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

Applicable module:
L60AD4

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## 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

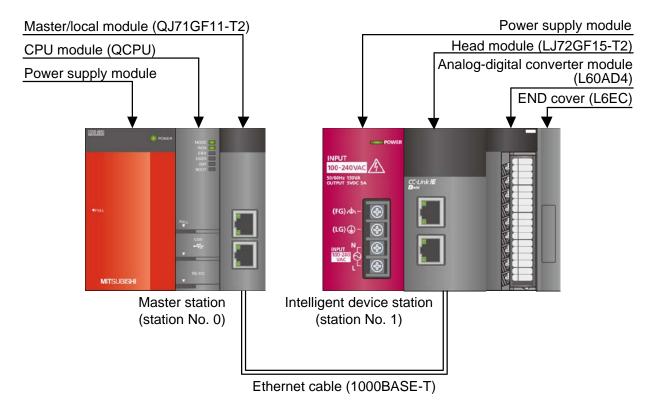
Item	Description	
M+L60AD4-IEF_ReadADVal	Reads the AD conversion data of a specified channel.	
M+L60AD4-IEF_ReadAllADVal	Reads the AD conversion data of all specified channels.	
M+L60AD4-IEF_ReadScalingVal	Reads the scaling value (digital operation value) of a specified	
	channel.	
M+L60AD4-IEF_ReadAllScalingVal	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.	

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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

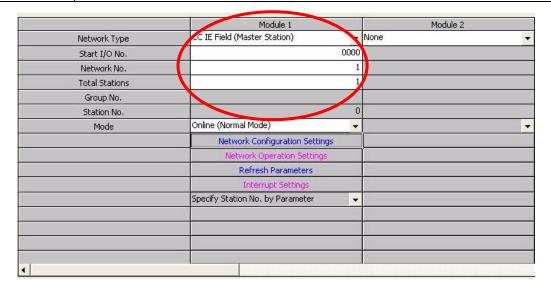


#### 1.4. Setting the CC-Link IE Field Network Master/Local Module

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".		

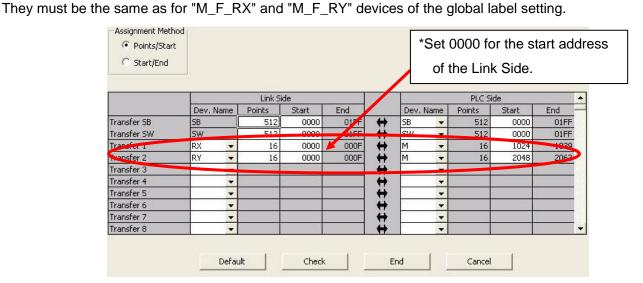
Set up Network configuration. Assignment Method The column contents for refresh device will be changed corresponding to refresh parameter setting contents. Please reopen the window after completing refresh parameter setting when changing refresh parameter. @ Points/Start ○ Start/End RX/RY Setting RWw/RWr Setting Refresh Device Number of PLCs Station No. Points Start End Points Start End RX Station Type RY RWw M1024(16) M2048(16) 1 Intelligent Device Station 🐷 16 0000 000F

#### (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

<sup>\*</sup>Make sure to set "0000" for the Start of the Link side.

<sup>\*</sup>Change the Points of the Link Side and Dev. Name and Start of the PLC Side according to the system.





## 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	•			300.000.000.	
4	<u> </u>				
5	<b>*</b>				



#### 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.)

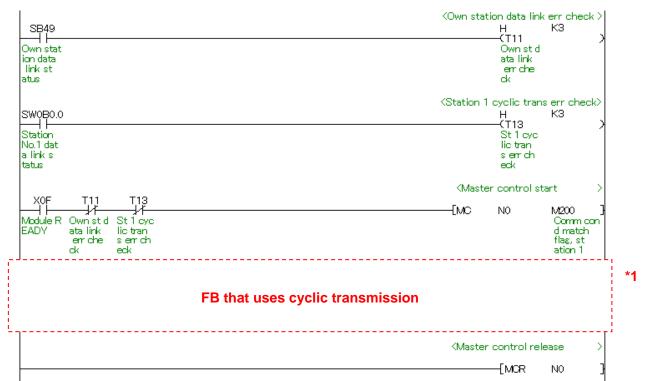
(For FBs that use both cyclic and transient transmission, refer to the application example.)

#### 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)



<sup>\*1</sup> For FB library that uses cyclic transmission, refer to 2.6.3 FB Transmission List.

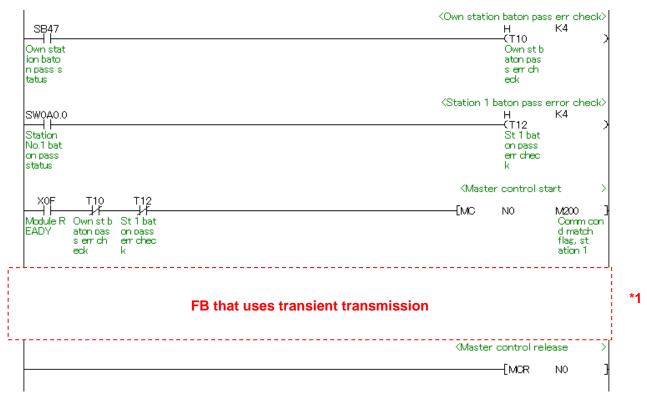


#### 1.6.2. Transient Transmission Program

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)



<sup>\*1</sup> 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	0	0
M+L60AD4-IEF_ReadAllADVal	0	0
M+L60AD4-IEF_ReadScalingVal	0	0
M+L60AD4-IEF_ReadAllScalingVal	0	О
M+L60AD4-IEF_SetConvertSpeed	0	0
M+L60AD4-IEF_SetADConversion	0	0
M+L60AD4-IEF_SetAverage	0	О
M+L60AD4-IEF_SetScaling	0	0
M+L60AD4-IEF_SetProcessAlarm	0	0
M+L60AD4-IEF_SetInputSignalErr	0	О
M+L60AD4-IEF_RequestSetting	0	-
M+L60AD4-IEF_SetOffsetVal	0	0
M+L60AD4-IEF_SetGainVal	0	0
M+L60AD4-IEF_ShiftOperation	-	-
M+L60AD4-IEF_DiffOperation	-	-
M+L60AD4-IEF_ErrorOperation	0	0
M+L60AD4-IEF_OGBackup	0	0
M+L60AD4-IEF_OGRestore	0	О
M+L60AD4-IEF_SetInputSignalErrEx	0	О
M+L60AD4-IEF_SetDigitalClip	0	0
M+L60AD4-IEF_SetShift	0	О
M+L60AD4-IEF_SetLoggingPARAM	0	0
M+L60AD4-IEF_SetFlowRatePARAM	0	0
M+L60AD4-IEF_SaveLogging	0	0
M+L60AD4-IEF_MakeFlowRateReport	0	0

-: 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	M+L60AD4-IEF_ReadADVal		
	Execution command-	B : FB_EN FE	B_ENO : B —Execution status
	Module start XY address-	W:i_Start_IO_No	FB_OK: B — Completed without error
	Station No	W:i_Station_No o_AD	_Value : W —AD conversion data
	Slave module start XY address-	W:i_SlvStart_IO_No FB_E	ERROR: B — Error flag
	Own station channel-	W:i_CH_No ERF	COR_ID: W — Error code
	Target CH-	W : i_CH	
Applicable hardware	Analog-Digital	L60AD4	
and software	converter module		
	CC-Link IE field	CC-Link IE field network master.	local module
	network module	CC-Link IE field network head m	nodule
	CPU module		
		Series	Model
		MELSEC-Q Series *1	Universal model QCPU *2
		MELSEC-L Series	LCPU *3
		*1 Not applicable to QCPU (A mo	ode)
		*2 The first five digits of the seria	Il number are "12012" or later
		*3 The first five digits of the seria	Il number are "13012" or later.
	Engineering software	GX Works2 *1	
		Language	Software version
		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 applica	ble to the modules used, refer to
		"Relevant manuals".	



Item	Description
Programming	Ladder
language	
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	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	The FB does not include error recovery processing. Program the error recovery		
precautions	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]		
	FB_EN (Execution command)		
	FB_ENO (Execution status)		
	o_AD_Value (AD conversion data)  Refreshing Refreshing (Execution status) o_AD_Value  Refreshing stop.		
	(Completed without error)  (Completed without error)  FB_OK		
	FB_ERROR (Error flag)  ERROR_ID (Error code)  0  (Completed without error)  FB_ERROR (Error flag)		
	ERROR_ID (Error code) 0 Error code 0		



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.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

## Labels

## ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN		ON,OFF	ON: The FB is activated.
		Bit		OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No		Depends on the I/O point	Specify the starting XY
address			range of the CPU. For	address (in hexadecimal)
		Word	details, refer to the CPU	where the L60AD4 module
			user's manual.	is mounted. (For example,
				enter H10 for X10.)



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

#### Output labels

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

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## 2.2. M+L60AD4-IEF\_ReadAllADVal (Read all AD conversion data)

## **FB Name**

M+L60AD4-IEF\_ReadAllADVal

## **Function Overview**

Item	Description			
Function overview	Reads the AD conversion data of all specified channels.			
Symbol		M+L60AD4-IEF_ReadAl	llADVal	
	Execution command—	B : FB_EN	FB_ENO: B	—Execution status
	Module start XY address —	W:i_Start_IO_No	FB_OK: B	Completed without error
	Station No. —	- W:i_Station_No o	_AD_ValueCH1: W	—CH1 AD conversion data
	Slave module start XY address —	W:i_SlvStart_IO_No o	_AD_ValueCH2: W	—CH2 AD conversion data
	Own station channel—	- W : i_CH_No o	_AD_ValueCH3: W	—CH3 AD conversion data
		o	_AD_ValueCH4: W	—CH4 AD conversion data
			FB_ERROR: B	—Error flag
			ERROR_ID: W	—Error code
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network m	naster/local mo	odule
	network module	CC-Link IE field network h	ead module	
	CPU Module			
		Series		Model
		MELSEC-Q Series *1	Univer	rsal model QCPU *2
		MELSEC-L Series	LCPU	*3
		*1 Not applicable to QCPU	J (A mode)	
		*2 The first five digits of the	e serial numbe	er are "12012" or later
		*3 The first five digits of the	e serial numbe	er are "13012" or later.

Item	Description		
	Engineering software	GX Works2 *1	
		Language	Software version
		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 applica	ble to the modules used, refer to
		"Relevant manuals".	
Programming	Ladder		
language			
Number of steps	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.		
Function description	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 unnecess	•	
	,		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.		
		ode explanation section for details	
	,	field network error occurs, the FB	
		upted, and the error code is stored	,
Commilia a seculo de	Refer to the error code explanation section for details.		
Compiling method	Macro type		



Item	Description		
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery		
precautions	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]		
	FB_EN (Execution command)  FB_EN (Execution command)		
	FB_ENO (Execution status)		
	(EAccution status)  O_AD_Value_CHa  (CHa AD conversion data)  Refreshing stop (CHa AD conversion data)		
	FB_OK (Completed without error)  FB_OK (Completed without error)		
	FB_ERROR (Error flag)  ERROR_ID (Error code)  0  ERROR_ID (Error code)  0  ERROR_ID (Error code)  0  ERROR_ID (Error code)		
	2 End code 0		



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	Review the following setting.	
	station number specified by i_Station_No	Network configuration setting	
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L	
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local	
		Module User's Manual.	

## Labels

## ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.



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

#### Output labels

Nama (Cammant)	l abal nama	Doto	امنئنما	Description
Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		Dit	OH	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the AD
error		Bit	OFF	conversion value read operation was
				successful.
CH1 AD conversion	o_AD_ValueCH1	Mord	0	CH1 AD conversion data output
data		Word 0		
CH2 AD conversion	o_AD_ValueCH2	Word	0	CH2 AD conversion data output
data		vvord	U	
CH3 AD conversion	o_AD_ValueCH3	Word	0	CH3 AD conversion data output
data		vvoid	U	
CH4 AD conversion	o_AD_ValueCH4	Word	0	CH4 AD conversion data output
data		vvoid	U	
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.



## **FB Name**

M+L60AD4-IEF\_ReadScalingVal

## **Function Overview**

Item	Description			
Function overview	Reads the scaling value (digital operation value) of a specified channel.			
Symbol		M+L60AD4-IEF_ReadScalingVal		
	Execution command-	B : FB_EN FB	B_ENO : B —Execution status	
	Module start XY address-	W:i_Start_IO_No F	B_OK : B —Completed without error	
	Station No	W: i_Station_No o_Scaling_	_Value : W —Scaling value	
	Slave module start XY address -	W : i_SlvStart_IO_No FB_E	RROR: B — Error flag	
	Own station channel-	W:i_CH_No ERR	OR_ID: W Error code	
	Target CH-	W : i_CH		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network master/	local module	
	network module	CC-Link IE field network head module		
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	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 seria	I number are "13012" or later.	
	Engineering software	GX Works2 *1		
		Language	Software version	
		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 "Relevant manuals".		



Item	Description		
Programming	Ladder		
language			
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	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	1) The FB does not include error recovery processing. Program the error recovery				
precautions	processing separately in accordance with the required system operation.				
	) 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]				
	FB_EN (Execution command)				
	FB_ENO (Execution status)				
	o_Scaling_Value (Scaling value)  Refreshing Refreshing o_Scaling_Value (Scaling value)  Refreshing stop (Scaling value)				
	FB_OK (Completed without error)  FB_OK (Completed without error)				
	FB_ERROR (Error flag)         FB_ERROR (Error flag)           ERROR_ID (Error code)         0         ERROR_ID (Error code)         0				



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.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

## Labels

## ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
			details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data Setting range		Description
		type		
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	Initial	Description
		type	value	
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the scaling value
error		Bit	OFF	(digital operation value) read operation was
				successful.
Scaling value	o_Scaling_Value	Word	0	Scaling value (digital operation value) output
Error flag	FB_ERROR	Dit	OFF	When ON, it indicates that an error has
		Bit OFF		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**

Item	Description			
Function overview	Reads the scaling values (digital operation values) of all channels.			
Symbol	M+L60AD4-IEF_ReadAllScalingVal			
	Execution command—	B : FB_EN FE	B_ENO : B —Execution status	
	Module start XY address-	W:i_Start_IO_No	FB_OK: B —Completed without error	
	Station No. —	W:i_Station_No o_Scalin	ng_CH1: W — CH1 Scaling value	
	Slave module start XY address -	W:i_SlvStart_IO_No o_Scalir	ng_CH2: W — CH2 Scaling value	
	Own station channel—	W:i_CH_No o_Scalin	ng_CH3: W — CH3 Scaling value	
		o_Scalir	ng_CH4: W — CH4 Scaling value	
		FB_E	ERROR : B — Error flag	
		ERF	ROR_ID: W — Error code	
	_			
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network master	local module	
	network module	CC-Link IE field network head module		
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	LCPU *3	
		*1 Not applicable to QCPU (A mode)		
		*2 The first five digits of the seria	al number are "12012" or later	
		*3 The first five digits of the seria	al number are "13012" or later.	

Item	Description		
	Engineering software	GX Works2 *1	
		Language	Software version
		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 applica	ble to the modules used, refer to
		"Relevant manuals".	
Programming	Ladder		
language			
Number of steps	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.		
Function description	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 au	uto refresh the scaling value
	(digital operation va	llue), it is unnecessary to use this	FB.
	3) When the network of	onfiguration setting of the station i	number specified by i_Station_No
	is incorrect, FB_ER	ROR is turned ON and the proces	ssing 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	The FB does not include error recovery processing. Program the error recovery		
precautions	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]		
	FB_EN (Execution command)		
	rb_ENO FB_ENO		
	(Execution status) o_Scaling_CH□ (CH□ Scaling value)  Refreshing stop (CH□ Scaling value)  Refreshing stop (CH□ Scaling value)  Refreshing stop (CH□ Scaling value)		
	FB_OK (Completed without error)  FB_OK (Completed without error)		
	FB_ERROR (Error flag)  ERROR_ID (Error code)  0  FB_ERROR_ID (From the code)		
	ERROR_ID (Error code) 0 Error code 0		



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	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

## Labels

## ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.



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

## Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	D.:		ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the scaling value
error		Bit	OFF	(digital operation value) read operation was
				successful.
CH1 Scaling value	o_Scaling_CH1	Word	0	CH1 scaling value (digital operation value)
		vvord	0	output
CH2 Scaling value	o_Scaling_CH2	Word	CH2 scaling value (digital operation value)	
		Word	0	output
CH3 Scaling value	o_Scaling_CH3	Mord	ord 0	CH3 scaling value (digital operation value)
		Word		output
CH4 Scaling value	o_Scaling_CH4	\\/ord	0	CH4 scaling value (digital operation value)
		Word	Word 0	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.



