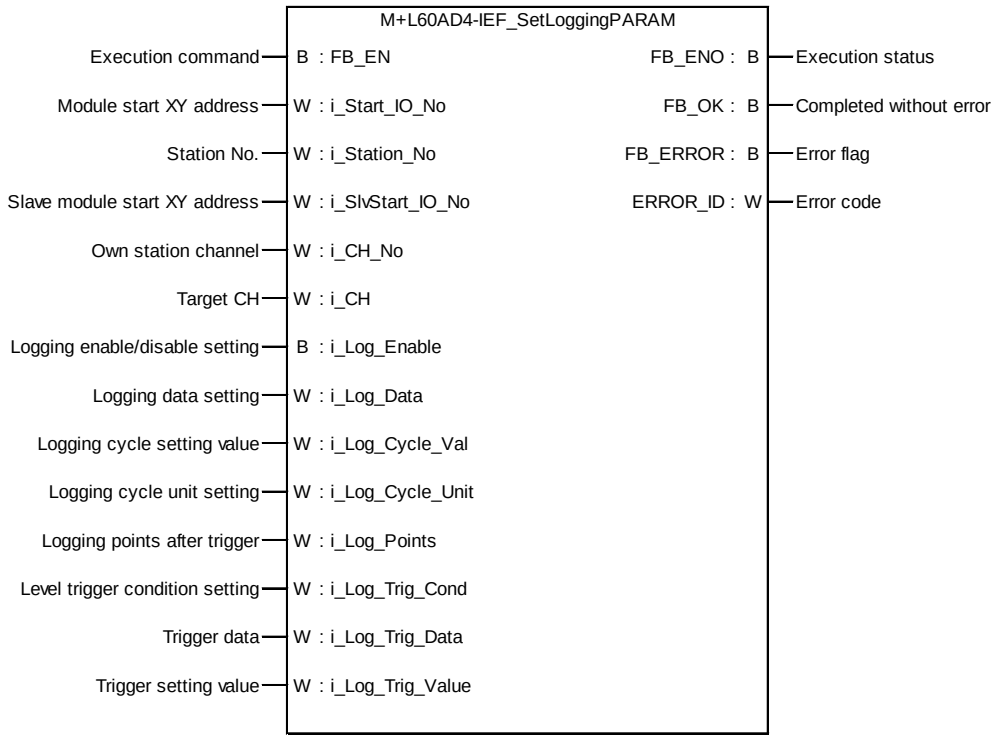
This chapter includes information related to the M+L60AD4-IEF_SetShift function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.22. M+L60AD4-IEF_SetLoggingPARAM (Logging function parameter setting)

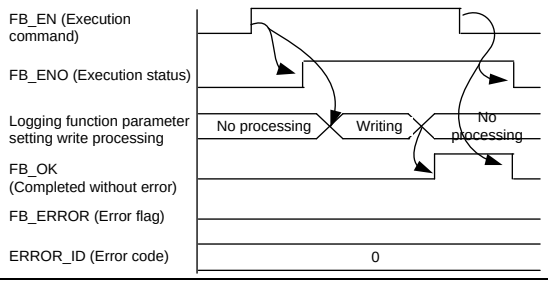
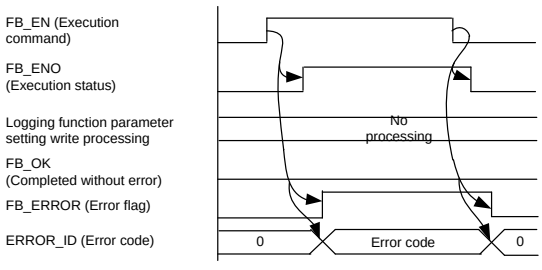
FB Name

M+L60AD4-IEF_SetLoggingPARAM

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Performs the logging 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>L60AD4
*Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">500 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>
<tr><td>Function description</td><td colspan="2">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 'operating condition setting request signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error]  [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
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	0,1	Set the data to be logged. 0: Digital output value 1: Digital operation value
Logging cycle setting value	i_Log_Cycle_Val	Word	1) Logging cycle unit setting=0: 80~32,767 2) Logging cycle unit setting=1: 1~32,767 3) Logging cycle unit setting=2: 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.

Name (Comment)	Label name	Data type	Setting range	Description
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	2016/04	First edition

Note

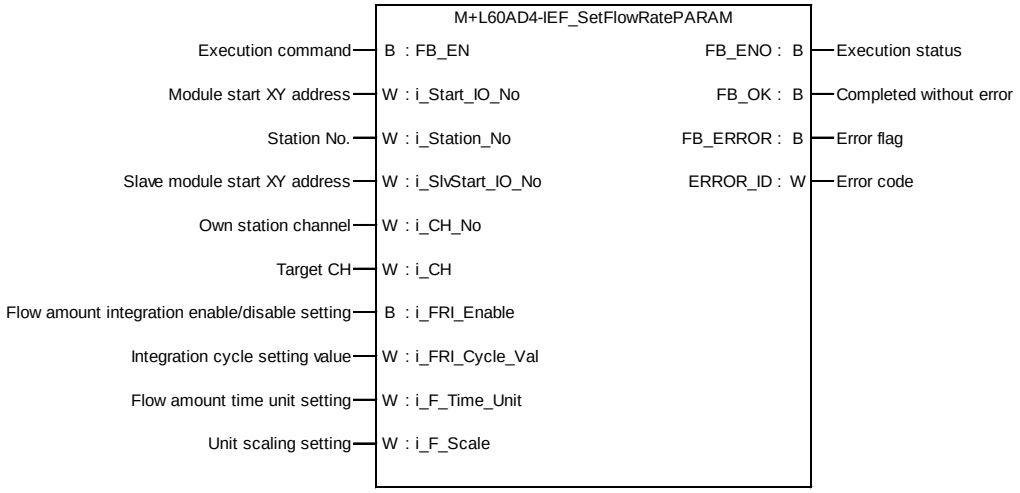
This chapter includes information related to the M+L60AD4-IEF_SetLoggingPARAM function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.23. M+L60AD4-IEF_SetFlowRatePARAM (Flow amount integration function parameter setting)

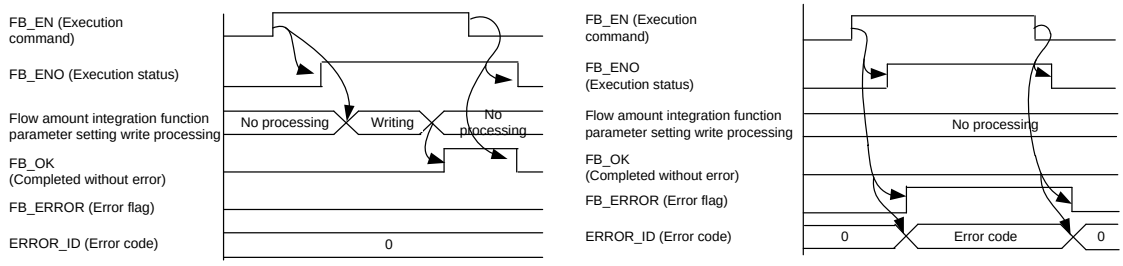
FB Name

M+L60AD4-IEF_SetFlowRatePARAM

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Sets 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>L60AD4
*Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">429 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>
<tr><td>Function description</td><td colspan="2">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 'operating condition setting request signal (Y9) is turned OFF->ON->OFF or the Operating condition setting request FB (M+L60AD4_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 (Error code). Refer to the error code explanation section for details.
5) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details.
6) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.</td></tr>
<tr><td>Compiling method</td><td colspan="2">Macro type</td></tr>
</table>

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) When this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target channel. 6) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) If the parameters are set using the configuration function of GX Works 2, using this FB is unnecessary. 9) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 10) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 11) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 12) Set the global label setting according to Section 1.5. 13) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules".
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.

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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)

Name (Comment)	Label name	Data type	Setting range	Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Flow amount integration enable/disable setting	i_FRI_Enable	Bit	ON: Enable OFF: Disable	Enable/disable the flow amount integration function.
Integration cycle setting value	i_FRI_Cycle_Val	Word	1~5,000	Set the integration cycle of the connected flow meter. The unit is ms. Set this according to the analog output cycle of the connected flow meter.
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.
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.

Name (Comment)	Label name	Data type	Initial value	Description
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	2016/04	First edition

Note

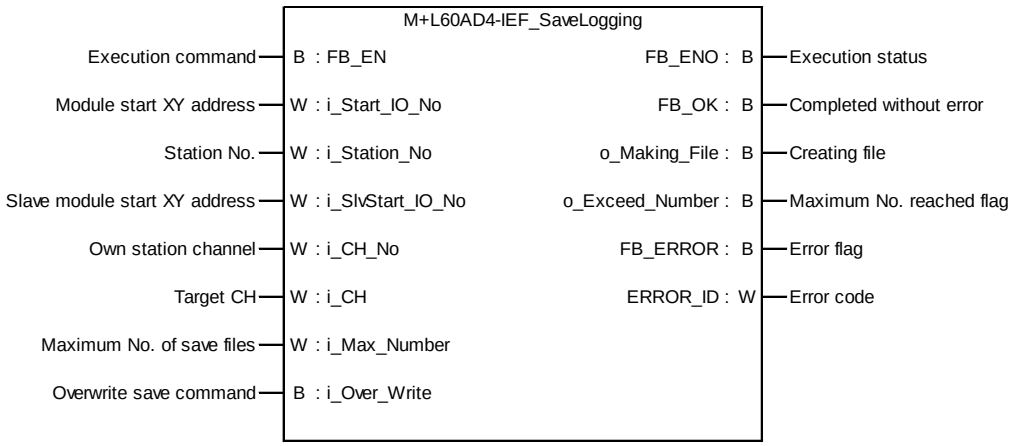
This chapter includes information related to the M+L60AD4-IEF_SetFlowRatePARAM function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.24. M+L60AD4-IEF_SaveLogging (Logging data save)

FB Name

M+L60AD4-IEF_SaveLogging

Function Overview

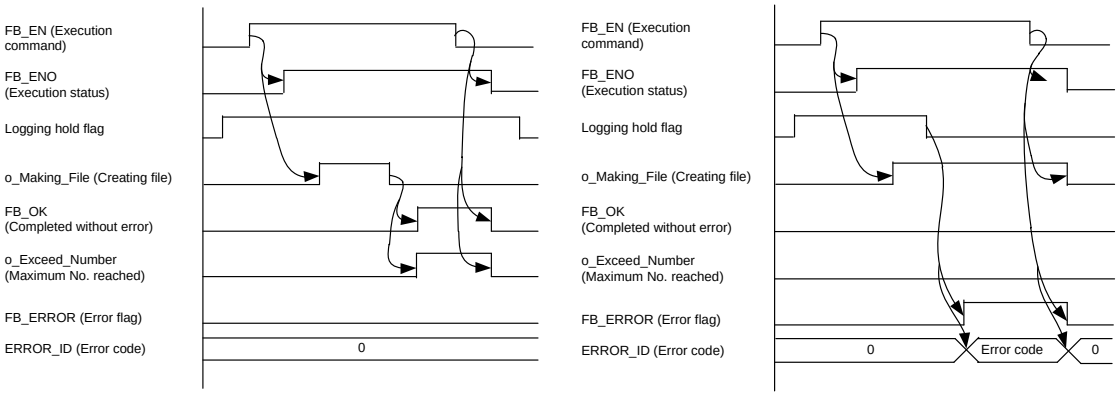
<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Saves the logging data of a specified channel in a file.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>Analog-Digital converter module</td><td>L60AD4
*Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr>
</table>
*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later.
</td></tr>
</table>

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td></td><td>Engineering software</td><td>GX Works2 *1
<table>
<tr><th>Language</th><th>Software version</th></tr>
<tr><td>Japanese version</td><td>Version1.86Q or later</td></tr>
<tr><td>English version</td><td>Version1.24A or later</td></tr>
<tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr>
<tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr>
<tr><td>Korean 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">2007 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 memory card *3 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 a memory 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 a memory card *3, if the same file name is already in the memory card, the existing file is replaced with a new file. 6) If i_Over_Write (Overwrite save command) is turned ON and the number of files the FB saved in the memory card *3 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 memory card *3 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 memory card *3 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 a memory card *3, if the mounted memory card *3 does not have sufficient space, or if the number of files *1 that can be saved is exceeded, 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-L Analog-Digital Converter Module User's Manual. 12) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 13) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details. *1 For information on the size of memory card and the number of files that can be saved, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and MELSEC-L CPU Module 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 memory card occurs. *3 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
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 this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) This FB can save logging data in memory card *1 only. 7) This FB uses a SP.FWRITE instruction. Therefore, if an error occurs during execution of the SP.FWRITE instruction, a CPU error occurs.

Item	Description
Restrictions and precautions	8) When processes for accessing the SD memory card, such as the data logging function of the LCPU, are executed simultaneously, the time for completing this FB may extend or an error 40 (timeout) may occur. For details, refer to Section 13.2.4 Troubleshooting on the entire system during operation of the data logging function of MELSEC-L CPU Module User's Manual (Data Logging Function). 9) 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. 10) With LCPU, if SM606 (SD memory card forced disable instruction) is turned ON during the save processing of logging data, SP.FWRITE is not operated and thus the logging data cannot be saved. In this case, FB_ERROR is turned ON and the error code is stored in ERROR_ID. 11) Every input must be provided with a value for proper FB operation. 12) Pay attention to the size of the memory card *1 and the number of files that can be saved when determining i_Max_Number (Maximum No. of save files). If the size of the memory card *1 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 memory card *1 and the number of files that can be saved, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and the MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection). 13) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 14) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 15) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 16) Set the global label setting according to Section 1.5.

Item	Description
Restrictions and precautions	17) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules". *1 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
FB operation type	Pulse execution type [multiple scan execution type]
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 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 999.	Please try again after confirming the setting.

Error code	Description	Action
20 (Decimal)	The processing is aborted because the logging hold flag is turned OFF while the logging data is being saved. A CSV file containing incomplete data is saved in the ATA card.	-
21 (Decimal)	When LCPU is used, it is not possible to access to an SD memory card because SM606 (SD memory card forced disable Instruction) is turned ON. If SM606 (SD memory card forced disable Instruction) is turned ON while the logging data is being saved, an incomplete CSV file is saved in the SD card. Turn OFF SM606 and confirm that SM607 (SD memory card forced disable status flag) is turned OFF. Then, execute the FB again.	Turn OFF SM606 and confirm that SM607 (SD memory card forced disable status flag) is turned OFF. Then, execute the FB again.
40 (Decimal)	The offset/gain value reading processing timeout occurred because accesses to the SD memory card are frequently made in addition to this FB.	Reduce the frequency of the access processing to the SD memory card.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.
Error codes other than above	-	For details on the error codes for errors, refer to Appendix 1 Error Code List in the MELSEC-L CPU Module User' 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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Target CH	i_CH	Word	1~4	Specify the channel number.
Maximum No. of save files	i_Max_Number	Word	1~999	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.
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	2016/04	First edition

Note

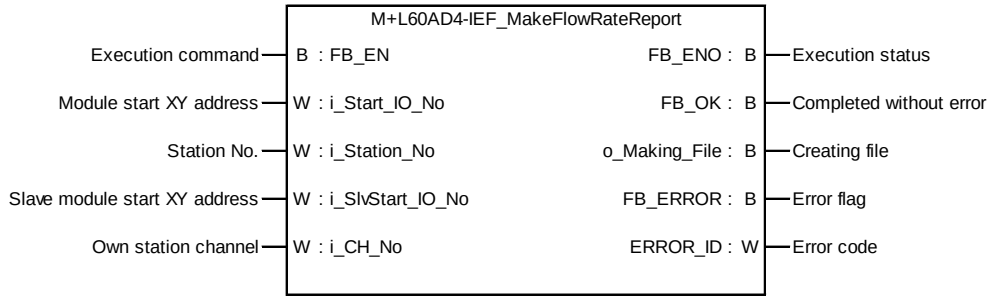
This chapter includes information related to the M+L60AD4-IEF_SaveLogging function block.
It does not include information on restrictions of use such as combination with intelligent function modules or programmable controller CPUs.
Before using any Mitsubishi products, please read all relevant manuals.

2.25. M+L60AD4-IEF_MakeFlowRateReport (Flow amount daily report creation)

FB Name

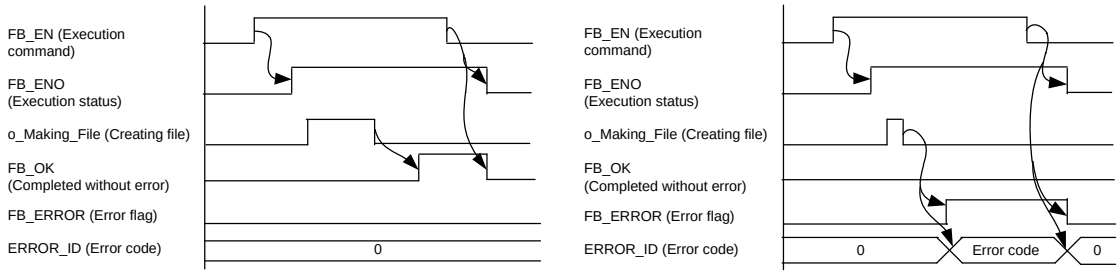
M+L60AD4-IEF_MakeFlowRateReport

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Saves the flow amount daily report data of all specified 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>L60AD4
*Applicable to A/D converter module whose first five digits of the product information are "13041" or later</td></tr>
<tr><td>CC-Link IE field network module</td><td>CC-Link IE field network master/local module
CC-Link IE field network head module</td></tr>
<tr><td>CPU Module</td><td><table><tr><th>Series</th><th>Model</th></tr><tr><td>MELSEC-Q Series *1</td><td>Universal model QCPU *2</td></tr><tr><td>MELSEC-L Series</td><td>LCPU *3</td></tr></table>*1 Not applicable to QCPU (A mode)
*2 The first five digits of the serial number are "12012" or later
*3 The first five digits of the serial number are "13012" or later</td></tr>
<tr><td>Engineering software</td><td>GX Works2 *1<table><tr><th>Language</th><th>Software version</th></tr><tr><td>Japanese version</td><td>Version1.86Q or later</td></tr><tr><td>English version</td><td>Version1.24A or later</td></tr><tr><td>Chinese (Simplified) version</td><td>Version1.49B or later</td></tr><tr><td>Chinese (Traditional) version</td><td>Version1.49B or later</td></tr><tr><td>Korean 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>
</table>

Item	Description
Programming language	Ladder
Number of steps	1642 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) 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 L60AD4. Then, they are saved in a flow amount daily report file in CSV format. The flow amount daily report is saved in the memory card *3 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 a memory 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 a memory card *3, if the same file is already in the memory card *3 (e.g. the clock information of the CPU is changed), the existing file is replaced with a new file. 7) If the FB is executed without mounting a memory card *3, if the mounted memory card *3 does not have sufficient space, or if the number of files *1 that can be saved is exceeded, 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-L Analog-Digital Converter Module User's Manual.

Item	Description
Function description	9) When the network configuration setting of the station number specified by i_Station_No is incorrect, FB_ERROR is turned ON and the processing is interrupted, and the error code 50 (decimal) is stored in ERROR_ID. Refer to the error code explanation section for details. 10) When a CC-Link IE field network error occurs, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details. *1 For information on the size of memory card and the number of files that can be saved, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection) and MELSEC-L CPU Module 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 memory card occurs. *3 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
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 this FB and other FB are operated simultaneously, precaution must be taken to avoid repetition of the own station channel of the FBs. 5) This FB uses index registers Z9, Z7, Z6 and Z5. Please do not use these index registers in an interrupt program. 6) This FB can save flow amount daily report data in memory card *1 only. 7) This FB uses a SP.FWRITE instruction. Therefore, if an error occurs during execution of the SP.FWRITE instruction, a CPU error occurs. 8) When processes for accessing the SD memory card, such as the data logging function of the LCPU, are executed simultaneously, the time for completing this FB may extend or an error 40 (timeout) may occur. For details, refer to Section 13.2.4 Troubleshooting on the entire system during operation of the data logging function of MELSEC-L CPU Module User's Manual (Data Logging Function).

