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

Applicable modules: L60DA4

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Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M072-A	2013/02/22	First edition



1. Overview

1.1 Overview of the FB Library

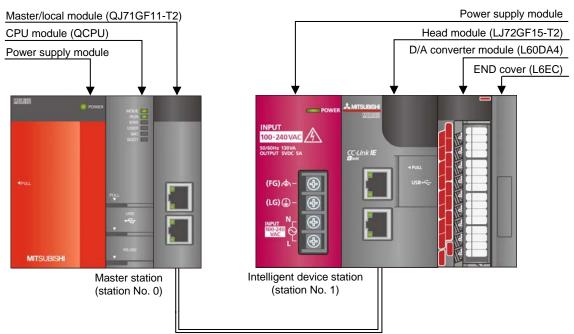
This FB Library is for using the MELSEC-L L60DA4 digital-analog converter module with MELSEC CC-Link IE Field.

1.2 Function of the FB Library

Item	Description
M+L60DA4-IEF_WriteDAVal	Writes the D/A conversion data of the specified channel.
M+L60DA4-IEF_WriteAllDAVal	Writes the D/A conversion data of all channels.
M+L60DA4-IEF_SetDAConversion	Enables or disables the D/A conversion for the specified channel or
	all channels.
M+L60DA4-IEF_SetDAOutput	Enables or disables the D/A output for the specified channel or all
	channels.
M+L60DA4-IEF_SetScaling	Sets the scaling of the specified channel.
M+L60DA4-IEF_SetAlarm	Sets the alert output of the specified channel.
M+L60DA4-IEF_RequestSetting	Validates the setting contents of each function.
M+L60DA4-IEF_SetOffsetVal	Sets the offset of the specified channel.
M+L60DA4-IEF_SetGainVal	Sets the gain of the specified channel.
M+L60DA4-IEF_ShiftOperation	Adds the input value shift amount to the digital value.
M+L60DA4-IEF_ErrorOperation	Monitors error codes and resets errors.
M+L60DA4-IEF_OGBackup	Reads the offset/gain setting values in the user range setting and
	saves them to a file.
M+L60DA4-IEF_OGRestore	Restores the offset/gain setting values saved in the file to the
	module.
M+L60DA4-IEF_WaveDataStoreCsv	Reads data from the CSV file where parameters and wave data
	(wave data points and wave data) of the wave output function are
	stored, then writes them to the buffer memory of the D/A converter
	module.
M+L60DA4-IEF_WaveDataStoreDev	Reads data from the file register (ZR) where parameters and wave
	data (wave data points and wave data) of the wave output function
	are stored, then writes them to the buffer memory of the D/A
	converter module.
M+L60DA4-IEF_WaveOutSetting	Sets the wave output for the specified channel or all channels.
M+L60DA4-IEF_WaveOutReqSetting	Sets the starting, stopping, or pausing of the wave output for the
	specified channel or all channels.



1.3 System Configuration Example



Ethernet cable (1000BASE-T)



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

This section explains the settings of CC-Link IE field network master/local module 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".						

	Module 1	Module 2
Network Type	CC IE Field (Master Station)	Vone 🗸
Start I/O No.	00	0
Network No.		1
Total Stations		1
Group No.		
Station No.		0
Mode	Online (Normal Mode)	•
	Network Configuration Settings	
	Network Operation Settings	
	Refresh Parameters	
	Interrupt Settings	
	Specify Station No. by Parameter	•
•		



(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.						
	Select "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. Points/Start Please reopen the window after completing refresh parameter setting when changing refresh parameter. Start/End Start/End											
				RX/RY Sett	ing	RWW	/RWr Se	tting		Refrest	n Device
Number of PLCs Station No. Station Type Points Start End Points Start End RX RY		RWw									
1	1	Intelligent Device Station 🖪	-	16 0000	000F				M1024(16)	M2048(16)	



(3) Refresh parameters

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

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

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

They must be the same as for "M_F_RX" and "M_F_RY" devices of the global label setting.

Assignment Method						* Set 00 Side.	000 for the	start add	ress of Li	ink
		Link Si	ide				PLC S	ide		-
	Dev. Name	Points	Start	End		Dev. Name	Points	Start	End	=
Transfer SB	SB	512	0000	01FF	÷	SB 💌	512	0000	01FF	
Transfer SW	sw	512	0000	01FF	÷	SW 🔻	512	0000	01FF	
Transfer 1	RX 👻	16	0000	000F	÷	M 👻	16	1024	1039	
Transfer 2	RY 🔻	16	0000	000F	÷	м 👻	16	2048	2063	
Transfer 3	-				÷	-				
Transfer 4	-				+	•				
Transfer 5	-				+	-				
Transfer 6					+					
Transfer 7	-				+	•				
Transfer 8	-				÷					-
	Defa	ult	Check		Er	nd	Cancel			



MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

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	Enter "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	elect "VAR_GLOBAL".				
Label name	Enter "M_F_RY".				
Data type	Enter "Bit".				
Device	Enter the refresh device set for the refresh parameter with a "Z8" prefix.				

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



1.6 Creating Interlock Programs

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

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

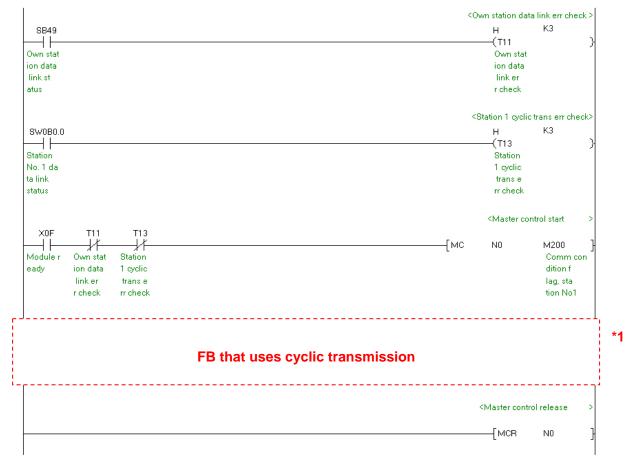
(Set a corresponding FB between MC and MCR instructions.)

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

1.6.1 Cyclic Transmission Program

Use 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 example (Station No. 1)

*1 For FB library that uses cyclic transmission, refer to Section 1.6.3 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 example (Station No. 1)

				<0	wn station baton		ck>	
SB47					н	K4		
- -					——(T10		거	
Own stat					Own stat			
ion bato					ion bato			
n passis					npasse			
tatus					rr check			
				<{	Station 1 baton pa	ass error che	ck>	
SW0A0.0					н	K4		
- -					——(T12		X	
Station					Station			
No. 1 ba					1 baton			
ton pass					pass err			
status					check			
					<master con<="" td=""><td>trol start</td><td>></td><td></td></master>	trol start	>	
XOF	T10	T12		F				
	//			—[мс	NO	M200	Ц	
Module r	Own stat	Station				Comm co	on	
eady	ion bato	1 baton				dition f		
	n pass e rr check	pass err check				lag, sta tion No1		
	rr check	спеск				tion NoT		
			ED that was transient transmission					*1
			FB that uses transient transmission					
1								
					<master contro<="" td=""><td>) release</td><td>></td><td></td></master>) release	>	
					——[мсв	NO	-	
						INU	1	

*1 For FB library that uses transient transmission, refer to Section 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+L60DA4-IEF_WriteDAVal	0	0
M+L60DA4-IEF_WriteAIIDAVal	0	0
M+L60DA4-IEF_SetDAConversion	0	0
M+L60DA4-IEF_SetDAOutput	0	-
M+L60DA4-IEF_SetScaling	0	0
M+L60DA4-IEF_SetAlarm	0	0
M+L60DA4-IEF_RequestSetting	0	-
M+L60DA4-IEF_SetOffsetVal	0	0
M+L60DA4-IEF_SetGainVal	0	0
M+L60DA4-IEF_ShiftOperation	-	-
M+L60DA4-IEF_ErrorOperation	0	0
M+L60DA4-IEF_OGBackup	0	0
M+L60DA4-IEF_OGRestore	0	0
M+L60DA4-IEF_WaveDataStoreCsv	0	0
M+L60DA4-IEF_WaveDataStoreDev	0	0
M+L60DA4-IEF_WaveOutSetting	0	0
M+L60DA4-IEF_WaveOutReqSetting	0	0

-: Not used

 $\bigcirc:$ Used



1.7 Relevant Manuals

MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection) MELSEC-L CPU Module User's Manual (Data Logging Function) GX Works2 Version 1 Operating Manual (Common) GX Works2 Version 1 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+L60DA4-IEF_WriteDAVal (Write D/A conversion data)

FB Name

M+L60DA4-IEF_WriteDAVal

Function Overview

Item	Description					
Function overview	Writes the D/A conversion data of the specified channel.					
Symbol		M+L60	DA4-IEF_W	/riteDAVal		
	Execution comma	nd—B:FB_EN		FB_ENO : B	- Execution status	
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error	
	Station N	No.—W:i_Station_No		FB_ERROR : B	— Error flag	
	Slave module start XY addre	ess—W:i_SlvStart_lO_l	No	ERROR_ID : W	- Error code	
	Own station chanr	nel—W:i_CH_No				
	Target 0	CH—W:i_CH				
	Digital val	ue—W:i_DA_Value				
Applicable hardware	Digital-analog	L60DA4				
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		Мос	del	
		MELSEC-Q Series	s *1	Universal model	QCPU *2	
		MELSEC-L Series	5	LCPU *3		
		*1 Not applicable to	QCPU-A	A (A mode)		
		*2 The first five digits of the serial number are "12012" or later.				
		*3 The first five digit	ts of the s	serial number are '	'13012" or later.	
	Engineering software	GX Works2 *1				
		Language		Software vers	sion	
		English version		1.24A or later		
		Chinese version		1.49B or later		
		*1 For software vers		licable to the mod	ules used, refer to	
		"Relevant manua	als".			
Programming	Ladder					
language						



Item	Description
Number of steps	389 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 digital value of the specified channel
	is written.
	2) The digital value to be written depends on the output range setting.
	When the scaling function of the L60DA4 is enabled, the digital value is scaled before
	the D/A conversion.
	3) When the setting value of the target channel is out of range, the FB_ERROR output
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).
	Refer to the error code explanation section for details.
	5) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).
	Refer to the error code explanation section for details.
	6) When the digital value is set in the auto refresh setting of the intelligent function
	module, this FB is unnecessary.
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 because it is impossible to turn OFF.						
	4) When operating this FB together with other FBs, make sure that the channels used by						
	the own station are not duplicated.						
	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 Z5 to Z7 and Z9. 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) To operate the L60DA4, set the output range according to the device and system to be						
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)						
	Refresh parameters".						
	11) Set the global label setting according to Section "1.5 Setting Global Labels".						
	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)						
	i_DA_Value(Digital value) Update value i_DA_Value(Digital value) Update value						
	CHD Digital value (Un\G1 to 4) Update During update Update CHD Digital value (Un\G1 to 4) Update stopped Update stopped						
	FB_OK (Completed without error) FB_DDDD (f_m_fki)						
	FB_ERROR (Error flag) FB_ERROR (Error flag) ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code) 0						



Item	Description
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)
	•GX Works2 Version 1 Operating Manual (Common)
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)

Error codes

• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.
	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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	FB_EN		ON, OFF	ON: The FB is activated.
command		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.	address (in hexadecimal)
		Word	For details, refer to the	where the L60DA4 is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Station No.	i_Station_No	\//ord	1 to 120	Specify the target station
		Word		number.



Name (Comment)	Label name	Data type	Setting range	Description
Slave module start	i_SlvStart_IO_No		Depends on the I/O point	Specify the starting XY
XY address			range of the head	address (in hexadecimal)
		Word	module.	where the L60DA4 is
		vvoru	For details, refer to the	connected. (For example,
			head module user's	enter H10 for X10.)
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
Target CH	i_CH	Word	1 to 4	Specify the channel number.
Digital value	i_DA_Value		-32,000 to 32,000	Specify the digital value.
		Word		The output range and
		Word		scaling function may
				decrease the setting range.

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO		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 digital
error		DIL	OFF	value is being written.
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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



2.2 M+L60DA4-IEF_WriteAllDAVal (Write D/A conversion data (all CHs))

FB Name

M+L60DA4-IEF_WriteAllDAVal

Function Overview

Item	Description				
Function overview	Writes the D/A conversion data of all channels.				
Symbol	M+L60DA4-		A4-IEF_Wr	iteAllDAVal	
	Execution command— B : FB_EN				- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	– Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_I	No	ERROR_ID : W	- Error code
	Own station chan	nel—W:i_CH_No			
	CH1 Digital val	ue—W:i_DA_ValueCH	1		
	CH2 Digital val	ue—W:i_DA_ValueCH	2		
	CH3 Digital val	ue—W:i_DA_ValueCH	3		
	CH4 Digital val	ue—W:i_DA_ValueCH	4		
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field CC-Link IE Field Network master/local module				
	Network module CC-Link IE Field Network he		ead module		
	CPU module	CPU module			
		Series		Model	
		MELSEC-Q Series	s *1	Universal model C	QCPU *2
		MELSEC-L Series		LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	s of the s	serial number are "?	12012" or later.
		*3 The first five digit	s of the s	serial number are "?	13012" or later.
	Engineering software	e GX Works2 *1			
		Language		Software versi	on
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
	*1 For software versions applicable to the modules used, refer		lles used, refer to		
		"Relevant manua	als".		



Item	Description
Programming	Ladder
language	
Number of steps	368 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 digital values of all channels are
	written.
	2) The digital value to be written depends on the output range setting.
	When the scaling function of the L60DA4 is enabled, the digital value is scaled before
	the D/A conversion.
	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 (Error code).
	Refer to the error code explanation section for details.
	4) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	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 digital value is set in the auto refresh setting of the intelligent function
	module, this FB is unnecessary.
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 because it is impossible to turn OFF.		
	4) When operating this FB together with other FBs, make sure that the channels used by		
	the own station are not duplicated.		
	5) This FB uses index registers Z5 to Z7, and Z9. 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) To operate the L60DA4, set the output range according to the device and system to be		
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)		
	Refresh parameters".		
	10) Set the global label setting according to Section "1.5 Setting Global Labels".		
	11) Only one master/local module can be controlled by the CC-Link IE Field system FB.		
	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)		
	i_DA_ValueCH1 to 4 (CH1 to 4 Digital value)		
	CH Digital value (Un\G1 to 4) Update Stopped Update Update Update Stopped CH Digital value (Un\G1 to 4) Update stopped		
	FB_OK (Completed without error)		
	FB_ERROR (Error flag) FB_ERROR (Error flag) ERROR_ID (Error code) 0 Error code) 0		



Item	Description
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)
	•GX Works2 Version 1 Operating Manual (Common)
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)

Error codes

• Error code list

Error code	Description	Action
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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual



Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	FB_EN	ON, OFF Bit		ON: The FB is activated.
command		Dit		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		word	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		word		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		word	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
CH1 Digital value	i_DA_ValueCH1		-32,000 to 32,000	Specify the digital value of
			*1	channel 1.
		Word		*1 The available setting range
		word		differs depending on the scaling
				function and output range
				setting.
CH2 Digital value	i_DA_ValueCH2		-32,000 to 32,000	Specify the digital value of
			*1	channel 2.
		Word		*1 The available setting range
		word		differs depending on the scaling
				function and output range
				setting.
CH3 Digital value	i_DA_ValueCH3		-32,000 to 32,000	Specify the digital value of
			*1	channel 3.
		Word		*1 The available setting range
		word		differs depending on the scaling
				function and output range
				setting.