## **FB Name**

M+L60AD4-IEF\_SetConvertSpeed

## **Function Overview**

Item	Description			
Function overview	Sets the conversion speed.			
Symbol		M+L60AD4-IEF_SetConvertSpeed		
	Execution command-	B:FB_EN FE	B_ENO : B —Execution status	
	Module start XY address-	W:i_Start_IO_No	FB_OK: B —Completed without error	
	Station No	W:i_Station_No FB_E	RROR: B — Error flag	
	Slave module start XY address-	W : i_SlvStart_IO_No ERR	OR_ID: W — Error code	
	Own station channel-	W : i_CH_No		
	Conversion speed setting-	W : i_Convert_Speed		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network master/local module CC-Link IE field network head module		
	network module			
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	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.  GX Works2 *1		
	Engineering software			
		Language	Software version	
		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	Ladder
language	
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	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	1) The FB does not include error recovery processing. Program the error recovery					
precautions	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]					
	FB_EN (Execution command)  FB_EN (Execution command)					
	FB_ENO (Execution status)  FB_ENO (Execution status)					
	Conversion speed setting write processing Writing placessing write processing Writing placessing write processing write proce					
	FB_OK (Completed without error)					
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FB_ERROR (Error flag)					
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code					



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 code list

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

# Labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.



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

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



### **FB Name**

M+L60AD4-IEF\_SetADConversion

### **Function Overview**

Item	Description			
Function overview	Enables or disables AD conversion for a specified channel or all channels.			
Symbol			M+L60AD4-IEF_SetADConversi	
	Execution comn			FB_ENO : B — Execution status
	Module start XY add			FB_OK : B —Completed without error
				B_ERROR : B — Error flag
	Slave module start XY add			ERROR_ID: W — Error code
	Own station cha			
	_		W:i_CH	
	AD conversion enable/disable se	tting—	B:I_AD_Enable	
Applicable hardware	Analog-Digital	L60	AD4	
and software	converter module			
	CC-Link IE field	CC-	Link IE field network master	/local module
	network module	CC-	Link IE field network head m	nodule
	CPU Module			
			Series	Model
		ME	ELSEC-Q Series *1	Universal model QCPU *2
		ME	ELSEC-L Series	LCPU *3
		*1 N	lot applicable to QCPU (A mo	ode)
		*2 The first five digits of the serial number are "12012" or		al number are "12012" or later
		*3 T	he first five digits of the seria	al number are "13012" or later.
	Engineering software	GX	Works2 *1	
			Language	Software version
		Ja	panese version	Version1.86Q or later
		En	glish version	Version1.24A or later
		Ch	ninese (Simplified) version	Version1.49B or later
		Ch	ninese (Traditional) version	Version1.49B or later
		Ko	rean version	Version1.49B or later
			or software versions applical Relevant manuals".	ble to the modules used, refer to



Item	Description
Programming	Ladder
language	
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	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	1) The FB does not include error recovery processing. Program the error recovery				
precautions	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]				
	FB_EN (Execution command)  FB_EN (Execution command)				
	FB_ENO (Execution status)				
	AD conversion enable/disable setting write processing  No processing  No processing  Writing  No processing  No processing				
	FB_OK (Completed without error) FB_OK (Completed without error)				
	FB_ERROR (Error flag)  FB_ERROR (Error flag)				
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code				



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



# Labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN		ON,OFF	ON: The FB is activated.
		Bit		OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No		Depends on the I/O point	Specify the starting XY
address			range of the CPU. For	address (in hexadecimal)
		Word	details, refer to the CPU	where the L60AD4 module
			user's manual.	is mounted. (For example,
				enter H10 for X10.)
Station No.	i_Station_No	\\/ord	1~120	Specify the target station
		Word		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O point	Specify the starting XY
XY address			range of the head module.	address (in hexadecimal)
		Word	For details, refer to the	where the L60AD4 module
			head module user's	is mounted. (For example,
			manual.	enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for
		vvoid		own station.
Target CH	i_CH		1~4,15	1~4: Specify a channel
		Word		number.
				15: Specify all channels.
AD conversion	i_AD_Enable		ON,OFF	ON: Enable AD
enable/disable		Bit		conversion.
setting		DIL		OFF: Disable AD
				conversion.



Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO			ON: Execution command is ON.
			OFF: Execution command is OFF.	
Completed without	FB_OK			When ON, it indicates that the AD
error		Bit	OFF	conversion disable/enable setting has been
				completed.
Error flag	FB_ERROR	Dit OFF V		When ON, it indicates that an error has
		Bit	OFF	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.



# 2.7. M+L60AD4-IEF\_SetAverage (Averaging process setting)

### **FB Name**

M+L60AD4-IEF\_SetAverage

# **Function Overview**

Item	Description				
Function overview	Performs averaging processing for a specified channel.				
Symbol	M+L60AD4-IEF_SetAverage				
	Execution commar	nd—	B:FB_EN F	B_ENO: B	Execution status
	Module start XY addres	ss—	W:i_Start_IO_No	FB_OK: B	—Completed without error
	Station N	lo. <del></del>	W:i_Station_No FB_	ERROR: B	—Error flag
	Slave module start XY addres	ss—	W:i_SIvStart_IO_No ERI	ROR_ID: W	—Error code
	Own station chann	nel —	W:i_CH_No		
	Target C	Н—	W:i_CH		
	Averaging processing type settir	ng—	W:i_Average_Type		
	Time or number of times settir	ng—	W:i_Average_Times		
Applicable hardware	Analog-Digital	L6	60AD4		
and software	converter module				
	CC-Link IE field	CC	C-Link IE field network master/	local mo	dule
	network module		CC-Link IE field network head module		
	CPU Module				
			Series		Model
		N	MELSEC-Q Series *1	Univers	sal model QCPU *2
		N	MELSEC-L Series	LCPU *	3
		*1	Not applicable to QCPU (A mo	ode)	
		*2	The first five digits of the seria	l number	are "12012" or later
		*3	The first five digits of the seria	l number	are "13012" or later.

Item		Description			
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applica	ble to the modules used, refer to		
		"Relevant manuals".			
Programming	Ladder				
language					
Number of steps	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.				
Function description	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.				
	, ,		the FB_ERROR output turns ON,		
	'	upted, and the error code is stored	_		
		ode explanation section for details			
	,		number specified by i_Station_No		
		ROR is turned ON and the process	ssing is interrupted, and the error		
	code 50 (decimal) is stored in ERROR_ID.  Refer to the error code explanation section for details.				
		field network error occurs, the FB			
	,	upted, and the error code is stored	•		
		ode explanation section for details	,		
Compiling method	Macro type				
- 3p333					



Item	Description				
Restrictions and	The FB does not include error recovery processing. Program the error recovery				
precautions	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]				
	FB_EN (Execution command)  FB_EN (Execution command)				
	FB_ENO (Execution status)  FB_ENO (Execution status)				
	Averaging process setting write processing  No processing				
	FB_OK (Completed without error)				
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FROR ID (Error code)  O ERROR_ID (Error code)  O Error code)  O Error code				
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code 0				



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



# Labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		Dit		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Average_Type		0H,1H,2H,3H	Specify the averaging processing
processing type				type.
setting		Word		0H: Sampling processing
		vvoid		1H: Time average
				2H: Count average
				3H: Moving average
Time or number of	i_Average_Times		As specified on	Time average:
times setting			the right.	20μs: 2~1,500 (ms)
		Word		80μs/1ms: 2~5,000 (ms)
				Count average: 4~62,500 (times)
				Moving average: 2~1,000 (times)



Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the averaging
error			OFF	processing setting has been completed.
Error flag	FB_ERROR	D:# OFF		When ON, it indicates that an error has
		Bit	OFF	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.



# 2.8. M+L60AD4-IEF\_SetScaling (Scaling setting)

### **FB Name**

M+L60AD4-IEF\_SetScaling

### **Function Overview**

Item	Description			
Function overview	Configures scaling setting of a specified channel.			
Symbol	M+L60AD4-IEF_SetScaling			
	Execution comma	nd B: FB_EN	FB_ENO : B —Execution status	
	Module start XY addre	ss—W : i_Start_IO_No	FB_OK: B —Completed without error	
	Station N	lo. — W : i_Station_No	B_ERROR: B — Error flag	
	Slave module start XY addre	ss—W : i_SlvStart_IO_No	ERROR_ID: W —Error code	
	Own station chann	mel—W:i_CH_No		
	Target C	CH—W:i_CH		
	Scaling enable/disat	ble B: i_Scaling_Enable		
	Scaling upper limit val	ue— W : i_Scl_U_Lim		
	Scaling lower limit val	ue—W:i_Scl_L_Lim		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network maste	er/local module	
	network module	CC-Link IE field network head	module	
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	LCPU *3	
		*1 Not applicable to QCPU (Ar	mode)	
		*2 The first five digits of the ser	ial number are "12012" or later	
		*3 The first five digits of the ser	rial number are "13012" or later.	

Item	Description				
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applica	ble to the modules used, refer to		
		"Relevant manuals".			
Programming	Ladder				
language					
Number of steps	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.				
Function description	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,				
		upted, and the error code is stored	,		
		ode explanation section for details			
		-	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.				
	, ,				
		ode explanation section for details field network error occurs, the FB			
	,	upted, and the error code is stored			
		ode explanation section for details	,		
Compiling method	Macro type	Sas Sapianation Socion for detaile	··		
Company method	Madro type				



Item	Description			
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery			
precautions	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]			
	FB_EN (Execution command)			
	FB_ENO (Execution status)			
	Scaling function setting write processing Writing placessing write processing write process			
	FB_OK (Completed without error)  FB_OK (Completed without error)			
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FB_ERROR (Error flag)			
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code			



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

# Labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data	Setting range	Description
		type		
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Scaling_Enable	Bit	ON,OFF	ON: Enable
enable/disable		DIL		OFF: Disable
Scaling upper limit	i_Scl_U_Lim	Word	-32,000~32,000	Specify the scaling upper limit value.
value		vvora		
Scaling lower limit	i_Scl_L_Lim	Word	-32,000~32,000	Specify the scaling lower limit value.
value		vvoiu		

-Catpat labels				
Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates the scaling setting
error		DIL	OFF	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.



# 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			M+L60AD4-IEF	M+L60AD4-IEF_SetProcessAlarm		
	Execution c	ommand—	B:FB_EN		FB_ENO: B	Execution status
	Module start XY	address —	W:i_Start_IO_No		FB_OK: B	—Completed without error
	Sta	ation No. —	W:i_Station_No	F	B_ERROR: B	—Error flag
	Slave module start XY	address —	W:i_SlvStart_IO_No		ERROR_ID: W	—Error code
	Own station	channel—	W:i_CH_No			
	Т	arget CH-	W:i_CH			
	Process alarm enable	e/disable—	B : i_Process_Enable			
	Process alarm upper upper li	mit value—	W:i_Pro_UU_Lim			
	Process alarm upper lower li	mit value—	W:i_Pro_UL_Lim			
	Process alarm lower upper li	mit value—	W:i_Pro_LU_Lim			
	Process alarm lower lower li	mit value—	W:i_Pro_LL_Lim			
Applicable hardware	Analog-Digital	L60AD	94			
and software	converter module					
	CC-Link IE field	CC-Lir	nk IE field network	master/lo	ocal modul	е
	network module	CC-Lir	nk IE field network	k head mo	dule	
	CPU Module					
			Series			Model
		MELS	SEC-Q Series *1		Universal	model QCPU *2
		MELS	SEC-L Series		LCPU *3	
	*1 Not applicable to QCPU (A mode)					
		*2 The	first five digits of	the serial	number ar	e "12012" or later
		*3 The	first five digits of	the serial	number ar	e "13012" or later.



Item	Description				
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applica	ble to the modules used, refer to		
		"Relevant manuals".			
Programming	Ladder				
language					
Number of steps	445 steps (for MELSEC	-Q series universal model CPU)			
	*The number of steps of	f the FB in a program depends on	the CPU model that is used and		
	input and output definition.				
Function description	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.				
	, ,		the FB_ERROR output turns ON,		
		upted, and the error code is stored	,		
		ode explanation section for details			
			number specified by i_Station_No		
	. –	ROR is turned ON and the proces	ssing is interrupted, and the error		
	, , ,	s stored in ERROR_ID.			
		ode explanation section for details			
	,	field network error occurs, the FB	<u> </u>		
		upted, and the error code is stored	,		
Compiling mathed		ode explanation section for details	). 		
Compiling method	Macro type				



Item	Description	
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery	
precautions	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]	
	FB_EN (Execution command)  FB_EN (Execution command)	
	FB_ENO (Execution status)	
	Process alarm setting write processing  No processing  No processing  No processing  No processing  No processing	
	FB_OK (Completed without error)  FB_OK (Completed without error)	
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FB_ERROR (Error flag)  FROR ID (Error code)  0  Error code  0	
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code	



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

# Labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data	Setting range	Description
		type		
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Process_Enable	Bit	ON,OFF	ON: Enable
enable/disable		DIL		OFF: Disable
Process alarm upper	i_Pro_UU_Lim	Word	-32,768~32,767	Specify the process alarm upper
upper limit value		vvora		upper limit value.
Process alarm upper	i_Pro_UL_Lim	Word	-32,768~32,767	Specify the process alarm upper
lower limit value		vvora		lower limit value.
Process alarm lower	i_Pro_LU_Lim	\\/ord	-32,768~32,767	Specify the process alarm lower
upper limit value		Word		upper limit value.
Process alarm lower	i_Pro_LL_Lim	\\/ord	-32,768~32,767	Specify the process alarm lower
lower limit value		Word		lower limit value.

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Di+	OFF	ON: Execution command is ON.
		Bit OFF C		OFF: Execution command is OFF.
Completed without	FB_OK	D:t	OFF	When ON, it indicates that the process
error		Bit	OFF	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.



### **FB Name**

M+L60AD4-IEF\_SetInputSignalErr

### **Function Overview**

Item	Description				
Function overview	Configures input signal error detection setting of a specified channel.				
Symbol			M+L60AD4-IEF_SetInputSig		
	Execution command—			FB_ENO : B — Execution status	
	Module start XY	address —	W:i_Start_IO_No	FB_OK: B —Completed without error	
				FB_ERROR : B — Error flag	
	Slave module start XY	address —	W:i_SlvStart_IO_No	ERROR_ID: W — Error code	
	Own station	channel—	W:i_CH_No		
	Т	arget CH-	W:i_CH		
	Input signal error detectio	n setting—	B:i_Sig_Err_Enable		
	Input signal error detection sett	ing value—	W:i_Sig_Err_Level		
Applicable hardware	Analog-Digital	L60AD	4		
and software	converter module				
	CC-Link IE field	CC-Lir	nk IE field network master/	local module	
	network module	CC-Lir	Link IE field network head module		
	CPU Module				
			Series	Model	
	MEL		SEC-Q Series *1	Universal model QCPU *2	
		MELS	SEC-L Series	LCPU *3	
		*1 Not applicable to Q0		ode)	
		*2 The	first five digits of the seria	l number are "12012" or later	
		*3 The	first five digits of the seria	I number are "13012" or later.	
	Engineering software	GX Wo	orks2 *1		
			Language	Software version	
		Japar	nese version	Version1.86Q or later	
		Englis	sh version	Version1.24A or later	
		Chine	ese (Simplified) version	Version1.49B or later	
		Chine	ese (Traditional) version	Version1.49B or later	
		Korea	an version	Version1.49B or later	
		*1 For	software versions applicat	ole to the modules used, refer to	
		"Re	evant manuals".		