Item	Description
Restrictions and precautions	9) With LCPU, if SM606 (SD memory card forced disable instruction) is turned ON during the save processing of flow amount daily report data, SP.FWRITE is not operated and thus the flow amount daily report data cannot be saved. In this case, FB_ERROR is turned ON and the error code is stored in ERROR_ID. 10) 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. 11) Every input must be provided with a value for proper FB operation. 12) If the size of memory card *1 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 memory card *1 and the number of files that can be saved, refer to the QCPU User's Manual (Hardware Design, Maintenance and Inspection). 13) The input range settings must be properly configured to match the system and devices connected to the L60AD4 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 Version1 Operating Manual (Common). 14) This FB uses cyclic and transient transmission. Therefore, an interlock program for cyclic and transient transmission is required. 15) Set the refresh parameters of the network parameter setting according to (3) in Section 1.4. 16) Set the global label setting according to Section 1.5. 17) Only one master/local module can be controlled by the CC-Link IE Field system FB. To control 2 or more master/local modules by the FB, refer to "Appendix 1. When Using the FB for 2 or More Master/Local Modules". *1 For QCPU, use an ATA memory card. For LCPU, use an SD memory card.
FB operation type	Real-time execution
Application example	Refer to "Appendix 2. FB Library Application Examples".
Timing chart	[When operation completes without error] [When an error occurs] 

Item	Description
Relevant manuals	•MELSEC-L Analog-Digital Converter Module User's Manual •MELSEC-Q CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Master/Local Module User's Manual •MELSEC-L CC-Link IE Field Network Head Module User's Manual •QCPU User's Manual (Hardware Design, Maintenance and Inspection) •MELSEC-L CPU Module User' Manual (Hardware Design, Maintenance and Inspection) •GX Works2 Version1 Operating Manual (Common) •GX Works2 Version1 Operating Manual (Simple Project, Function Block)

Error Codes

●Error code list

Error code	Description	Action
21 (Decimal)	When LCPU is used, it is not possible to access to an SD memory card because SM606 (SD memory card forced disable Instruction) is turned ON. If SM606 (SD memory card forced disable Instruction) is turned ON while the flow amount daily report data is being saved, an incomplete CSV file is saved in the SD card.	Turn OFF SM606 and confirm that SM607 (SD memory card forced disable status flag) is turned OFF. Then, execute the FB again.
40 (Decimal)	The offset/gain value reading processing timeout occurred because accesses to the SD memory card are frequently made in addition to this FB.	Reduce the frequency of the access processing to the SD memory card.
50 (Decimal)	The network configuration setting of the station number specified by i_Station_No is incorrect.	Review the following setting. •Network configuration setting Refer to (2) in Section 1.4 Setting the CC-Link IE Field Network Master/Local Module. •The value entered in i_Station_No
D000 to DAF9 (Hexadecimal)	A CC-Link IE field network error occurred in the system.	Refer to Error Code List in the MELSEC-Q/L CC-Link IE Field Network Master/Local Module User's Manual.
Error codes other than above	-	For details on the error codes for errors, refer to Appendix 1 Error Code List in the MELSEC-L CPU Module User' 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 of the CPU. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start XY address	i_SlvStart_IO_No	Word	Depends on the I/O point range of the head module. For details, refer to the head module user's manual.	Specify the starting XY address (in hexadecimal) where the L60AD4 module is mounted. (For example, enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

●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	2016/04	First edition

Note

This chapter includes information related to the M+L60AD4-IEF_MakeFlowRateReport 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. When Using the FB for 2 or More Master/Local Modules

To use 2 or more CC-Link IE field master/local modules and to use an FB for the second and subsequent CC-Link IE field master/local modules, it is necessary to create an FB for the second and subsequent modules from the MELSOFT Library CC-Link IE field master/local module FB using the following procedure.

Four steps are required to create an FB for the second and subsequent modules, and the brief description is given as follows.

(1) Enter network parameters

(2) Set global labels

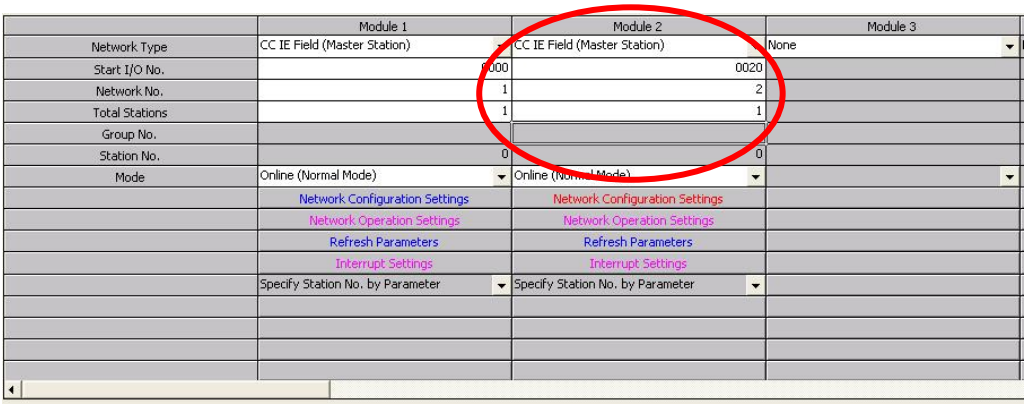
(3) Copy MELSOFT Library to create the FB for the second module

(4) Replace devices to create the FB for the second module

Appendix 1.1. Entering Network Parameters

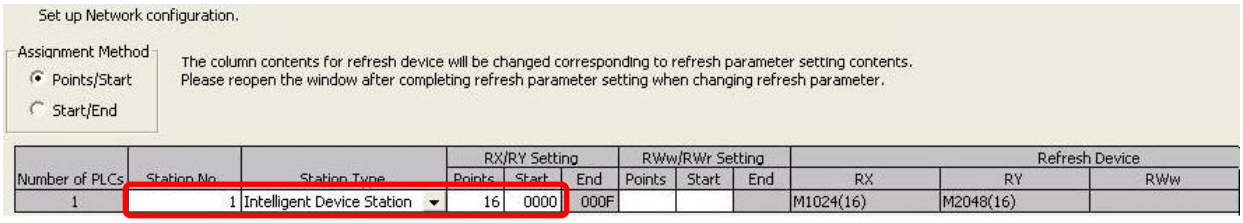
1) Enter the network parameters for the second module.

Item	Description
Network Type	Select CC IE Field (Master Station).
Start I/O No.	Set the start I/O number of the master/local module in increments of 16 points. Set "0020".
Network No.	Set the network number of the master/local module. Set "2".
Total Stations	Set the number of slave stations connected to the master station. Include the number of reserved slave stations. Set "1".



2) Set the network configuration setting for the second module.

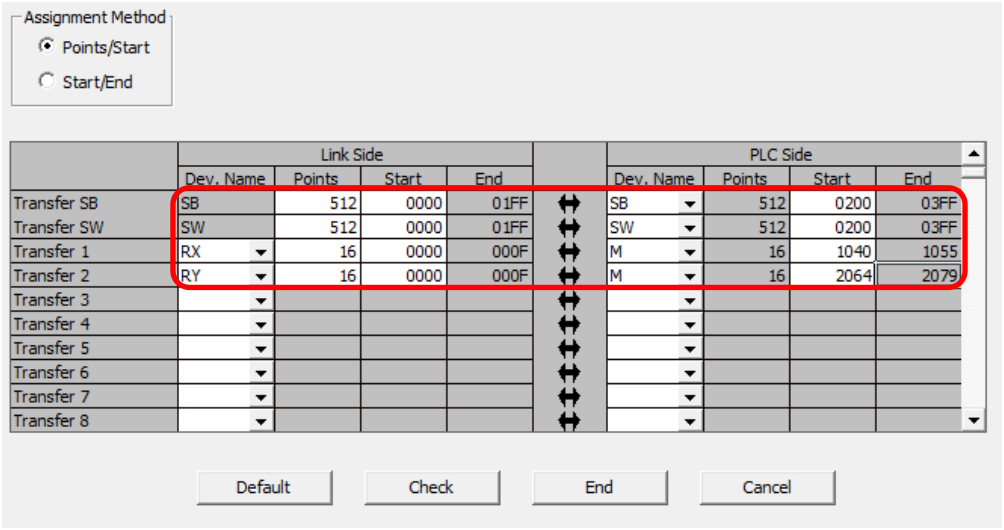
Item	Description
Station No.	Set the station number of the slave connected to the master station. Set "1".
Station Type	Set the station type of the slave connected to the master station. Set "Intelligent Device Station".
RX/RY Setting	Set assignment for RX/RY for the slave station connected to the master station. (a) Points Set "16". (b) Start Set "0000".



3) Enter the refresh parameters for the second module.

Item	Description	Setting value
Transfer SB	Set the link refresh range of SB device.	•"Link Side Points" : 512 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : SB •"PLC Side Start" : 0200
Transfer SW	Set the link refresh range of SW device.	•"Link Side Points" : 512 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : SW •"PLC Side Start" : 0200
Transfer 1	Set the link refresh range of RX device.	•"Link Side Dev. Name" : RX •"Link Side Points" : 16 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : M •"PLC Side Start" : 1040
Transfer 2	Set the link refresh range of RY device.	•"Link Side Dev. Name" : RY •"Link Side Points" : 16 •"Link Side Start" : 0000 •"PLC Side Dev. Name" : M •"PLC Side Start" : 2064

*Change the Points of the Link Side and Dev. Name and Start of the PLC Side according to your system.



Appendix 1.2. Entering Global Labels

Enter the global labels for the second module.

Specify label names for the second module. The names must be different from the label names for the first module.

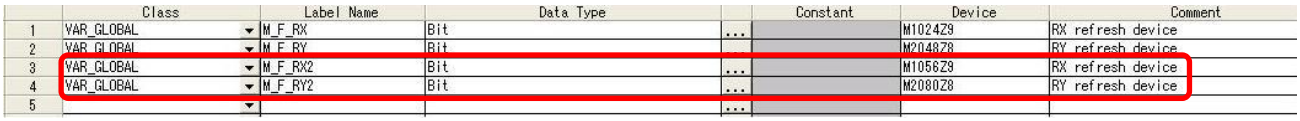
The following explains how to set the global label for the second module.

1) M_F_RX2 Set for remote input (RX).

Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_F_RX2".
Data type	Select "Bit".
Device	Enter the refresh device set for the refresh parameter with a prefix "Z9".

2) M_F_RY2 Set for remote output (RY).

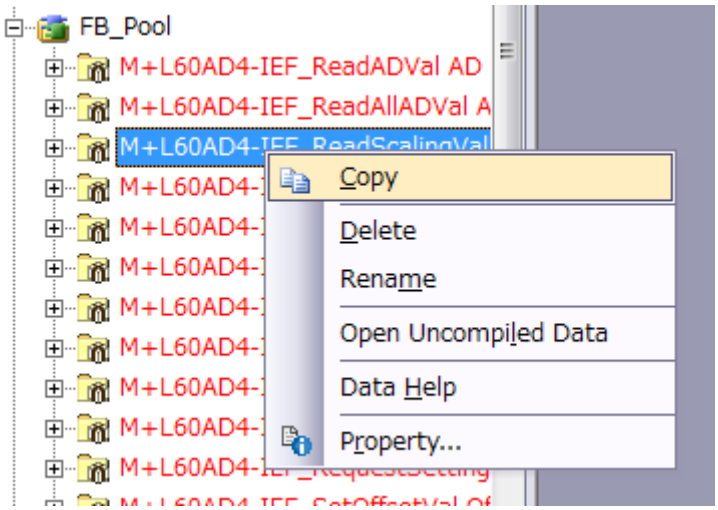
Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_F_RY2".
Data type	Select "Bit".
Device	Enter the refresh device set for the refresh parameter with a prefix "Z8".



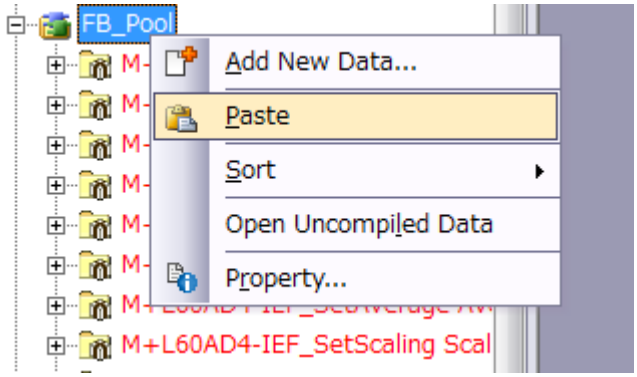
	Class	Label Name	Data Type		Constant	Device	Comment
1	VAR_GLOBAL	M_F_RX	Bit	...		M1024Z9	RX refresh device
2	VAR_GLOBAL	M_F_RY	Bit	...		M2048Z8	RY refresh device
3	VAR_GLOBAL	M_F_RX2	Bit	...		M1056Z9	RX refresh device
4	VAR_GLOBAL	M_F_RY2	Bit	...		M2080Z8	RY refresh device
5				...			

Appendix 1.3. Copying MELSOFT Library to Create an FB for the Second Module

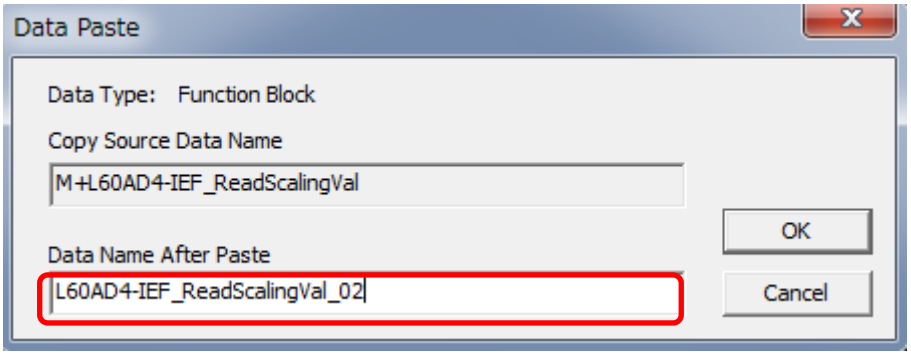
1) Select an FB necessary for the second module from the Project tab of the Navigation window. Execute the Copy command.

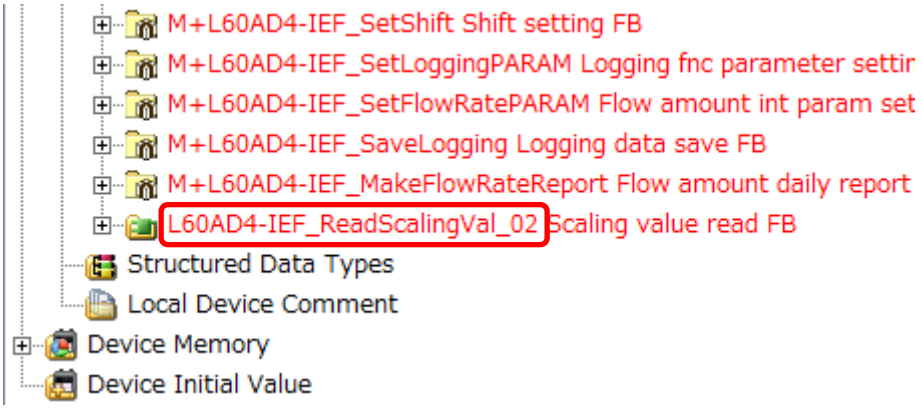


2) Paste the copied FB to "FB_Pool" on the Project tab of the Navigation window.



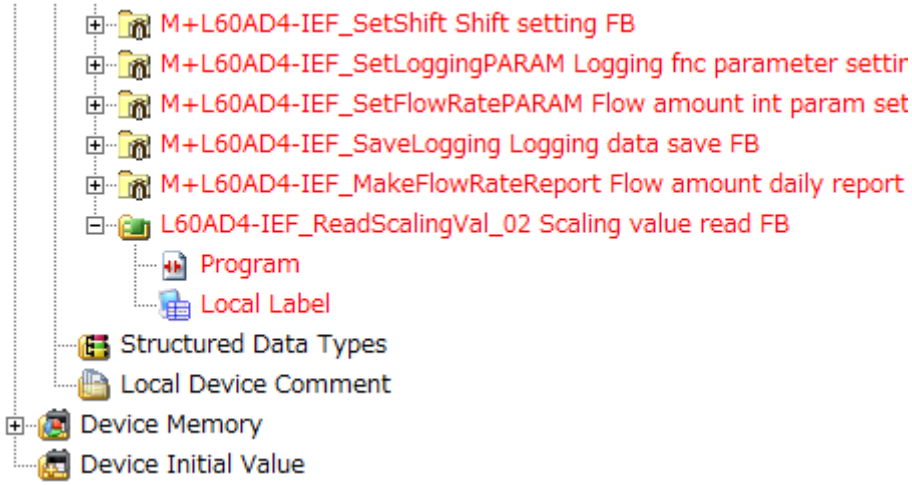
3) After selecting the paste command, a window appears to enter an FB name. Enter an FB name after paste.
(Example: L60AD4-IEF_ReadScalingVal_02)
[Note] The character string "+" of M+··· cannot be entered.



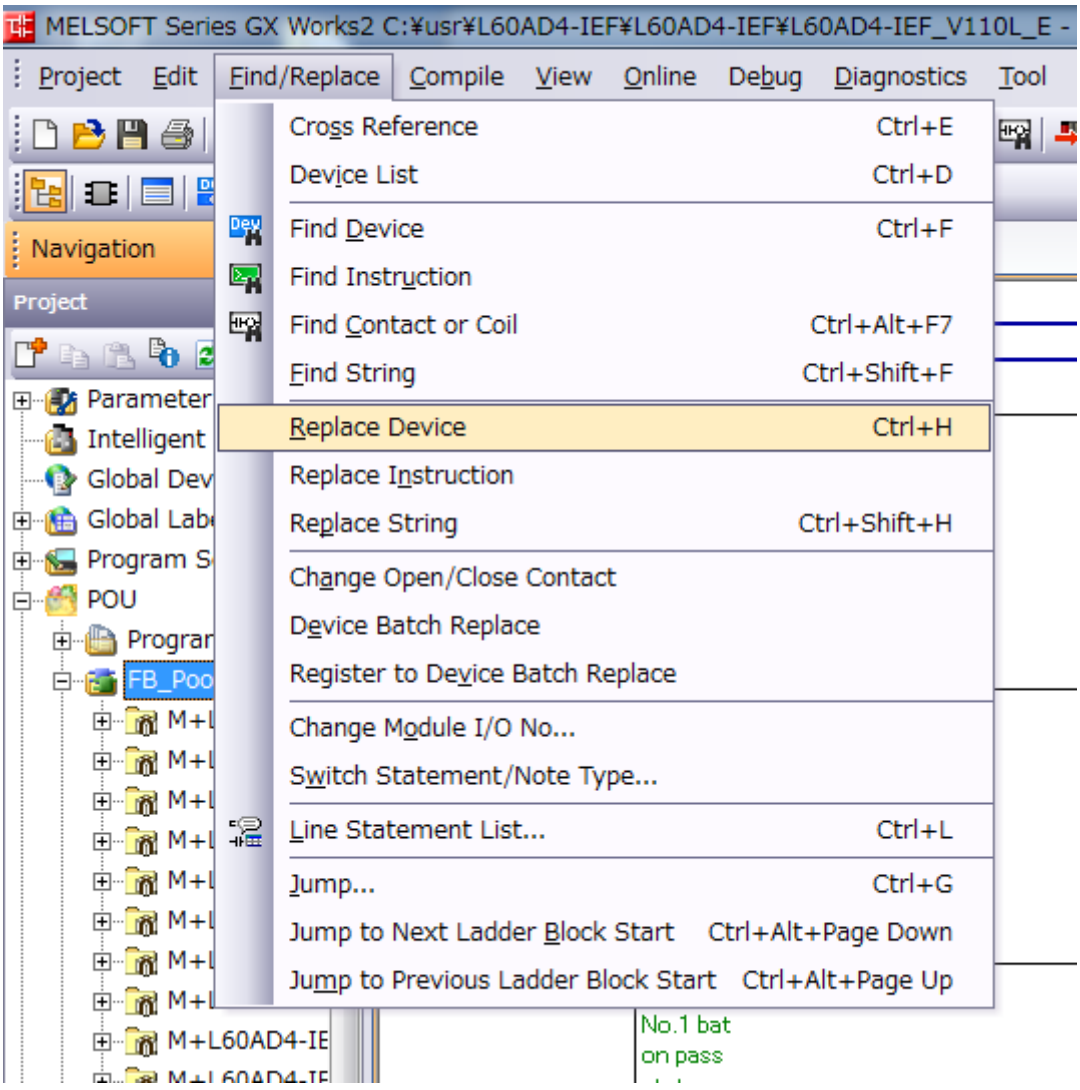


Appendix 1.4. Replacing Devices to Create the FB for the Second Module

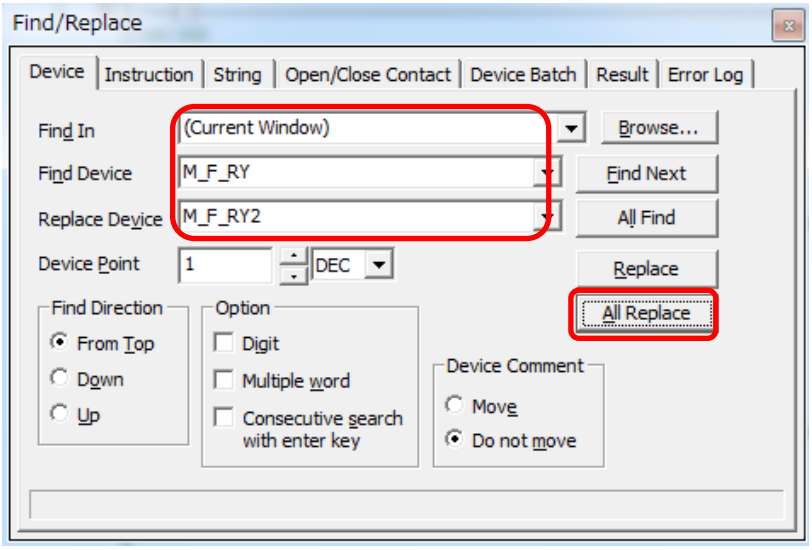
1) Open "Program" of the added FB.