Name (Comment)	Label name	Data type	Setting range	Description
CH4 Digital value	i_DA_ValueCH4		-32,000 to 32,000	Specify the digital value of
			*1	channel 4.
		Word		*1 The available setting range
		word		differs depending on the scaling
				function and output range
				setting.

Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO			ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the digital value is
error		Bit	OFF	being written.
Error flag	FB_ERROR	D:4		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



2.3 M+L60DA4-IEF_SetDAConversion (D/A conversion enable/disable setting)

FB Name

M+L60DA4-IEF_SetDAConversion

Function Overview

Item	Description				
Function overview	Enables or disables the D/A conversion for the specified channel or all channels.				
Symbol		M+L60DA	M+L60DA4-IEF_SetDAConversion		
	Execution comma	nd— B:FB_EN			- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	— Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_	No	ERROR_ID : W	- Error code
	Own station chanr	nel—W:i_CH_No			
		CH—W:i_CH			
	D/A conversion enable/disab setti				
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field N	etwork m	aster/local module	
	Network module	CC-Link IE Field N	etwork he	ead module	
	CPU module				
		Series		Мос	del
		MELSEC-Q Serie	s *1	Universal model	QCPU *2
		MELSEC-L Series	5	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digi	ts of the s	serial number are "	12012" or later.
		*3 The first five digi	ts of the s	serial number are "	13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software ver	sions app	licable to the mod	ules used, refer to
		"Relevant manu	als".		
Programming	Ladder				
language					



Item	Description		
Number of steps	491 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 D/A conversion enable/disable		
	setting for the specified channel or all channels is configured.		
	2) FB operation is one-shot only, triggered by the FB_EN signal.		
	3) The setting value is validated when the Operating condition setting request signal		
	(RYn9) is turned OFF $ ightarrow$ ON $ ightarrow$ OFF or the Operating condition setting request FB		
	(M+L60DA4-IEF_RequestSetting) is executed.		
	4) When the setting value of the target channel is out of range, the FB_ERROR output		
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).		
	Refer to the error code explanation section for details.		
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and		
	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 because it is impossible to turn OFF.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	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 Z4 to Z7 and Z9. 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 parameter is set using the configuration function of GX Configurator-DA or GX
	Works2, using this FB is unnecessary.
	9) To operate the L60DA4, set the output range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	12) Set the global label setting according to Section "1.5 Setting Global Labels".
	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 (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)
	D/A conversion enable/disable setting writing processing Write Noprocessing D/A conversion enable/ disable setting writing No processing No processing D/A conversion enable/
	FB_OK (Completed without error)
	FB_ERROR (Error flag)
	ERROR_ID (Error code) 0 FB_ERROR (Error flag) ERROR_ID (Error code) 0 Error code 0
	ERROR_ID (Error code) 0



MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

Item	Description			
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)			
	•GX Works2 Version 1 Operating Manual (Common)			
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)			



Error codes

• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.
	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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O point	Specify the starting XY address
address		Word	range of the CPU.	(in hexadecimal) where the
		word	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		word		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O point	Specify the starting XY address
XY address			range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		word	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
Target CH	i_CH		1 to 4 and 15	1 to 4: Specify the channel
		Word		number.
				15: Specify all the channels.



Name (Comment)	Label name	Data type	Setting range	Description
D/A conversion	i_DA_Enable		ON, OFF	ON: D/A conversion enabled
enable/disable		Bit		OFF: D/A conversion disabled
setting				

Output labels

Name (Comment)	Label name	Data type	Initial value	Description
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 conversion
error		DIL	OFF	enable/disable setting is 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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



2.4 M+L60DA4-IEF_SetDAOutput (D/A output enable/disable setting)

FB Name

M+L60DA4-IEF_SetDAOutput

Function Overview

Item	Description				
Function overview	Enables or disables the D/A output for the specified channel or all channels.				
Symbol		M+L60E	DA4-IEF_Se	etDAOutput	
	Execution comma	nd— B:FB_EN		FB_ENO : B	- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	— Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_	No	ERROR_ID : W	- Error code
	Own station chanr	nel—W:i_CH_No			
		CH—W:i_CH			
	D/A output enable/disat setti	ng B : i_DA_Out_Ena	able		
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field N	etwork m	aster/local module	1
	Network module	CC-Link IE Field N	CC-Link IE Field Network head me		
	CPU module				
		Series		Мос	del
		MELSEC-Q Serie	s *1	Universal model	QCPU *2
		MELSEC-L Series	6	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digi	ts of the s	serial number are "	'12012" or later.
		*3 The first five digi	ts of the s	serial number are "	'13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software ver	sions app	licable to the mod	ules used, refer to
		"Relevant manua	als".		
Programming	Ladder				
language					



Item	Description		
Number of steps	423 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 D/A output enable/disable setting for		
	the specified channel or all channels is configured.		
	2) When the setting value of the target channel is out of range, the FB_ERROR output		
	turns ON and processing is interrupted, and the error code 10 (decimal) is stored in		
	ERROR_ID (Error code).		
	Refer to the error code explanation section for details.		
	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 (Error code).		
	Refer to the error code explanation section for details.		
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 because it is impossible to turn OFF.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	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 Z4 to Z7 and Z9. 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 parameter is set using the configuration function of GX Configurator-DA or GX
	Works2, using this FB is unnecessary.
	9) When this FB is used in two or more places, a duplicated coil warning may 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) To operate the L60DA4, set the output range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 transmission. Therefore, an interlock program for cyclic
	transmission is required.
	12) Set the refresh device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	13) Set the global label setting according to Section "1.5 Setting Global Labels".
	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	Real-time execution
Application example	Refer to "Appendix 2 FB Library Application Examples".



Item	Description					
Timing chart	[When operation completes without error] [When an error occurs] (CH1)					
	(CH1)					
	FB_EN (Execution command)					
	FB_ENO (Execution status)					
	i_DA_Out_Enable (D/A output enable/disable setting)					
	Output enable/disable flag (RYn1) Output enable/disable flag (RYn1)					
	FB_OK (Completed without error)					
	FB_ERROR (Error flag)					
	ERROR_ID (Error code) 0 Error code 0					
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)					
	•GX Works2 Version 1 Operating Manual (Common)					
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)					

Error codes

• Error code list

Error code	Description	Action	
10 (Decimal)	The specified channel is not valid.	Please try again after confirming the setting.	
	Set 1 to 4 or 15 to the target channel.		
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 Section 1.4(2) Network configuration	
		setting.	
		 The value entered in i_Station_No 	

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	FB_EN	Bit	ON, OFF	ON: The FB is activated.
command		ы		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		vvoru	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		vvoru		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range.	(in hexadecimal) where the
		Word	For details, refer to the	L60DA4 is connected. (For
			head module user's	example, enter H10 for X10.)
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		vvora		station.
Target CH	i_CH		1 to 4 and 15	1 to 4: Specify the channel
		Word		number.
				15: Specify all the channels.
D/A output	i_DA_Out_Enable		ON, OFF	ON: D/A output enabled
enable/disable		Bit		OFF: D/A output disabled
setting				

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that the FB is being
error		Bit		executed properly.
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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



2.5 M+L60DA4-IEF_SetScaling (Scaling setting)

FB Name

M+L60DA4-IEF_SetScaling

Item	Description				
Function overview	Sets the scaling of the specified channel.				
Symbol		M+L60	DA4-IEF_S	SetScaling	
	Execution comman	nd B : FB_EN			- 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		FB_ERROR : B	— Error flag
	Slave module start XY addre	ss—W:i_SlvStart_IO_I	No	ERROR_ID : W	— Error code
	Own station chann	nel—W:i_CH_No			
	Target C	СН—W : iСН			
	Scaling enabled/disable	ed— B : i_Scaling_Enat	ole		
	Scaling upper limit valu	ue—W:i_Scl_U_Lim			
	Scaling lower limit value	ue—W:i_Scl_L_Lim			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field Ne	etwork m	aster/local module	
	Network module	CC-Link IE Field Ne	etwork he	ead module	
	CPU module				
		Series		Мос	del
		MELSEC-Q Series	s *1	Universal model	QCPU *2
		MELSEC-L Series	i	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	s of the s	serial number are "	'12012" or later.
		*3 The first five digit	s of the s	serial number are "	'13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
	*1 For software versions applicable to the modules used, refe		ules used, refer to		
		"Relevant manua	als".		



Item	Description
Programming	Ladder
language	
Number of steps	521 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 scaling function setting of the
	specified channel is configured.
	2) FB operation is one-shot only, triggered by the FB_EN signal.
	3) The setting value is validated when the Operating condition setting request (RYn9) is
	turned OFF $ ightarrow$ ON $ ightarrow$ OFF or the Operating condition setting request FB
	(M+L60DA4-IEF_RequestSetting) is executed.
	4) When the setting value of the target channel is out of range, the FB_ERROR output
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).
	Refer to the error code explanation section for details.
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	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.		
	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 because it is impossible to turn OFF.		
	4) When operating this FB together with other FBs, make sure that the channels used by		
	the own station are not duplicated.		
	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 Z4 to Z7 and Z9. 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 parameter is set using the configuration function of GX Configurator-DA or GX		
	Works2, using this FB is unnecessary.		
	9) To operate the L60DA4, set the output range according to the device and system to be		
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to "1.4(3) Refresh		
	parameters".		
	12) Set the global label setting according to Section "1.5 Setting Global Labels".		
	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 (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 ommand)		
	FB_ENO (Execution status)		
	Scaling function setting writing processing Write Noprocessing Scaling function setting No processing No processing		
	FB_OK (Completed without error)		
	FB_ERROR (Error flag)		
	ERROR_ID (Error code) 0 FB_ERROR (Error flag) ERROR_ID (Error code) 0 Error code 0		



MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

Item	Description		
Relevant manuals	 MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)		
	•GX Works2 Version 1 Operating Manual (Common)		
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)		



• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.
	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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		vvoru	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		vvoru		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		vvora	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		vvora		station.
Target CH	i_CH	Word	1 to 4	Specify the channel number.
Scaling	i_Scaling_Enable	Dit	ON, OFF	ON: Enabled
enabled/disabled		Bit		OFF: Disabled



Name (Comment)	Label name	Data type	Setting range	Description
Scaling upper limit	i_Scl_U_Lim	Word	-32,000 to 32,000	Specify the scaling upper limit
value		vvoru		value.
Scaling lower limit	i_Scl_L_Lim	Word	-32,000 to 32,000	Specify the scaling lower limit
value		vvoru		value.

Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO			ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the scaling
error		Bit	OFF	function setting is completed.
Error flag	FB_ERROR	Dit		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.6 M+L60DA4-IEF_SetAlarm (Alert output setting)

FB Name

M+L60DA4-IEF_SetAlarm

Item	Description				
Function overview	Sets the alert output of the specified channel.				
Symbol	M+L60DA4-IEF_SetAlarm				
	Execution comma	nd— B:FB_EN			- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	— Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_I	No	ERROR_ID : W	— Error code
	Own station chan	nel—W:i_CH_No			
	Target 0	CH—W:i_CH			
	Alert output enabled/disabl	ed— B:i_Alarm_Enable	e		
	Alert output upper limit val	ue—W:i_Alm_U_Lim			
	Alert output lower limit val	ue—W:i_Alm_L_Lim			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field CC-Link IE Field Network master/local module		•		
	Network module CC-Link IE Field Network		etwork he	ead module	
	CPU module			1	
		Series	Model		del
		MELSEC-Q Series	s *1	Universal model	QCPU *2
		MELSEC-L Series	;	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	s of the	serial number are '	"12012" or later.
		*3 The first five digit	s of the s	serial number are '	"13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
	*1 For software versions applicable to the modules used, refe		ules used, refer to		
		"Relevant manua	als".		



Item	Description
Programming	Ladder
language	
Number of steps	524 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 alert output function setting of the
	specified channel is configured.
	2) FB operation is one-shot only, triggered by the FB_EN signal.
	3) The setting value is validated when the Operating condition setting request signal
	(RYn9) is turned OFF $ ightarrow$ ON $ ightarrow$ OFF or the Operating condition setting request FB
	(M+L60DA4-IEF_RequestSetting) is executed.
	4) When the setting value of the target channel is out of range, the FB_ERROR output
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).
	Refer to the error code explanation section for details.
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	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 because it is impossible to turn OFF.		
	4) When operating this FB together with other FBs, make sure that the channels used by		
	the own station are not duplicated.		
	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 Z4 to Z7 and Z9. 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 parameter is set using the configuration function of GX Configurator-DA or GX		
	Works2, using this FB is unnecessary.		
	9) To operate the L60DA4, set the output range according to the device and system to be		
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)		
	Refresh parameters".		
	12) Set the global label setting according to Section "1.5 Setting Global Labels".		
	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 (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 ommand)		
	FB_ENO (Execution status)		
	Alert output function setting writing processing Write Noprocessing Alert output function setting No processing Alert output function setting		
	FB_OK (Completed without error)		
	FB_ERROR (Error flag)		
	ERROR_ID (Error code) 0 FB_ERROR (Error flag) ERROR_ID (Error code) 0 Error code 0		



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Item	Description			
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)			
	•GX Works2 Version 1 Operating Manual (Common)			
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)			



• Error code list

Error code	Description	Action	
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.	
	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 Section 1.4(2) Network configuration	
		setting.	
		 The value entered in i_Station_No 	
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of	
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network	
		Master/Local Module User's Manual	

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		vvoru	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		vvoru		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		vvoru	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		vvoru		station.
Target CH	i_CH	Word	1 to 4	Specify the channel number.
Alert output	i_Alarm_Enable	Bit	ON, OFF	ON: Enabled
enabled/disabled		DIL		OFF: Disabled



Name (Comment)	Label name	Data type	Setting range	Description
Alert output upper	i_Alm_U_Lim	Word	-32,768 to 32,767	Specify the alert output upper
limit value		vvoru		limit value.
Alert output lower	i_Alm_L_Lim	Word	-32,768 to 32,767	Specify the alert output lower
limit value		vvoru		limit value.

Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the alert output
error		Bit	Bit OFF	function setting is completed.
Error flag	FB_ERROR	Dit		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.7 M+L60DA4-IEF_RequestSetting (Operating condition setting request)

FB Name

M+L60DA4-IEF_RequestSetting

Item		Desc	ription		
Function overview	Validates the setting contents of each function.				
Symbol		M+L60DA	4-IEF_Red	questSetting	
	Execution comma	nd— B:FB_EN		FB_ENO : B Execution stat	
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B Completed wit	hout
	Station N	No.—W:i_Station_No		FB_ERROR : B — Error flag	
	Slave module start XY addre	ess—W:i_SlvStart_IO_I	No	ERROR_ID : W — Error code	
	Own station chan	nel—W:i_CH_No			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field Ne	etwork m	aster/local module	
	Network module	CC-Link IE Field Ne	etwork he	ead module	
	CPU module				
		Series		Model	
		MELSEC-Q Series	s *1	Universal model QCPU *2	
		MELSEC-L Series	5	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	ts of the s	serial number are "12012" or late	er.
		*3 The first five digit	ts of the s	serial number are "13012" or late	er.
	Engineering software	GX Works2 *1			
		Language		Software version	
		English version	Version	1.24A or later	
		Chinese version		1.49B or later	
		*1 For software vers	sions app	plicable to the modules used, refe	er to
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	321 steps (for MELSEC-	Q series universal m	nodel CP	U)	
	* The number of steps of the FB in a program depends on the CPU model that is used and			and	
	input and output definit	tion.			



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the setting contents of all channels are
	validated. For the setting contents to be validated, refer to MELSEC-L Digital-Analog
	Converter Module User's Manual.
	2) After FB_EN (Execution command) is turned ON, the execution of this FB continues
	until each function setting is 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 (Error code).
	Refer to the error code explanation section for details.
Compiling method	Macro type



Item	Description
Restrictions and	1) When this FB is executed, the D/A conversion is stopped and the D/A output is held.
precautions	The conversion restarts after FB_OK turns ON.
	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 because it is impossible to turn OFF.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	5) The FB cannot be used in an interrupt program.
	6) This FB uses index registers Z7 to Z9. 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 may 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) To operate the L60DA4, set the output range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 transmission. Therefore, an interlock program for cyclic
	transmission is required.
	11) Set the refresh device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	12) Set the global label setting according to Section "1.5 Setting Global Labels".
	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 (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_EN (Execution command) FB_ENO (Execution status) FB_ENO (Execution status) Operating condition setting Operating condition setting			
	Operating condition setting request (RYn9) Operating condition setting request (RYn9) Operating condition setting complete flag (RXn9) Operating condition setting request (RYn9) FB_OK (Completed without error) FB_OK (Completed without error) FB_ERROR (Error flag) FB_ERROR (Error flag) ERROR_ID (Error code) 0			
Relevant manuals	 MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual (Common) 			

• 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 Section 1.4(2) Network configuration	
		setting.	
		 The value entered in i_Station_No 	



Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated.
		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 of	hexadecimal) where the L60DA4 is
		Word	the CPU.	connected. (For example, enter H10
		vvoru	For details, refer	for X10.)
			to the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1 to 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 of	hexadecimal) where the L60DA4 is
			the head module.	connected. (For example, enter H10
		Word	For details, refer	for X10.)
			to the head	
			module user's	
			manual.	
Own station channel	i_CH_No	Word	1 to 32	Specify the channel for own station.

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Dit	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 operation
error		DIL	OFF	condition setting is 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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.8 M+L60DA4-IEF_SetOffsetVal (Offset setting)

FB Name

M+L60DA4-IEF_SetOffsetVal

Item		Desc	ription		
Function overview	Sets the offset of the specified channel.				
Symbol		M+L60D	M+L60DA4-IEF_SetOffsetVal		
	Execution comma	nd— B:FB_EN		FB_ENO: B — Execution status	
	Module start XY addre	wss—W:i_Start_IO_No		FB_OK : B Completed without error	
	Station N	No.—W:i_Station_No		FB_ERROR : B — Error flag	
	Slave module start XY addre	ss—W:i_SlvStart_IO_1	No	ERROR_ID : W — Error code	
	Own station chann	nel—W:i_CH_No			
	Target 0	CH—W:i_CH			
	Offset/gain adjustment amou	unt—W:i_Adjust_Amou	nt		
	Set value change comma	nd B: i_Value_Chang	е		
	User range writing comma	nd—B:i_Write_Offset			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field Ne	etwork m	aster/local module	
	Network module	CC-Link IE Field Ne	etwork he	ead module	
	CPU module				
		Series		Model	
		MELSEC-Q Series	s *1	Universal model QCPU *2	
		MELSEC-L Series		LCPU *3	
		*1 Not applicable to		· ·	
		_		serial number are "12012" or later.	
			s of the s	serial number are "13012" or later.	
	Engineering software	GX Works2 *1			
		Language		Software version	
		English version		1.24A or later	
		Chinese version Version1.49B or later			
		"Relevant manua		plicable to the modules used, refer to	
		Relevant manua	ais .		



Item	Description					
Programming	Ladder					
language						
Number of steps	856 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 value of the specified channel is set.					
	2) To adjust the D/A output, set i_Adjust_Amount (Offset/gain adjustment amount) and					
	turn ON from OFF i_Value_Change (Set value change command) during the FB_EN					
	(Execution command) ON.					
	3) After FB_EN (Execution command) is turned ON, the execution of this FB continues					
	until the setting of the offset value of the specified channel is completed.					
	4) When the setting value of the target channel is out of range, the FB_ERROR output					
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).					
	Refer to the error code explanation section for details.					
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and					
	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 because it is impossible to turn OFF.	
	4) When operating this FB together with other FBs, make sure that the channels used by	y
	the own station are not duplicated.	
	5) When two or more of these FBs are used, precaution must be taken to avoid repetition	n
	of the target channel.	
	6) This FB uses index registers Z5 to Z9. 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 is set using the configuration function of GX Configurator-DA or GX	
	Works2, using this FB is unnecessary.	
	9) When this FB is used in two or more places, a duplicated coil warning may 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) To operate the L60DA4, set the output range according to the device and system to be	е
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)	
	Refresh parameters".	
	13) Set the global label setting according to Section "1.5 Setting Global Labels".	
	14) Only one master/local module can be controlled by the CC-Link IE Field system FB. To	о
	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 (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_EN (Execution command) Operation mode FB_EN (Execution status) CHI Offset specification Offset/gain setting mode Channel change request (RYNB) Value Change L'Value Change Value change command)
	Set value change request (RVnC) i_Write_Offset (RVnC) User range writing request (RVnA) 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) Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0 ERROR_ID (Error code) Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) Completed without error) Completed without error) Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) Completed without error) Completed without error) Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) Completed without error) Completed without error)
Relevant manuals	 MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection) GX Works2 Version 1 Operating Manual (Simple Project, Function Block)



• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.
	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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		For details, refer to the		L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		word		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
			For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
Target CH	i_CH	Word	1 to 4	Specify the channel number.
Offset/gain	i_Adjust_Amount	Word	-3,000 to 3,000	Specify the adjustment amount
adjustment amount		word		for the D/A output adjustment.



Name (Comment)	Label name	Data type	Setting range	Description
Set value change	i_Value_Change		ON, OFF	Turn ON for D/A output change.
command		Bit		Turn OFF after the D/A output
				change.
User range writing	i_Write_Offset		ON, OFF	Turn ON for the adjusted offset
command		Bit		value writing to a flash memory.
				Turn OFF after the writing.

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	ON: Execution command is ON.	
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the offset setting
error		Bit	OFF	is completed.
Error flag	FB_ERROR	Dit		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.9 M+L60DA4-IEF_SetGainVal (Gain setting)

FB Name

M+L60DA4-IEF_SetGainVal

Item	Description				
Function overview	Sets the gain of the specified channel.				
Symbol		M+L601	M+L60DA4-IEF_SetGainVal		
	Execution comma	nd— B:FB_EN		FB_ENO : B	- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	— Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_t	No	ERROR_ID : W	- Error code
	Own station chan	nel—W:i_CH_No			
	Target 0	CH—W:i_CH			
	Offset/gain adjustment amou	unt—W:i_Adjust_Amou	nt		
	Set value change comma	nd B: i_Value_Chang	е		
	User range writing comma	nd— B:i_Write_Gain			
		[
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field Ne	etwork m	aster/local module	
	Network module	CC-Link IE Field Ne	etwork he	work head module	
	CPU module				
		Series	Model		lel
		MELSEC-Q Series	s *1	Universal model QCPU *2	
		MELSEC-L Series		LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	s of the s	serial number are "	12012" or later.
		*3 The first five digit	s of the s	serial number are "	13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version Version1.49B or later			
		*1 For software versions applicable to the modules used, refer to			
		"Relevant manua	als".		



Item	Description					
Programming	Ladder					
language						
Number of steps	854 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 gain value of the specified channel is set.					
	2) To adjust the D/A output, set i_Adjust_Amount (Offset/gain adjustment amount) and					
	turn ON from OFF i_Value_Change (Set value change command) during the FB_EN (Execution command) ON.					
	3) After FB_EN (Execution command) is turned ON, the execution of this FB continues					
	until the setting of the gain value of the specified channel is completed.					
	4) When the setting value of the target channel is out of range, the FB_ERROR output					
	turns ON and processing is interrupted, and the error code 10 (decimal) 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 (Error code).					
	Refer to the error code explanation section for details.					
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and					
	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 because it is impossible to turn OFF.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	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 Z5 to Z9. 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 is set using the configuration function of GX Configurator-DA or GX Works2,
	using this FB is unnecessary.
	9) When this FB is used in two or more places, a duplicated coil warning may 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) To operate the L60DA4, set the output range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	13) Set the global label setting according to Section "1.5 Setting Global Labels".
	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	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 2 FB Library Application Examples".



Item	Desc	ription
Timing chart	[When operation completes without error] FB_EN(Execution command) FB_ENO(Execution status) Operation mode CHC) Gain specification	[When an error occurs] FB_EN (Execution command) FB_EN (Execution status) Operation mode CH_Gain specification
	Change request (RYNB) LValue_Change (Ret value change command) Set value change command) Set value change request (RYNG) LVMite_Gain (User range writing command) User range writing command) User range writing command) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	Channel change request (RYnD) i Value Change (Get value change command) Set value change request (RYnC) User range writing command (User range writing command) User range writing request (RYnA) FB_CR (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0 Error code 0 Error code 0
Relevant manuals	 MELSEC-L Digital-Analog Converter Module MELSEC-Q CC-Link IE Field Network Maste MELSEC-L CC-Link IE Field Network Maste MELSEC-L CC-Link IE Field Network Head QCPU User's Manual (Hardware Design, Ma MELSEC-L CPU Module User's Manual (Ha GX Works2 Version 1 Operating Manual (Co GX Works2 Version 1 Operating Manual (Single Constraints) 	er/Local Module User's Manual er/Local Module User's Manual Module User's Manual aintenance and Inspection) urdware Design, Maintenance and Inspection) ommon)



• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid. The	Please try again after confirming the setting.
	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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		vvoru	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		woru		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		vvoru	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
Target CH	i_CH	Word	1 to 4	Specify the channel number.
Offset/gain	i_Adjust_Amount	Word	-3,000 to 3,000	Specify the adjustment amount
adjustment amount		vvoru		for the D/A output adjustment.



Name (Comment)	Label name	Data type	Setting range	Description
Set value change	i_Value_Change		ON, OFF	Turn ON for D/A output change.
command		Bit		Turn OFF after the D/A output
				change.
User range writing	i_Write_Gain		ON, OFF	Turn ON for the adjusted gain
command		Bit		value writing to a flash memory.
				Turn OFF after the writing.

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that the gain setting is
error		Bit	OFF	completed.
Error flag	FB_ERROR	Dit		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.10 M+L60DA4-IEF_ShiftOperation (Shift operation)

FB Name

M+L60DA4-IEF_ShiftOperation

Item	Description					
Function overview	Adds the input value shift amount to the digital value.					
Symbol			M+L60D/	A4-IEF_Shi	iftOperation	
	Execution command-		B : FB_EN		FB_ENO : B	- Execution status
	Digital val	lue—	W:i_Digital_Value		FB_OK : B	Completed without error
	Input value shift amou	unt—	W:i_Shift_Value		o_Dig_Out_Val:W	— Digital value
					FB_ERROR : B	- Error flag
					ERROR_ID : W	- Error code
		1				
Applicable hardware	Digital-analog	L6	0DA4			
and software	converter module					
	CC-Link IE Field	CC	C-Link IE Field Ne	etwork m	aster/local module	
	Network module	CC	C-Link IE Field Ne	etwork he	ead module	
	CPU module					
			Series		Мос	del
		N	IELSEC-Q Series	s *1	Universal model	QCPU *2
		N	IELSEC-L Series	6	LCPU *3	
		*1	Not applicable to	QCPU-A	A (A mode)	
		*2	The first five digit	ts of the s	serial number are "	'12012" or later.
		*3	The first five digit	ts of the s	serial number are "	'13012" or later.
	Engineering software	Gک	K Works2 *1			
			Language		Software vers	sion
		E	nglish version	Version1.24A or later		
		С	hinese version	Version	1.49B or later	
		*1 For software versions appl		licable to the mod	ules used, refer to	
		"Relevant manuals".				
Programming	Ladder					
language						
Number of steps	199 steps (for MELSEC-	-Q s	eries universal m	nodel CPI	U)	
	* The number of steps o	of the	e FB in a program	n depend	s on the CPU mod	lel that is used and
	input and output definition.					