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Item	Description			
Programming	Ladder			
language				
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	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	1) The FB does not include error recovery processing. Program the error recovery				
precautions	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]				
	FB_EN (Execution command)  FB_EN (Execution command)				
	FB_ENO (Execution status)  FB_ENO (Execution status)				
	Input signal error detection setting write processing  No processing  Writing  No Input signal error detection setting write processing  setting write processing  processing				
	FB_OK (Completed without error)  FB_OK (Completed without error)				
	FB_ERROR (Error flag)				
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code				



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

# Labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		ווט		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data	Setting range	Description
		type		
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Sig_Err_Enable	D:t	ON,OFF	ON: Enable
detection setting		Bit		OFF: Disable
Input signal error	i_Sig_Err_Level		0~250	Specify the input signal error
detection setting		Word	(Unit: 0.1%)	detection setting value.
value				

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Di+	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Bit OFF		When ON, it indicates that the input signal
error				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.



### **FB Name**

M+L60AD4-IEF\_RequestSetting

# **Function Overview**

Item	Description				
Function overview	Applies changes made to each function's settings.				
Symbol					
	Execution command	B : FB_EN F	FB_ENO : B — Execution status		
	Module start XY address	W : i_Start_IO_No	FB_OK : B —Completed without error		
	Station No.	W : i_Station_No FB_	ERROR: B — Error flag		
	Slave module start XY address— W : i_SlvStart_IO_No ERI		ROR_ID: W — Error code		
	Own station channel	W : i_CH_No			
Applicable hardware	Analog-Digital	L60AD4			
and software	converter module				
	CC-Link IE field	CC-Link IE field network master	local module		
	network module		nodule		
	CPU Module				
		Series	Model		
		MELSEC-Q Series *1	Universal model QCPU *2		
		MELSEC-L Series	LCPU *3		
	*1 Not applicable to QCPU (A		ode)		
		*2 The first five digits of the serial	Il number are "12012" or later		
		*3 The first five digits of the seria	Il number are "13012" or later.		
	Engineering software	GX Works2 *1			
		Language	Software version		
		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".			
Programming	Ladder				
language					

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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	1) When this FB is executed, A/D conversion processing stops. After turning ON FB_OK,		
precautions	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	10) This FB uses cyclic transmission. Therefore, an interlock program for cyclic			
precautions	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]			
	FB_EN (Execution command)  FB_ENO (Execution status)  Operating condition setting request (signal Y) Operating condition setting completed flag (signal X) FB_OK (Completed without error) FB_ERROR (Error flag)  ERROR_ID (Error code)  FB_ENO (Execution command)  FB_ENO (Execution status)  Operating condition setting condition setting request (signal Y) Operating condition setting completed flag (signal X) FB_OK (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  0  ERROR_ID (Error code)  0  ERROR_ID (Error code)			
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 code	Description	Action
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	Refer to (2) in Section 1.4 Setting the
		CC-Link IE Field Network Master/Local
		Module.
		•The value entered in i_Station_No



# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

# Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Dit	OFF	ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Di+	OFF	When ON, it indicates that the operating
error		Bit	OFF	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.



M+L60AD4-IEF\_SetOffsetVal

Item	Description			
Function overview	Sets the offset value of a specified channel to the current analog value.			
Symbol				
		M+L60AD4-IEF_SetOffsetVal		
	Execution command-	B:FB_EN	FB_ENO : B — Execution status	
	Module start XY address -	W : i_Start_IO_No	FB_OK: B —Completed without error	
	Station No	W:i_Station_No FB_	_ERROR : B —Error flag	
	Slave module start XY address -	W : i_SlvStart_IO_No ER	RROR_ID: W —Error code	
	Own station channel-	W : i_CH_No		
	Target CH-	W : i_CH		
	User range write command-	B : i_Write_Offset		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network master/local module		
	network module	CC-Link IE field network head m	nodule	
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	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 seria	al number are "13012" or later.	

Item	Description					
	Engineering software	GX Works2 *1				
		Language	Software version			
		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 applica	ble to the modules used, refer to			
		"Relevant manuals".				
Programming	Ladder					
language						
Number of steps	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.					
Function description	1) Sets the offset value of a specified channel to the current analog value by turning on					
	FB_EN (Execution command).					
	2) To write the offset value, both FB_EN and the User range write command must be ON.					
	3) If the User range write command is ON when FB_EN is turned ON, the FB will continue					
		to execute until the offset value of the specified channel is written.				
	,		the FB_ERROR output turns ON,			
		upted, and the error code is stored	,			
		ode explanation section for details				
			number specified by i_Station_No			
		ROR is turned ON and the proces	ssing is interrupted, and the error			
	code 50 (decimal) is stored in ERROR_ID.  Refer to the error code explanation section for details.					
		field network error occurs, the FB				
	<b>_</b>		•			
		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					
	1					



Item	Description
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery
precautions	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]  FB_EN (Execution command) FB_ENO (Execution status)  Operation mode   Normal			
	i_Write_Offset (User range write command) CH□ Offset specification Channel change request (signal Y) User range write request (signal Y) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)  i_Write_Offset (User range write command) CH□ Offset specification Channel change request (signal Y) User range write request (signal Y) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)  0 ERROR_ID (Error code)  0 Error code 0			
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 code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	D:t	ON,OFF	ON: The FB is activated.
		Bit		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		\\/ord	of the CPU. For	module is mounted. (For example,
		Word	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Write_Offset		ON,OFF	ON: Perform the user range write
command		Bit		operation.
		DIL		OFF: Do not perform the user range
				write operation.

# Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Di+	OFF	ON: Execution command is ON.
		Bit OFF (		OFF: Execution command is OFF.
Completed without	FB_OK	D:4	OFF	When ON, it indicates that the offset setting
error		Bit	OFF	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.



M+L60AD4-IEF\_SetGainVal

### **Function Overview**

Item	Description			
Function overview	Sets the gain value of a specified channel to the current analog value.			
Symbol	M+L60AD4-IEF_SetGainVal			
	Execution command·	B : FB_EN	FB_ENO : B — Execution status	
	Module start XY address	W : i_Start_IO_No	FB_OK : B —Completed without error	
	Station No.	W : i_Station_No FB	_ERROR: B —Error flag	
	Slave module start XY address	W:i_SlvStart_IO_No EF	RROR_ID: W — Error code	
	Own station channel	W : i_CH_No		
	Target CH-	W : i_CH		
	User range write command	B : i_Write_Gain		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field	CC-Link IE field network master	/local module	
	network module	CC-Link IE field network head n	nodule	
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	LCPU *3	
		*1 Not applicable to QCPU (A m	ode)	
		*2 The first five digits of the seria	al number are "12012" or later	
		*3 The first five digits of the serial	al number are "13012" or later.	
	Engineering software	GX Works2 *1		
		Language	Software version	
		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 applica	ble to the modules used, refer to	
		"Relevant manuals".		

MELSEC-L Analog-Digital Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M071-A



Item	Description
Programming	Ladder
language	
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	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	1) The FB does not include error recovery processing. Program the error recovery
precautions	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]  FB_EN (Execution command) FB_ENO (Execution status)  FB_EN (Execution command) FB_ENO (Execution status)		
	Operation mode  i_Write_Gain (User range write command)  CHormal change request (signal Y)  FB_OK (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  Normal mode  Offsev/gain setting mode  I_Write_Gain (User range write command)  CHormal mode  I_Write_Gain (User range write command)  Channel change request (signal Y)  FB_OK (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  O Error code		
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 code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Write_Gain		ON,OFF	ON: Perform the user range write
command		Bit		operation.
		DIL		OFF: Do not perform the user range
				write operation.

### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	D:4	OFF	ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the gain setting
error				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.



M+L60AD4-IEF\_ShiftOperation

Item	Description			
Function overview	Adds the shifting amount to conversion value to the digital value that was input.			
Symbol			M+L60AD4-IEF_ShiftOperat	
	Execution cor			FB_ENO : B — Execution status
	_		W:i_Digital_Value	FB_OK : B — Completed without error
	Shifting amount to conversion	n value—		Dig_Out_Val: W Digital output value  B_ERROR: B Error flag
			ľ	ERROR_ID : W — Error code
				ERROR_ID . W — Elloi code
Applicable hardware	Analog-Digital	L60A	.D4	
and software	converter module			
	CC-Link IE field	CC-L	ink IE field network master/	local module
	network module	CC-L	ink IE field network head m	odule
	CPU Module			
			Series	Model
		MEI	_SEC-Q Series *1	Universal model QCPU *2
		MEI	_SEC-L Series	LCPU *3
		*1 No	t applicable to QCPU (A mo	ode)
		*2 Th	e first five digits of the seria	Il number are "12012" or later
		*3 Th	e first five digits of the seria	Il number are "13012" or later.
	Engineering software	GX V	Vorks2 *1	
			Language	Software version
		Jap	anese version	Version1.86Q or later
		Eng	lish version	Version1.24A or later
		Chi	nese (Simplified) version	Version1.49B or later
		Chii	nese (Traditional) version	Version1.49B or later
		Kor	ean version	Version1.49B or later
		*1 Fo	r software versions applical	ole to the modules used, refer to
		"R	elevant manuals".	
Programming	Ladder			
language				



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	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	1) The FB does not include error recovery processing. Program the error recovery
precautions	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]  FB_EN (Execution command)		
	FB_ENO (Execution status) Shift operation  FB_OK (Completed without error)		
	FB_ERROR (Error flag)         0		
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 code list

Error code	Description	Action
None	None	None

# Labels

# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Digital value	i_Digital_Value		-32,768~32,767	Specify a digital value to which to add
		Word		the shifting amount to conversion
				value that was read.
Shifting amount to	i_Shift_Value	\\/ord	-32,768~32,767	Specify an amount to shift.
conversion value		Word		



#### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the shift
error		DIL	OFF	operation has been completed.
Digital output value	o_Dig_Out_Val			Stores a sum obtained by adding the input
		Word	0	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.



M+L60AD4-IEF\_DiffOperation

Item	Description			
Function overview	Outputs the difference obtained by subtracting the reference value from the input digital			
	value.			
Symbol		M+L60AD4-IEF_DiffOperation		
	Execution command—	B:FB_EN FB_ENO:	B —Execution status	
	Digital value—	W:i_Digital_Value FB_OK:	B —Completed without error	
		o_Dig_Out_Val : `	W Digital output value	
		o_Standard_Val : `	W Difference conversion reference value	
		FB_ERROR:	B — Error flag	
		ERROR_ID:	W Error code	
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module			
	CC-Link IE field CC-Link IE field network master/local module			
	network module CC-Link IE field network head module			
	CPU Module			
		Series	Model	
		MELSEC-Q Series *1	Universal model QCPU *2	
		MELSEC-L Series	LCPU *3	
		*1 Not applicable to QCPU (A mo	ode)	
		*2 The first five digits of the serial number are "12012" or		
		*3 The first five digits of the seria	I number are "13012" or later.	
	Engineering software	GX Works2 *1		
		Language	Software version	
		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 applical	ole to the modules used, refer to	
		"Relevant manuals".		



Item	Description
Programming	Ladder
language	
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	1) The FB does not include error recovery processing. Program the error recovery			
precautions	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]			
	FB_EN (Execution command)			
	FB_ENO (Execution status)  Difference			
	Operation mode conversion Difference conversion in conversion stopped Difference conversion			
	Difference conversion reference value  O  Difference value  O  O  O  O  O  O  O  O  O  O  O  O  O			
	(Completed without error)			
	FB_ERROR (Error flag)  ERROR_ID (Error code)  0			



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 code list

Error code	Description	Action
None	None	None

# Labels

# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		ы		OFF: The FB is not activated.
Digital value	i_Digital_Value	\\/ord	-32,768~32,767	Specify a digital value for which to
		Word		perform the difference conversion.



#### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the difference
error		DIL	OFF	conversion process has been completed.
Digital output value	o_Dig_Out_Val			The result of subtracting the differential
		Word 0 c	conversion reference value from the current	
				digital value
Difference	o_Standard_Val			The basis of comparison for differential
conversion		Word	0	processing. (This value is equal to the digital
reference value		vvord	U	value when FB_EN changes from OFF to
				ON.
Error flag	FB_ERROR	Di+	OFF	When ON, it indicates that an error has
		Bit OFF		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.



M+L60AD4-IEF\_ErrorOperation

Item	Description		
Function overview	Performs monitoring of error codes and error reset.		
Symbol	M+L60AD4-IEF_ErrorOperation		
	Execution command	B : FB_EN FI	B_ENO : B —Execution status
	Module start XY address	- W : i_Start_IO_No	FB_OK: B —Completed without error
	Station No.	- W : i_Station_No o_UNIT_ERR_	_CODE: B —Module error flag
	Slave module start XY address	- W: i_SlvStart_IO_No o_UNIT_ERR_	_CODE: WModule error code
	Own station channel	- W : i_CH_No FB_E	ERROR: B — Error flag
	Error reset request	B: i_ErrorReset ERF	ROR_ID: W — Error code
Applicable hardware	Analog-Digital	L60AD4	
and software	converter module		
	CC-Link IE field	CC-Link IE field network master/	local module
	network module	CC-Link IE field network head m	odule
	CPU Module		
		Series	Model
		MELSEC-Q Series *1	Universal model QCPU *2
		MELSEC-L Series	LCPU *3
		*1 Not applicable to QCPU (A mo	ode)
		*2 The first five digits of the seria	I number are "12012" or later
		*3 The first five digits of the seria	I number are "13012" or later.
	Engineering software	GX Works2 *1	
		Language	Software version
		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, refe		ole to the modules used, refer to
		"Relevant manuals".	



Item	Description		
Programming	Ladder		
language			
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	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	The FB does not include error recovery processing. Program the error recovery
precautions	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]  FB_EN (Execution command)  FB_ENO (Execution status) i_ErrorReset (Error reset request) (Signal Y) Error reset request (Signal Y) Error reset request (Signal X) o_UNIT_ERR (Module error flag)  O_UNIT_ERR_CODE (Error code)  FB_OK (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  O Error code)  ERROR_ID (Error code)  [When an error occurs]  FB_EN (Execution command)  FB_EN (Execution command)  FB_EN (Execution status) i_Error reset request (Signal Y) o_UNIT_ERR (ell) O_UNIT_ERR_CODE (Error reset request) (Signal X) o_UNIT_ERR_CODE (Error reset)  FB_OK (Completed without error) FB_ERROR (Error flag)  ERROR_ID (Error code)  O Error code		
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 code	Description	Action
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



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



#### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO			ON: Execution command is ON. (Module
		Bit	OFF	error being monitored)
				OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the error reset is
error				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_COD	Mord	\\\\-\-\-\	Specified module error code output
	E	Word 0		
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.



M+L60AD4-IEF\_OGBackup

Item	Description		
Function overview	Reads the offset and gain values from the user range setting and saves them in a file.		
Symbol	M+L60AD4-IEF_OGBackup		
	Execution command	B : FB_EN FI	B_ENO : B — Execution status
	Module start XY address	W : i_Start_IO_No	FB_OK: B —Completed without error
	Station No.	- W : i_Station_No FB_E	ERROR: B — Error flag
	Slave module start XY address	- W : i_SlvStart_IO_No ERF	ROR_ID: W — Error code
	Own station channel	W : i_CH_No	
	Saved data type	W : i_Dat_Type	
Applicable hardware	Analog-Digital	L60AD4	
and software	converter module		
	CC-Link IE field	CC-Link IE field network master/	local module
	network module	CC-Link IE field network head m	odule
	CPU Module		<del>,</del>
		Series	Model
		MELSEC-Q Series *1	Universal model QCPU *2
		MELSEC-L Series	LCPU *3
		*1 Not applicable to QCPU (A mo	ode)
		*2 The first five digits of the seria	Il number are "12012" or later
		*3 The first five digits of the seria	I number are "13012" or later.
	Engineering software	GX Works2 *1	
		Language	Software version
		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		ble to the modules used, refer to
		"Relevant manuals".	