2) Select "Find/Replace" menu and then select "Replace Device". "Find/Replace" window appears.



3) Select "Current Window" from Find In, "M_F_RY" from Find Device, and "M_F_RY2" from Replace Device. Then replace all devices. In the same way, replace "M_F_RX" with "M_F_RX2" all at once.



By performing the steps above, the CC-Link IE field master/local module FB can be used for the second module.

[Point]

1) To use multiple FBs for the second CC-Link IE field master/local module, repeat the step (4).
2) To use an FB for third or subsequent CC-Link master/local modules, make sure that the "Global label name", "Data Name After Paste" that is set when pasting FB data and "Replace Device" that is set when replacing devices are not duplicated for the first and second modules.

[Note]

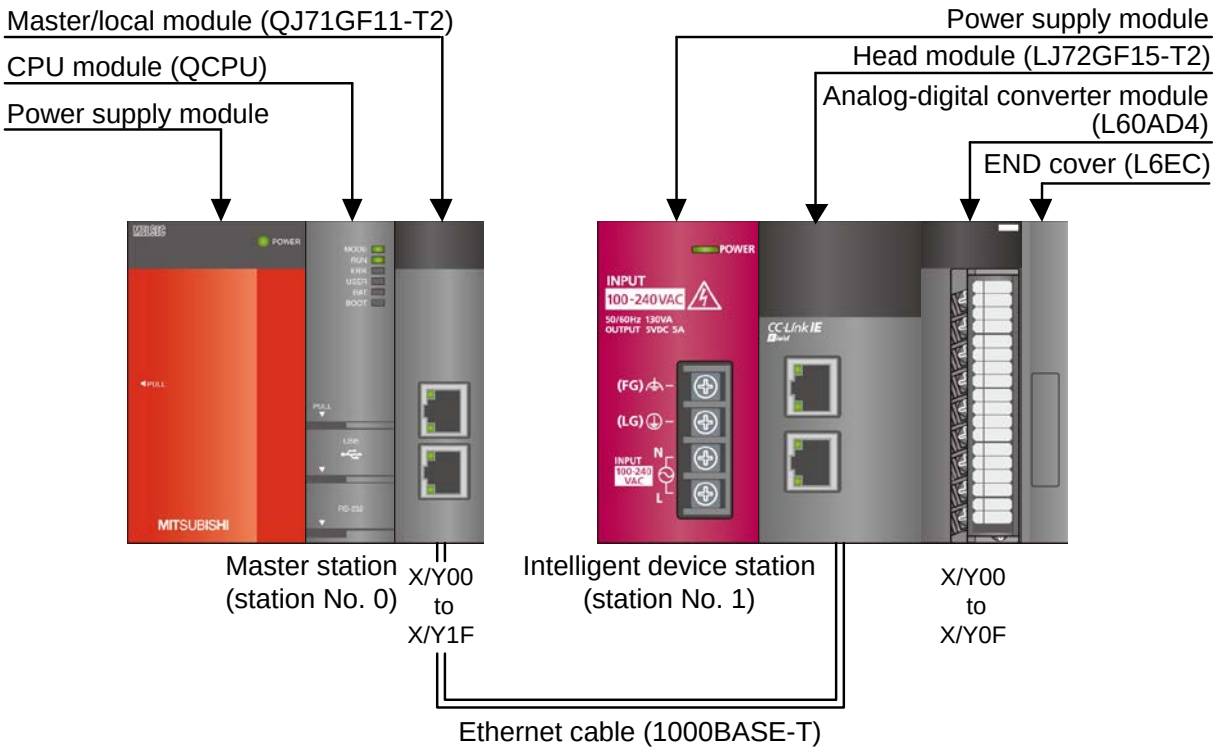
If MELSOFT Library is upgraded, MELSOFT Library FBs can be upgraded by importing them again. However, the FBs that were created by following these procedures for the second and subsequent modules are not upgraded even if the FBs are imported again.

Therefore, to upgrade FBs that were created by following these procedures, after upgrading MELSOFT Library, follow these procedures again.

Appendix 2. FB Library Application Examples

L60AD4 FB application examples are as follows.

1) System configuration



Reminder

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

2) Device list

a) External input (Command)

Device	FB name	Application (ON details)
M0	M+L60AD4-IEF_ReadADVal	AD conversion value read request
M10	M+L60AD4-IEF_ReadAllADVal	All AD conversion values read request
M20	M+L60AD4-IEF_ReadScalingVal	Scaling value read request
M30	M+L60AD4-IEF_ReadAllScalingVal	Scaling value read request
M40	M+L60AD4-IEF_SetConvertSpeed	Conversion speed setting request
M50	M+L60AD4-IEF_SetADConversion	AD conversion enable/disable setting request
M51		AD conversion enable/disable setting
M60	M+L60AD4-IEF_SetAverage	Averaging process setting request
M70	M+L60AD4-IEF_SetScaling	Scaling value setting request
M71		Scaling value enable/disable (ON/OFF)
M80	M+L60AD4-IEF_SetProcessAlarm	Process alarm value setting request
M81		Process alarm value enable/disable (ON/OFF)
M90	M+L60AD4-IEF_SetInputSignalErr	Input signal error detection setting request
M91		Input signal error detection enable/disable (ON/OFF)
M100	M+L60AD4-IEF_RequestSetting	Operating condition setting request
M110	M+L60AD4-IEF_SetOffsetVal	Offset setting request
M111		Offset value write request
M120	M+L60AD4-IEF_SetGainVal	Gain setting request
M121		Gain value write request
M130	M+L60AD4-IEF_ShiftOperation	Shift function start request
D130		Digital value
M140	M+L60AD4-IEF_DiffOperation	Difference conversion function start request
D140		Digital value
M150	M+L60AD4-IEF_ErrorOperation	Error operation request
M151		Error reset request
M160	M+L60AD4-IEF_OGBackup	Offset/gain value file save request
M170	M+L60AD4-IEF_OGRestore	Offset/gain value file restore request
M180	M+L60AD4-IEF_SetInputSignalErrEx	Input signal error detection extension setting request
M190	M+L60AD4-IEF_SetDigitalClip	Digital clipping setting request
M191		Digital clipping enable/disable setting
M203	M+L60AD4-IEF_SetShift	Shift setting request

Device	FB name	Application (ON details)
M210	M+L60AD4-IEF_SetLoggingPARAM	Logging function parameter setting request
M211		Logging enable/disable setting request
M220	M+L60AD4-IEF_SetFlowRatePARAM	Flow amount integration function parameter setting request
M221		Flow amount integration function parameter enable/disable setting
M230	M+L60AD4-IEF_SaveLogging	Logging data save request
M231		Logging file overwrite enable/disable setting
M240	M+L60AD4-IEF_MakeFlowRateReport	Flow amount daily report creation request

b) External output (checks)

Device	FB name	Application (ON details)
M1	M+L60AD4-IEF_ReadADVal	AD conversion value read FB ready
M2		AD conversion value read complete
F0		AD conversion value read FB error
D0		AD conversion data
D1		AD conversion value read FB error code
M11	M+L60AD4-IEF_ReadAllADVal	All AD conversion values read FB ready
M12		All AD conversion values read complete
D10		CH1 AD conversion data
D11		CH2 AD conversion data
D12		CH3 AD conversion data
D13		CH4 AD conversion data
F5		All AD conversion values read FB error
D14		All AD conversion values read FB error code
M21	M+L60AD4-IEF_ReadScalingVal	Scaling value read FB ready
M22		Scaling value read complete
D20		Scaling value
F10		Scaling value read FB error
D21		Scaling value read FB error code
M31	M+L60AD4-IEF_ReadAllScalingVal	Scaling value read FB ready
M32		Scaling value read complete
D30		CH1 Scaling value
D31		CH2 Scaling value
D32		CH3 Scaling value

Device	FB name	Application (ON details)
D33	M+L60AD4-IEF_ReadAllScalingVal	CH4 Scaling value
F15		Scaling value read FB error
D34		Scaling value read FB error code
M41	M+L60AD4-IEF_SetConvertSpeed	Conversion speed setting FB ready
M42		Conversion speed setting complete
F20		Conversion speed setting FB error
D40		Conversion speed setting FB error code
M52	M+L60AD4-IEF_SetADConversion	AD conversion enable/disable setting FB ready
M53		AD conversion enable/disable setting complete
F25		AD conversion enable/disable setting FB error
D50		AD conversion enable/disable setting FB error code
M61	M+L60AD4-IEF_SetAverage	Averaging process setting FB ready
M62		Averaging process setting complete
F30		Averaging process setting FB error
D60		Averaging process setting FB error code
M72	M+L60AD4-IEF_SetScaling	Scaling value setting FB ready
M73		Scaling value setting complete
F35		Scaling setting FB error
D70		Scaling setting FB error code
M82	M+L60AD4-IEF_SetProcessAlarm	Process alarm value setting FB ready
M83		Process alarm value setting complete
F40		Process alarm setting FB error
D80		Process alarm setting FB error code
M92	M+L60AD4-IEF_SetInputSignalErr	Input signal error detection setting FB ready
M93		Input signal error detection setting complete
F45		Input signal error detection setting FB error
D90		Input signal error detection setting FB error code
M101	M+L60AD4-IEF_RequestSetting	Operating condition setting request FB ready
M102		Operating condition setting request complete
F50		Operating condition setting request FB error
D100		Operating condition setting request FB error code
M112	M+L60AD4-IEF_SetOffsetVal	Offset setting FB ready
M113		Offset setting complete
F55		Offset setting FB error
D110		Offset setting FB error code

Device	FB name	Application (ON details)
M122	M+L60AD4-IEF_SetGainVal	Gain setting FB ready
M123		Gain setting complete
F60		Gain setting FB error
D120		Gain setting FB error code
M131	M+L60AD4-IEF_ShiftOperation	Shift function start FB ready
M132		Shift function operation complete
D131		Shift conversion value
M141	M+L60AD4-IEF_DiffOperation	Difference conversion function FB ready
M142		Difference conversion function operation complete
D141		Difference conversion value
D142		Difference conversion reference value
M152	M+L60AD4-IEF_ErrorOperation	Error operation ready
M153		Error operation complete
M154		Module error flag
D150		Module error code
F65		Error operation FB error
D151		Error operation FB error code
M161	M+L60AD4-IEF_OGBackup	Offset/gain value file save ready
M162		Offset/gain value file save complete
F70		Offset/gain value file save FB error
D160		Offset/gain value file save FB error code
M171	M+L60AD4-IEF_OGRestore	Offset/gain value file restore ready
M172		Offset/gain value file restore complete
F75		Offset/gain value file restore FB error
D170		Offset/gain value file restore FB error code
M181	M+L60AD4-IEF_SetInputSignalErrEx	Input signal error detection extension setting ready
M182		Input signal error detection extension setting complete
F80		Input signal error detection extension FB error
D180		Input signal error detection extension FB error code
M192	M+L60AD4-IEF_SetDigitalClip	Digital clipping setting ready
M193		Digital clipping setting complete
F85		Digital clipping setting FB error
D190		Digital clipping setting FB error code

Device	FB name	Application (ON details)
M201	M+L60AD4-IEF_SetShift	Shift setting ready
M202		Shift setting complete
F90		Shift setting FB error
D200		Shift setting FB error code
M212	M+L60AD4-IEF_SetLoggingPARAM	Logging function parameter setting ready
M213		Logging function parameter setting complete
F95		Logging function parameter setting FB error
D210		Logging function parameter setting FB error code
M222	M+L60AD4-IEF_SetFlowRatePARAM	Flow amount integration function parameter setting ready
M223		Flow amount integration function parameter setting complete
F100		Flow amount integration function parameter FB error
D220		Flow amount integration parameter setting FB error code
M232	M+L60AD4-IEF_SaveLogging	Logging data save ready
M233		Logging data save complete
M234		Logging data saving
M235		Maximum No. of logging files reached
F105		Logging data save FB error
D230		Logging data save FB error code
M241	M+L60AD4-IEF_MakeFlowRateReport	Flow amount daily report creation ready
M242		Flow amount daily report creation complete
M243		Flow amount daily report creating
F110		Flow amount daily report creation FB error
D240		Flow amount daily report creation FB error code
T10	Interlock check	Own station baton pass error check
T11		Own station data link error check
T12		Station No.1 baton pass error check
T13		Station No.1 cyclic transmission error check
M200		Communication condition match flag (station No.1)

3) Global label settings

a) Common settings

Class	Label name	Data type	Device
VAR_GLOBAL	M_F_RX	Bit	M1024Z9
VAR_GLOBAL	M_F_RY	Bit	M2048Z8

4) Application example settings

a) Common settings

Item	Value	Description
Module start XY address	0	Specify the starting XY address where the CC-Link IE field system master/local module is mounted.

b) Network parameters

Item	Setting value
Network Type	CC IE Field (Master Station)
Start I/O No.	0000
Network No.	1
Total Stations	1
Mode	Online (Normal Mode)

c) Network configuration setting

Item		Setting value
Station No.		1
Station Type		Intelligent Device Station
RX/RY setting	Points	16
	Start	0000

d) Refresh Parameters

Item	Link Side			PLC Side	
	Dev. Name	Points	Start	Dev. Name	Start
Transfer SB	SB	512	0000	SB	0000
Transfer SW	SW	512	0000	SW	0000
Transfer 1	RX	16	0000	M	1024
Transfer 2	RY	16	0000	M	2048

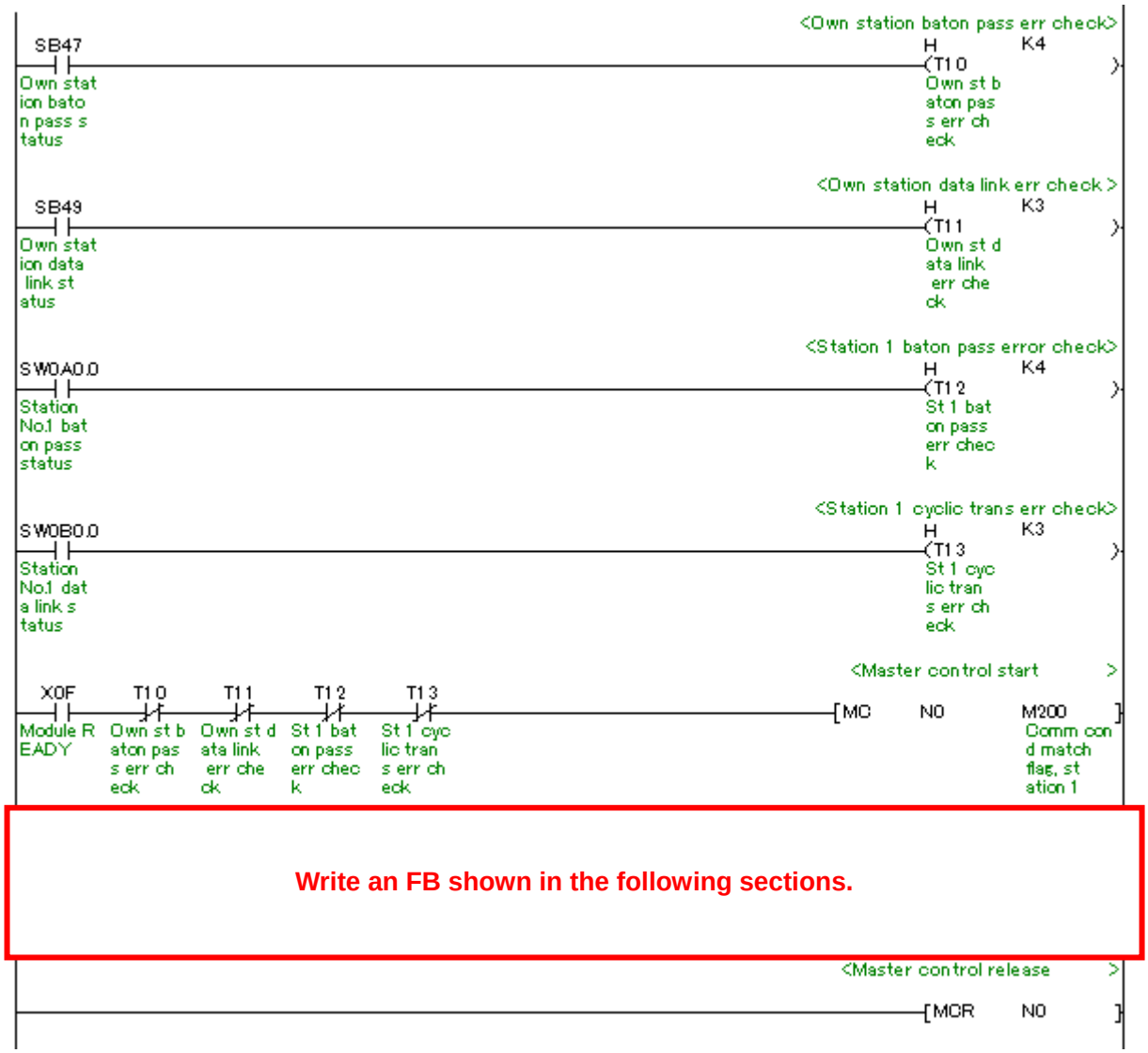
e) Slave Station Information

Item	Setting value
Mode	Online
Network No.	1
Station No.	1

5) Programs

Interlock program

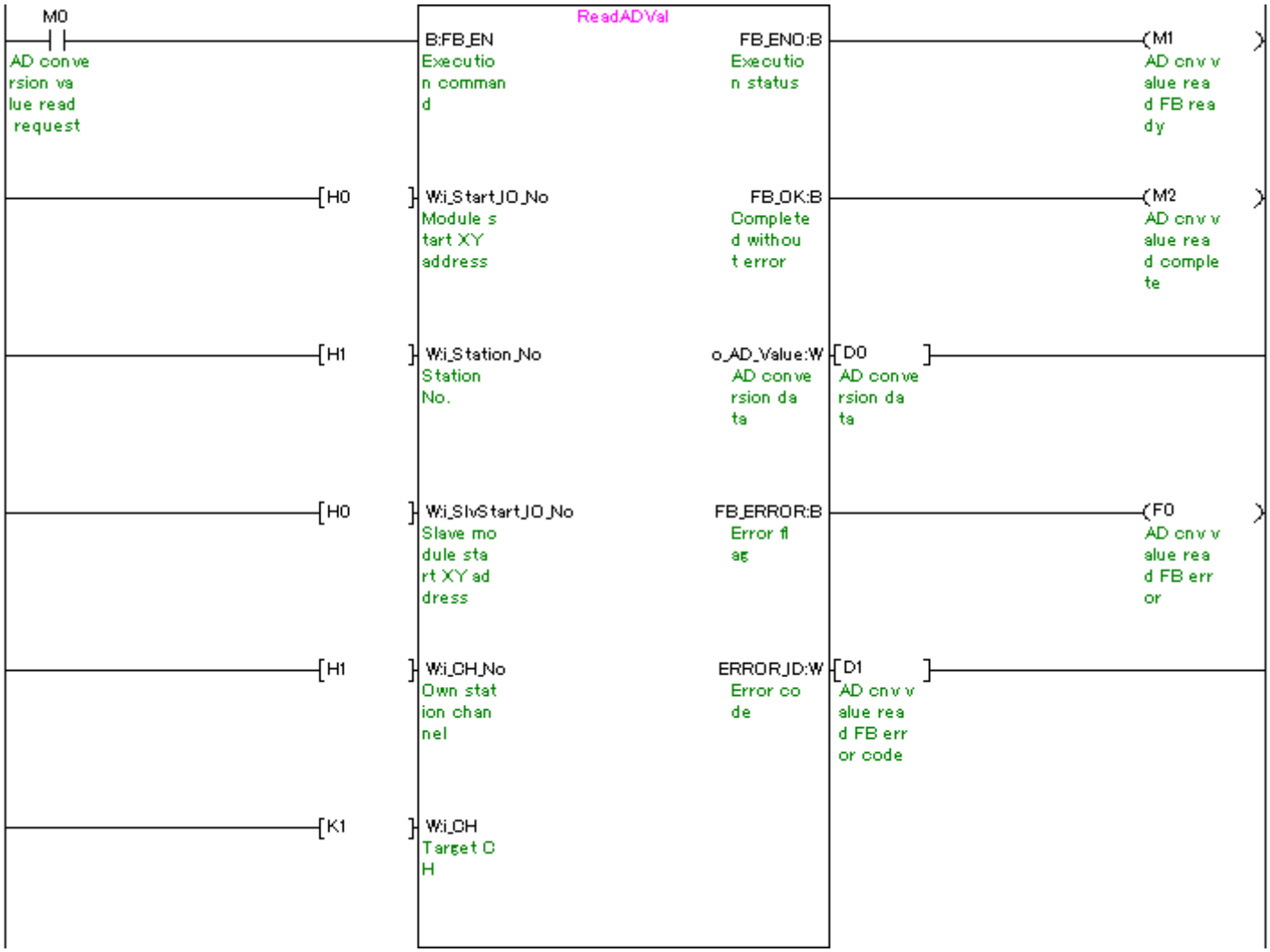
*This is the interlock program for when using both cyclic and transient transmission.