Item	Description			
Function description	1) By turning ON FB_EN (Execution command), i_Shift_Value (Input value shift amount)			
	is added to i_Digital_Value (Digital value).			
	When the addition result falls below -32768 (exceeds 32767), the value is fixed to			
	-32768 (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 because it is impossible to turn OFF.			
	4) When operating this FB together with other FBs, make sure that the channels used by			
	the own station are not duplicated.			
	5) The D/A converter modules whose first five digits of the product information are			
	"13041" or later has the shift function as a module function. When using the shift			
	function of the module, do not use this FB.			
	6) Every input must be provided with a value for proper FB operation.			
	7) To operate the L60DA4, set the output range according to the device and system to be			
	connected. Configure the setting in Switch Setting of GX Works2 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) When FB_OK (Normal completion) is ON, o_Dig_Out_Val (Digital output value) is			
	effective.			
	9) By turning OFF FB_EN, o_Dig_Out_Val (Digital output value) is cleared to 0.			
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)			
	Shift operation During shift operation subped			
	FB_OK (Completed without error)			
	FB_ERROR (Error flag)			
	ERROR_ID (Error code) 0			



Item	Description	
Relevant manuals	MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)	
	•GX Works2 Version 1 Operating Manual (Common)	
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)	

Error codes Error code list Error code Description Action

Error code	Description	Action
None	None	None

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description	
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated.	
		DIL		OFF: The FB is not activated.	
Digital value	i_Digital_Value	Word	-32,768 to	Specify the digital value.	
		volu	32,767		
Input value shift	i_Shift_Value	Word	-32,768 to	Specify the shift amount.	
amount		vvoru	32,767		

Output labels

Name (Comment)	Label name	Data type	Initial value	Description	
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.	
				OFF: Execution command is OFF.	
Completed without	FB_OK	Bit	OFF	When ON, it indicates that the shift	
error		DIL	UFF	operation is being executed.	
Digital value	o_Dig_Out_Val	Word 0	0	The digital value to which the input value	
		vvoru	0	shift amount is added is stored.	
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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.11 M+L60DA4-IEF_ErrorOperation (Error operation)

FB Name

M+L60DA4-IEF_ErrorOperation

Item	Description					
Function overview	Monitors error codes and resets errors.					
Symbol		M+L6	M+L60DA4-IEF_ErrorOperation			
	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_N	0	o_UNIT_ERROR : B	— Module error flag	
	Slave module start XY addre	ss—W:i_SlvStart_I	D_No o_U	INIT_ERR_CODE : W	— Module error code	
	Own station chanr	nel—W:i_CH_No		FB_ERROR : B	— Error flag	
	Error reset comma	nd— B:i_ErrorRese	t	ERROR_ID : W	— Error code	
Applicable hardware	Digital-analog	L60DA4				
and software	converter module					
	CC-Link IE Field CC-Link IE Field		Network m	etwork master/local module		
	Network module	CC-Link IE Field Network head module				
	CPU module					
		Serie	8	Model		
		MELSEC-Q Series *1		Universal model QCPU *2		
		MELSEC-L Series		LCPU *3		
		*1 Not applicable to QCPU-A (A mode)				
		*2 The first five of	igits of the	serial number are	"12012" or later.	
		*3 The first five digits of the serial number are "13012" or later.			"13012" or later.	
	Engineering software	GX Works2 *1				
		Language		Software vers	sion	
		English version	Versior	n1.24A or later		
		Chinese versio	n Versior	n1.49B or later		
		*1 For software versions applicable to the modules used, refer to "Relevant manuals".			lules used, refer to	
Programming	Ladder					
language						



Item	Description		
Number of steps	455 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) When FB_EN (Execution command) is turned ON, an error of the target module is		
	monitored.		
	2) After FB_EN (Execution command) is turned ON, an error is reset when i_ErrorReset		
	(Error reset command) is turned ON during 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 (Error code).		
	Refer to the error code explanation section for details.		
	4) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and		
	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 because it is impossible to turn OFF.				
	4) When operating this FB together with other FBs, make sure that the channels used by				
	the own station are not duplicated.				
	5) This FB uses index registers Z5 to Z9. 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 may 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) To operate the L60DA4, set the output range according to the device and system to be				
	connected. Configure the setting in Switch Setting of GX Works2 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.				
	10) Set the refresh device of the network parameter setting according to Section "1.4(3)				
	Refresh parameters".				
	11) Set the global label setting according to Section "1.5 Setting Global Labels".				
	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) FB_ENO (Execution status) i_ErrorReset i_ErrorReset (Fror reset command) i_ErrorReset				
	(Error reset command) Error clear request (RYnF)				
	Error flag (RXnF) UNIT_ERROR (Module error flag)				
	(Module error flag) 0. UNIT_ERR_CODE (Error code) 0 Module error code 0 (Module error flag) 0 UNIT_ERR_CODE 0 (Module error flag) 0 (Module error flag) 0 (Error code) 0				
	FB_OK (Completed without error) FB_OK (Completed without error) FB_EROR (Error flag)				
	ERROR_ID (Error code) 0 Error code 0 Error code				



MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

Item	Description		
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)		
	•GX Works2 Version 1 Operating Manual (Common)		
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)		

• Error 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 Section 1.4(2) Network configuration	
		setting.	
		 The value entered in i_Station_No 	
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of	
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network	
		Master/Local Module User's Manual	



Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 L60DA4 is
		Word	of the CPU.	connected. (For example, enter H10 for
		vvord	For details, refer	X10.)
			to the CPU	
			user's manual.	
Station No.	i_Station_No	Word	1 to 120	Specify the target station number.
Slave module	i_SlvStart_IO_No		Depends on the	Specify the starting XY address (in
start XY address			I/O point range	hexadecimal) where the L60DA4 is
			of the head	connected. (For example, enter H10 for
		Word	module.	X10.)
			For details, refer	
			to the head	
			module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own station.
channel		volu		
Error reset	i_ErrorReset	Bit	ON, OFF	Turn ON for the error reset.
command		DIL		Turn OFF after the error reset.



Name (Comment)	Label name	Data type	Initial value	Description
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 an error reset
error		DIL	OFF	is completed.
Module error flag	o_UNIT_ERROR	Bit	OFF	When ON, it indicates that a module
		DIL	OFF	error has occurred.
Module error code	o_UNIT_ERR_CODE	Word	0	Stores the error code of the current error.
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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.12 M+L60DA4-IEF_OGBackup (Offset/gain value save)

FB Name

M+L60DA4-IEF_OGBackup

Item	Description				
Function overview	Reads the offset/gain setting values in the user range setting and saves them to a file.				
Symbol		M+L	M+L60DA4-IEF_OGBackup		
	Execution comma	and B: FB_EN		FB_ENO : B	
	Module start XY addre	ess—W:i_Start_IO_I	No	FB_OK : B	Completed without error
	Station N	No.—W:i_Station_N	þ	FB_ERROR : B	Error flag
	Slave module start XY addre	ess—W:i_SlvStart_K	D_No	ERROR_ID : W	Error code
	Own station chan	nel—W:i_CH_No			
	Saved data ty	/pe—W:i_Dat_Type			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field	Network m	aster/local module	
	Network module	CC-Link IE Field	Network h	ead module	
	CPU module				
		Series		Model	
		MELSEC-Q Series *1		Universal model QC	PU *2
		MELSEC-L Series		LCPU *3	
		*1 Not applicable to QCPU-A (A mode)			
		*2 The first five d	gits of the	serial number are "12	012" or later.
		*3 The first five d	gits of the	serial number are "13	012" or later.
	Engineering software	GX Works2 *1			
		Language		Software versior	۱
		English version Version1.24A or later			
		Chinese version Version1.49B or later			
		*1 For software versions applicable to the modules used, refer to			s used, refer to
		"Relevant manuals".			
Programming	Ladder				
language					



Item	Description		
Number of steps	684 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/gain value of the user range		
	setting is read and saved in the memory card*1 inserted in the CPU module in a file		
	format.		
	2) FB operation is one-shot only, triggered by the FB_EN signal.		
	3) The format for the name of the file that the FB saves in an SD memory card is "LDA_"		
	+ "module start XY address" + ".BIN".		
	4) [File name example] When the module start XY address is "H0120", the file name is		
	"LDA_0120.BIN".		
	5) When a file with the same name exists in the memory card, the existing file is replaced		
	with a new BIN file created by this FB.		
	6) When this FB is executed without the memory card installed to the CPU, when the		
	installed memory card does not have enough capacity, or when the number of files to		
	be created exceeds the number of storable files *2, a CPU error *3 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 (Error code).		
	Refer to the error code explanation section for details.		
	8) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and		
	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 the QCPU, use an ATA memory card, and for the LCPU, use an SD memory card.		
	*2 For the memory card capacity and the number of storable files, refer to QCPU User's		
	Manual (Hardware Design, Maintenance and Inspection) or MELSEC-L CPU Module		
	User's Manual (Hardware Design, Maintenance and Inspection).		
	*3 Setting the operation status of the CPU module (RUN/STOP) when an access error to		
	the memory card occurs is available with parameters.		
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 because it is impossible to turn OFF.				
	4) When operating this FB together with other FBs, make sure that the channels used by				
	the own station are not duplicated.				
	5) This FB uses index registers Z5 to Z9. Please do not use these index registers in an				
	interrupt program.				
	6) In this FB, the user range setting can be saved only in the memory card *1.				
	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 may 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) To operate the L60DA4, set the input range according to the device and system to be				
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)				
	Refresh parameters".				
	Set the global label setting according to Section "1.5 Setting Global Labels".				
	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 the QCPU, use an ATA memory card, and for the LCPU, use an SD memory card.				
FB operation type	Pulsed execution (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) User range setting file saving No processing Vice range setting file saving Vice range setting file savi				
	Processing FB_OK (Completed without error)				
	FB_ERROR (Error flag)				
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0 Error code 0				



Item	Description			
Relevant manuals	•MELSEC-L Digital-Analog 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's Manual (Hardware Design, Maintenance and Inspection)			
	•GX Works2 Version 1 Operating Manual (Common)			
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)			

• Error 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 Section 1.4(2) Network configuration	
		setting.	
		 The value entered in i_Station_No 	
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of	
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network	
		Master/Local Module User's Manual	

Labels

Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	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 I/O	Specify the starting XY address (in
address			point range of the	hexadecimal) where the L60DA4
		Word	CPU.	is connected. (For example, enter
		word	For details, refer to	H10 for X10.)
			the CPU user's	
			manual.	
Station No.	i_Station_No	Word	1 to 120	Specify the target station number.



Name (Comment)	Label name	Data type	Setting range	Description
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address (in
XY address			point range of the	hexadecimal) where the L60DA4
			head module.	is connected. (For example, enter
		Word	For details, refer to	H10 for X10.)
			the head module	
			user's manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		Word		station.
Saved data type	i_Dat_Type		0 to Fh	Specify the type of the data to be
				saved for each channel.
		Word		0: Voltage, 1: Current
				b15 b4 b3 b2 b1 b0
				0 to 0 CH.4 CH.3 CH.2 CH.1

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL		OFF: Execution command is OFF.
Completed without	FB_OK	Bit	OFF	When ON, it indicates that saving file is
error		DIL	OFF	completed.
Error flag	FB_ERROR	Bit	055	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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.13 M+L60DA4-IEF_OGRestore (Offset/gain value restore)

FB Name

M+L60DA4-IEF_OGRestore

Item		Desc	ription		
Function overview	Restores the offset/gain setting values saved in the file to the module.				
Symbol		M+L60DA4-IEF_OGRestore			
	Execution comma	nd—B:FB_EN		_	- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	- Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_	No	ERROR_ID : W	- Error code
	Own station chan	nel—W:i_CH_No			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module				
	CC-Link IE Field	CC-Link IE Field No	etwork m	aster/local module	
	Network module	CC-Link IE Field No	etwork he	ead module	
	CPU module			1	
		Series		Мос	lel
		MELSEC-Q Serie	s *1	Universal model (QCPU *2
		MELSEC-L Series	3	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digits of the serial number are "12012		12012" or later.	
		*3 The first five digi	ts of the s	serial number are "	13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	ion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers	sions app	licable to the mod	ules used, refer to
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	828 steps (for MELSEC-	-Q series universal m	nodel CP	U)	
	* The number of steps of the FB in a program depends on the CPU model that is used and			el that is used and	
	input and output definit	tion.			



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the offset/gain value in the memory card
	*1 inserted in the CPU module is read and restored to the module.
	2) FB operation is one-shot only, triggered by the FB_EN signal.
	3) This FB operates only when the D/A conversion is set to "disabled" for all channels.
	4) Execute this FB after executing M+L60DA4-IEF_OGBackup (Offset/gain value save).
	When reading a file created other than by M+L60DA4-IEF_OGBackup, a Module error
	(Error code: 163) occurs.
	5) The format for the name of the file that the FB reads from an SD memory card is
	"LDA_" + "module start XY address" + ".BIN".
	6) [File name example] When the module start XY address is "H0120", the file name is
	"LDA_0120.BIN".
	7) When this FB is executed without the memory card installed to the CPU or when no
	target file containing the user range setting exist in the installed memory card, a CPU
	error *2 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 (Error code).
	Refer to the error code explanation section for details.
	9) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	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 the QCPU, use an ATA memory card, and for the LCPU, use an SD memory card.
	*2 Setting the operation status of the CPU (RUN/STOP) when an access error to the
	memory card occurs is available with parameters.
Compiling method	Macro type



Item	Description
Restrictions and	1) Set the D/A conversion to "disabled" for all channels before executing this FB. When
precautions	executing this FB with the D/A conversion enabled, the digital output value changes
	significantly.
	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 because it is impossible to turn OFF.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	5) The FB cannot be used in an interrupt program.
	6) This FB uses index registers Z5 to Z9. Please do not use these index registers in an
	interrupt program.
	7) This FB cannot restore the user range setting from a file created other than by
	M+L60DA4-IEF_OGBackup.
	8) Every input must be provided with a value for proper FB operation.
	9) When this FB is used in two or more places, a duplicated coil warning may 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) To operate the L60DA4, set the input range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	13) Set the global label setting according to Section "1.5 Setting Global Labels".
	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	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 2 FB Library Application Examples".



Item	Descri	iption				
Timing chart	[When operation completes without error]	[When an error occurs]				
	FB_EN (Execution command) FB_ENO (Execution status) User range setting file reading processing FB_OK (Completed without error) FB_ERROR (Error flag)	FB_EN (Execution command) FB_ENO (Execution status) User range setting file reading processing FB_OK (Completed without error) FB_ERROR (Error flag) 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's Manual (Hardware Design, Maintenance and Inspection) 					
	•GX Works2 Version 1 Operating Manual (Common)					
	•GX Works2 Version 1 Operating Manual (Sim	nple Project, Function Block)				

• Error code list

Error code	Description	Action
50 (Decimal)	The network configuration setting of the	Review the following setting contents.
	station number specified by i_Station_No	Network configuration setting
	is incorrect.	Refer to Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
90 (Decimal)	A channel whose D/A conversion is set to	Please try again after confirming the setting.
	"enabled" exists.	
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels					
 Input labels					
Name (Comment)	Label name	Data type	Setting range	Description	
Execution	FB_EN	Bit	ON, OFF	ON: The FB is activated.	
command		ЫІ		OFF: The FB is not activated.	



Name (Comment)	Label name	Data type	Setting range	Description
Module start XY	i_Start_IO_No		Depends on the I/O	Specify the starting XY address
address		Word	point range of the CPU.	(in hexadecimal) where the
		vvoru	For details, refer to the	L60DA4 is connected. (For
			CPU user's manual.	example, enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		vvoru		number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address
XY address			point range of the head	(in hexadecimal) where the
		Word	module.	L60DA4 is connected. (For
		vvoru	For details, refer to the	example, enter H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		vvolu		station.