Item	Description
Programming	Ladder
language	
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	The FB does not include error recovery processing. Program the error recovery	
precautions	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]		
	FB_EN (Execution command)  FB_ENO (Execution status)  User range setting save file processing FB_CN (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  FB_EN (Execution command)  FB_EN (Execution status)  User range setting save file processing FB_OK (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  0  ERROR_ID (Error code)  0  Error code		
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 code	Description	Action
40 (Decimal)	The offset/gain value reading processing	Reduce the frequency of the access
	timeout occurred because accesses to	processing to the SD memory card.
	the SD memory card are frequently made	
	in addition to this FB.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.



# ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command F	FB_EN	Bit	ON,OFF	ON: The FB is activated.
				OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
			details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.
Saved data type	i_Dat_Type		0~Fh	Specify the type of data to be saved
				for each channel.
		Word		0: Voltage, 1: Current
				b15 b4 b3 b2 b1 b0 0 ~ 0 CH.4 CH.3 CH.2 CH.1

### Output labels

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



M+L60AD4-IEF\_OGRestore

#### **Function Overview**

Item	Description				
Function overview	Restores the user range offset/gain settings from a file to the module.				
Symbol	M+L60AD4-IEF_OGRestore				
	Execution command	B : FB_EN FI	B_ENO : B — Execution status		
	Module start XY address	W: i_Start_IO_No	FB_OK: B —Completed without error		
	Station No.	- W : i_Station_No FB_E	ERROR: B — Error flag		
	Slave module start XY address	W: i_SlvStart_IO_No ERF	ROR_ID: W — Error code		
	Own station channel	W:i_CH_No			
Applicable hardware	Analog-Digital	L60AD4			
and software	converter module				
	CC-Link IE field	CC-Link IE field network master/	local module		
	network module	CC-Link IE field network head m	odule		
	CPU Module				
		Series	Model		
		MELSEC-Q Series *1	Universal model QCPU *2		
		MELSEC-L Series	LCPU *3		
		*1 Not applicable to QCPU (A mo	ode)		
		*2 The first five digits of the seria	Il number are "12012" or later		
		*3 The first five digits of the seria	Il number are "13012" or later.		
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applical	ble to the modules used, refer to		
		"Relevant manuals".			
Programming	Ladder				
language					

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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	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	Disable conversion of all channels before executing this FB.
precautions	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]			
	FB_EN (Execution command)  FB_ENO (Execution status)  User range setting file read processing FB_CN (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  FB_ENO (Execution status)  User range setting file read processing FB_CN (Completed without error)  FB_ERROR (Error flag)  ERROR_ID (Error code)  O Error code  O Error code			
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 code list

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



### Labels

#### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
Own station channel	i_CH_No	Word	1~32	Specify the channel for own station.

#### Output labels

- Catpat labolo				
Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the file saving
error				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**

Ve	ersion	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.



 $M+L60AD4-IEF\_SetInputSignalErrEx$ 

### **Function Overview**

Item	Description			
Function overview	Configures input signal error detection extension setting of a specified channel.			
Symbol	M+L60AD4-IEF_SetInputSignalErrEx			nalErrEx
	Execut	ion command—	B:FB_EN	FB_ENO : B — Execution status
	Module sta	rt XY address —	W:i_Start_IO_No	FB_OK: B —Completed without error
		Station No. —	W:i_Station_No	FB_ERROR: B — Error flag
	Slave module sta	rt XY address —	W:i_SlvStart_IO_No	ERROR_ID: W — Error code
	Own st	tation channel—	W:i_CH_No	
		Target CH—	- W : i_CH	
	Input signal error detection exte	ension setting—	W:i_SigErrEnhance	
	Input signal error detection	n setting value —	W:i_SigErrLevel	
		T		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module * Applicable to A/D converter module whose first five digits of the			
		produ	ct information are "1304	1" or later
	CC-Link IE field CC-Link IE field network master/local module		local module	
	network module CC-Link IE field network head module		odule	
	CPU Module			
			Series	Model
		MELSE	EC-Q Series *1	Universal model QCPU *2
		MELSE	C-L Series	LCPU *3
		*1 Not a	oplicable to QCPU (A mo	ode)
		*2 The fi	rst five digits of the seria	I number are "12012" or later
		*3 The fi	rst five digits of the seria	I number are "13012" or later.

Item	Description			
	Engineering software	GX Works2 *1		
		Language	Software version	
		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 applica	ble to the modules used, refer to	
		"Relevant manuals".		
Programming	Ladder			
language				
Number of steps	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.			
Function description	Configures input sign	nal error detection extension setti	ng 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	ue will not take effect until the 'ope	erating condition setting request	
		d OFF->ON->OFF or the Operatin	g 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.			
		ode explanation section for details		
	,		number specified by i_Station_No	
		ROR is turned ON and the proces	ssing is interrupted, and the error	
	, , ,	s stored in ERROR_ID.		
		ode explanation section for details		
	,	field network error occurs, the FB	•	
		upted, and the error code is stored	·	
Compiling mathed		ode explanation section for details	•	
Compiling method	Macro type			



Item	Description			
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery			
precautions	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]			
	FB_EN (Execution command)  FB_EN (Execution command)			
	FB_ENO (Execution status)  FB_ENO (Execution status)			
	Input signal error detection extension setting write processing No processing Writing Input signal error detection extension setting write processing extension setting write processing extension setting write processing			
	(Completed without error)  (Completed without error)			
	FB_ERROR (Error flag)  FROR_ID (Error code)  0  ERROR_ID (Error code)  0  Error code  0			



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 code list

Error code	Description	Action	
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.	
	The target channel is not within the range		
	of 1 to 4.		
11 (Decimal)	The input signal error detection extension	Please try again after confirming the setting.	
	setting is not valid. The input signal error		
	detection extension setting is not within		
	the range of 0 to 4.		
50 (Decimal)	The network configuration setting of the	Review the following setting.	
	station number specified by i_Station_No	Network configuration setting	
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L	
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local	
		Module User's Manual.	

### Labels

### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		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	Disable     Upper and lower detection     Lower detection     Upper detection     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	Initial	Description
		type	value	
Execution status	FB_ENO	Dit	OFF	ON: Execution command is ON.
		Bit OFF C		OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the input signal
error		Bit	OFF	error detection extension setting has been
				completed.
Error flag	FB_ERROR	Dit	OFF	When ON, it indicates that an error has
		Bit OFF		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.



M+L60AD4-IEF\_SetDigitalClip

### **Function Overview**

Item	Description				
Function overview	Enables or disables the digital clipping of a specified channel.				
Symbol		M+L60AD4-IEF_SetDigitalC			
	Execution co	mmand— B : FB_EN	FB_ENO : B —Execution status		
	Module start XY	address — W: i_Start_IO_No	FB_OK : B —Completed without error		
	Sta	tion No. — W: i_Station_No	FB_ERROR: B — Error flag		
	Slave module start XY	address — W: i_SlvStart_IO_No	ERROR_ID: W — Error code		
	Own station	channel— W : i_CH_No			
	Та	rget CH— W: i_CH			
	Digital clipping enable/disable	setting—B: i_SetDegiClip			
Applicable hardware	Analog-Digital	L60AD4			
and software	converter module		dule whose first five digits of the		
and software	converter module	product information are "1304	•		
	CC-Link IE field	•			
		CC-Link IE field network head m	C-Link IE field network master/local module		
	network module	CC-Link ie lield network nead if	lodule		
	CPU Module				
		Series	Model		
		MELSEC-Q Series *1	Universal model QCPU *2		
		MELSEC-L Series	LCPU *3		
		*1 Not applicable to QCPU (A mo	ode)		
		*2 The first five digits of the seria	erial number are "12012" or later erial number are "13012" or later.		
		*3 The first five digits of the seria			
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applica	ble to the modules used, refer to		
		"Relevant manuals".			

MELSEC-L Analog-Digital Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M071-A



Item	Description			
Programming	Ladder			
language				
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	1) The FB does not include error recovery processing. Program the error recovery				
precautions	processing separately in accordance with the required system operation.				
	) 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.				
	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]				
	FB_EN (Execution command)  FB_EN (Execution command)				
	FB_ENO (Execution status)				
	Digital clipping setting write processing Writing processing proce				
	FB_OK (Completed without error)  FB_OK (Completed without error)				
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FROM ID (Error code)  FROM ID (Error code)  FROM ID (Error code)  FROM ID (Error code)				
	ERROR_ID (Error code) 0 ERROR_ID (Ellol code) U Error code V				



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

### Labels

### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvord	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



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

### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		ום	011	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the digital
error		Bit	OFF	clipping enable/disable setting has been
				completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has
		DIL	OFF	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.



M+L60AD4-IEF\_SetShift

### **Function Overview**

Item	Description		
Function overview	Performs the shift setting of a specified channel.		
Symbol	Execution co Module start XY : Sta Slave module start XY : Own station	M+L60AD4-IEF_SetShift  mmand— B: FB_EN  address— W: i_Start_IO_No  tion No.— W: i_Station_No F	FB_ENO: B — Execution status  FB_OK: B — Completed without error  EB_ERROR: B — Error flag  ERROR_ID: W — Error code
Applicable hardware and software	Analog-Digital converter module  CC-Link IE field network module	L60AD4  *Applicable to A/D converter mo product information are "1304  CC-Link IE field network master, CC-Link IE field network head m	/local module
	Series  MELSEC-Q Series *1  MELSEC-L Series  *1 Not applicable to QCPU (A mo *2 The first five digits of the serial		,
	Engineering software	Language  Japanese version  English version  Chinese (Simplified) version  Chinese (Traditional) version  Korean version  *1 For software versions applical "Relevant manuals".	Software version  Version1.86Q or later  Version1.24A or later  Version1.49B or later  Version1.49B or later  Version1.49B or later  ble to the modules used, refer to

MELSEC-L Analog-Digital Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M071-A



Item	Description		
Programming	Ladder		
language			
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	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	1) The FB does not include error recovery processing. Program the error recovery			
precautions	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).			
	This FB uses cyclic and transient transmission. Therefore, an interlock program for			
	cyclic and transient transmission is required.			
	t the refresh parameters of the network parameter setting according to (3) in Section			
	1.4.			
	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]			
	FB_EN (Execution command)  FB_EN (Execution command)			
	FB_ENO (Execution status)  FB_ENO (Execution status)			
	Shifting amount to Conversion value write processing Writing No processing Writing Placessing Processing Proce			
	FB_OK (Completed without error)  FB_ERROR (Error flag)			
	FB_ERROR (Error flag)  ERROR_ID (Error code)  0  ERROR_ID (Error code)  0  Error code			



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 code list

Error code	Description	Action	
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.	
	The target channel is not within the range		
	of 1 to 4.		
50 (Decimal)	The network configuration setting of the	Review the following setting.	
	station number specified by i_Station_No	Network configuration setting	
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L	
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local	
		Module User's Manual.	



### Labels

### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution	FB_EN	Bit	ON,OFF	ON: The FB is activated.
command		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
		vvoid	details, refer to	
			the head module	
			user's manual.	
Own station	i_CH_No	Word	1~32	Specify the channel for own station.
channel		vvoid		
Target CH	i_CH	Word	1~4	Specify the channel number.
Shifting amount to	i_ShiftValue	Word	-32,768~32,767	Specify the shifting amount to
conversion value		vvoid		conversion value.

#### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Di+	OFF	ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	D:4	OFF	When ON, it indicates that the shift setting
error		Bit	OFF	has been completed.
Error flag	FB_ERROR	Di+	OFF	When ON, it indicates that an error has
		Bit	OFF	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.



M+L60AD4-IEF\_SetLoggingPARAM

### **Function Overview**

Item	Description			
Function overview	Performs the logging function of a specified channel.			
Symbol		M+L60AD4-IEF_SetLoggingPARAM		
	Execution command	B : FB_EN F	B_ENO : B —Execution status	
	Module start XY address	W : i_Start_IO_No	FB_OK : B —Completed without error	
	Station No.	W: i_Station_No FB_I	ERROR: B — Error flag	
	Slave module start XY address	- W : i_SlvStart_IO_No ERF	ROR_ID: W — Error code	
	Own station channel	W : i_CH_No		
	Target CH	W:i_CH		
	Logging enable/disable setting	B : i_Log_Enable		
	Logging data setting	W : i_Log_Data		
	Logging cycle setting value	W : i_Log_Cycle_Val		
	Logging cycle unit setting	W : i_Log_Cycle_Unit		
	Logging points after trigger	W : i_Log_Points		
	Level trigger condition setting	g—W:i_Log_Trig_Cond		
	Trigger data	ta— W:i_Log_Trig_Data		
	Trigger setting value	ue—W:i_Log_Trig_Value		
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module	*Applicable to A/D converter mod	dule whose first five digits of the	
		product information are "1304"	1" or later	
	CC-Link IE field	CC-Link IE field network master/	local module	
	network module	CC-Link IE field network head m	odule	
	CPU Module			
		Series Model		
		MELSEC-Q Series *1 Universal model QCPU *2		
		MELSEC-L Series 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 seria	I number are "13012" or later.	



Item	Description			
	Engineering software	GX Works2 *1		
		Language	Software version	
		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 applica	ble to the modules used, refer to	
		"Relevant manuals".		
Programming	Ladder			
language				
Number of steps	500 steps (for MELSEC	-Q series universal model CPU)		
	*The number of steps of	f the FB in a program depends on	the CPU model that is used and	
	input and output defir	ition.		
Function description	1) Performs the logging function of a specified channel when the FB_EN (Execution			
	command) is turned	d 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			
	,	estSetting) is executed.		
	,		the FB_ERROR output turns ON,	
		upted, and the error code is stored	,	
		ode explanation section for details		
			number specified by i_Station_No	
	. –	ROR is turned ON and the proces	ssing is interrupted, and the error	
	, , ,	s stored in ERROR_ID.		
		ode explanation section for details		
	,	field network error occurs, the FB	·	
		upted, and the error code is stored	,	
0 111 11 1	Refer to the error code explanation section for details.			
Compiling method	Macro type			



Item	Description			
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery			
precautions	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.			
	hen 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]			
	FB_EN (Execution command)  FB_EN (Execution command)			
	FB_ENO (Execution status)  FB_ENO (Execution status)			
	Logging function parameter setting write processing Writing processing setting write processing setting sett			
	FB_OK (Completed without error)			
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  ERROR_ID (Error code)  0  Error code  0			
	ERROR_ID (Error code) 0			



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

### Labels

### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
		vvoid	details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data	Setting range	Description
		type		
Station No.	i_Station_No	Word	1~120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_Log_Enable		ON,OFF	ON: Enable the logging function.
enable/disable		Bit		OFF: Disable the logging function.
setting				
Logging data setting	i_Log_Data		0,1	Set the data to be logged.
		Word		0: Digital output value
				1: Digital operation value
Logging cycle	i_Log_Cycle_Val		1) Logging cycle	Set the cycle to store data.
setting value			unit setting=0:	
			80~32,767	
			2) Logging cycle	
		Word	unit setting=1:	
			1~32,767	
			3) Logging cycle	
			unit setting=2:	
			1~3,600	
Logging cycle unit	i_Log_Cycle_Unit		0: μs	Specify the cycle unit to store data.
setting		Word	1: ms	
			2: s	
Logging points after	i_Log_Points		1~10,000	Specify the number of data to be
trigger		Word		logged after the hold trigger occurs.
Level trigger	i_Log_Trig_Cond		0: Disable	Set whether to use the level trigger
condition setting			1: Above	or not. If used, set the condition.
		Word	2: Below	
			3: Pass through	
Trigger data	i_Log_Trig_Data		0~4,999	Set the buffer memory address
		Word		monitored for the level trigger.
	1		1	

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Name (Comment)	Label name	Data	Setting range	Description
		type		
Trigger setting value	i_Log_Trig_Value	Word	-32,768~32,767	Set the level at which the level
		vvora		trigger occurs.