M+L60AD4-IEF_ReadADVal (Read AD conversion data)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K1	Set the target channel to channel 1.

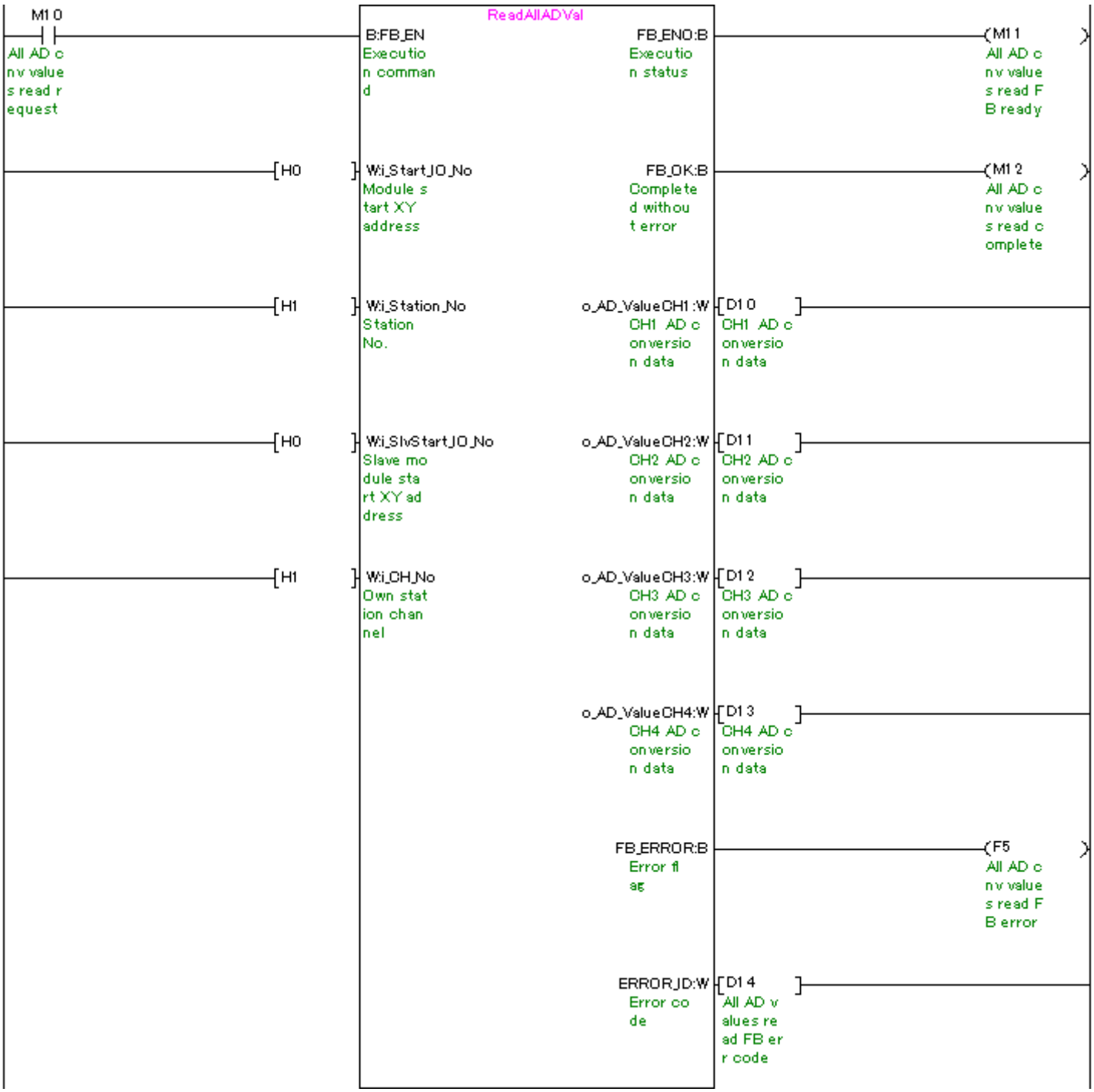
By turning ON M0, the AD conversion data of channel 1 is read.



M+L60AD4-IEF_ReadAllADVal (Read all AD conversion data)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.

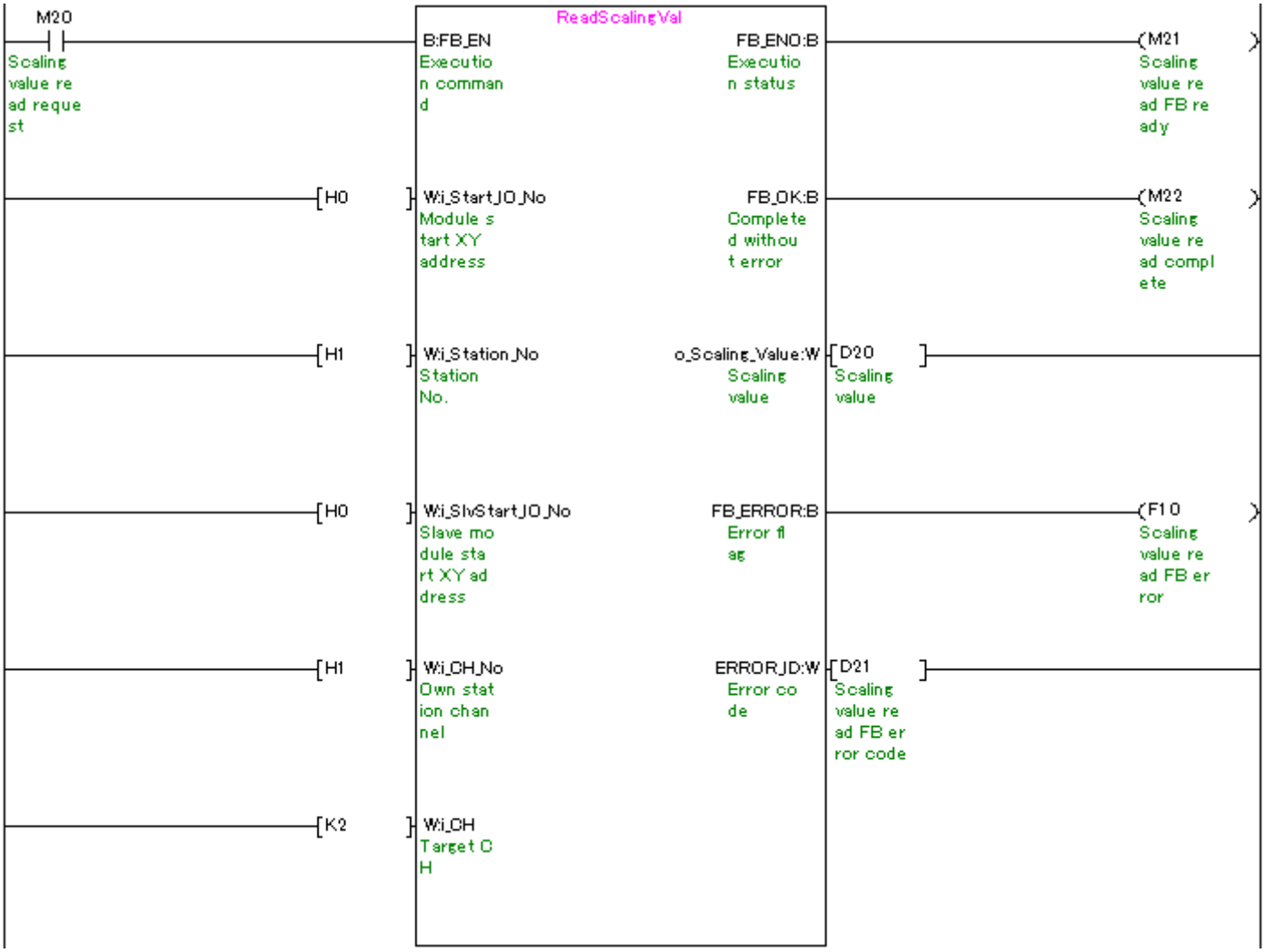
By turning ON M10, AD conversion data of all channels are read.



M+L60AD4-IEF_ReadScalingVal (Read scaling value)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K2	Set the target channel to channel 2.

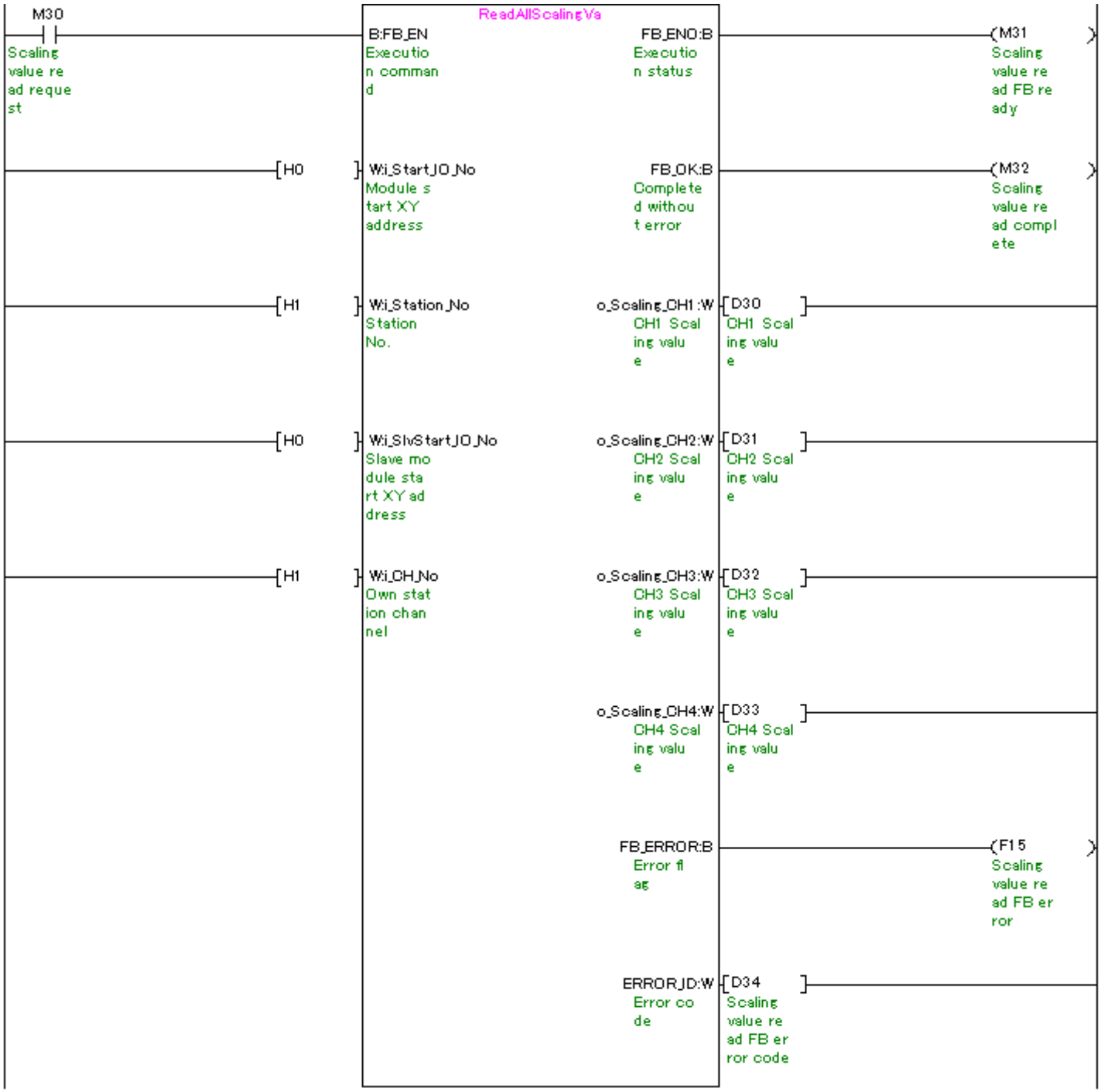
By turning ON M20, the scaling value (digital operation value) of channel 2 is read.



M+L60AD4-IEF_ReadAllScalingVal (Read all scaling values)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.

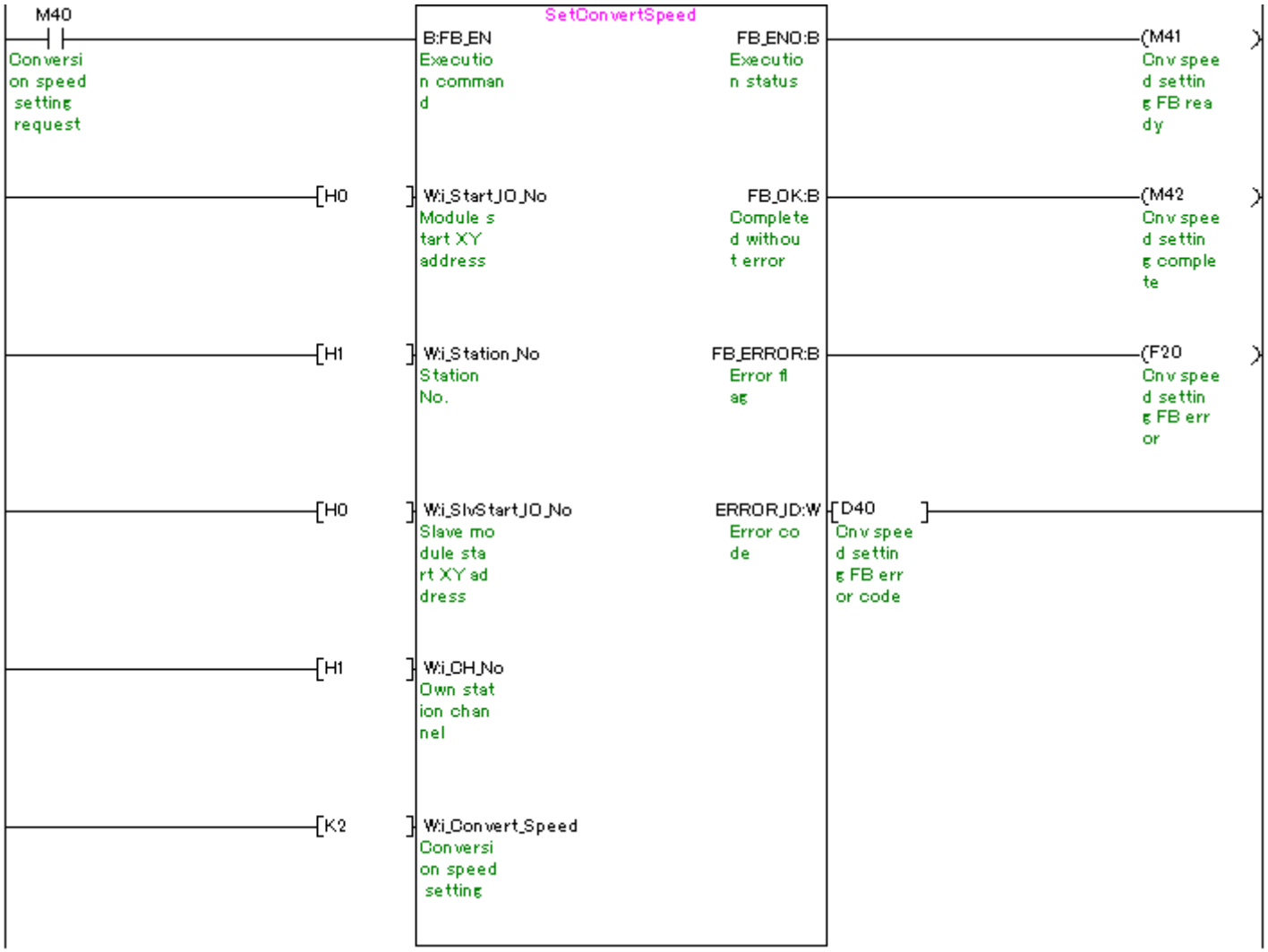
By turning ON M30, the scaling values (digital operation values) of all channels are read.



M+L60AD4-IEF_SetConvertSpeed (Conversion speed setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_Convert_Speed	K2	Set the conversion speed of all channels to 1 ms.

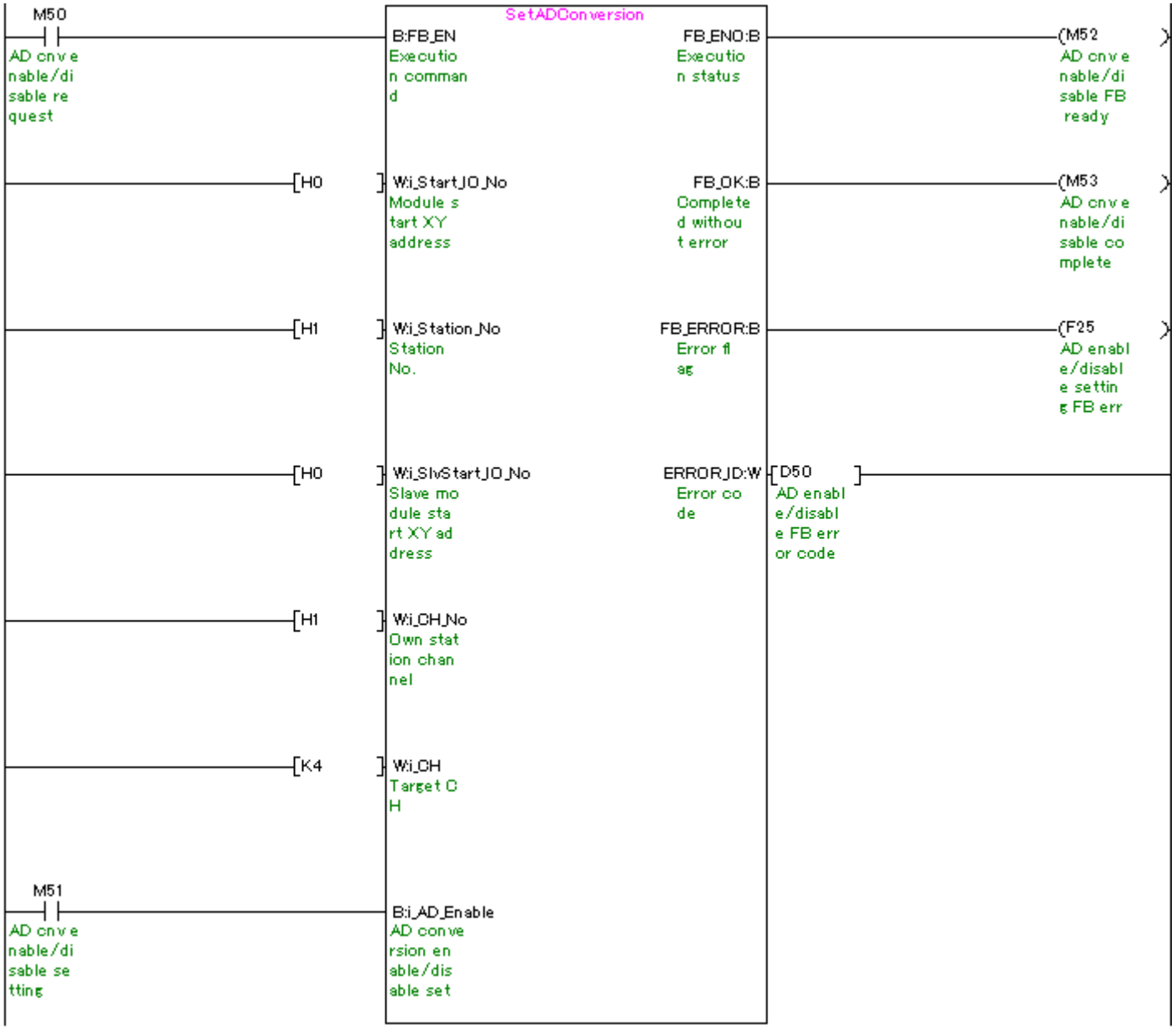
By turning ON M40, the conversion speed setting value is written to the buffer memory.