Name (Comment)	Label name	Data type	Initial value	Description
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 saving file is
error		DIL	OFF	completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has
		DIL	UFF	occurred.
Error code	ERROR_ID	Word	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



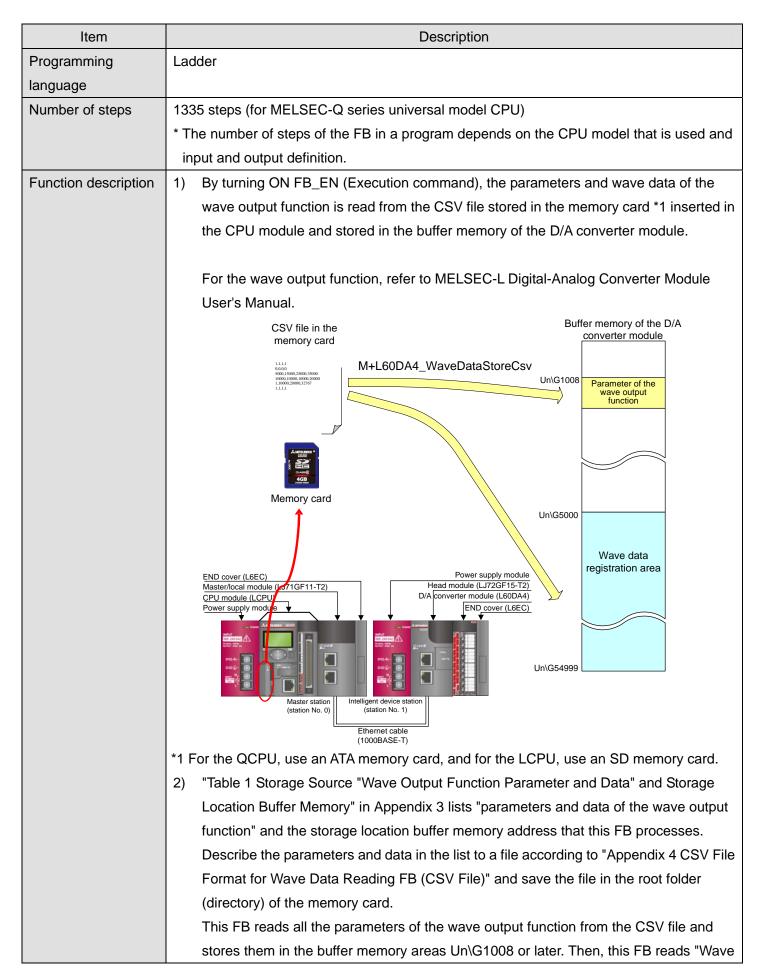
2.14 M+L60DA4-IEF_WaveDataStoreCsv (Read wave data (CSV file))

FB Name

M+L60DA4-IEF_WaveDataStoreCsv

Item	Description				
Function overview	Reads data from the CSV file where parameters and wave data (wave data points and				
	wave data) of the wave output function are stored, then writes them to the buffer memory of				
	the D/A converter modul	e.			
Symbol	M+L60DA4-IEF_WaveDataStoreCsv				
	Execution comma	nd— B:FB_EN			- Execution status
	Module start XY addre	ess—W:i_Start_IO_No		FB_OK : B	Completed without error
	Station N	No.—W:i_Station_No		FB_ERROR : B	- Error flag
	Slave module start XY addre	ess—W:i_SlvStart_IO_I	No	ERROR_ID : W	- Error code
	Own station chanr	nel—W:i_CH_No			
	CSV file nar	ne— S:i_FileName			
Applicable hardware	Digital-analog	L60DA4			
and software	converter module	er module * Applicable to D/A conversion modules whose first five digits of			first five digits of
		the product information are "14041" 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		Мос	lel
		MELSEC-Q Series	s *1	Universal model	QCPU *2
		MELSEC-L Series	;	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	s of the s	serial number are "	12012" or later.
		*3 The first five digit	s of the s	serial number are "	13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software versions applicable to the modules used, refer to		ules used, refer to	
		"Relevant manua	als".		







Item	Description
	data" specified in "Number of wave data" of the line 100 in the CSV file from the line
	101 in order for the number of specified points, and stores them into the start address
	(Un\G5000) or later of the wave data registration area of the buffer memory.
	The CSV file of the wave output function can be created easily with the "Create wave
	output data" tool of GX Works2.
	3) When this FB is executed without inserting the memory card to the CPU module, the
	FB_ERROR output turns ON and processing is interrupted, and the error code 10
	(decimal) is stored in ERROR_ID (Error code).
	Refer to the error code explanation section for details.
	4) When this FB is executed with special relay SM605 (Memory card remove/insert
	prohibit flag) is OFF, the FB_ERROR output turns ON and processing is interrupted,
	and the error code 20 (decimal) is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
	* Only in the QCPU module whose first five digits of the serial number are "10102" or later
	(except Q00UJCPU, Q00UCPU, and Q01UCPU) and LCPU module, special relay SM605
	is used to prohibit removal and insertion of a memory card.
	5) When this FB is executed with special relay SM606 (SD memory card forced disable
	instruction) is OFF, the FB_ERROR output turns ON and processing is interrupted,
	and the error code 30 (decimal) is stored in ERROR_ID (Error code). Refer to the error
	code explanation section for details.
	* Only in the LCPU module whose first five digits of the serial number are "12022" or later,
	special relay SM606 is used to forcibly stop the use of an SD memory card.
	6) 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 (Error code).
	Refer to the error code explanation section for details.
	7) When the CSV file specified by i_FileName (CSV file name) does not exist in the
	memory card inserted to the CPU module, a CPU error (Error code: 2410) occurs.
	* When the CPU is set to stop at the CPU error occurrence, FB_ERROR and ERROR_ID
	are not updated. The operation status of the CPU module (RUN/STOP) for when the CPU
	error occurs can be set in [PLC RAS] *1.
	*1 [Parameter] <> [PLC Parameter] <> [PLC RAS] <> "File Access Error " in "When There is
	an Error"
	8) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).
	Refer to the error code explanation section for details.
	9) When FB_EN (Execution command) is turned OFF before the execution of this FB is
	completed, the processing is interrupted. At that time, the data stored in the buffer



Item	Description
	memory is not cleared.
	When the FB is executed again, the reading processing is started from the beginning.
	10) Do not remove the memory card during the execution of this FB. For the insertion or
	removal method of the memory card, refer to QCPU User's Manual (Hardware Design,
	Maintenance and Inspection) or MELSEC-L CPU Module User's Manual (Hardware
	Design, Maintenance and Inspection).
Compiling method	Macro type



Item	Description
Restrictions and	1) This FB requires many scans and takes long time to complete the processing.
precautions	Therefore, this FB should be executed during the warm up of the L60DA4.
	2) The FB does not include error recovery processing. Program the error recovery
	processing separately in accordance with the required system operation.
	3) The FB cannot be used in an interrupt program.
	4) When operating this FB together with other FBs, make sure that the channels used by
	the own station are not duplicated.
	5) 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 because it is impossible to turn OFF.
	6) This FB uses index registers Z5 to Z7 and Z9. Please do not use these index registers
	in an interrupt program.
	7) This FB uses the SP.FREAD command. Thus, when an execution error of the
	SP.FREAD command occurs, a CPU error occurs.
	8) When processes for accessing the 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 the MELSEC-L CPU
	Module User's Manual (Data Logging Function).
	9) When two or more of these FBs are used, they cannot be used simultaneously.
	10) Every input must be provided with a value for proper FB operation.
	11) To operate the L60DA4, set the output range according to the device and system to be
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)
	Refresh parameters".
	14) Set the global label setting according to Section "1.5 Setting Global Labels".
	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".
FB operation type	Pulsed execution (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) Reading a CSV file in the memory card Buffer memory updating processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)	FB_EN (Execution command) FB_ENO (Execution status) Reading a CSV file in the memory card Buffer memory updating processing FB_CK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)		
Relevant manuals	•MELSEC-L Analog-Digital Converter Module	e User's Manual		
	•MELSEC-Q CC-Link IE Field Network Mast	er/Local Module User's Manual		
	•MELSEC-L CC-Link IE Field Network Maste	er/Local Module User's Manual		
	•MELSEC-L CC-Link IE Field Network Head	Module User's Manual		
	•QCPU User's Manual (Hardware Design, M	aintenance and Inspection)		
	•MELSEC-L CPU Module User's Manual (Ha	ardware Design, Maintenance and Inspection)		
	•MELSEC-L CPU Module User's Manual (Da	ata Logging Function)		
	•GX Works2 Version 1 Operating Manual (Common)			
	•GX Works2 Version 1 Operating Manual (Si	mple Project, Function Block)		



• Error code list

Error code	Description	Action
10 (Decimal)	This FB is executed without no memory	Execute this FB again after inserting the
	card inserted to the CPU module.	memory card where the target CSV file is
		saved to the CPU module.
		Or execute this FB again after inserting the
		available memory card and saving the target
		CSV file to the memory card using "Write PLC
		User Data" of GX Works2.
20 (Decimal)	SM605 (Memory card remove/insert	ATA memory card
	prohibit flag) is OFF, and the accessing to	Execute this FB again after turning ON
	the memory card is unavailable.	SM605 (Memory card remove/insert prohibit
		flag).
		SD memory card
		Execute this FB again after sliding the SD
		card disabling switch downward and SM605
		(Memory card remove/insert prohibit flag) is
		turned ON.
30 (Decimal)	SM606 (SD memory card forced disable	Execute this FB again after turning OFF
	instruction) is ON, and the accessing to	SM606 to confirm that SM607 (SD memory
	the SD memory card is unavailable.	card use force stop condition flag) is OFF.
40 (Decimal)	The wave data reading processing	Reduce the frequency of the access
	timeout occurred because accesses to the	processing to the 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	 Network configuration setting
	is incorrect.	Refer to Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
4-digit error code	The error code of the CPU module	For details, refer to "Error Code List" of
		MELSEC-L CPU/QCPU Module User's
		Manual (Hardware Design, Maintenance and
		Inspection).
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network



Error code	Description	Action
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
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 I/O	Specify the starting XY address (in
address			point range of the	hexadecimal) where the L60DA4
		Word	CPU.	is connected. (For example, enter
			For details, refer to the	H10 for X10.)
			CPU user's manual.	
Station No.	i_Station_No	Word	1 to 120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address (in
XY address			point range of the head	hexadecimal) where the L60DA4
		Word	module.	is connected. (For example, enter
		vvord	For details, refer to the	H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
CSV file name	i_FileName		12 characters or less	Specify the name of the CSV file
				in which the parameters and the
				wave data of the wave output
		Character		function are stored. (Only CSV is
	Character			valid for a file attribute.)
		string		For details of the CSV file format,
				refer to "Appendix 4 CSV File
				Format for Wave Data Reading
				FB (CSV File)".



Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that writing the
error				parameters and wave data of the wave
				output function in the CSV file to the buffer
				memory of the D/A converter module is
				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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.15 M+L60DA4-IEF_WaveDataStoreDev (Read wave data (device))

FB Name

M+L60DA4-IEF_WaveDataStoreDev

Item	Description				
Function overview	Reads data from the file register (ZR) where parameters and wave data (wave data points				
	and wave data) of the wave output function are stored, then writes them to the buffer				
	memory of the D/A conve	erter module.			
Symbol	M+L60DA4-IEF_WaveDataStoreDev				
	Execution comma	nd— B:FB_EN		_	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		FB_ERROR : B	—Error flag
	Slave module start XY addre	ss—W:i_SlvStart_lO_l	No	ERROR_ID : W	Error code
	Own station chann	nel—W:i_CH_No			
	Read start addre	ss— D:i_ReadDataAd	dr		
Applicable hardware	Digital-analog	L60DA4			
and software	converter module	* Applicable to D/A conversion modules whose first five digits of			e first five digits of
		the product information are "14041" 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		Мос	del
		MELSEC-Q Serie	s *1	Universal model	QCPU *2
		MELSEC-L Series	5	LCPU *3	
		*1 Not applicable to	QCPU-A	A (A mode)	
		*2 The first five digit	ts of the s	serial number are '	'12012" or later.
		*3 The first five digit	ts of the s	serial number are '	'13012" or later.
	Engineering software	GX Works2 *1			
		Language		Software vers	sion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software versions applicable to the modules used, refer to			
		"Relevant manua	als".		



Item	Description		
Programming	Ladder		
language			
Number of steps	806 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 parameters and the wave data of the		
	wave output function is read from the serial number access format file register (ZR)		
	and stored in the buffer memory of the D/A converter module.		
	Serial number access format file register (ZR) of the CPU module ZR(m + 0) Parameter of the Buffer memory of the D/A converter module		
	ZR(m + 98) Number of wave data points 64 words Parameter of the wave output ZR(m + 100) Number of wave data points 2 words Un\G1008		
	Wave data Max. 50000 points M+L60DA4_WaveDataStoreDev Wave data registration area		
	ZR(m + 50099)		
	For the wave output function, refer to MELSEC-L Digital-Analog Converter Module		
	User's Manual.		
	2) "Table 1 Storage Source "Wave Output Function Parameter and Data" and Storage		
	Location Buffer Memory" in Appendix 3 lists "parameters and data of the wave output		
	function" and the storage location buffer memory address that this FB processes. Save		
	the parameter and the data in the file register (ZR) described in "Storage source" in the		
	table.		
	This FB reads the parameters of the wave output function from ZR(m+0) specified by i_ReadDataAddr (read start address) and stores them in the buffer memory area		
	Un\G1008 or later. Then, this FB reads "Wave data" of specified points specified in		
	"Number of wave data" of ZR(m+98,99) from ZR(m+100) in order, and stores them into		
	the Start address (Un\G5000) or later of the wave data registration area of the buffer		
	memory.		