#### Output labels

Name (Comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Di+	OFF	ON: Execution command is ON.
		Bit OFF C		OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the logging
error		Bit	OFF	function parameter setting has been
				completed.
Error flag	FB_ERROR	Di+	OFF	When ON, it indicates that an error has
		Bit OFF		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.



M+L60AD4-IEF\_SetFlowRatePARAM

#### **Function Overview**

Item	Description			
Function overview	Sets the flow amount integration function of a specified channel.			
Symbol			M+L60AD4-IEF_SetFlowRa	atePARAM
	Exec	ution command—	B : FB_EN	FB_ENO : B —Execution status
	Module s	tart XY address—	W : i_Start_IO_No	FB_OK: B —Completed without error
		Station No. —	W:i_Station_No	FB_ERRÔR : B — Error flag
	Slave module s	tart XY address—	W:i_SlvStart_IO_No	ERROR_ID: W — Error code
	Own	station channel—	W:i_CH_No	
		Target CH—	W:i_CH	
	Flow amount integration enable	/disable setting—	B:i_FRI_Enable	
	Integration cyc	cle setting value—	W:i_FRI_Cycle_Val	
	Flow amount t	ime unit setting—	W:i_F_Time_Unit	
	Unit	scaling setting—	W:i_F_Scale	
Applicable hardware	Analog-Digital	L60AD4		
and software	converter module	*Applicabl	le to A/D converter mod	dule whose first five digits of the
		product	information are "1304"	1" or later
	CC-Link IE field	CC-Link II	E field network master/	local module
	network module	CC-Link II	E field network head m	odule
	CPU Module			
			Series	Model
		MELSEC	C-Q Series *1	Universal model QCPU *2
		MELSEC	C-L Series	LCPU *3
		*1 Not app	olicable to QCPU (A mo	ode)
		*2 The firs	t five digits of the seria	I number are "12012" or later
		*3 The firs	t five digits of the seria	I number are "13012" or later.



Item		Description			
	Engineering software	GX Works2 *1			
		Language	Software version		
		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 applica	ble to the modules used, refer to		
		"Relevant manuals".			
Programming	Ladder				
language					
Number of steps	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 defin	ition.			
Function description	,	t integration function of a specifie	d channel when the FB_EN		
	(Execution commar	•			
	2) FB operation is one-shot only, triggered by the FB_EN signal.				
	,	ue will not take effect until the 'ope			
	, ,	d OFF->ON->OFF or the Operation	g condition setting request FB		
		estSetting) is executed.	# ED EDDOD / // ON		
	,		the FB_ERROR output turns ON,		
		upted, and the error code is stored	_		
		ode explanation section for details	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.			
		field network error occurs, the FB			
	,	upted, and the error code is stored	•		
		ode explanation section for details	,		
Compiling method	Macro type	,			
, 5					



Item	Description			
Restrictions and	The FB does not include error recovery processing. Program the error recovery			
precautions	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]			
	FB_EN (Execution command)  FB_EN (Execution command)			
	FB_ENO (Execution status)  FB_ENO (Execution status)			
	Flow amount integration function parameter setting write processing Writing processing parameter setting write processing parameter setting write processing			
	FB_OK (Completed without error)			
	FB_ERROR (Error flag)  FB_ERROR (Error flag)  FB_ERROR (Error flag)  FB_ERROR (Error flag)  FROR_ID (Error code)  0  ERROR_ID (Error code)  0			
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0			



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 code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid.	Please try again after confirming the setting.
	The target channel is not within the range	
	of 1 to 4.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	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	A CC-Link IE field network error occurred	Refer to Error Code List in the MELSEC-Q/L
(Hexadecimal)	in the system.	CC-Link IE Field Network Master/Local
		Module User's Manual.

### Labels

### ●Input labels

Name (Comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON,OFF	ON: The FB is activated.
		BIT		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60AD4
		Word	of the CPU. For	module is mounted. (For example,
			details, refer to	enter H10 for X10.)
			the CPU user's	
			manual.	



Name (Comment)	Label name	Data Setting range type		Description
Station No.	i_Station_No	Word	1~120	Specify the target station number.
		vvoiu		. , ,
Slave module start	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
XY address			I/O point range	hexadecimal) where the L60AD4
			of the head	module is mounted. (For example,
		Word	module. For	enter H10 for X10.)
			details, refer to	
			the head module	
			user's manual.	
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	i_FRI_Enable		ON: Enable	Enable/disable the flow amount
integration		D.,	OFF: Disable	integration function.
enable/disable		Bit		
setting				
Integration cycle	i_FRI_Cycle_Val		1~5,000	Set the integration cycle of the
setting value				connected flow meter. The unit is
		Word		ms. Set this according to the analog
				output cycle of the connected flow
				meter.
Flow amount time	i_F_Time_Unit		0: /s	Set the range (time unit) of the flow
unit setting		Word	1: /min	meter.
			2: /h	
Unit scaling setting	i_F_Scale		0:×1	Specify the unit scale to calculate
			1:×10	the integrated flow amount.
		Word	2:×100	
			3:×1,000	
			4:×10,000	

#### Output labels

Name (Comment)	Label name	Data	Initial	Description
Name (Comment)	Labername	Dala	IIIIIai	Description
		type	value	
Execution status	FB_ENO	Bit OFF	ON: Execution command is ON.	
			OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the flow
error		Bit	OFF	amount integration function parameter
				setting has been completed.





Name (Comment)	Label name	Data	Initial	Description
		type	value	
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.



## **FB Name**

M+L60AD4-IEF\_SaveLogging

## **Function Overview**

Item	Description				
Function overview	Saves the logging data of a specified channel in a file.				
Symbol	M+L60AD4-IEF_SaveLogging				
	Execution command	B:FB_EN F	B_ENO : B —Execution status		
	Module start XY address	W:i_Start_IO_No	FB_OK : B —Completed without error		
	Station No	. — W : i_Station_No	ing_File: B —Creating file		
	Slave module start XY address	W: i_SIvStart_IO_No	Number : B —Maximum No. reached flag		
	Own station channe	W:i_CH_No FB_	ERROR: B — Error flag		
	Target Ch	H—W:i_CH ERI	ROR_ID: W —Error code		
	Maximum No. of save files	S W: i_Max_Number			
	Overwrite save command	B:i_Over_Write			
Applicable hardware	Analog-Digital	L60AD4			
and software	converter module	*Applicable to A/D converter module whose first five digits of the			
		product information are "13041" or later			
	CC-Link IE field	CC-Link IE field network master/local module			
	network module	CC-Link IE field network head module			
	CPU Module				
		Series	Model		
		MELSEC-Q Series *1	Universal model QCPU *2		
		MELSEC-L Series	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 seria	al number are "13012" or later.		

Item	Description				
	Engineering software	GX Works2 *1			
		Language	Software version		
		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".			
Programming	Ladder				
language					
Number of steps	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.				



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	ie
	the logging hold flag is turned ON.	
	3) It requires multiple scans to complete the save processing of the logging data. To ch	ieck
	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" + "Targe	ŧt
	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 alread	ly 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 retu	rns
	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.	
	B) If the number of files the FB saved in the memory card *3 has reached i_Max_Num	ber,
	o_Exceed_Number (Maximum No. reached flag) is turned ON regardless of whether	er
	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 (Er	ror
	flag) is turned ON and the FB processing is aborted. Then an error code is stored in	n
	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	The FB does not include error recovery processing. Program the error recovery
precautions	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	8) When processes for accessing the SD memory card, such as the data logging function
precautions	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	17) Only one master/local module can be controlled by the CC-Link IE Field system FB. To				
precautions	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]				
	FB_EN (Execution command)  FB_ENO (Execution status)  Logging hold flag  o_Making_File (Creating file)  FB_OK (Completed without error)  o_Exceed_Number (Maximum No. reached)  FB_EROR (Error flag)  ERROR_ID (Error code)  FB_EROR (Error code)  FB_EROR_IC (Error code)  O_Exceed_IN (Error code)  O_Exceed_IN (Error code)  FB_EROR_IC (Error code)  O_ERROR_ID (Error code)				
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	Please try again after confirming the	
	target channel is not within the range of 1 to 4.	setting.	
11 (Decimal)	The maximum number of save files is not	Please try again after confirming the	
	valid. The maximum number of save files is	setting.	
	not within the range of 1 to 999.		



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	Turn OFF SM606 and confirm that
	access to an SD memory card because	SM607 (SD memory card forced disable
	SM606 (SD memory card forced disable	status flag) is turned OFF. Then, execute
	Instruction) is turned ON.	the FB again.
	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.	
40 (Decimal)	The offset/gain value reading processing	Reduce the frequency of the access
	timeout occurred because accesses to the SD	processing to the SD memory card.
	memory card are frequently made in addition	
	to this FB.	
50 (Decimal)	The network configuration setting of the	Review the following setting.
	station number specified by i_Station_No is	Network configuration setting
	incorrect.	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	A CC-Link IE field network error occurred in	Refer to Error Code List in the
(Hexadecimal)	the system.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual.
Error codes other than	-	For details on the error codes for errors,
above		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	Initial	Description
		type	value	
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the file saving
error				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.	o_Exceed_Number	Bit	OFF	When ON, it indicates that the number of
reached flag				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.



## **FB Name**

 $M+L60AD4-IEF\_MakeFlowRateReport$ 

## **Function Overview**

Item	Description		
Function overview	Saves the flow amount daily report data of all specified channels in a file.		
Symbol	Execution command  Module start XY address	W : i_Start_IO_No	B_ENO: B —Execution status  FB_OK: B —Completed without error
	Station No.  Slave module start XY address  Own station channel		ng_File: B — Creating file  ERROR: B — Error flag  COR_ID: W — Error code
Applicable hardware and software	Analog-Digital converter module	L60AD4  *Applicable to A/D converter moderation product information are "1304"	_
	CC-Link IE field network module CPU Module	CC-Link IE field network master/ CC-Link IE field network head m	
		Series  MELSEC-Q Series *1  MELSEC-L Series  *1 Not applicable to QCPU (A mo	,
	Engineering software	*3 The first five digits of the serial GX Works2 *1  Language  Japanese version  English version  Chinese (Simplified) version  Chinese (Traditional) version  Korean version  *1 For software versions applicate "Relevant manuals".	Software version Version1.86Q or later Version1.24A or later Version1.49B or later Version1.49B or later Version1.49B or later



Item	Description					
Programming	Ladder					
language						
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 e						
	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	1) The FB does not include error recovery processing. Program the error recovery						
precautions	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	9) With LCPU, if SM606 (SD memory card forced disable instruction) is turned ON during						
precautions	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]						
	FB_EN (Execution FB_EN (Execution						
	command)  FB_ENO  FB_ENO						
	(Execution status)  o_Making_File (Creating file)  o_Making_File (Creating file)						
	FB_OK (Completed without error)  FB_OK (Completed without error)						
	FB_ERROR (Error flag)  FB_ERROR (Error flag)						
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code						



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	Turn OFF SM606 and confirm that SM607 (SD			
	access to an SD memory card because	memory card forced disable status flag) is			
	SM606 (SD memory card forced	turned OFF. Then, execute the FB again.			
	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.				
40 (Decimal)	The offset/gain value reading	Reduce the frequency of the access processing			
	processing timeout occurred because	to the SD memory card.			
	accesses to the SD memory card are				
	frequently made in addition to this FB.				
50 (Decimal)	The network configuration setting of the	Review the following setting.			
	station number specified by	<ul> <li>Network configuration setting</li> </ul>			
	i_Station_No is incorrect.	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	A CC-Link IE field network error	Refer to Error Code List in the MELSEC-Q/L			
(Hexadecimal)	occurred in the system.	CC-Link IE Field Network Master/Local Module			
		User's Manual.			
Error codes other than	-	For details on the error codes for errors, refer to			
above		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	Setting range	Description
		type		
Execution command	FB_EN		ON,OFF	ON: The FB is activated.
		Bit		OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No		Depends on the I/O point	Specify the starting XY
address			range of the CPU. For	address (in hexadecimal)
		Word	details, refer to the CPU	where the L60AD4 module
			user's manual.	is mounted. (For example,
				enter H10 for X10.)
Station No.	i_Station_No	Word	1~120	Specify the target station
		vvoid		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O point	Specify the starting XY
XY address			range of the head module.	address (in hexadecimal)
		Word	For details, refer to the	where the L60AD4 module
			head module user's	is mounted. (For example,
			manual.	enter H10 for X10.)
Own station channel	i_CH_No	Word	1~32	Specify the channel for
		vvoiu		own station.

#### Output labels

- Catpat labole						
Name (Comment)	Label name	Data	Initial	Description		
		type	value			
Execution status	FB_ENO	ON: Execution command is ON.		ON: Execution command is ON.		
	Bit OFF		OFF	OFF: Execution command is OFF.		
Completed without	FB_OK	Bit OFF		When ON, it indicates that the creation of the		
error		Bit	OFF	flow amount daily report has been completed.		
Creating file	o_Making_File Bit OFF		OFF	When ON, it indicates that a file is being		
		DIL	OFF	created.		
Error flag	FB_ERROR	D:4	OFF	When ON, it indicates that an error has		
		Bit	OFF	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

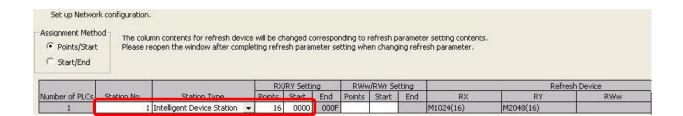
## 1) Enter the network parameters for the second module.

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".

	Module 1		Module 2		Module 3
Network Type	CC IE Field (Master Station)		CC IE Field (Master Station)		None •
Start I/O No.		000		0020	
Network No.		1		2	8
Total Stations		1		1	
Group No.					
Station No.		0		0	
Mode	Online (Normal Mode)	-	Online (Norm LMode)	•	,
	Network Configuration Settings		Network Configuration Settings		
	Network Operation Settings		Network Operation Settings		
	Refresh Parameters		Refresh Parameters		
	Interrupt Settings		Interrupt Settings		
	Specify Station No. by Parameter	-	Specify Station No. by Parameter		
		ilus		200	

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

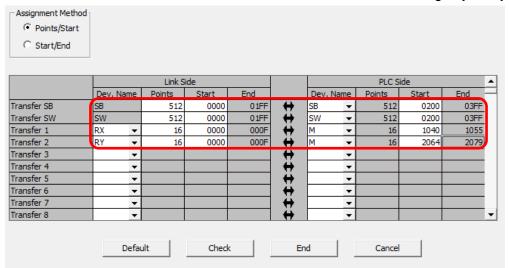
Item		Description					
Station No.	Set the station	Set the station number of the slave connected to the master station.					
	Set "1".	Set "1".					
Station Type	Set the station	Set the station type of the slave connected to the master station.					
	Set "Intelligent	Set "Intelligent Device Station".					
RX/RY Setting	Set assignmen	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	9
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

<sup>\*</sup>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).

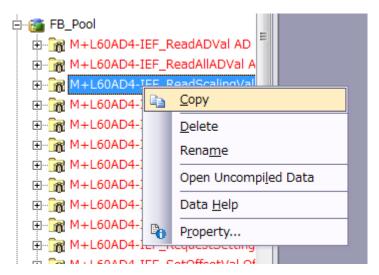
Item	Description	
Class	Select "VAR_GLOBAL".	
Label Name	Enter "M_F_RY2".	
Data type	Select "Bit".	
Device	Enter the refresh device set for the refresh parameter with a prefix "Z8".	

	Class	Label Name	Data Type	Co	nstant 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		¥				

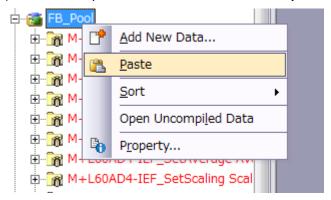


#### Appendix 1.3. Copying MELSOFT Library to Create an FB for the Second Module

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



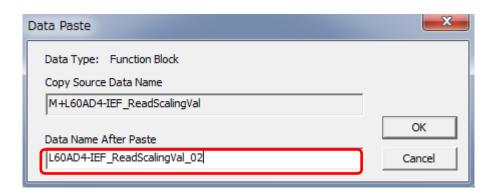
2) Paste the copied FB to "FB\_Pool" on the Project tab of the Navigation window.