M+L60AD4-IEF_SetADConversion (Enable/disable AD conversion)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K4	Set the target channel to channel 4.
i_AD_Enable	ON/OFF	Turn ON to enable the AD conversion of the target channel.

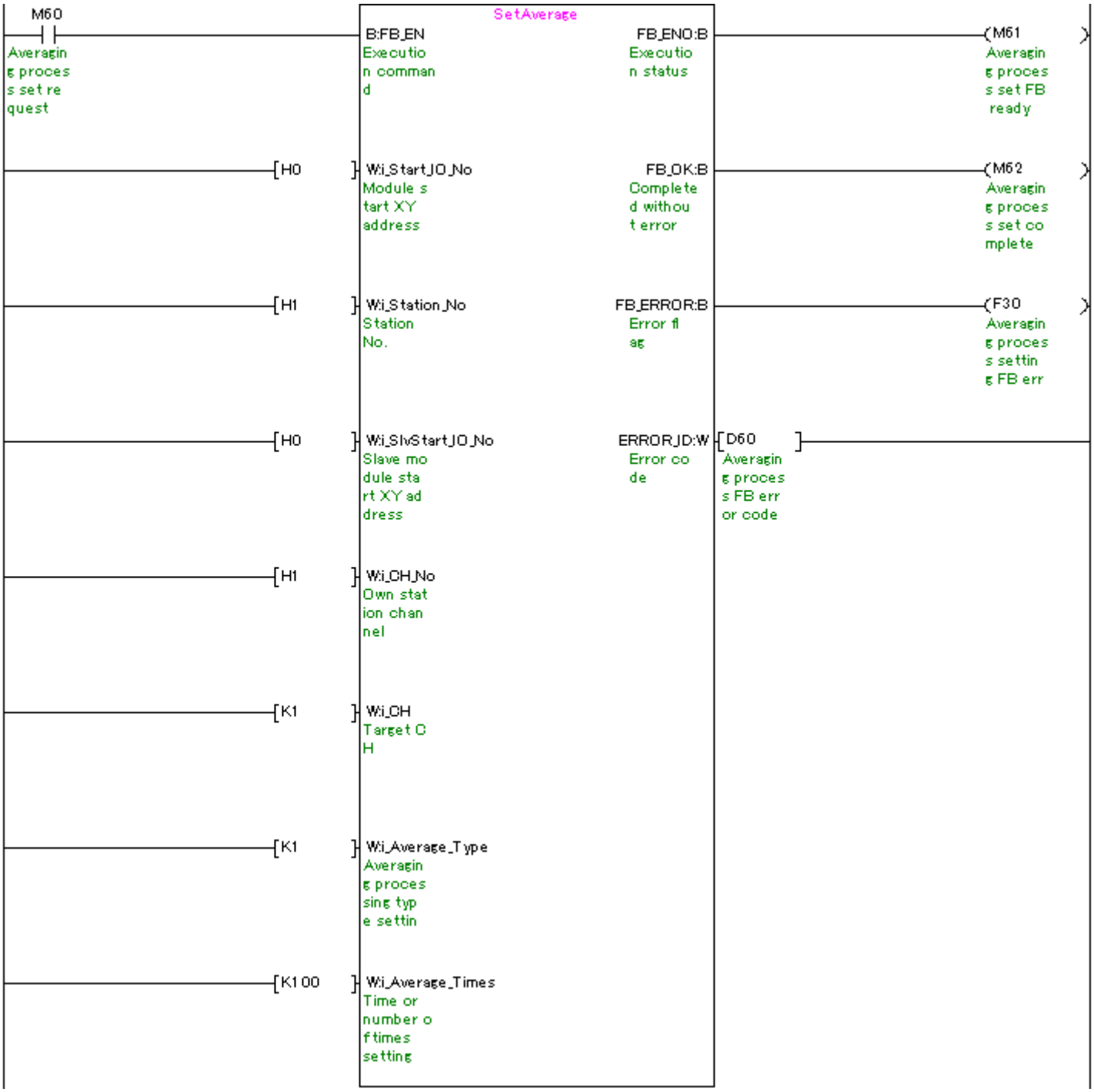
By turning ON M50, the conversion setting value of channel 4 is written to the buffer memory.



M+L60AD4-IEF_SetAverage (Averaging process setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K1	Set the target channel to channel 1.
i_Average_Type	K1	Set the averaging processing type to "Time average".
i_Average_Times	K100	Set the time average to 100.

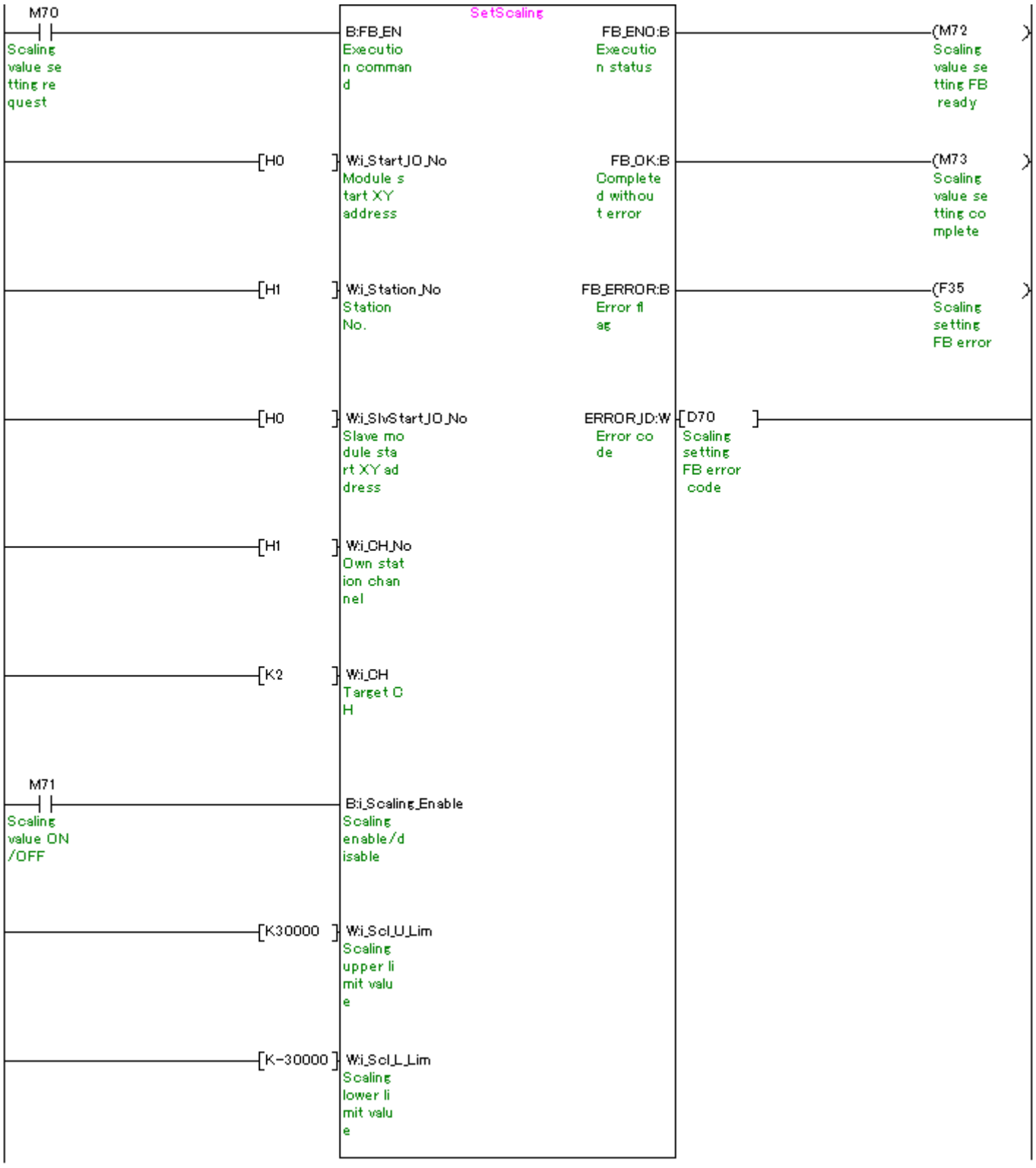
By turning ON M60, the averaging processing setting value of channel 1 is written to the buffer memory.



M+L60AD4-IEF_SetScaling (Scaling setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K2	Set the target channel to channel 2.
i_Scaling_Enable	ON/OFF	Turn ON to enable the scaling.
i_Scl_U_Lim	K30000	Set the scaling upper limit value to 30,000.
i_Scl_L_Lim	K-30000	Set the scaling lower limit value to -30,000.

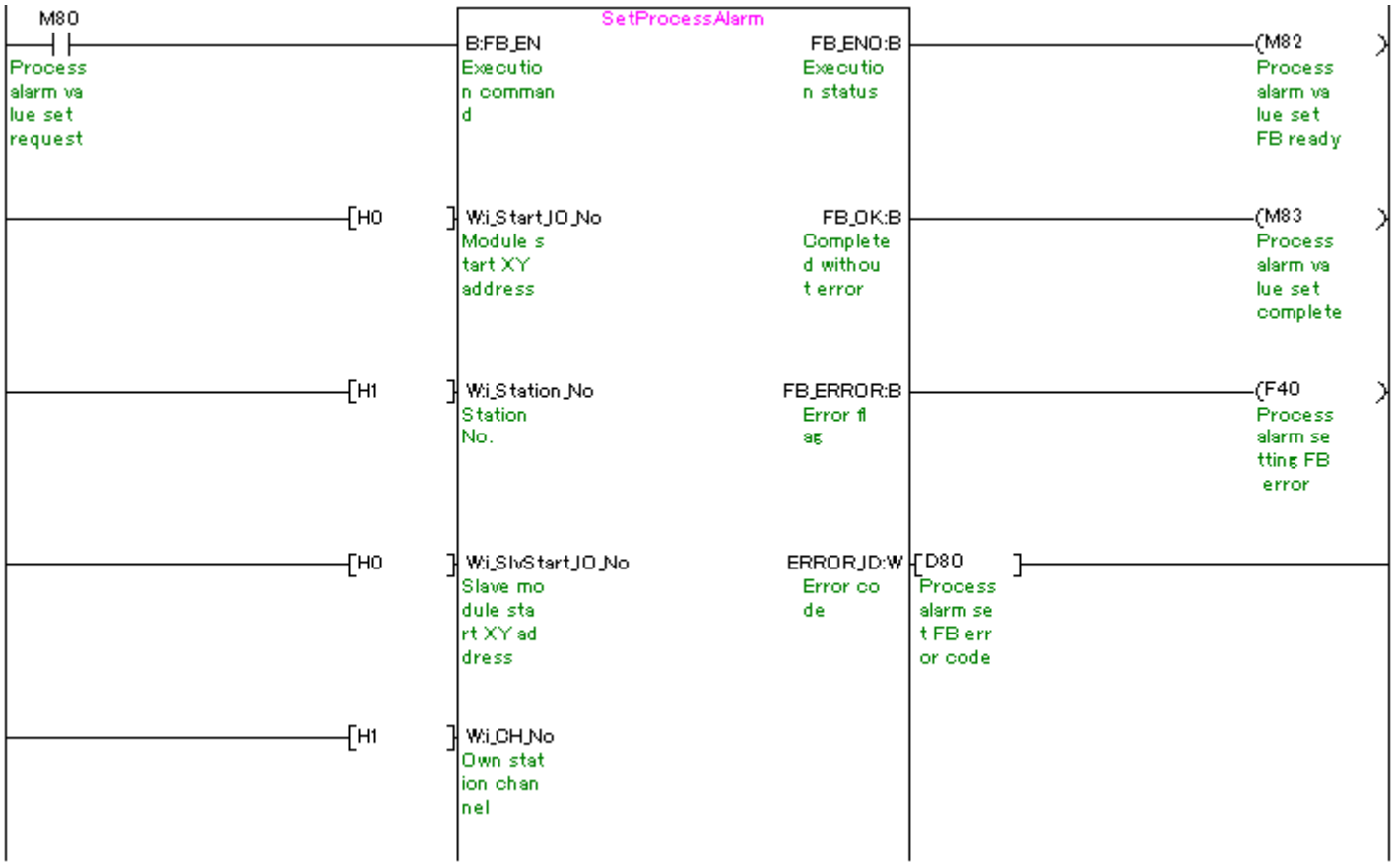
By turning ON M70, the scaling setting value of channel 2 is written to the buffer memory.


M70
Scaling value setting request
SetScaling
B:FB_EN
Execution command
FB_ENO:B
Execution status
(M72
Scaling value setting FB ready
H0
Wi_Start_IO_No
Module start XY address
FB_OK:B
Completed without error
(M73
Scaling value setting complete
H1
Wi_Station_No
Station No.
FB_ERROR:B
Error flag
(F35
Scaling setting FB error
H0
Wi_SlvStart_IO_No
Slave module start XY address
ERROR_ID:W
Error code
D70
Scaling setting FB error code
H1
Wi_CH_No
Own station channel
K2
Wi_CH
Target CH
M71
Scaling value ON/OFF
Bi_Scaling_Enable
Scaling enable/disable
K30000
Wi_Scl_U_Lim
Scaling upper limit value
K-30000
Wi_Scl_L_Lim
Scaling lower limit value

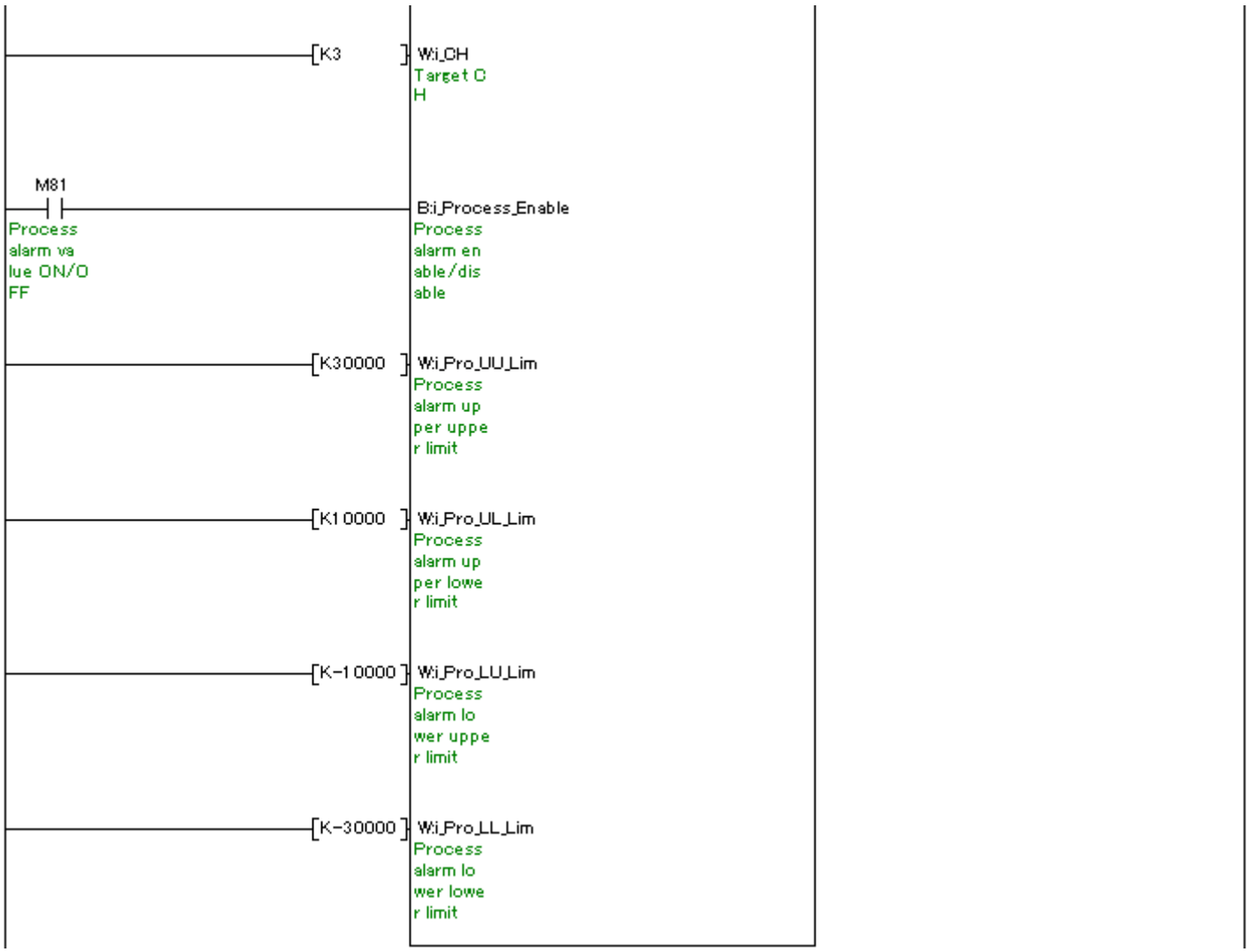
M+L60AD4-IEF_SetProcessAlarm (Process alarm setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K3	Set the target channel to channel 3.
i_Process_Enable	ON/OFF	Turn ON to enable the the process alarm warning output.
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 3 is written to the buffer memory.



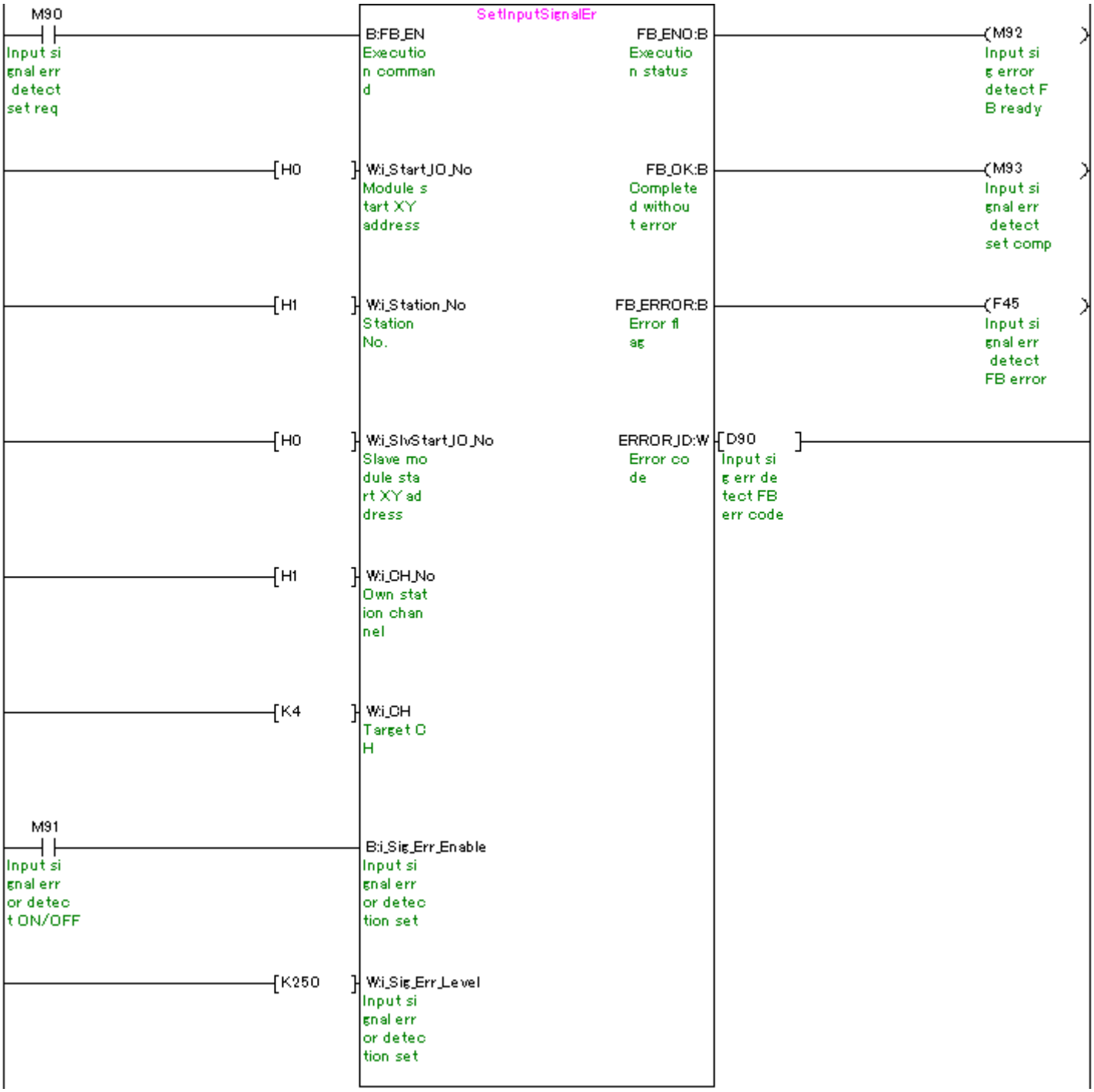
(Please refer to next page.)