Item	Description		
	The file register (ZR) data of the wave output function can be created easily with the		
	"Create wave output data" tool of GX Works2.		
	*m: File register (ZR) read start address Specifying the points to be used in [PLC		
	File]*1 and the device points of the file register (ZR) in [Device]*2 can reserve the		
	points of the file register and arrange the data in the desired address.		
	*1 [Parameter] <> [PLC Parameter] <> [PLC File] <> "File Register"		
	*2 [Parameter] <> [PLC Parameter] <> [Device] <> "File Register Extension Setting"		
	3) Reserve "Number of wave data" +100 points or more for the file register (ZR) to be		
	used. When this FB is executed with the points specified in i_ReadDataAddr (read		
	start address) less than "Number of wave data" +100 of ZR(m+98,99), the available		
	range of the file register (ZR) is exceeded and a CPU error (Error code: 4101) occurs.		
	4) When FB_EN (Execution command) is turned OFF before the execution of this FB is		
	completed, the processing is interrupted. At that time, the data stored in the buffer		
	memory is not cleared.		
	When the FB is executed again, the reading processing is started from the beginning.		
	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 (Error code).		
	Refer to the error code explanation section for details.		
	6) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and		
	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) This FB requires many scans and takes long time to complete the processing.			
precautions	Therefore, this FB should be executed during the warm up of the L60DA4.			
	2) The FB does not include error recovery processing. Program the error recovery			
	processing separately in accordance with the required system operation.			
	The FB cannot be used in an interrupt program.			
) When operating this FB together with other FBs, make sure that the channels used by			
	the own station are not duplicated.			
	5) 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 because it is impossible to turn OFF.			
	6) This FB uses index registers Z5 to Z9. Please do not use these index registers in an			
	interrupt program.			
	7) When two or more of these FBs are used, they cannot be used simultaneously.			
	8) Every input must be provided with a value for proper FB operation.			
	9) To operate the L60DA4, set the output range according to the device and system to be			
	connected. Configure the setting in Switch Setting of GX Works2 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 device of the network parameter setting according to Section "1.4(3)			
	Refresh parameters".			
	12) Set the global label setting according to Section "1.5 Setting Global Labels".			
	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 (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)			
	Buffer memory updating processing FB_OK Update Update Update Update Update Stopped Processing Processing FB_OK FB_OK			
	ID_OR ID_OR (Completed without error) (Completed without error) FB_ERROR (Error flag) FB_ERROR (Error flag)			
	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's Manual (Hardware Design, Maintenance and Inspection)		
	•GX Works2 Version 1 Operating Manual (Common)		
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)		



• Error 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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution	FB_EN	Bit	ON, OFF	ON: The FB is activated.
command		Ы		OFF: The FB is not activated.
Module start XY	i_Start_IO_No		Depends on the I/O	Specify the starting XY address (in
address			point range of the	hexadecimal) where the L60DA4
		Word	CPU.	is connected. (For example, enter
			For details, refer to the	H10 for X10.)
			CPU user's manual.	
Station No.	i_Station_No	Word	1 to 120	Specify the target station number.
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address (in
XY address			point range of the head	hexadecimal) where the L60DA4
		Word	module.	is connected. (For example, enter
		vvoru	For details, refer to the	H10 for X10.)
			head module user's	
			manual.	
Own station	i_CH_No	Word	1 to 32	Specify the channel for own
channel		word		station.
Read start address	i_ReadDataAddr		Effective device range	Specify the start address of the file
		Doublo		register (ZR) in which the
		Double Word		parameters and the wave data of
		vvoru		the wave output function are
				stored.



Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Dit		ON: Execution command is ON.
		Bit	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that writing the
error				parameters and the wave data of the wave
		Bit	OFF	output function in the file register (ZR) to the
				buffer memory of the D/A converter module is
				completed.
Error flag	FB_ERROR	Dit		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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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



2.16 M+L60DA4-IEF_WaveOutSetting (Wave output setting)

FB Name

M+L60DA4-IEF_WaveOutSetting

Item	Description			
Function overview	Sets the wave output for the specified channel or all channels.			
Symbol	Execution comman Module start XY addres Station N Slave module start XY addres Own station chann Target C Output setting during way output sto Output value during way output sto Wave pattern start addres settin Wave pattern data poin settin Wave pattern output repetitio settin	$\begin{array}{c} & \begin{array}{c} & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & $	veOutSetting	Error flag
Applicable hardware and software	Constant for wave outp conversion cyc Digital-analog converter module			e first five digits of
	CC-Link IE Field Network module CPU module	CC-Link IE Field Network m CC-Link IE Field Network he Series MELSEC-Q Series *1	ead module Moo Universal model	del
		MELSEC-L Series *1 Not applicable to QCPU-A *2 The first five digits of the s *3 The first five digits of the s	serial number are "	



Item	Description			
	Engineering software	GX Works2 *1		
		Language	Software version	
		English version	Version1.24A or later	
		Chinese version	Version1.49B or later	
		*1 For software vers	sions applicable to the modules used, refer to	
		"Relevant manua	als".	
Programming	Ladder			
language				
Number of steps	556 steps (for MELSEC	-Q series universal m	nodel CPU)	
	* The number of steps of	of the FB in a program	n depends on the CPU model that is used and	
	input and output defini	tion.		
Function description	1) By turning ON FB_	EN (Execution comm	and), the wave output settings of the specified	
	channel or all the c	hannels are written.		
	2) The wave output se	etting is enabled only	when the output mode setting is set to "Wave	
	output mode".			
	Set the wave output	It data for the analog	output in advance.	
	3) The setting value is validated when the Operating condition setting request (RYn9) is			
		turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB		
		equestSetting) is exe		
	-			
			and the error code 10 (decimal) is stored in	
	ERROR_ID (Error o			
		ode explanation sect		
	,	с с	of the station number specified by	
	i_Station_No is incorrect, FB_ERROR is turned ON and			
		· · · · ·	d in ERROR_ID (Error code).	
		ode explanation sect		
	,		occurs, the FB_ERROR output turns ON and	
		•	code is stored in ERROR_ID (Error code).	
Compiling method	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 because it is impossible to turn OFF.		
	4) When operating this FB together with other FBs, make sure that the channels used by		
	the own station are not duplicated.		
	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 Z4 to Z7 and Z9. 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) To operate the L60DA4, set the output range according to the device and system to be		
	connected. Configure the setting in Switch Setting of GX Works2 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.		
	 Set the refresh device of the network parameter setting according to Section "1.4(3) Refresh parameters". 		
	11) Set the global label setting according to Section "1.5 Setting Global Labels".		
	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 (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)		
	Setting value writing processing Write Noprocessing Setting value writing processing No processing No processing		
	FB_OK		
	(Wave output setting complete) (Wave output setting complete) FB_ERROR (Error flag) FB_ERROR (Error flag)		
	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's Manual (Hardware Design, Maintenance and Inspection)		
	•GX Works2 Version 1 Operating Manual (Common)		
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)		



• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid.	Please try again after confirming the setting.
	Set 1 to 4 or 15 to the target channel.	
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 Section 1.4(2) Network configuration
		setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

Input labels

Name (Comment)	Label name	Data type	Setting range	Description	
Execution	FB_EN	Bit	ON, OFF	ON: The FB is activated.	
command		ЫІ		OFF: The FB is not activated.	
Module start XY	i_Start_IO_No		Depends on the I/O	Specify the starting XY address (in	
address			point range of the	hexadecimal) where the L60DA4	
		Word	CPU.	is connected. (For example, enter	
			For details, refer to the	H10 for X10.)	
			CPU user's manual.		
Station No.	i_Station_No	Word	1 to 120	Specify the target station number.	
Slave module start	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY address (in	
XY address			point range of the head	hexadecimal) where the L60DA4	
		\A/e rel	module.	is connected. (For example, enter	
		Word For detail		H10 for X10.)	
			head module user's		
	manual.		manual.		
Own station	i_CH_No	Word	1 to 32	Specify the channel for own	
channel		word		station.	
Target CH	i_CH		1 to 4 and 15	1 to 4: Specify the channel	
		Word		number.	
				15: Specify all the channels.	



Name (Comment)	Label name	Data type	Setting range	Description
Output setting	i_OutputSelect		0: 0V/0mA	Specify the output value during
during wave output		Word	1: Offset value	the wave output stop.
stop		vvoru	2: Output value during	
			wave output stop	
Output value	i_OutputValue		•0 to 20,479:	Set the value to be output when
during wave output			(For range of 0 to 5V,	"2: Output value during wave
stop		1 to 5V, 0 to 20mA,		output stop" is selected in "Output
		Word	and 4 to 20mA)	setting during wave output stop".
			•-20,480 to 20,479:	
			(For range of -10 to	
			10V)	
Wave pattern start	i_StartingAddr	Double	5,000 to 54,999	Set the start address of the wave
address setting		Word		pattern to be output.
Wave pattern data	i_PointsSetting	Double	1 to 50,000 (points)	Set the data points of the wave
points setting		Word		pattern to be output.
Wave pattern	i_Frequency		-1:	Set the output times of the wave
output repetition			Unlimited repetition	pattern.
setting		Word	1 to 32,767:	
			Specified number of	
			times	
Constant for wave	i_ConvSpeed		1 to 5,000	Set the constant to determine the
output conversion		Word		conversion cycle of the wave
cycle				output.

Name (Comment)	Label name	Data type	Initial value	Description
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 wave output
error		DIL	OFF	setting is 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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



2.17 M+L60DA4-IEF_WaveOutReqSetting (Wave output start/stop request)

FB Name

M+L60DA4-IEF_WaveOutReqSetting

Function Overview

Item			Desc	ription		
Function overview	Sets the starting, stopping, or pausing of the wave output for the specified channel or all				ed channel or all	
	channels.					
Symbol			M+L60DA4-	IEF_Wave	OutReqSetting	
	Execution command-		B : FB_EN		FB_ENO : B	
	Module start XY addre	ss—	W:i_Start_IO_No		FB_OK:B	enor
	Station N	lo. —	W:i_Station_No	0_	_WaveStatusCH1 : W	status monitor
	Slave module start XY addre	ss—	W:i_SlvStart_IO_1	No o_	_WaveStatusCH2:W	CH2 Wave output status monitor
	Own station chann	nel—	W:i_CH_No	0_	_WaveStatusCH3:W	status monitor
	Target C	н—	W : i_CH	0_	_WaveStatusCH4:W	CH4 Wave output status monitor
	Wave output start/stop reque	est-	W:i_Start_Stop_R	eq	FB_ERROR : B	—Error flag
					ERROR_ID : W	- Error code
Applicable hardware	Digital-analog	L6	0DA4			-
and software	converter module	* A	* Applicable to D/A conversion modules whose first five digits of			
		tł	he product inform	ation are	e "14041" or later	
	CC-Link IE Field CO		CC-Link IE Field Network master/local module			
	Network module CO		CC-Link IE Field Network head module			
	CPU module					
				Model		del
		N	IELSEC-Q Series	s *1	I Universal model QCPU *2	
		N	IELSEC-L Series		LCPU *3	
		*1	Not applicable to	QCPU-A	A (A mode)	
		*2	The first five digit	s of the s	serial number are '	"12012" or later.
		*3 '	The first five digit	s of the s	serial number are '	"13012" or later.
	Engineering software	GX Works2 *1				
		Language			Software version	
		English version Vers		Version	Version1.24A or later	
		Chinese version Version1.49B or later				
		*1 For software versions applicable to the modules used, refer to			ules used, refer to	
			"Relevant manua	als".		



Item	Description
Programming	Ladder
language	
Number of steps	509 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 start or stop request for wave output
	of the specified channel or all the channels is set.
	2) By turning ON FB_EN (Execution command), the value of the wave output status
	monitor (Un\G1100 to Un\G1103) is output.
	When a channel is specified in the input label, only the wave output status monitor
	value of the specified channel is updated. For other channels, "0" is output.
	When all channels are set in the input label, the wave output status monitor values of
	all the channels are output.
	3) After FB_EN (Execution command) is turned ON, the FB is always executed.
	4) To restart the wave output, after the wave output is finished, set i_Start_Stop_Req
	(Wave output start/stop request) to "1 (Wave output start request)", "0 (Wave output
	stop request)", then "1 (Wave output start request)".
	5) The wave output setting is enabled only when the output mode setting is set to "Wave
	output mode".
	6) When the setting value of the target channel is out of range, the FB_ERROR output
	turns ON and processing is interrupted, and the error code 10 (decimal) is stored in
	ERROR_ID (Error code).
	Refer to the error code explanation section for details.
	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 (Error code).
	Refer to the error code explanation section for details.
	8) When the CC-Link IE field network error occurs, the FB_ERROR output turns ON and
	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) When operating this FB together with other FBs, make sure that the channels used by			
	the own station are not duplicated.			
	4) 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 because it is impossible to turn OFF.			
	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 Z5 to Z7 and Z9. 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) To operate the L60DA4, set the output range according to the device and system to be			
	connected. Configure the setting in Switch Setting of GX Works2 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.			
	0) Set the refresh device of the network parameter setting according to Section "1.4(3)			
	Refresh parameters".			
	11) Set the global label setting according to Section "1.5 Setting Global Labels".			
	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)			
	Wave output start/stop request (i_Start_Stop_Req) Update Stopped U			
	CH1 to 4 Wave output status monitor (_WaveStatusCH1 to 4)			
	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's Manual (Hardware Design, Maintenance and Inspection)
	•GX Works2 Version 1 Operating Manual (Common)
	•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)

Error codes

• Error code list

Error code	Description	Action
10 (Decimal)	The specified channel is not valid.	Please try again after confirming the setting.
	Set 1 to 4 or 15 to the target channel.	
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 Section 1.4(2) Network
		configuration setting.
		 The value entered in i_Station_No
D000 to DAF9	A CC-Link IE field network error has	For details, refer to Error Code List of
(Hexadecimal)	occurred at the system configuration.	MELSEC-Q/L CC-Link IE Field Network
		Master/Local Module User's Manual

Labels

• Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN		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	Specify the starting XY
address			point range of the CPU.	address (in hexadecimal)
		Word	For details, refer to the	where the L60DA4 is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Station No.	i_Station_No	Word	1 to 120	Specify the target station
		vvora		number.



Name (Comment)	Label name	Data type	Setting range	Description
Slave module start XY	i_SlvStart_IO_No		Depends on the I/O	Specify the starting XY
address			point range of the head	address (in hexadecimal)
		Word	module.	where the L60DA4 is
		vvoru	For details, refer to the	connected. (For example,
			head module user's	enter H10 for X10.)
			manual.	
Own station channel	i_CH_No	Word	1 to 32	Specify the channel for own
		vvoru		station.
Target CH	i_CH		1 to 4 and 15	1 to 4: Specify the channel
		Word		number.
				15: Specify all the channels.
Wave output start/stop	i_Start_Stop_Req		0: Wave output stop	Specify the request for the
request			request	wave output start or stop.
		Word	1: Wave output start	
		woru	request	
			2: Wave output pause	
			request	

• Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit OFF		ON: Execution command is ON.
		DIL	UFF	OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the FB is being
error		Bit	OFF	executed properly.
CH1 Wave output	o_WaveStatusCH1	Word	0	Outputs the wave output status value
status monitor		vvoru	0	(stop, during output, pause).
CH2 Wave output	o_WaveStatusCH2	Word	0	0: Wave output stop
status monitor		Word 0		1: Wave output
CH3 Wave output	o_WaveStatusCH3	\A/e rd	0	2: Wave output pause
status monitor		Word 0 3		3: Wave output step action *1
CH4 Wave output	o_WaveStatusCH4			*1: The wave output step action function is
status monitor				unavailable with the FB. To execute,
				refer to Section 8.8 Wave Output
		Word	0	Function of the MELSEC-L
				Digital-Analog Converter Module
				User's Manual and use the device test
				function of GX Works2.