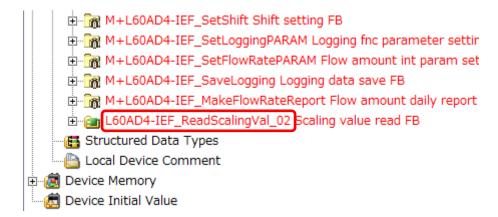
3) After selecting the paste command, a window appears to enter an FB name. Enter an FB name after paste.

(Example: L60AD4-IEF\_ReadScalingVal\_02)

[Note] The character string "+" of M+ $\cdots$  cannot be entered.

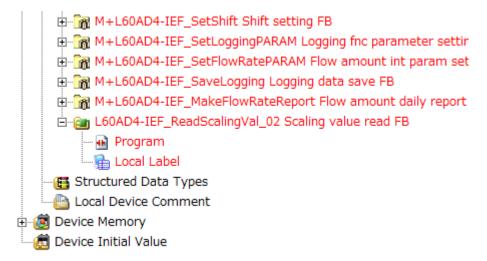




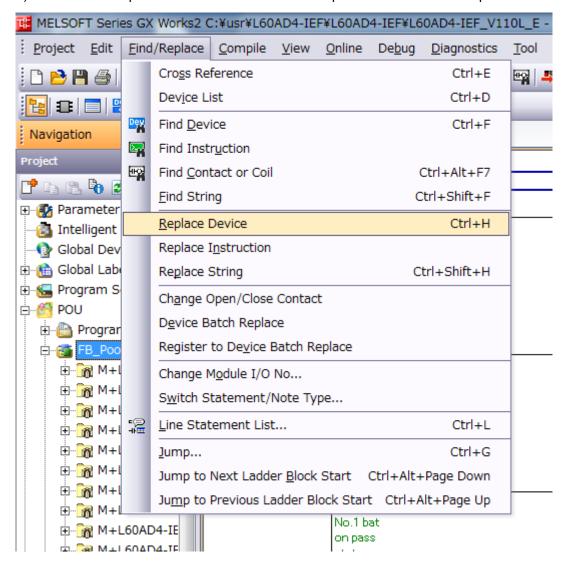


#### Appendix 1.4. Replacing Devices to Create the FB for the Second Module

1) Open "Program" of the added FB.



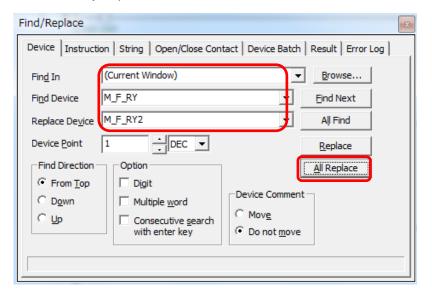
2) Select "Find/Replace" menu and then select "Replace Device". "Find/Replace" window appears.



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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.

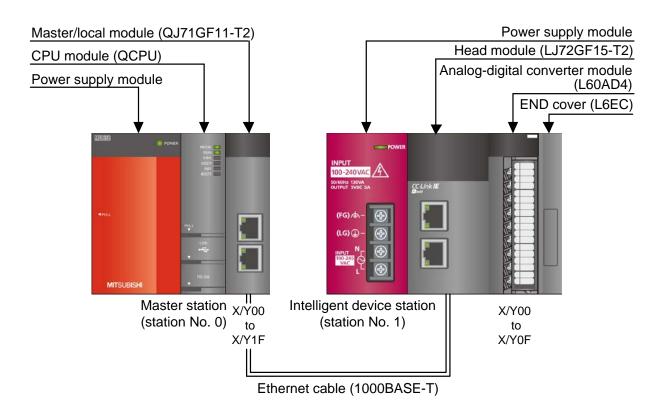
Therefore, to upgrade FBs that were created by following these procedures, after upgrading MELSOFT Library, follow these procedures again.



### 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

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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

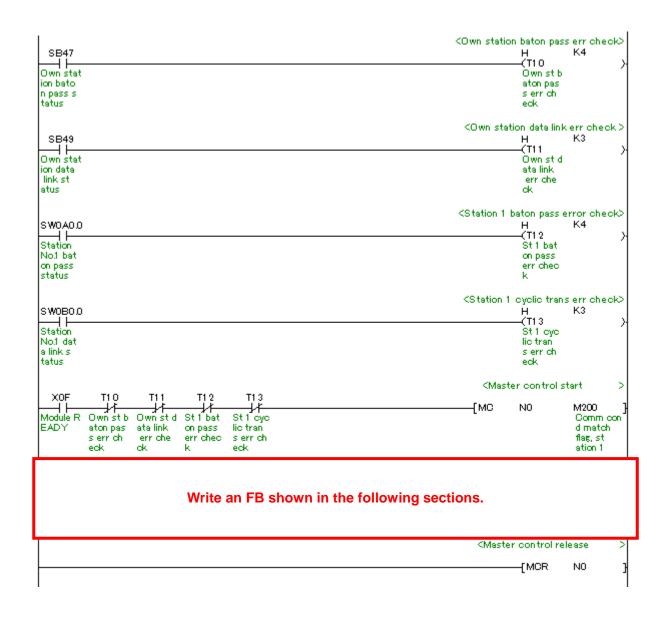
Item	Setting value
Mode	Online
Network No.	1
Station No.	1



#### 5) Programs

#### Interlock program

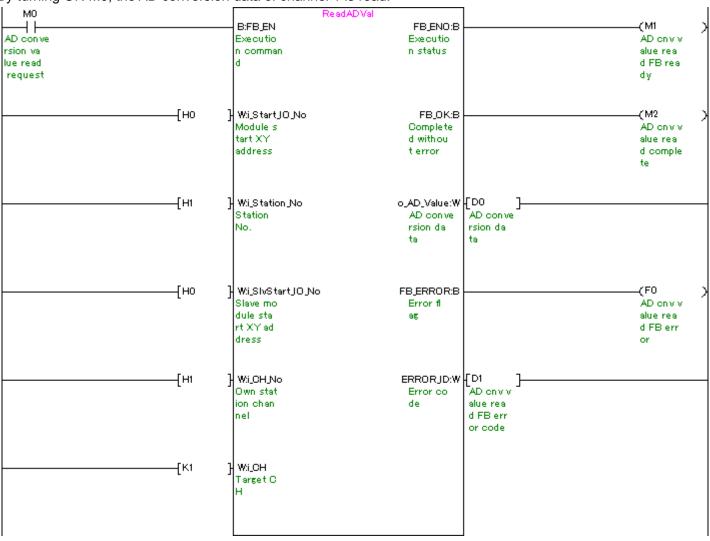
\*This is the interlock program for when using both cyclic and transient transmission.



#### M+L60AD4-IEF\_ReadADVal (Read AD conversion data)

Label name	Setting	Description
	value	
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.

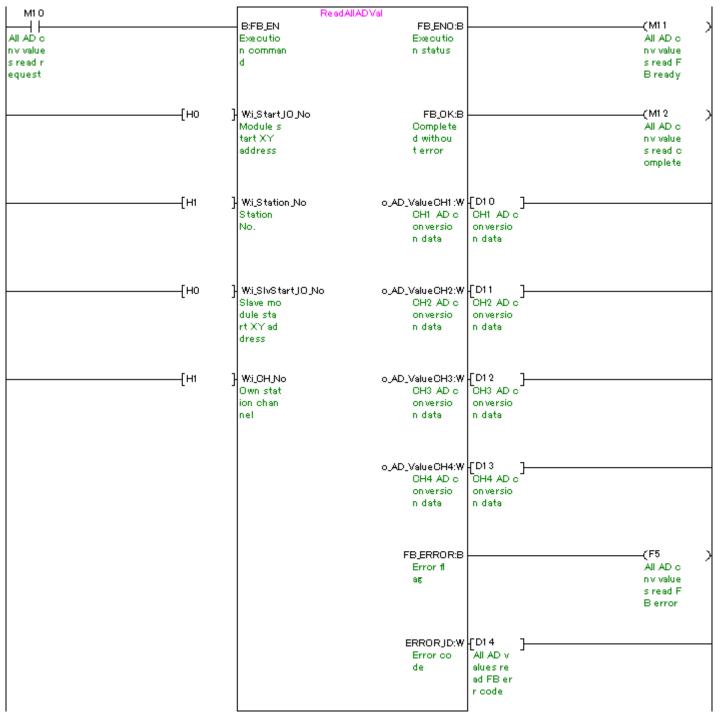
#### By turning ON M0, the AD conversion data of channel 1 is read.



#### M+L60AD4-IEF\_ReadAllADVal (Read all AD conversion data)

Label name	Setting	Description
	value	
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.



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### M+L60AD4-IEF\_ReadScalingVal (Read scaling value)

Label name	Setting	Description
	value	
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.

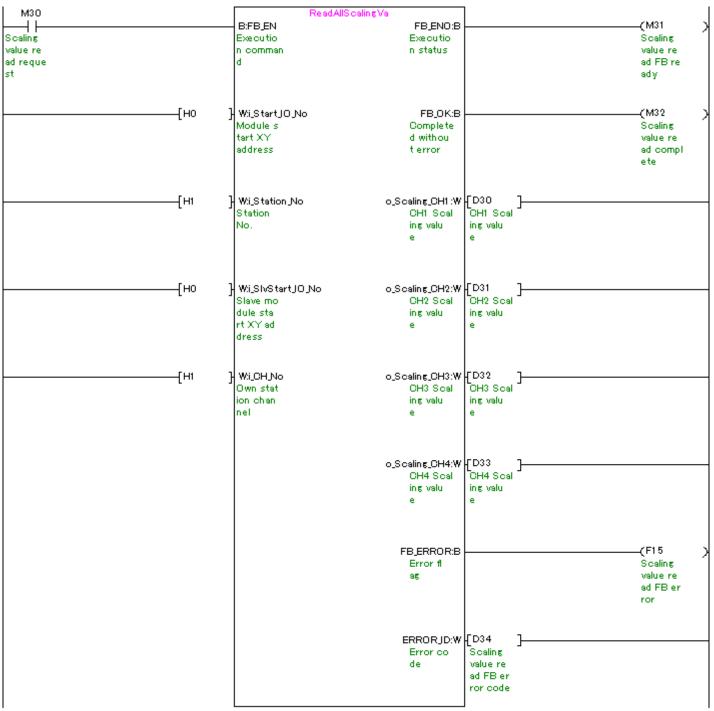
By turning ON M20, the scaling value (digital operation value) of channel 2 is read.



#### M+L60AD4-IEF\_ReadAllScalingVal (Read all scaling values)

Label name	Setting	Description
	value	
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.



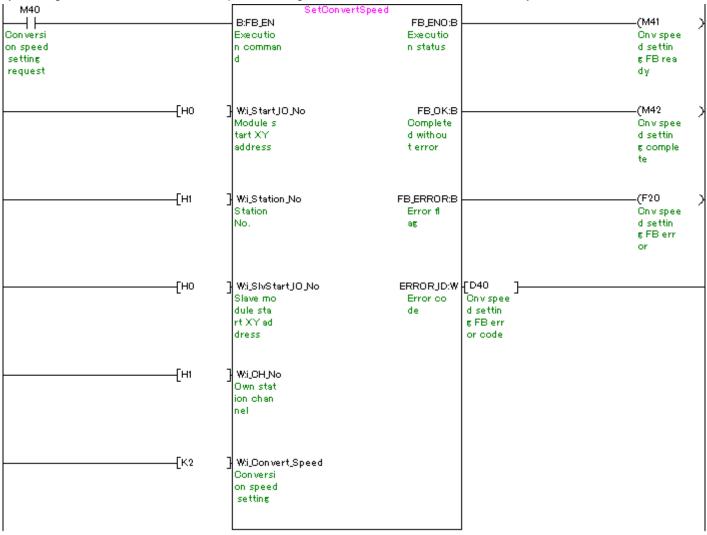
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### M+L60AD4-IEF\_SetConvertSpeed (Conversion speed setting)

Label name	Setting	Description
	value	
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.

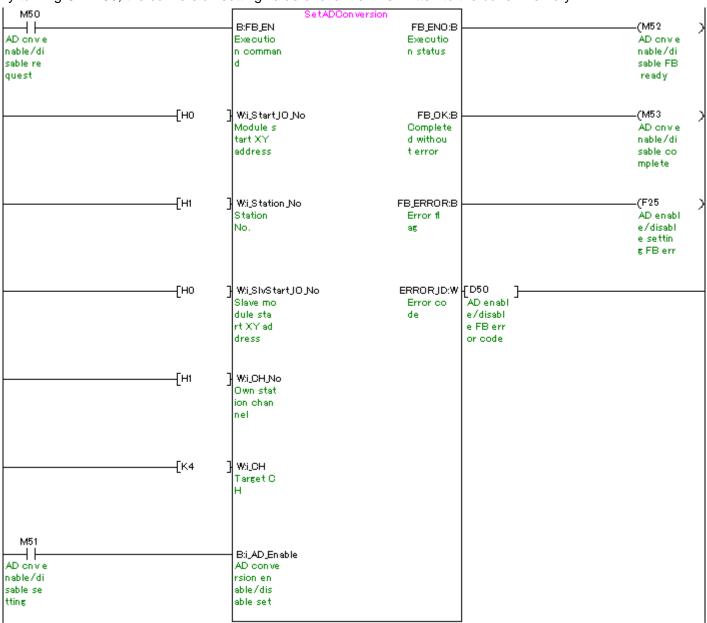
By turning ON M40, the conversion speed setting value is written to the buffer memory.



### M+L60AD4-IEF\_SetADConversion (Enable/disable AD conversion)

Label name	Setting	Description
	value	
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.



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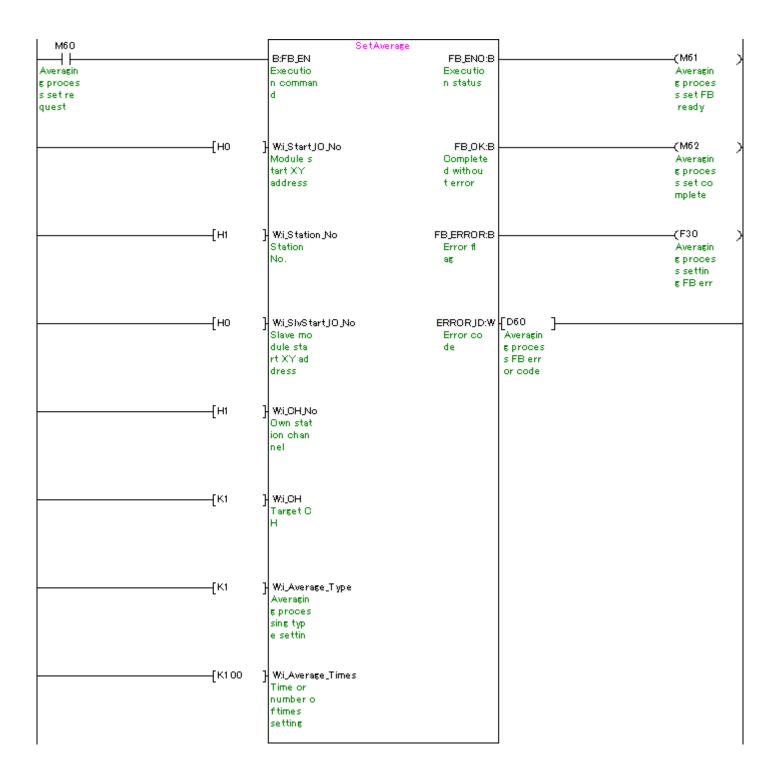


# M+L60AD4-IEF\_SetAverage (Averaging process setting)

Label name	Setting	Description
	value	
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.