K3
Wi_CH
Target C
H
M81
Process
alarm va
lue ON/O
FF
Bi:i_Process_Enable
Process
alarm en
able/dis
able
K30000
Wi_Pro_UU_Lim
Process
alarm up
per uppe
r limit
K10000
Wi_Pro_UL_Lim
Process
alarm up
per lowe
r limit
K-10000
Wi_Pro_LU_Lim
Process
alarm lo
wer uppe
r limit
K-30000
Wi_Pro_LL_Lim
Process
alarm lo
wer lowe
r limit

M+L60AD4-IEF_SetInputSignalErr (Input signal error detection setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K4	Set the target channel to channel 4.
i_Sig_Err_Enable	ON/OFF	Turn ON to enable the input signal error detection setting.
i_Sig_Err_Level	K250	Set the input signal error detection setting value to 25.0%.

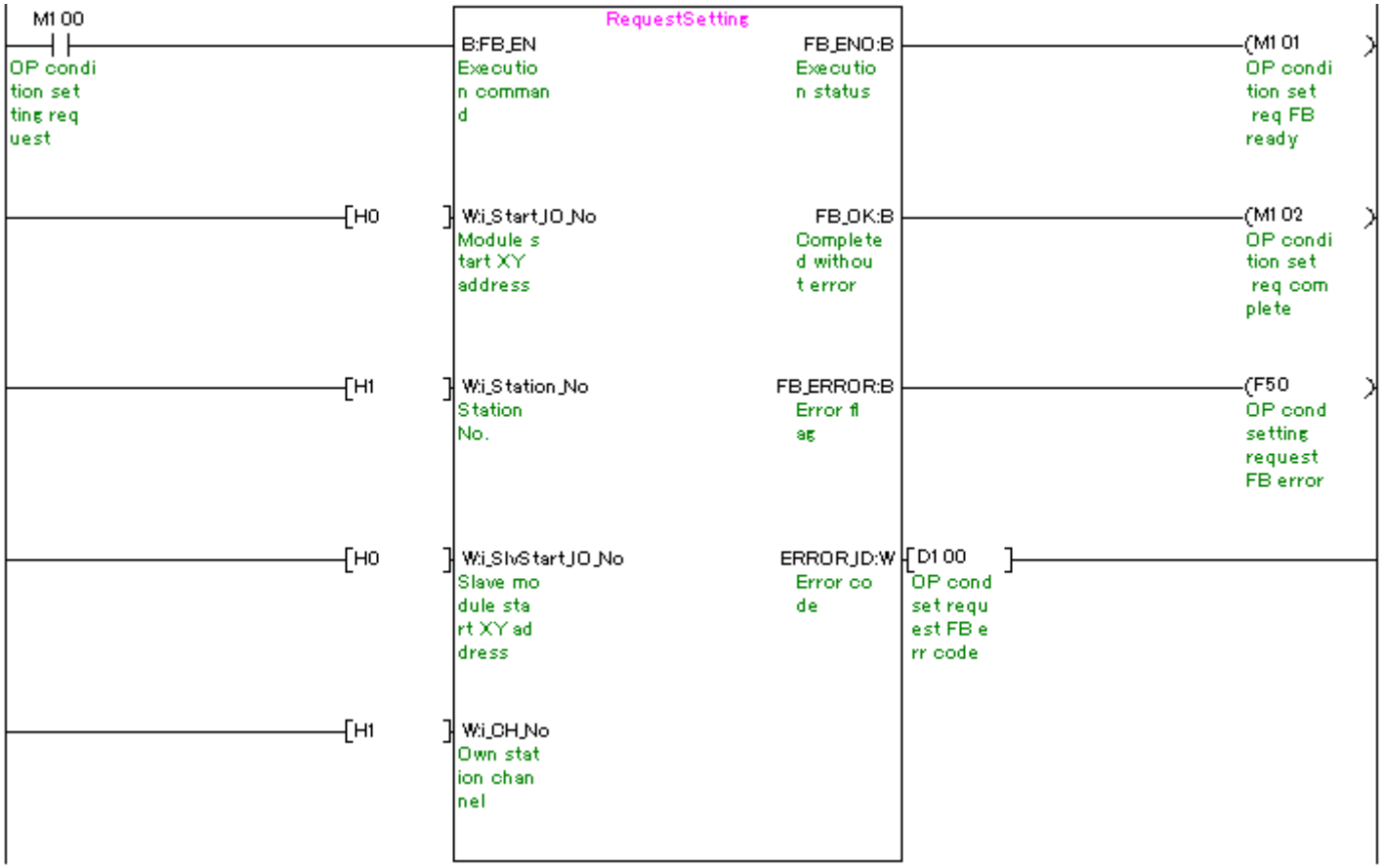
By turning ON M90, the input signal error detection setting value of channel 4 is written to the buffer memory.


M90
Input signal error detect set req
SetInputSignalEr
B:FB_EN
Execution command
FB_ENO:B
Execution status
M92
Input sig error detect FB ready
H0
Wi_Start_IO_No
Module start XY address
FB_OK:B
Completed without error
M93
Input signal error detect set comp
H1
Wi_Station_No
Station No.
FB_ERROR:B
Error flag
F45
Input signal error detect FB error
H0
Wi_SlvStart_IO_No
Slave module start XY address
ERROR_ID:W
Error code
D90
Input sig err detect FB err code
H1
Wi_CH_No
Own station channel
K4
Wi_CH
Target CH
M91
Input signal error detect ON/OFF
Bi_Sig_Err_Enable
Input signal error detection set
K250
Wi_Sig_Err_Level
Input signal error detection set

M+L60AD4-IEF_RequestSetting (Operating condition setting request)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.

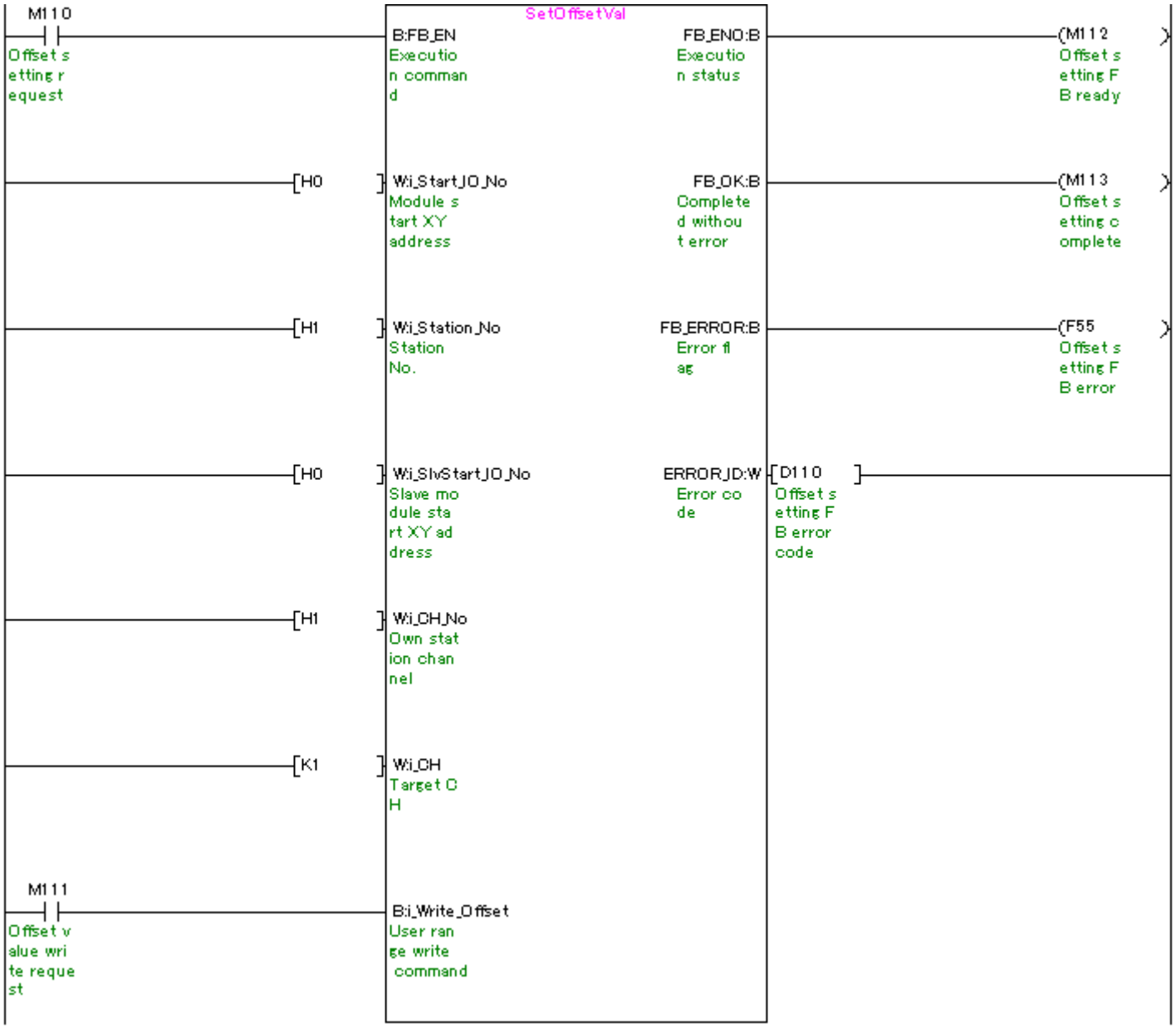
By turning ON M100, the settings of the enable/disable AD conversion, averaging processing setting, input signal error detection extension setting, digital clipping setting, input signal error detection setting, conversion speed setting, warning output setting, scaling setting, process alarm setting,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



M+L60AD4-IEF_SetOffsetVal (Offset setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K1	Set the target channel to channel 1.
i_Write_Offset	ON/OFF	Turn ON to perform the user range write operation for channel 1.

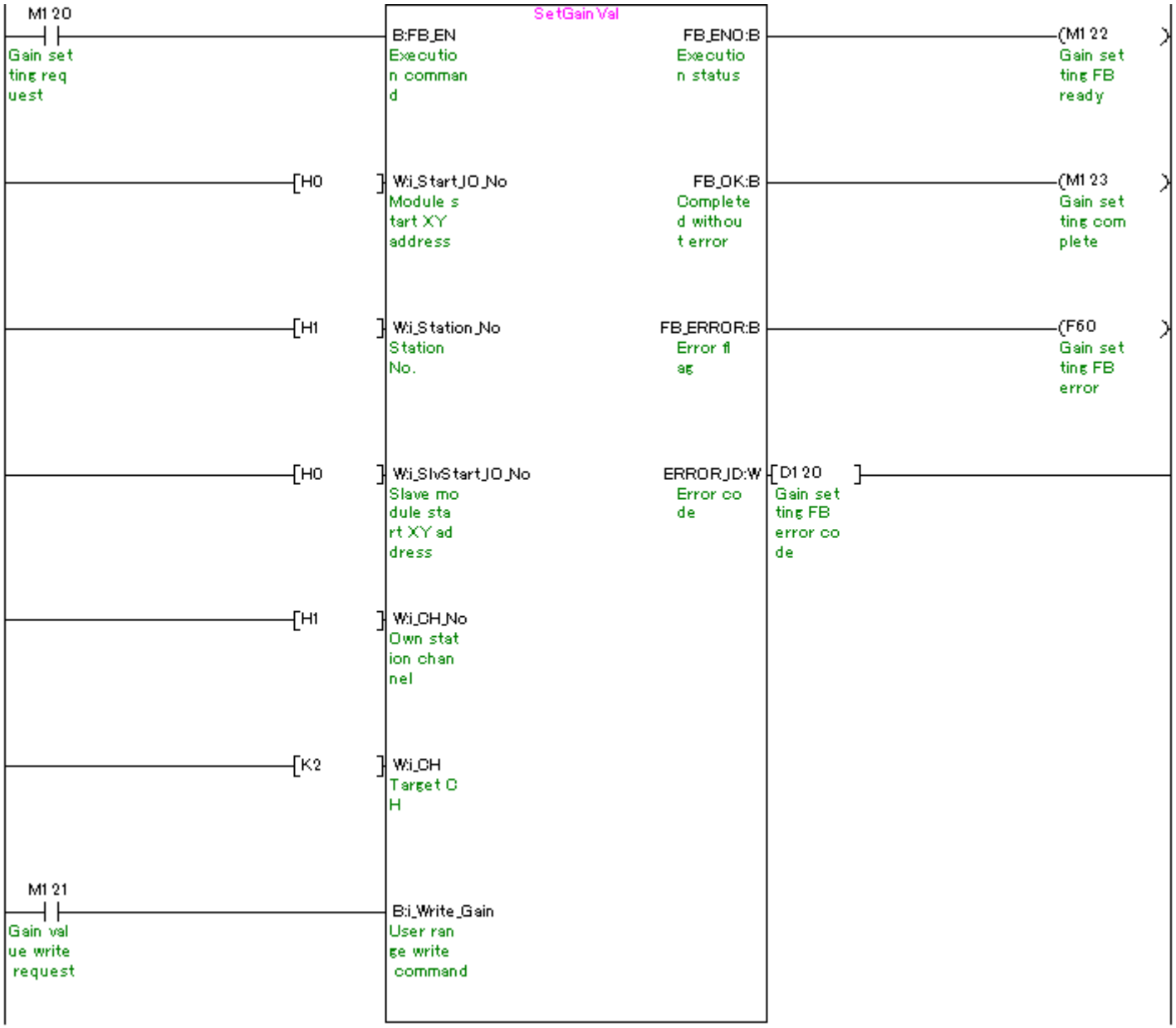
After turning ON M110, by turning ON M111, the offset value of channel 1 is written.



M+L60AD4-IEF_SetGainVal (Gain setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K2	Set the target channel to channel 2.
i_Write_Gain	ON/OFF	Turn ON to perform the user range write operation for channel 2.

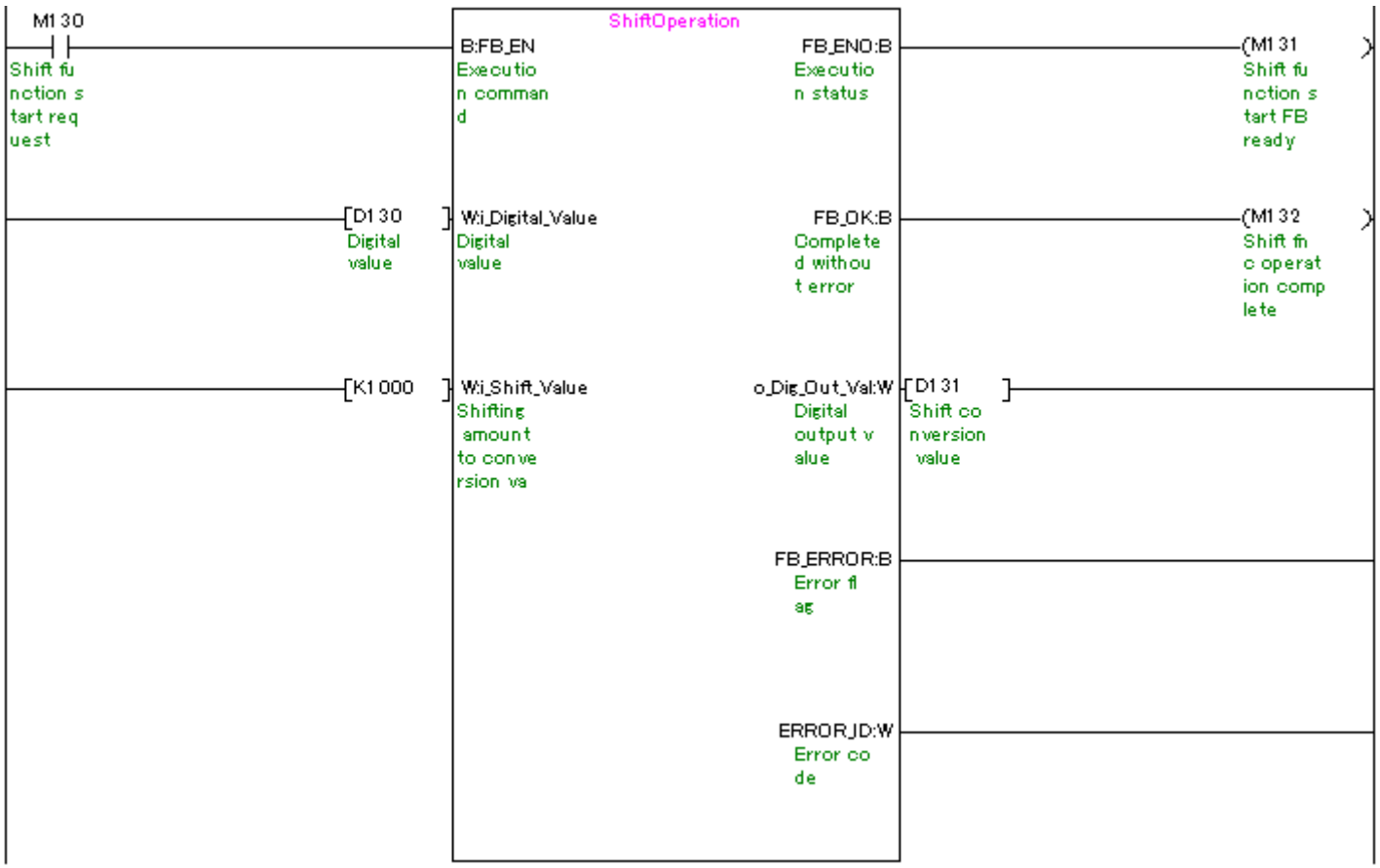
After turning ON M120, by turning ON M121, the gain value of channel 2 is written.



M+L60AD4-IEF_ShiftOperation (Shift operation)

Label name	Setting value	Description
i_Digital_Value	-	Store the digital output value to which to add the shifting amount to conversion value.
i_Shift_Value	K1000	Set the shifting amount to conversion value to 1,000.