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	2013/02/22	First edition

Note

This chapter includes information related to the function block.

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

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



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 the 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

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 "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".	

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

	Module 1	Module 2	Module 3
Network Type	CC IE Field (Master Station) 🗸	CC IE Field (Master Station)	None 🗸
Start I/O No.	0000	0020	
Network No.	1	2	
Total Stations	1	1	
Group No.			
Station No.	0	0	
Mode	Online (Normal Mode) 🗸 🗸	Online (Normal Mode) 🛛 🗸 🗸	•
	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 🛛 🗸 🗸	



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

Item	Description			
Station No.	Set the station number of the slave connected to the master station.			
	Set "1".			
Station Type	Set the station type of the slave connected to the master station.			
	Select "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 Networ	k configuration.											
Assignment Metho Points/Start												
			RX/RY Setting RWw/RWr Setting Refresh Device) Device					
Number of PLCs	Station No.	Station Type	Points	Start	End	Points	Start	End	RX	RY	RWw	
1	1	Intelligent Device Station 🛛 🚽	16	0000	000F				M1024(16)	M2048(16)		



(3) Enter the network parameters for the second module.

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" : 0200
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" : 0200
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" : 1040
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" : 2064

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

Assignment Method Points/Start Start/End

Transfer SW SW 512 0000 01FF Transfer 1 RX 16 0000 000F M 16 1040 10 Transfer 2 RY 16 0000 000F M 16 2064 20 Transfer 3 Image: Constraint of the state of t			Link S	ide			PLC Side				
Transfer SW SW 512 0000 01FF SW 512 0200 033 Transfer 1 RX I 16 0000 000F Image: SW 512 0200 033 Transfer 1 RX I 16 0000 000F Image: SW 512 0200 033 Transfer 2 RY I 16 0000 000F Image: SW Image: Image: SW Image: Imag		Dev. Name	Points	Start	End		Dev. N	Jame	Points	Start	End
Transfer 1 RX I6 0000 000F M I6 1040 10 Transfer 2 RY I6 0000 000F M I6 2064 20 Transfer 3 Image: Constraint of the state of the sta	Transfer SB	SB	512	0000	01FF	+	SB	-	512	0200	03FF
Transfer 1 RX I 16 0000 000F M I 16 1040 10 Transfer 2 RY I 16 0000 000F M I 16 2064 20 Transfer 3 Image: Constraint of the state of the	Transfer SW	SW	512	0000	01FF	+	SW	-	512	0200	03FF
Transfer 2 RY I 0000 000F M I 16 2064 20 Transfer 3 Image: Constraint of the state of the	Transfer 1	RX 🔻	16	0000	000F		м	-	16	1040	1055
Transfer 3 Image: Constraint of the second	Transfer 2	RY 🔻	16	0000	000F		м	-	16	2064	2079
Transfer 4 Transfer 5 Transfer 6	Transfer 3	-						-			
Transfer 5 ▼ ▼ ▼ ▼ ■ Transfer 6 ▼ ●	Transfer 4	-						-			
Transfer 6 🔹 🚽	Transfer 5	-				+		-			
	Transfer 6	-				+		-			
	Transfer 7	-				+		-			
Transfer 8 🚽 🚽	Transfer 8	-				+		-			



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 "Z9" prefix.

(2) M_F_RY2 Set for remote output (RY).

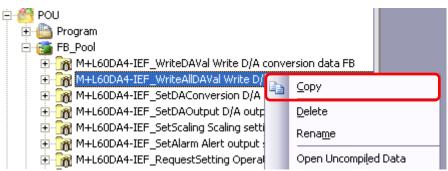
Item	Description
Class	Select "VAR_GLOBAL".
Label Name	Enter "M_F_RY2".
Data Type	Select "Bit".
Device	Enter the refresh device set for the refresh parameter with a "Z8" prefix.

	Class	Label Name	Data Type	Constant	Device	Comment
1	VAR_GLOBAL	M_F_RX	Bit		M1024Z9	RX refresh device
2	VAR_GLOBAL	M_F_BY	Bit		M2048Z8	RY refresh device
3	VAR_GLOBAL	M_F_RX2	Bit		M1040Z9	RX refresh device
4	VAR_GLOBAL	M_F_RY2	Bit		M2064Z8	RY refresh device

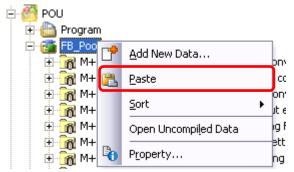


Appendix 1.3 Copying MELSOFT Library to Create an FB for the Second Module

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



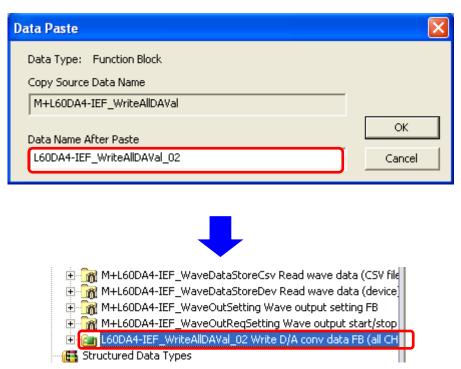
(2) Paste the copied FB to "FB_Pool" on the Project tab of the Navigation window.





(3) After selecting the paste command, a window appears to enter an FB name. Enter an FB name after paste. (Example: L60DA4-IEF_WriteAlIDAVal_02)

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





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

(1) Open "Program" of the added FB.



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

📴 MELSOFT Se	ries	GX Wor	ks2L6	ODA4-	IEF VL 60	DA4-IEF	L60DA4	-IEF	
Eroject Edit	Eino	l/Replace	⊆ompile	⊻iew	<u>O</u> nline	De <u>b</u> ug	<u>D</u> iagnosti	s	<u>T</u> ool
i 🗅 🖻 💾 🖨		Cro <u>s</u> s Rel	Cross Reference Ctrl+E						
		Dev <u>i</u> ce Lis	st				Ctrl+D		
Navigation	Dev	Find <u>D</u> evi	ce				Ctrl+F	nr.	A4-IEF
Project		Find Instr	uction						
1 B B B	Ш О-	Find <u>C</u> ont	act or Coil:			Ctr	l+Alt+F7		
🛨 🚯 Parameter		<u>F</u> ind Strin	g			Ctrl	+Shift+F	1-	+L60D
Intelligent f		<u>R</u> eplace D	Device				Ctrl+H	Vri	te D//
Global Devi		Replace Instruction						r.	1.00A
🕀 🛗 Global Labe 🕀 🏀 Program Se		Replace S	Replace String Ctrl+Shift+H				+Shift+H	**	******
POU 🦉 POU		Ch <u>a</u> nge C) pen/Close	Contact				╞	
🕀 🍪 Program		D <u>e</u> vice Ba	atch Replac	е					SM.
		Register I	to De <u>v</u> ice B	atch Rep	place)	$\left - \right $
. ⊕ - 👧 M+ . ⊕ - 🔞 M+		Change N	1 <u>o</u> dule I/O	No					
		S <u>w</u> itch St	atement/N	ote Type					
. ⊕ - 🙀 M+	. #	Line State	Line Statement List Ctrl+L						
		<u>]</u> ump	 _jump Ctrl+G						
🕀 📷 M+		Jump to N	Next Ladde	r <u>B</u> lock S	tart Ct	rl+Alt+Pa	ge Down		
		Jump to P	Previous La	dder Blo	ck Start	Ctrl+Alt+	-Page Up		
🕀 📆 M+I	L60D	A4-IEF_Err	orOperatio	n Error d	perati			_	



(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" by "M_F_RX2" all at once.

Find/Replace								
Device Instruction String Open/Close Contact Device Batch Result Error Log								
Fin <u>d</u> In	(Current Window)							
Fi <u>n</u> d Device	M_F_RY _ Eind Next							
Replace De <u>v</u> ice	M_F_RY2							
Device <u>P</u> oint	1 DEC Replace							
Find Direction -	Option All Replace							
ⓒ From <u>I</u> op○ Down○ Up	Digit Multiple word Consecutive search with enter key Do not move							

By performing the steps above, the CC-Link IE field master/local 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 IE field master/local modules, make sure that the preset "Global label name", "Data Name After Paste" that was set when pasting FB data and "Replace Device" that was 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.

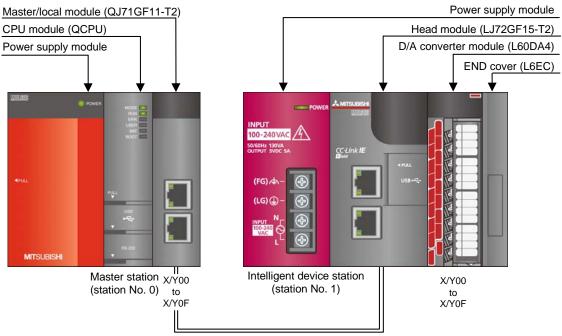
Therefore, to upgrade FBs that were created by following these procedures, after upgrading MELSOFT Library, follow these procedures again.



Appendix 2. FB Library Application Examples

L60DA4-IEF FB application examples are as follows.

1) System configuration



Ethernet cable (1000BASE-T)

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) List of devices

a) External input (commands)

Device	FB name	Application (ON details)
M0	M+L60DA4-IEF_WriteDAVal	D/A conversion data write req.
M10	M+L60DA4-IEF_WriteAllDAVal	D/A cnv data write req all chnls
M20	M+L60DA4-IEF_SetDAConversion	D/A conv enable/disable set req.
M21		D/A conv enable/disable setting
M30	M+L60DA4-IEF_SetDAOutput	DA output enable/disable set req
M31		DA output enable/disable setting
M40	M+L60DA4-IEF_SetScaling	Scaling setting request
M41		Scaling enabled:ON/disabled:OFF
M50	M+L60DA4-IEF_SetAlarm	Alert output setting request
M51		Airt outpt enable:ON/disable:OFF
M60	M+L60DA4-IEF_RequestSetting	Operation condition set ctrl req
M70	M+L60DA4-IEF_SetOffsetVal	Offset setting request
M71		Offset value change request
M72		Offset value writing request
M80	M+L60DA4-IEF_SetGainVal	Gain setting request
M81		Gain value change request
M82		Gain value writing request
M90	M+L60DA4-IEF_ShiftOperation	Shift function execution request
D90		Digital value
M100	M+L60DA4-IEF_ErrorOperation	Error operation request
M101		Error reset request
M110	M+L60DA4-IEF_OGBackup	Offset/gain save to file req.
M120	M+L60DA4-IEF_OGRestore	Offset/gain value restore req.
M130	M+L60DA4-IEF_WaveDataStoreCsv	Wave data read (CSV) request
M140	M+L60DA4-IEF_WaveDataStoreDev	Wave data read (dev) request
M150	M+L60DA4-IEF_WaveOutSetting	Wave output setting request
M160	M+L60DA4-IEF_WaveOutReqSetting	Wave output start/stop request



b) External output (checks)

Device	FB name	Application (ON details)
M1	M+L60DA4-IEF_WriteDAVal	D/A conversion data write FB rdy
M2		D/A conversion data write comp.
F0		DA conv data write FB error flag
D0		DA conv data write FB error code
M11	M+L60DA4-IEF_WriteAllDAVal	D/A data write all chnls FB rdy.
M12		D/A data write all chnls comp.
F5		Data write all chnls FB err flag
D10		Data write all chnls FB err code
M22	M+L60DA4-IEF_SetDAConversion	D/A conv enable/disable set rdy.
M23		D/A conv enable/disable set comp
F10		DA conv enable/disable FB er flg
D20		DA conv enable/disable FB er cod
M32	M+L60DA4-IEF_SetDAOutput	D/A output enable/disable FB rdy
M33		DA outpt enable/disable set comp
F15		DA output enable/disable err flg
D30		DA otpt enable/disable FB er cod
M42	M+L60DA4-IEF_SetScaling	Scaling value setting FB ready
M43		Scaling value ave proc set comp.
F20		Scaling value set FB error flag
D40		Scaling function set FB err code
M52	M+L60DA4-IEF_SetAlarm	Alert output setting FB ready
M53		Alert output setting complete
F25		Alert output set FB error flag
D50		Alert output setting FB err code
M61	M+L60DA4-IEF_RequestSetting	Operation condition req ctrl rdy
M62		Operation cndition req ctrl comp
F30		Operatin cond req ctrl FB er flg
D60		Operatin cond req ctrl FB er cod
M73	M+L60DA4-IEF_SetOffsetVal	Offset setting FB ready
M74		Offset setting complete
F35		Offset setting FB error flag
D70]	Offset setting FB error code



Device	FB name	Application (ON details)
M83	M+L60DA4-IEF_SetGainVal	Gain setting FB ready
M84		Gain setting complete
F40		Gain setting FB error flag
D80		Gain setting FB error code
M91	M+L60DA4-IEF_ShiftOperation	Shift function FB ready
M92		Shift function complete
D91		Shift conversion value
M102	M+L60DA4-IEF_ErrorOperation	Error operation FB ready
M103		Error operation complete
M104		Module error
D100		Module error code
F45		Error operation FB error flag
D101		Error operation FB error code
M111	M+L60DA4-IEF_OGBackup	Offset/gain save to file FB rdy
M112		Offset/gain save to file comp.
F50		Offset/gain save FB error flag
D110		Offset/gain save FB error code
M121	M+L60DA4-IEF_OGRestore	Offset/gain restore FB ready
M122		Offset/gain restore complete
F55		Offset/gain restore FB err flag
D120		Offset/gain restore FB err code
M131	M+L60DA4-IEF_WaveDataStoreCsv	Wave data read (CSV) ready
M132		Wave data read (CSV) complete
F60		Wave data read (CSV) FB err
D130		Wave data read (CSV) FB err code
M141	M+L60DA4-IEF_WaveDataStoreDev	Wave data read (dev) FB ready
M142		Wave data read (dev) complete
F65		Wave data read (dev) FB err
D140		Wave data read (dev) FB err code
M151	M+L60DA4-IEF_WaveOutSetting	Wave output setting FB ready
M152]	Wave output setting complete
F70]	Wave output setting FB err flag
D150		Wave output setting FB err code



Device	FB name	Application (ON details)
M161	M+L60DA4-IEF_WaveOutReqSetting	Wave output start/stop FB ready
M162		Wave output start/stop complete
D160		CH1 Wave output status monitor
D161		CH2 Wave output status monitor
D162		CH3 Wave output status monitor
D163		CH4 Wave output status monitor
F75		Wave output start/stop err flag
D164		Wave output start/stop err code
T10	Interlock check	Own station baton pass err check
T11		Own station data link err check
T12		Station 1 baton pass error check
T13		Station 1 cyclic trans err check
M200		Comm condition flag, station No1

3) Global label setting

a) Common setting

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 setting

Input and output item	Value	Description
Module start XY address	0	Specify the starting XY address where the
		L60DA4 is connected.