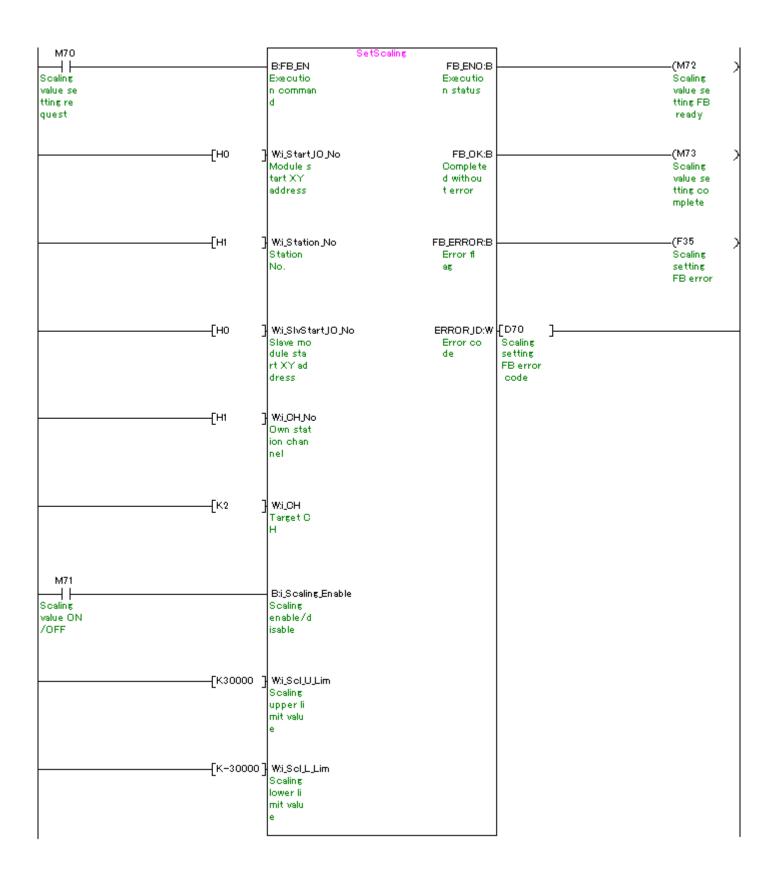




# M+L60AD4-IEF\_SetScaling (Scaling setting)

Label name	Setting	Description
	value	
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.

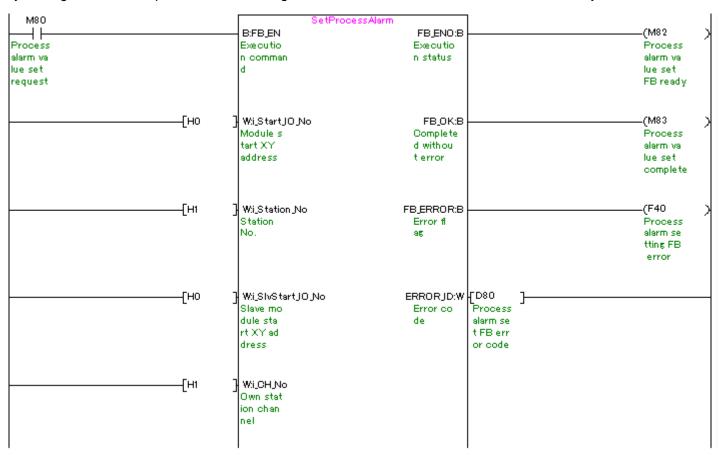




### M+L60AD4-IEF\_SetProcessAlarm (Process alarm setting)

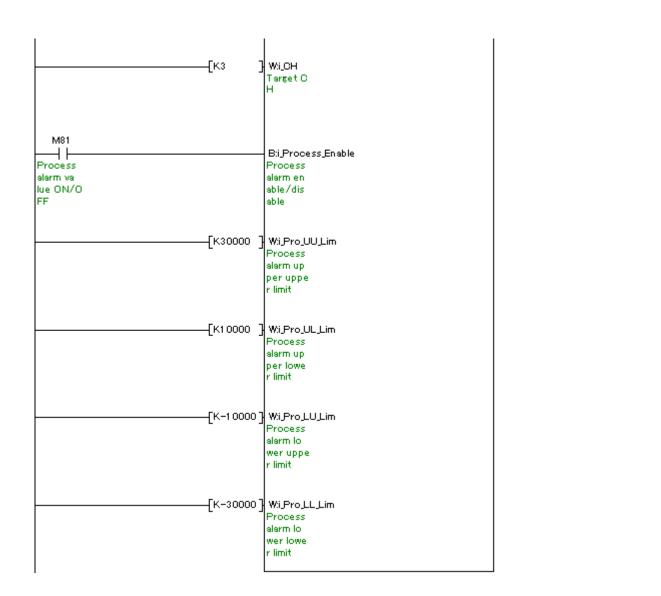
Label name	Setting	Description
	value	
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel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



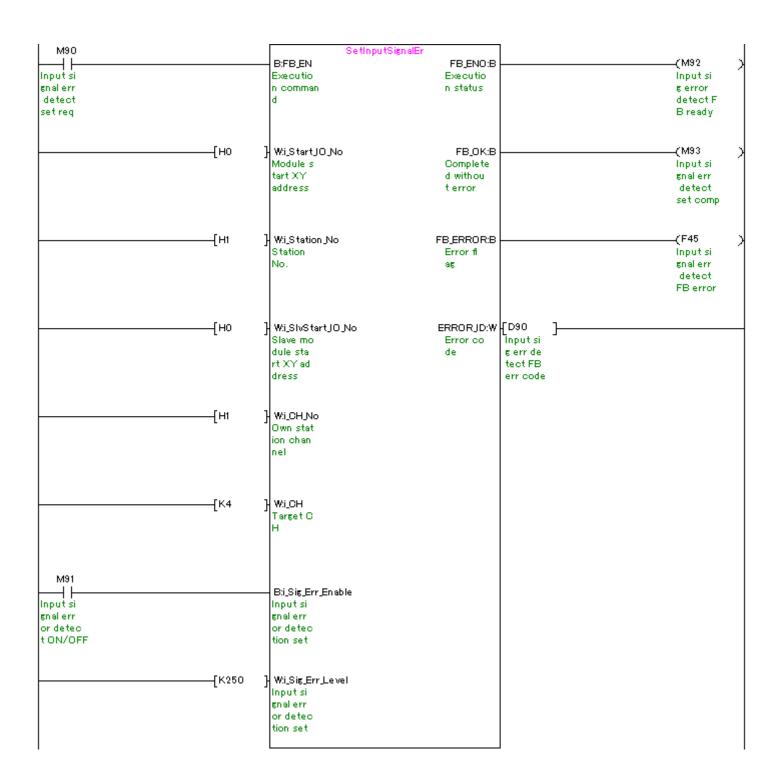




# M+L60AD4-IEF\_SetInputSignalErr (Input signal error detection setting)

Label name	Setting	Description
	value	
i_Start_IO_No	Н0	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.

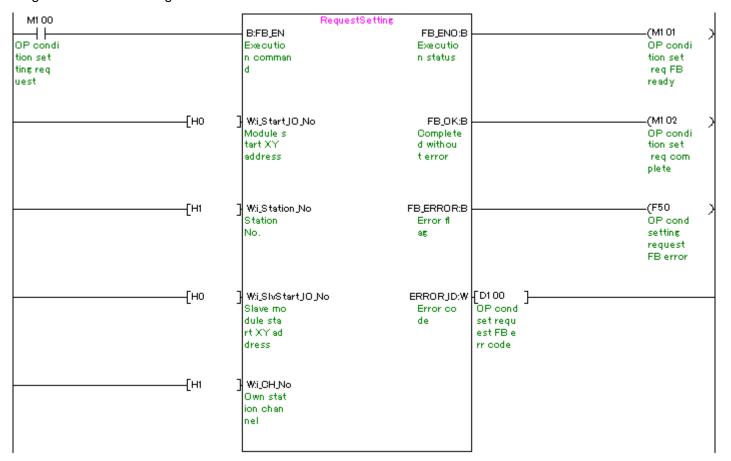




M+L60AD4-IEF\_RequestSetting (Operating condition setting request)

Label name	Setting	Description
	value	
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.

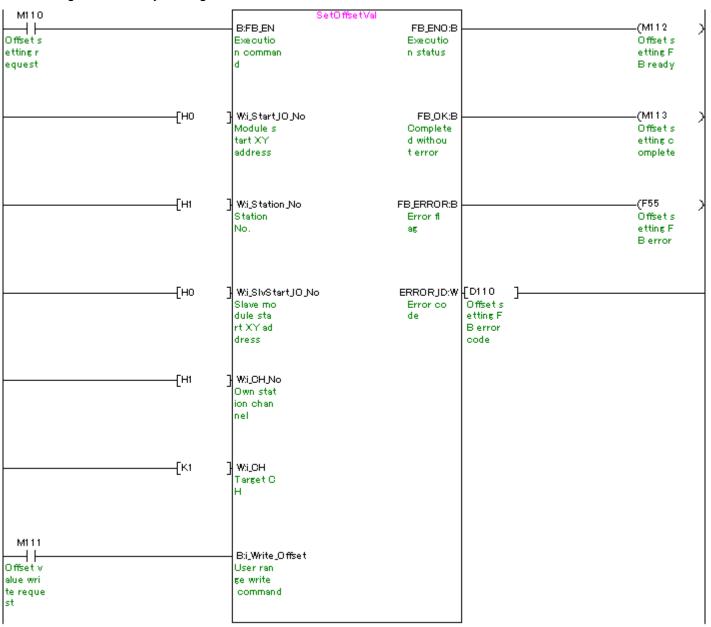
By turning ON M100, the settings of the enable/disable AD conversion, averaging processing setting, input signal error detection extension setting, digital clipping setting, input signal error detection setting, conversion speed setting, warning output setting, scaling setting, process alarm setting,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

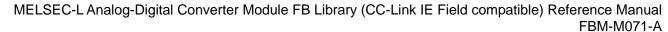


### M+L60AD4-IEF\_SetOffsetVal (Offset setting)

Label name	Setting	Description
	value	
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.



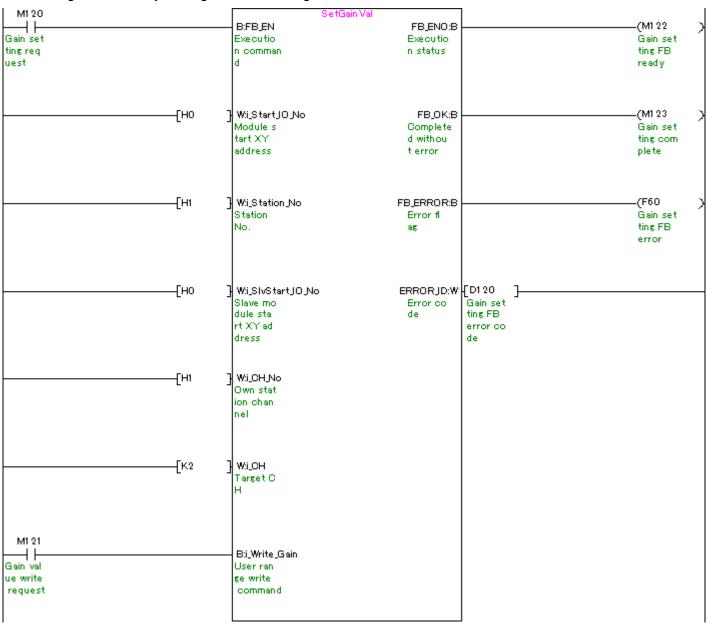


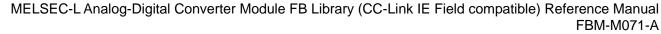


### M+L60AD4-IEF\_SetGainVal (Gain setting)

Label name	Setting	Description
	value	
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.



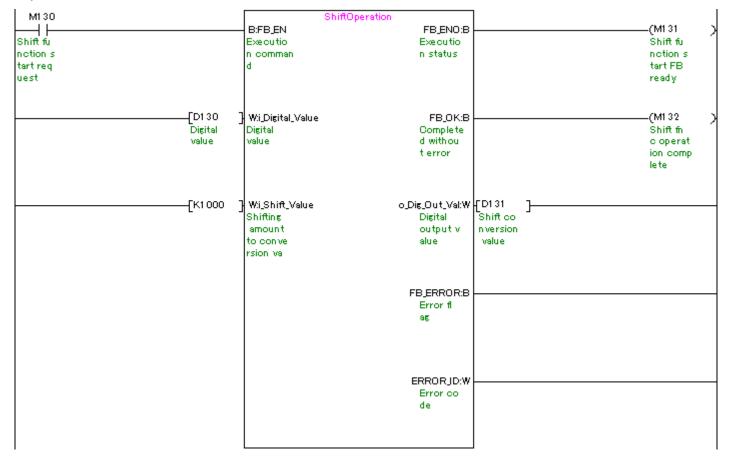




### M+L60AD4-IEF\_ShiftOperation (Shift operation)

Label name	Setting	Description
	value	
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.

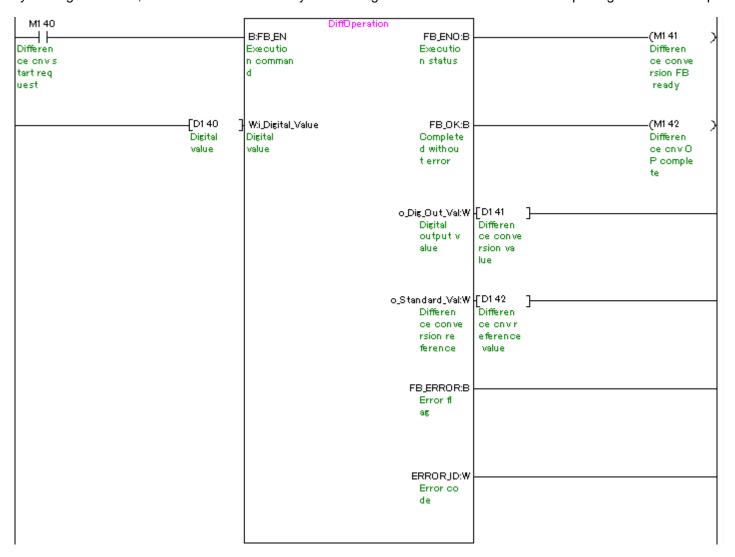
By turning ON M130, the sum obtained by adding the input digital value to the shifting amount to conversion value is output.



### M+L60AD4-IEF\_DiffOperation (Difference conversion process)

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

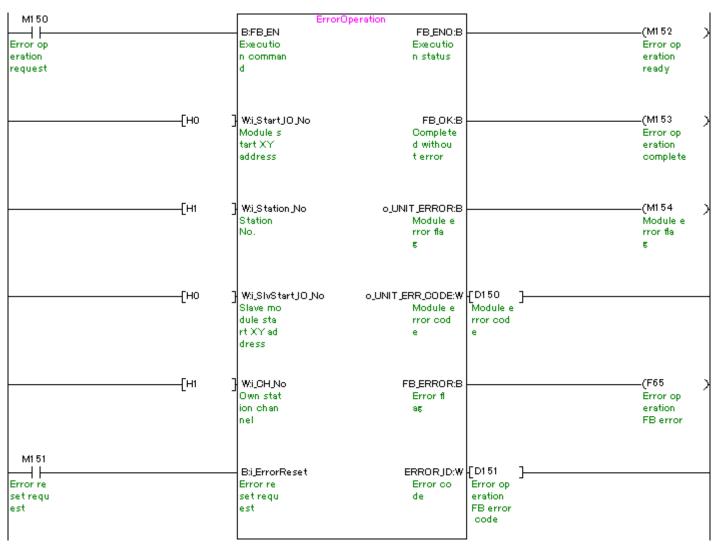
By turning ON M140, the difference obtained by subtracting the reference value from the input digital value is output.



### M+L60AD4-IEF\_ErrorOperation (Error operation)

Label name	Setting	Description
	value	
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.