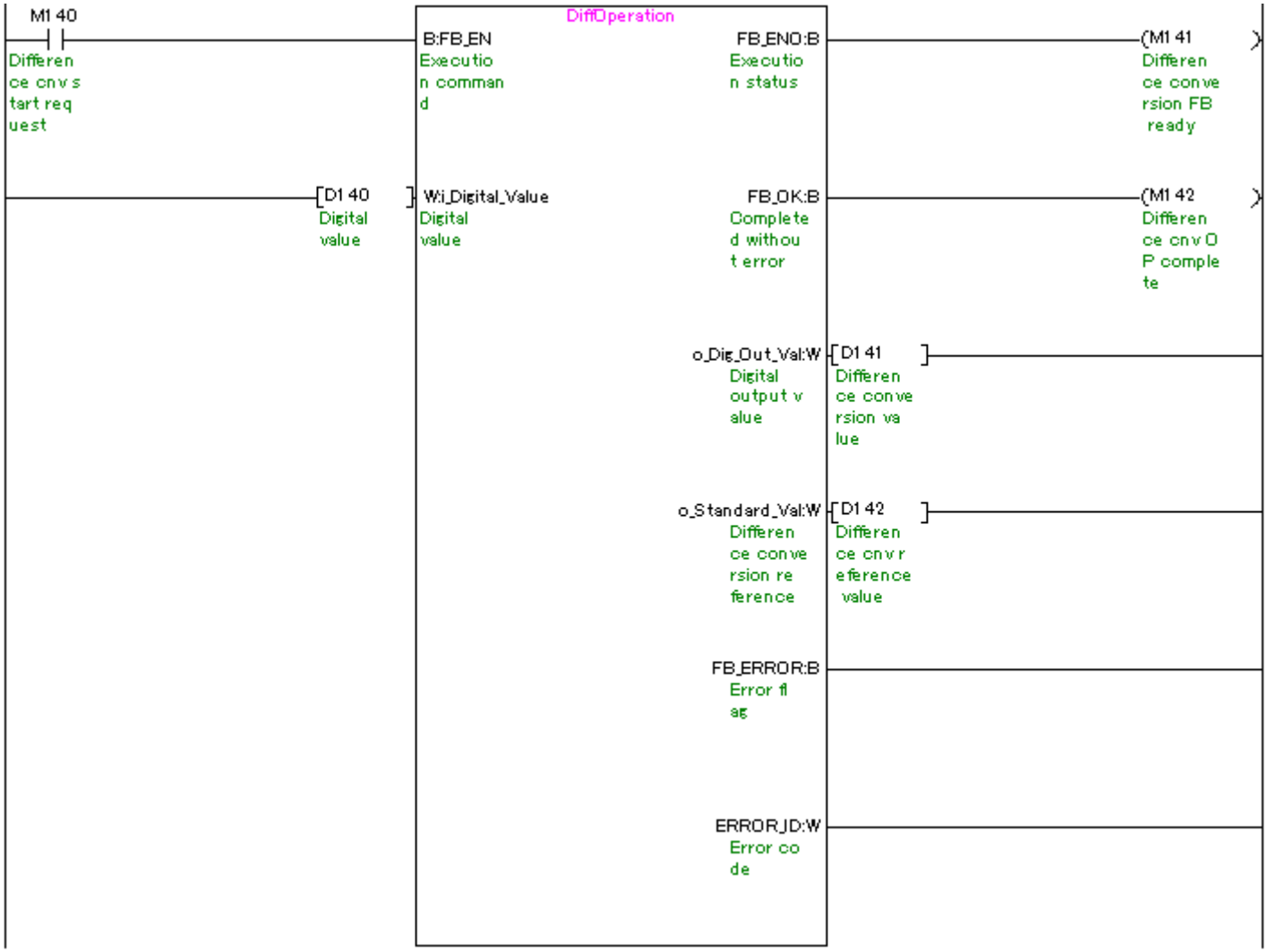
By turning ON M130, the sum obtained by adding the input digital value to the shifting amount to conversion value is output.



M+L60AD4-IEF_DiffOperation (Difference conversion process)

Label name	Setting value	Description
i_Digital_Value	-	Store the digital value for which to perform the difference conversion.

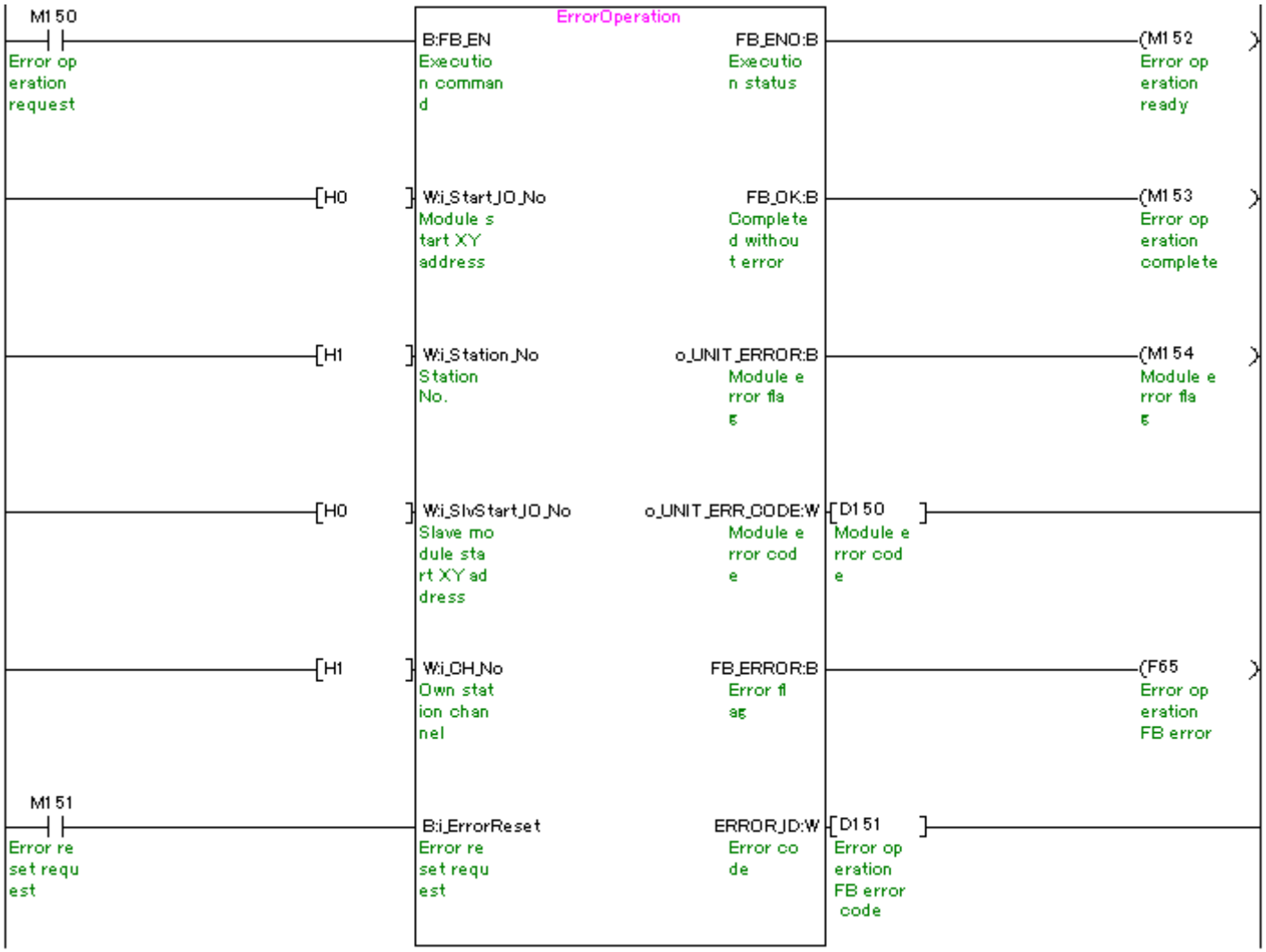
By turning ON M140, the difference obtained by subtracting the reference value from the input digital value is output.



M+L60AD4-IEF_ErrorOperation (Error operation)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_ErrorReset	ON/OFF	Turn ON to reset errors.

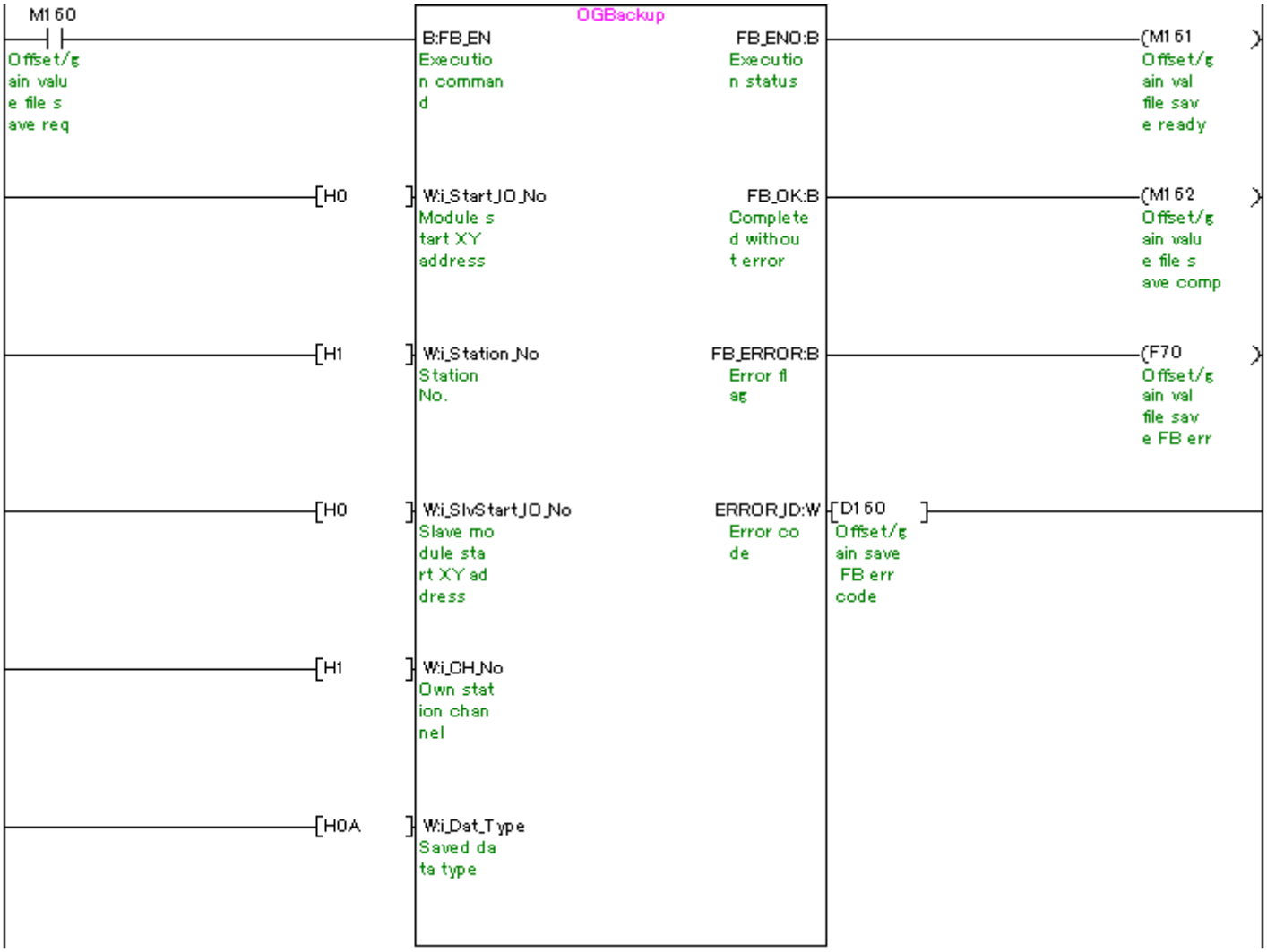
By turning ON M150, an error code is output if an error occurs. After an error output, by turning ON M151, the error is reset.



M+L60AD4-IEF_OGBackup (Offset/gain value save)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_Dat_Type	H0A	Set the type of save data to "Voltage" for channels 1 and 3 and "Current" for channels 2 and 4.

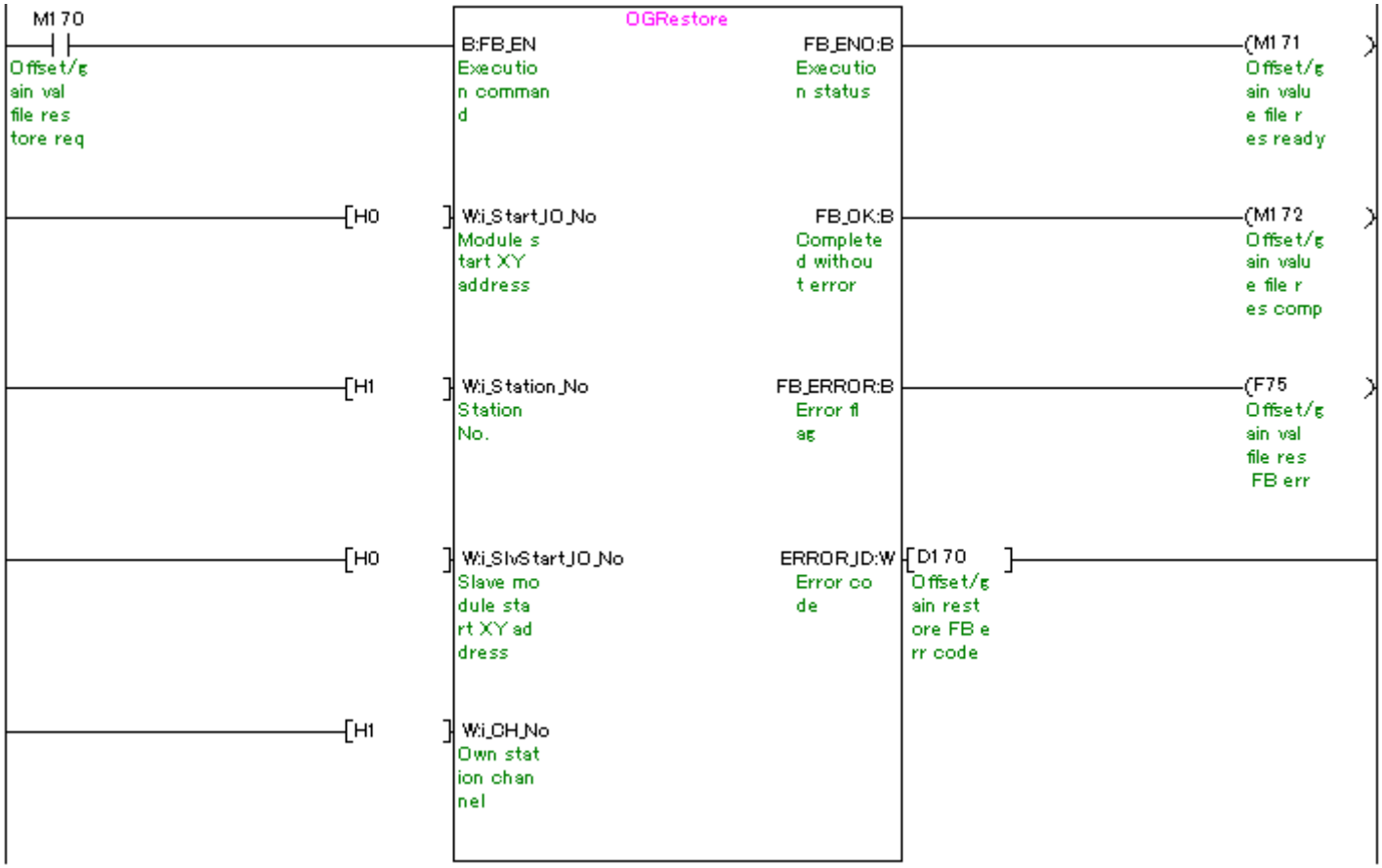
By turning ON M160, the offset/gain values are read from the user range setting and they are saved in the memory card mounted on the CPU module.



M+L60AD4-IEF_OGRestore (Offset/gain value restore)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.

By turning ON M170, the user range offset/gain settings are read from the memory card.



M+L60AD4-IEF_SetInputSignalErrEx (Input signal error detection extension setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K3	Set the target channel to channel 3.
i_SigErrEnhance	K1	Set the input signal error detection extension setting to "Upper and lower detection" for channel 3.
i_SigErrLevel	K100	Set the input signal error detection setting value to 10.0%.

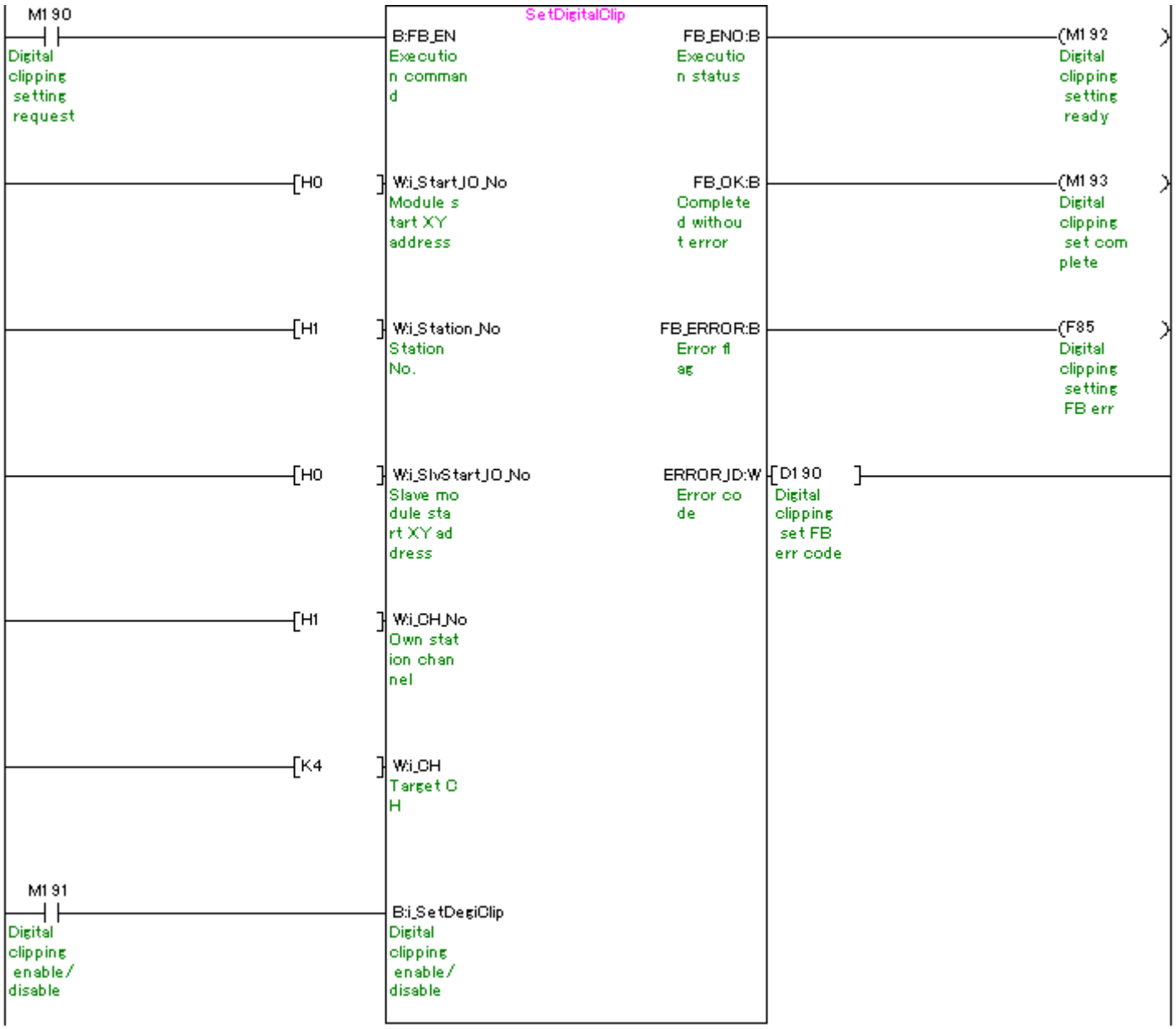
By turning ON M180, the input signal error detection extension setting value of channel 3 is written to the buffer memory.


M180
Input signal err detect ext req
SetInputSignalEE
B:FB_EN
Execution command
FB_ENO:B
Execution status
(M181
Input sgnl err detect ext ready
H0
Wi_StartIO_No
Module start XY address
FB_OK:B
Completed without error
(M182
Input signal err detect ext comp
H1
Wi_Station_No
Station No.
FB_ERROR:B
Error flag
(F80
Input sgnl err detec ext FB err
H0
Wi_SlvStartIO_No
Slave module start XY address
ERROR_ID:W
Error code
D180
Input sig err ext FB err code
H1
Wi_CH_No
Own station channel
K3
Wi_CH
Target CH
K1
Wi_SigErrEnhance
Input signal error detection ext
K100
Wi_SigErrLevel
Input signal error detection set

M+L60AD4-IEF_SetDigitalClip (Digital clipping setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K4	Set the target channel to channel 4.
i_SetDegiClip	ON/OFF	Turn ON to enable the digital clipping function.

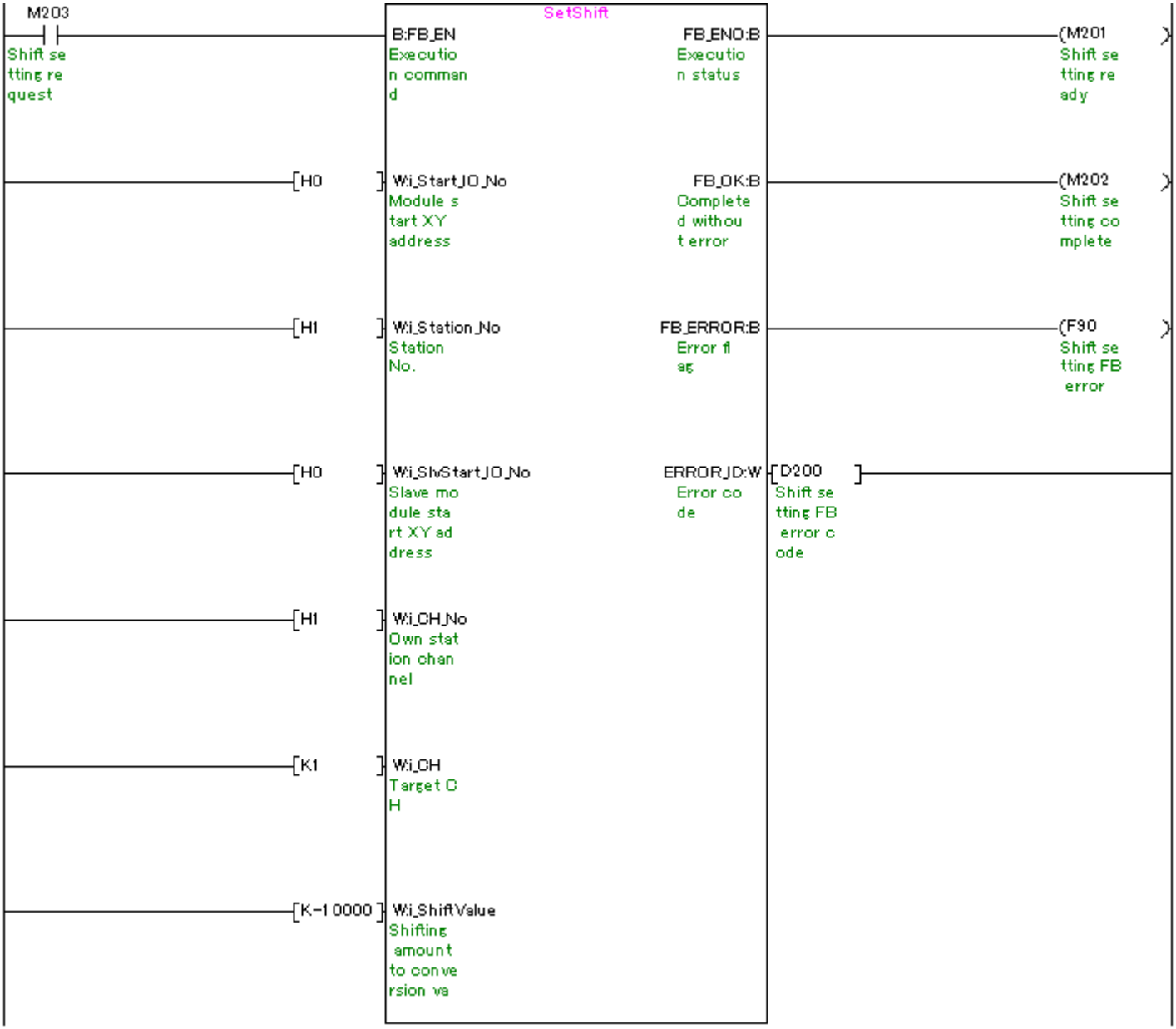
By turning ON M190, the digital clipping setting value of channel 4 is written to the buffer memory.



M+L60AD4-IEF_SetShift (Shift setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K1	Set the target channel to channel 1.
i_ShiftValue	K-10000	Set the shifting amount to conversion value to -10,000.

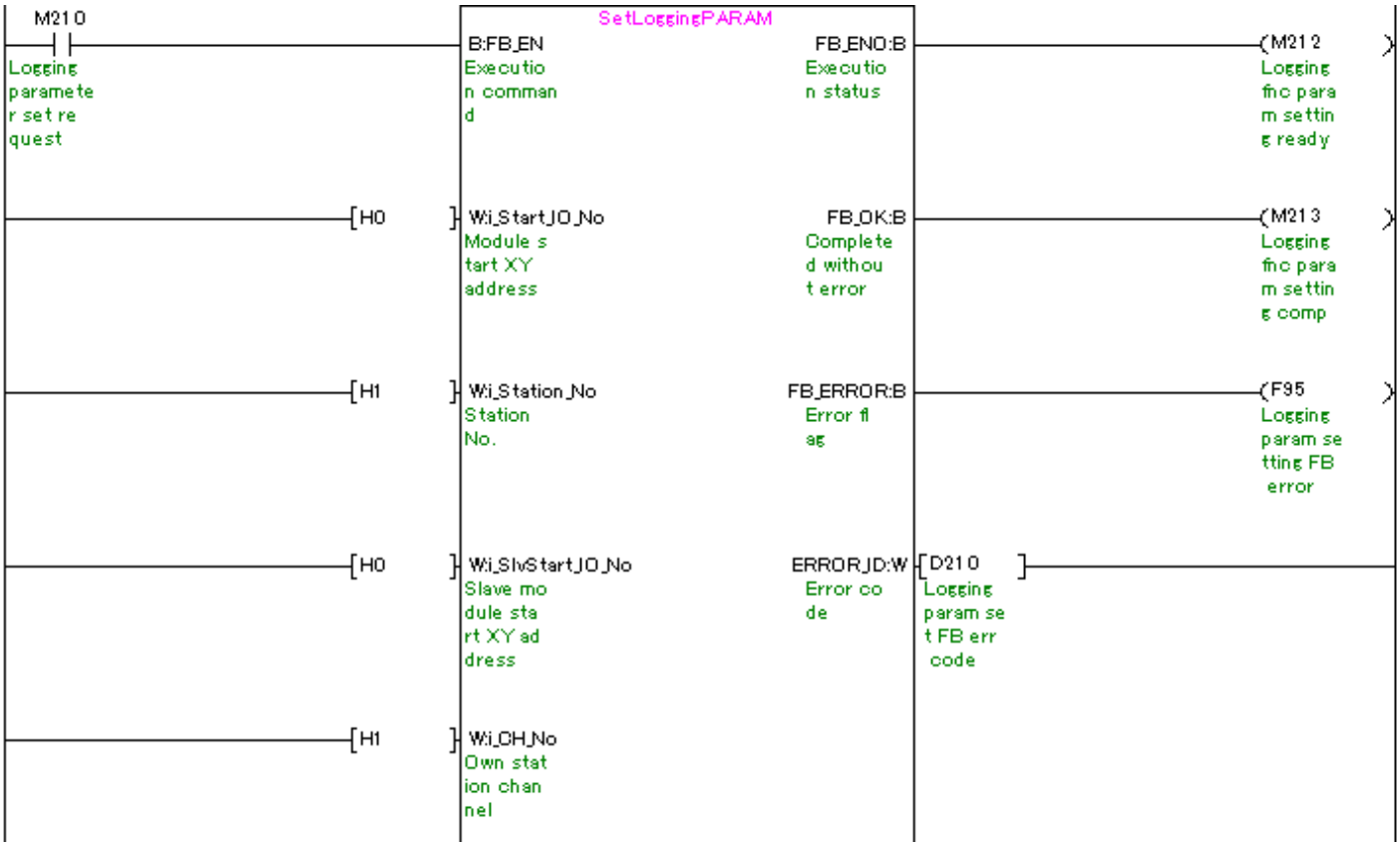
By turning ON M203, the shift setting value of channel 1 is written to the buffer memory.



M+L60AD4-IEF_SetLoggingPARAM (Logging function parameter setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K2	Set the target channel to channel 2.
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 us.
i_Log_Cycle_Unit	K0	Set the time unit of the logging cycle to "us".
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 level trigger condition setting to "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 M210, the logging function parameter setting value of channel 2 is written to the buffer memory.



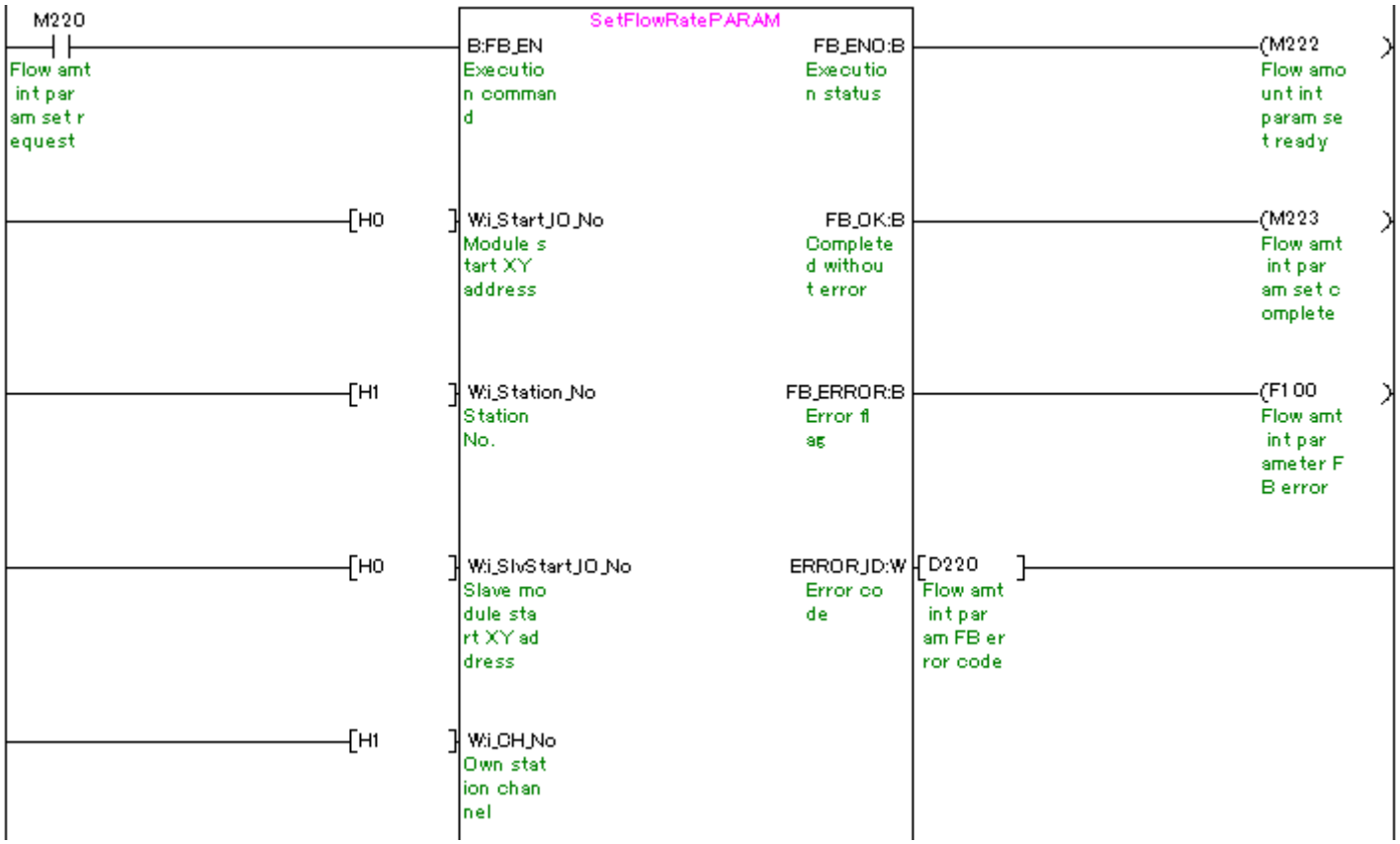
(Please refer to next page.)


K2
Wi_CH
Target C
H
M211
Logging
enable/d
isable r
equest
Bi_Log_Enable
Logging
enable/d
isable s
etting
K0
Wi_Log_Data
Logging
data set
ting
K320
Wi_Log_Cycle_Val
Logging
cycle se
tting va
lue
K0
Wi_Log_Cycle_Unit
Logging
cycle un
it setti
ng
K1
Wi_Log_Points
Logging
points a
fter tri
gger
K1
Wi_Log_Trig_Cond
Level tr
igger co
ndition
setting
K12
Wi_Log_Trig_Data
Trigger
data
K10000
Wi_Log_Trig_Value
Trigger
setting
value

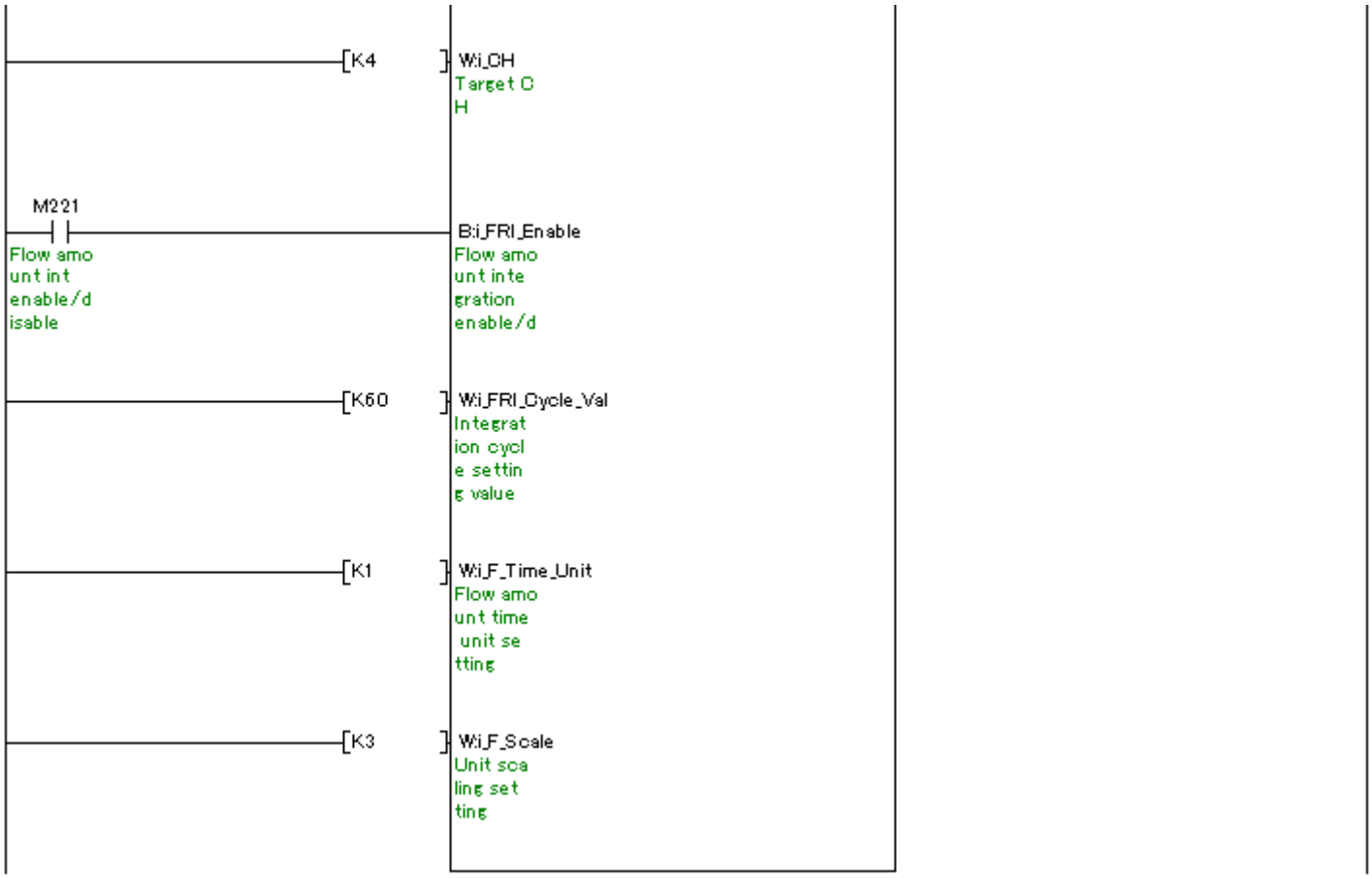
M+L60AD4-IEF_SetFlowRatePARAM (Flow amount integration function parameter setting)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K4	Set the target channel to channel 4.
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 M220, the flow amount integration function parameter setting value of channel 4 is written to the buffer memory.



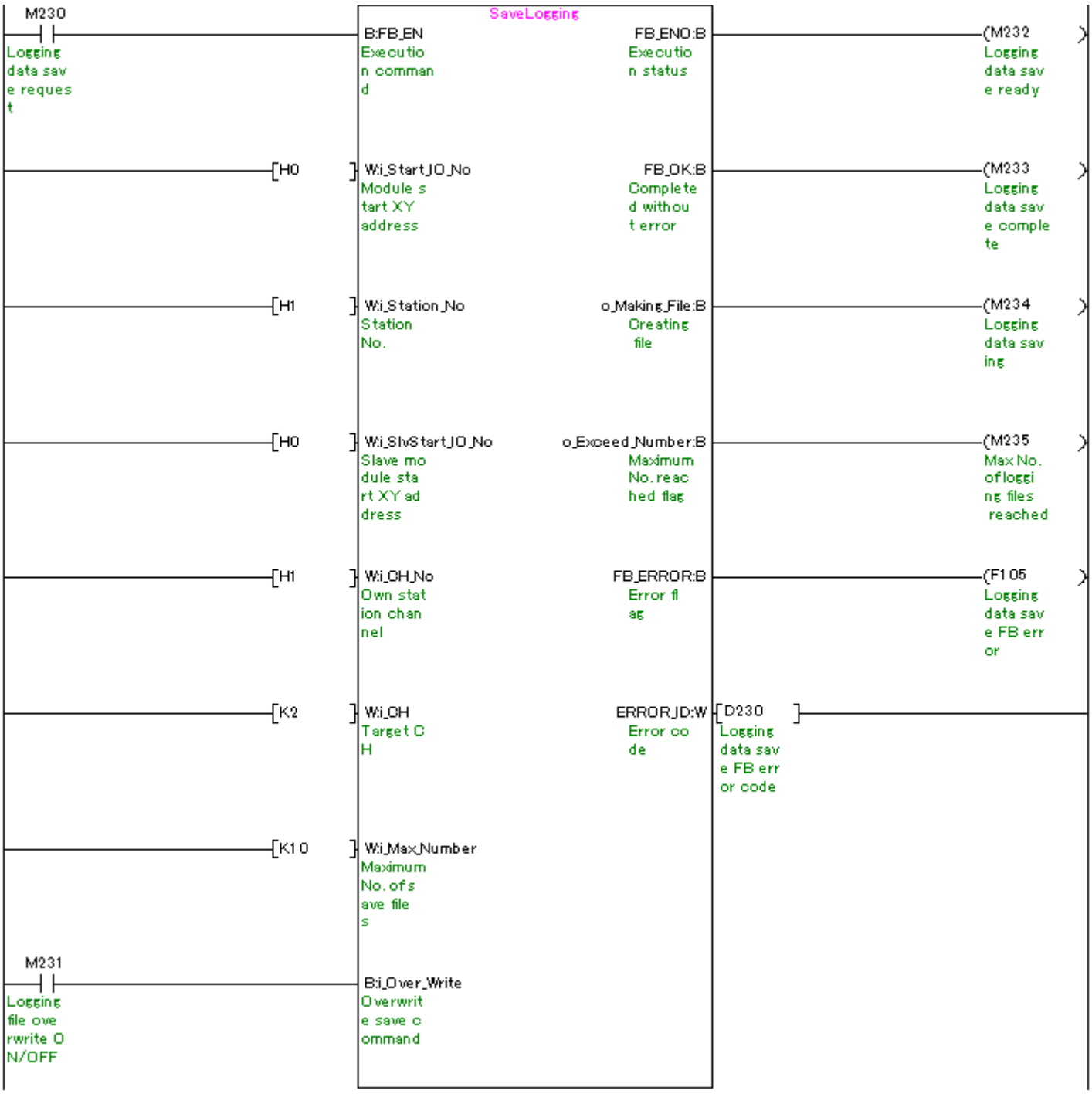
(Please refer to next page.)



M+L60AD4-IEF_SaveLogging (Logging data save)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.
i_CH	K2	Set the target channel to channel 2.
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 M230, the logging data from the start pointer of channel 2 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 memory card mounted on the CPU.



M+L60AD4-IEF_MakeFlowRateReport (Flow amount daily report creation)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel to 1H.

By turning ON M240, 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 L60AD4. Then, they are saved in a flow amount daily report file in CSV format in the memory card mounted on the CPU module at 12 am every day.