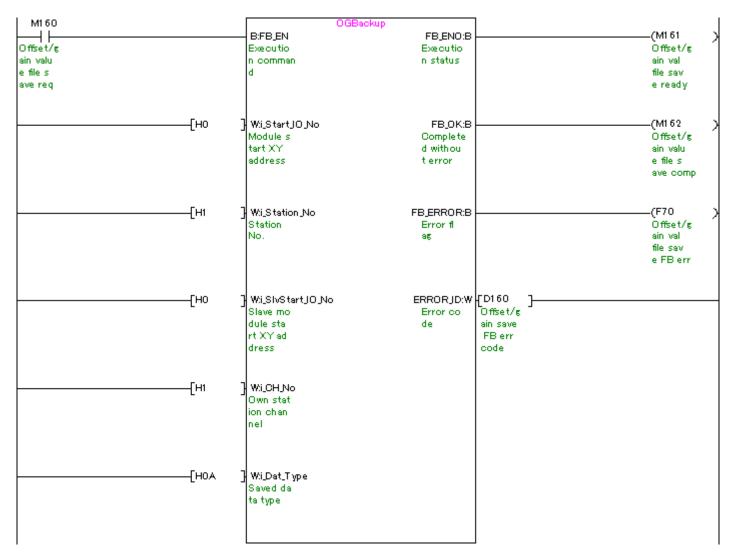




### M+L60AD4-IEF\_OGBackup (Offset/gain value save)

Label name	Setting	Description
	value	
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.

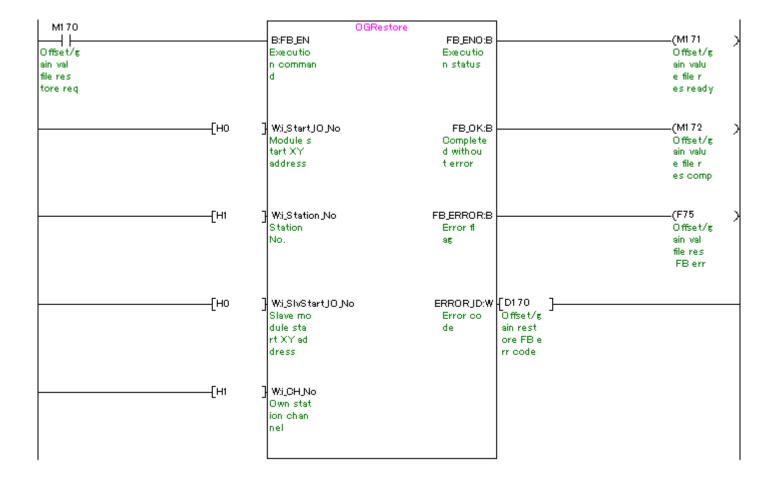
By turning ON M160, the offset/gain values are read from the user range setting and they are saved in the memory card mounted on the CPU module.



### M+L60AD4-IEF\_OGRestore (Offset/gain value restore)

Label name	Setting	Description
	value	
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.

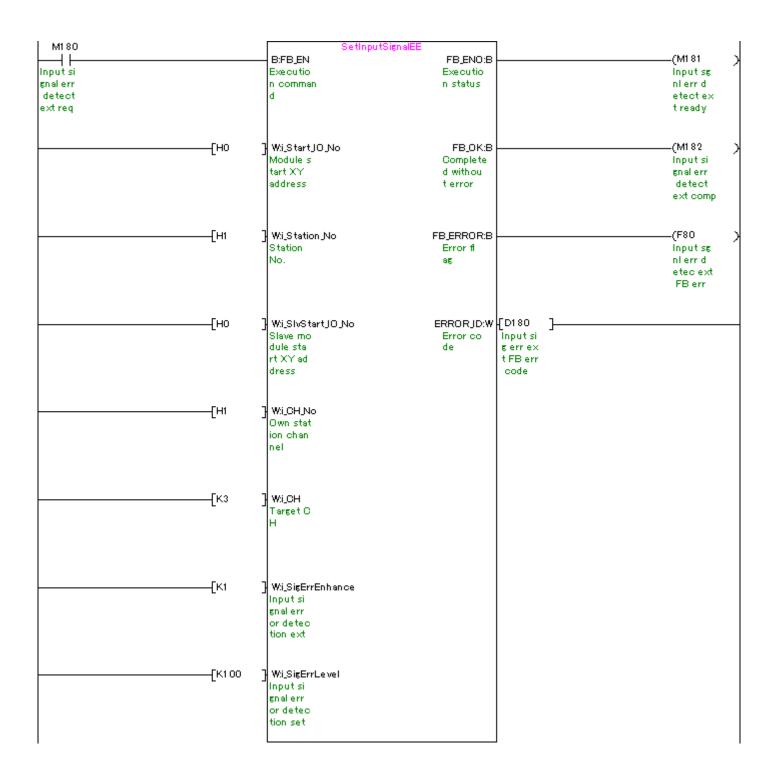


## M+L60AD4-IEF\_SetInputSignalErrEx (Input signal error detection extension setting)

Label name	Setting	Description
	value	
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.



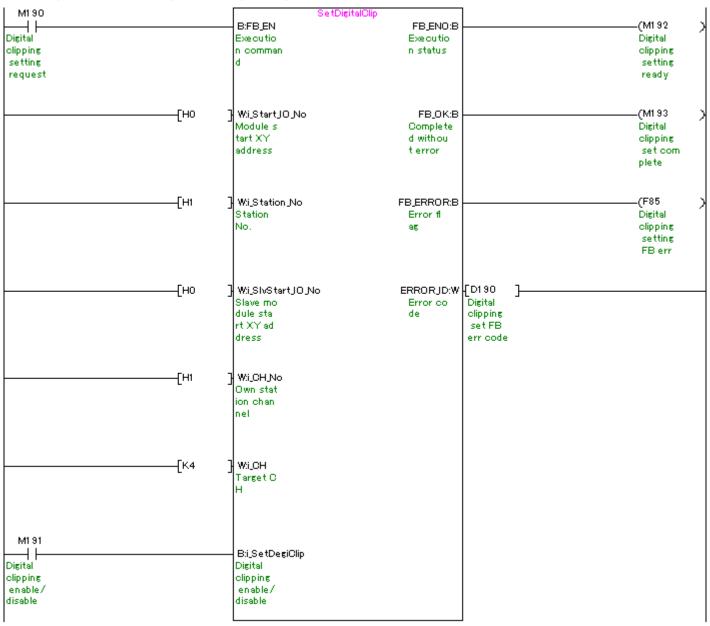


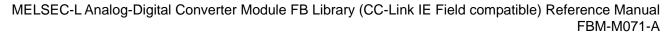


### M+L60AD4-IEF\_SetDigitalClip (Digital clipping setting)

Label name	Setting	Description
	value	
i_Start_IO_No	Н0	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.



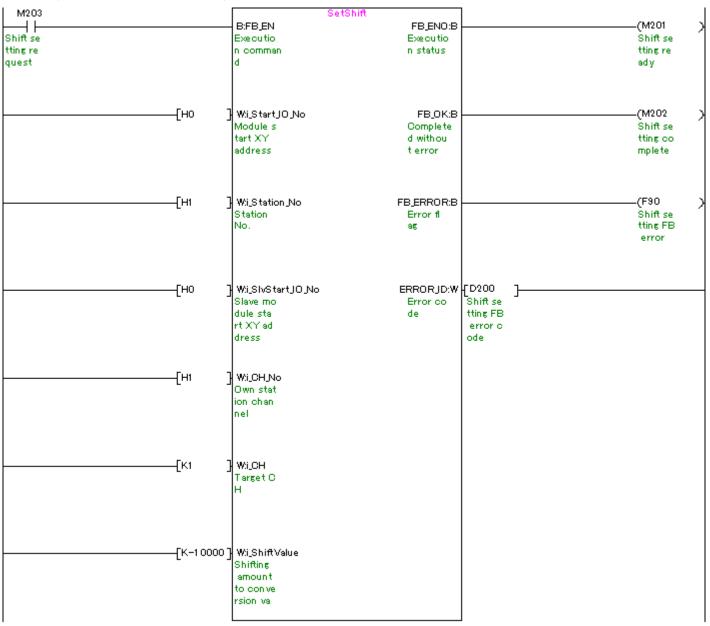


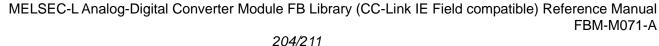


### M+L60AD4-IEF\_SetShift (Shift setting)

Label name	Setting	Description
	value	
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	Н0	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.



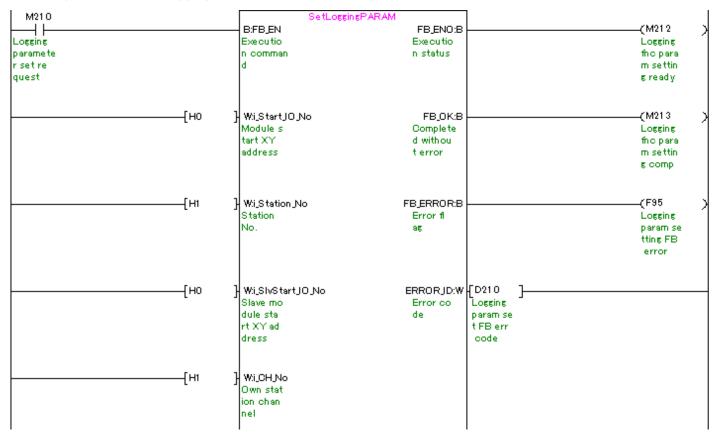




#### M+L60AD4-IEF\_SetLoggingPARAM (Logging function parameter setting)

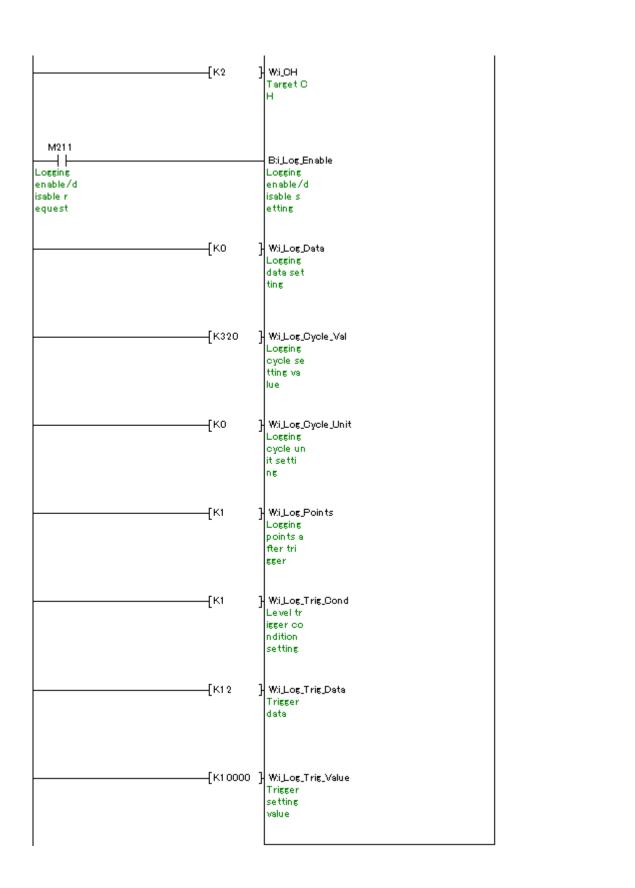
Label name	Setting	Description
	value	
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel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

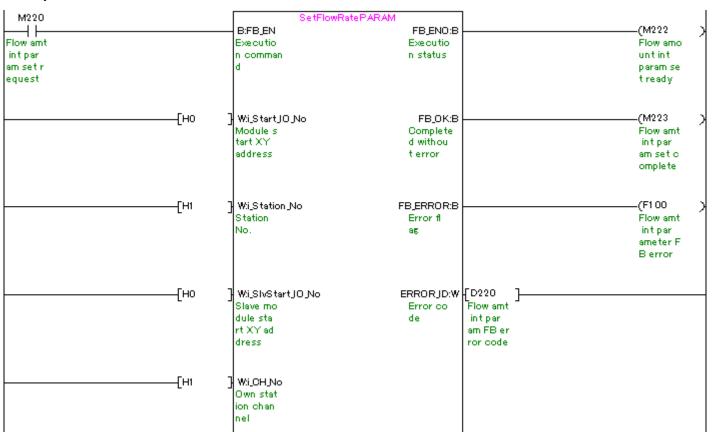




M+L60AD4-IEF\_SetFlowRatePARAM (Flow amount integration function parameter setting)

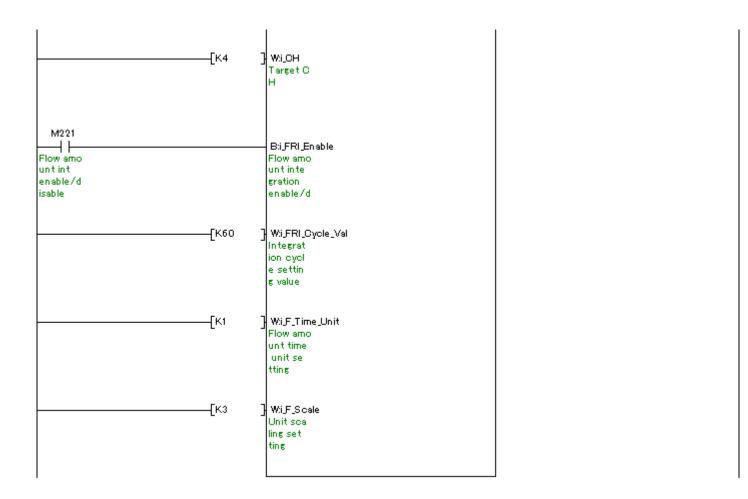
Label name	Setting	Description
	value	
i_Start_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_Station_No	H1	Set the target station to 1H.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60AD4 module is mounted to 0H.
i_CH_No	H1	Set the own station channel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

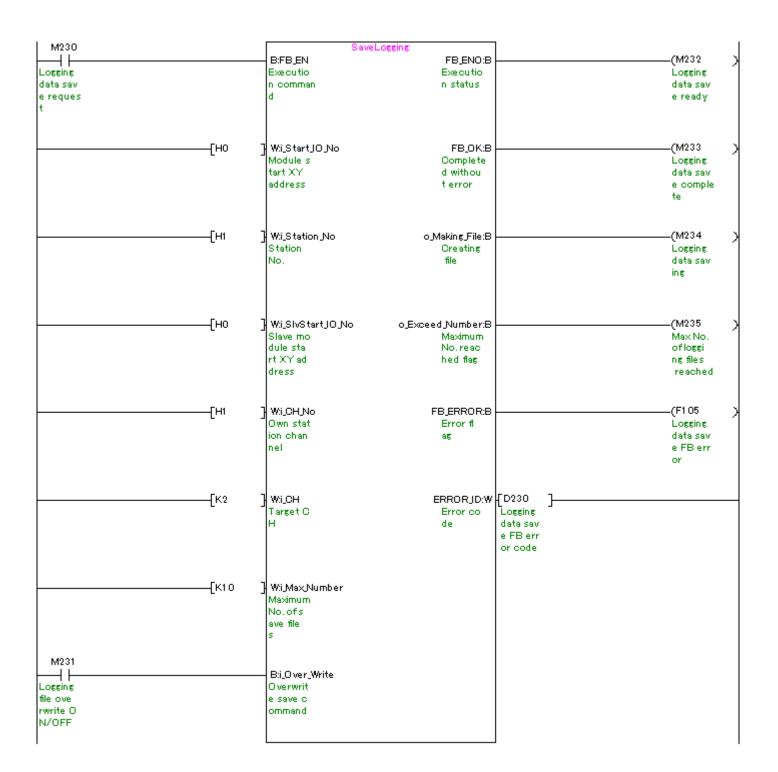




## M+L60AD4-IEF\_SaveLogging (Logging data save)

Label name	Setting	Description
	value	
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	Description
	value	
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.