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	М	1024
Transfer 2	RY	16	0000	Μ	2048

e) Slave station information

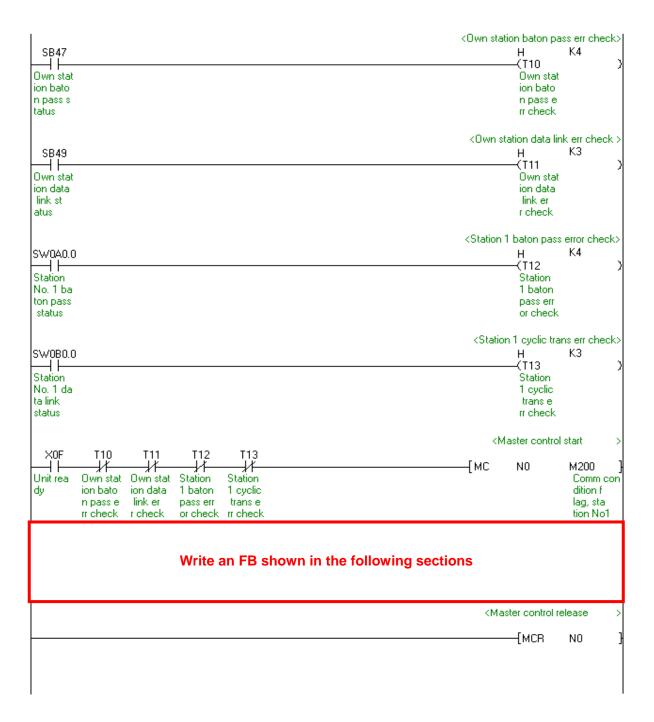
Item	Setting value
Mode	Online
Network No.	1
Station No.	1



5) Programs

Interlock program

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

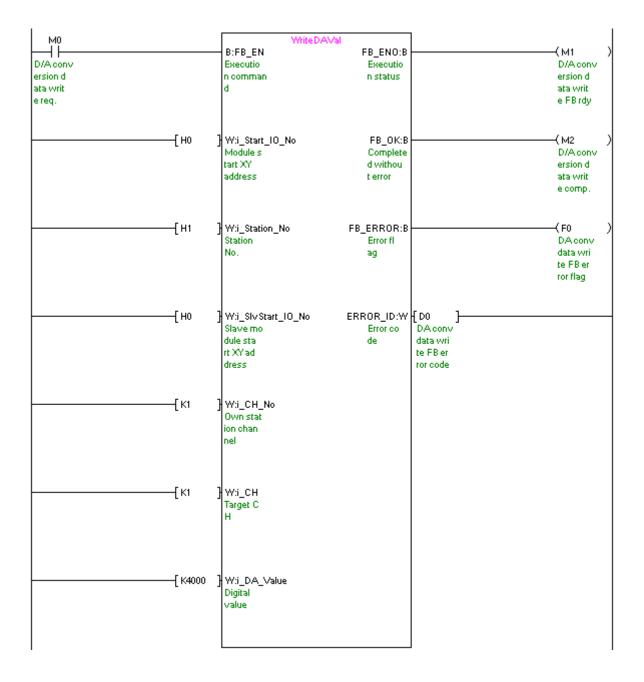




M+L60DA4-IEF_WriteDAVal (Write D/A conversion da	ata)
--	------

Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K1	Set the target channel to channel 1.
i_DA_Value	K4000	Set the digital value to 4,000.

By turning ON M0, the digital value of channel 1 is written to the buffer memory.





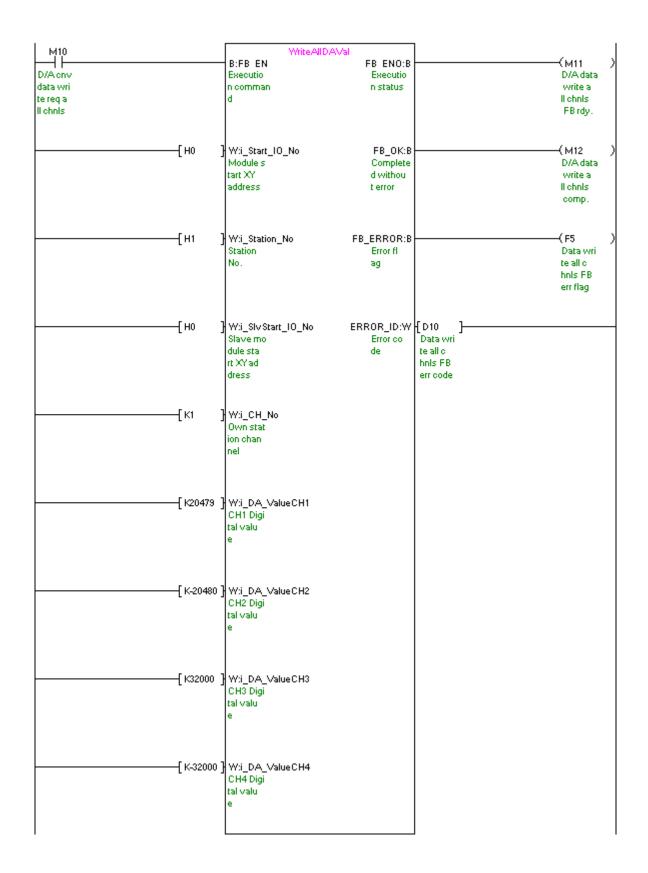
MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

M+L60DA4-IEF_WriteAlIDAVal (Write D/A conversion data (all CHs))

Label name Setting		Description	
	value		
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.	
i_Station_No	H1	Set the target station number to 1.	
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.	
i_CH_No	K1	Set the own station channel to channel 1.	
i_DA_ValueCH1	K20479	Set the digital value of channel 1 to 20,479.	
i_DA_ValueCH2	K-20480	Set the digital value of channel 2 to -20,480.	
i_DA_ValueCH3	K32000	Set the digital value of channel 3 to 32,000.	
i_DA_ValueCH4	K-32000	Set the digital value of channel 4 to -32,000.	

By turning ON M10, the digital values of all the channels are written to the buffer memory.



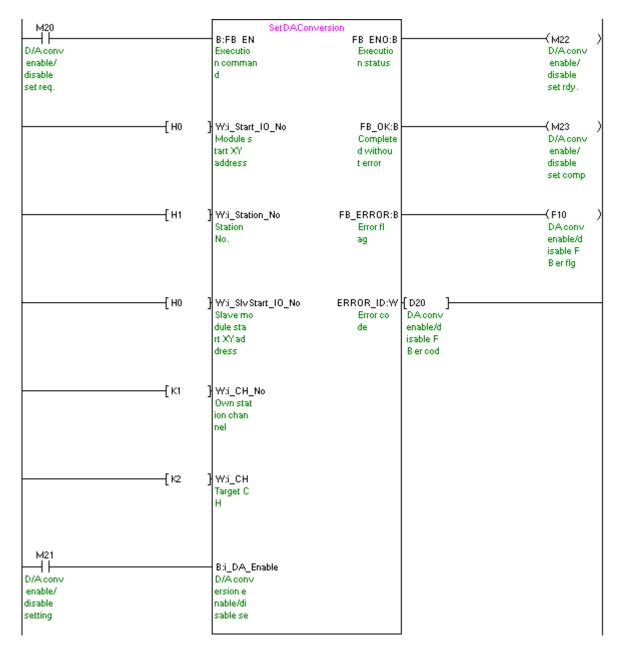




Label name Setting		Description	
	value		
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.	
i_Station_No	H1	Set the target station number to 1.	
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.	
i_CH_No	K1	Set the own station channel to channel 1.	
i_CH	K2	Set the target channel to channel 2.	
i_DA_Enable	ON/OFF	By turning ON, the D/A conversion of the target channel is set to "Enabled".	

M+L60DA4-IEF_SetDAConversion (D/A conversion enable/disable setting)

By turning ON M20, the value for the D/A conversion enable/disable setting of channel 2 is written to the buffer memory.

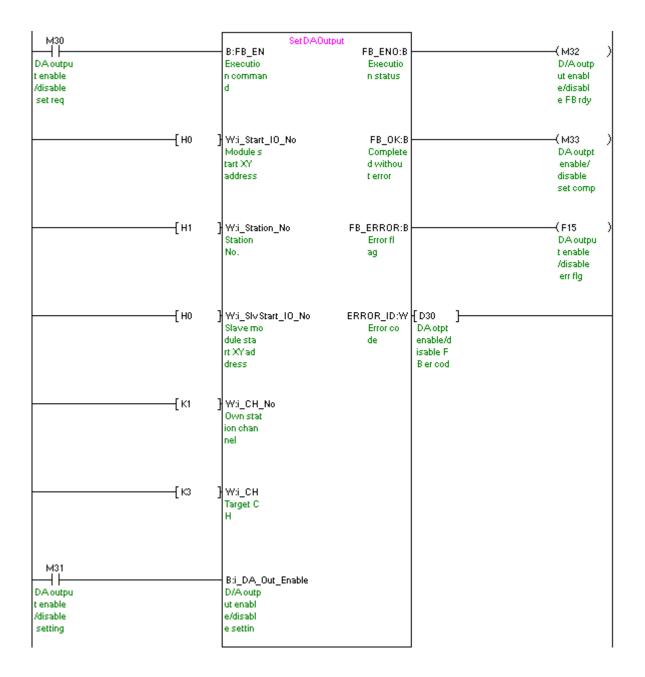




MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

Label name	Setting	Description
	value	
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K3	Set the target channel to channel 3.
i_DA_Out_Enable	ON/OFF	By turning ON, the D/A output of the target channel is set to "Enabled".

By turning ON M30, the D/A output of channel 3 is enabled.





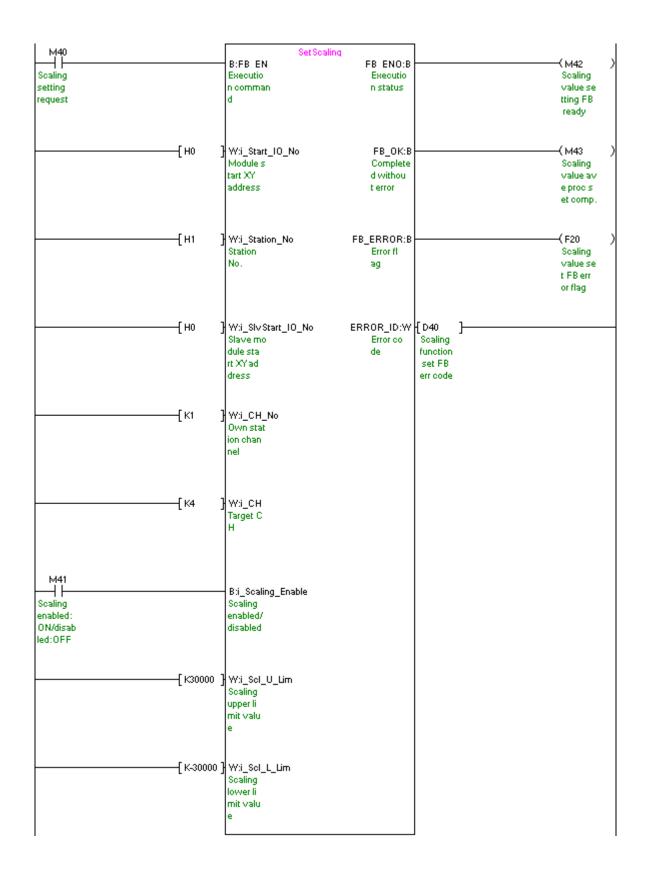
MELSEC-L Digital-Analog Converter Module FB Library (CC-Link IE Field compatible) Reference Manual FBM-M072-A

M+L60DA4-IEF_SetScaling (Scaling setting)

Label name	Setting	Description
	value	
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K4	Set the target channel to channel 4.
i_Scaling_Enable	ON/OFF	By turning ON, the scaling is enabled.
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 M40, the value for the scaling setting of channel 4 is written to the buffer memory.





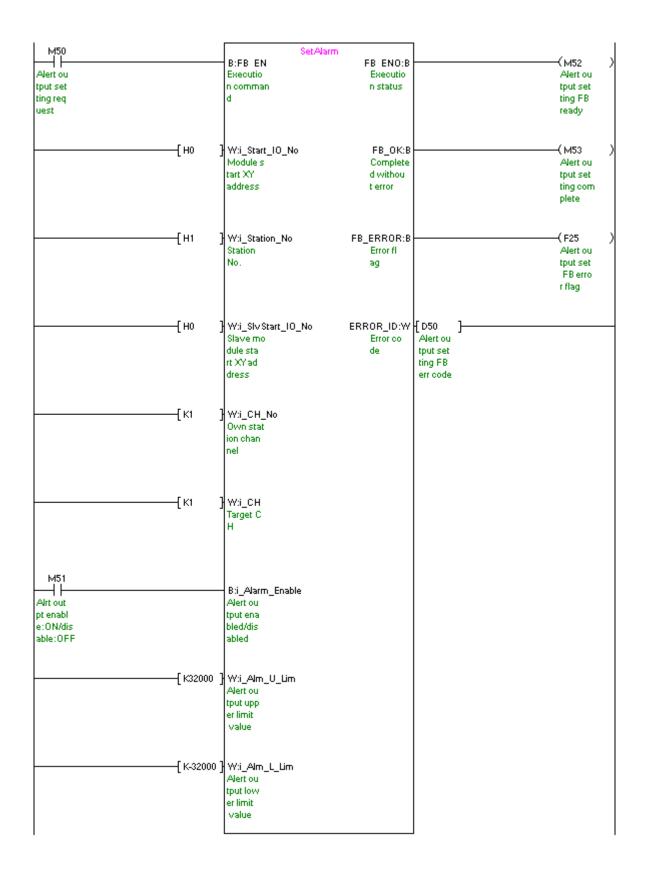


M+L60DA4-IEF_SetAlarm (Alert output setting)

Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K1	Set the target channel to channel 1.
i_Alarm_Enable	ON/OFF	By turning ON, the alert output is enabled.
i_Alm_U_Lim	K32000	Set the alert output upper limit value to 32,000.
i_Alm_L_Lim	K-32000	Set the alert output lower limit value to -32,000.

By turning ON M50, the value for the alert output setting of channel 1 is written to the buffer memory.



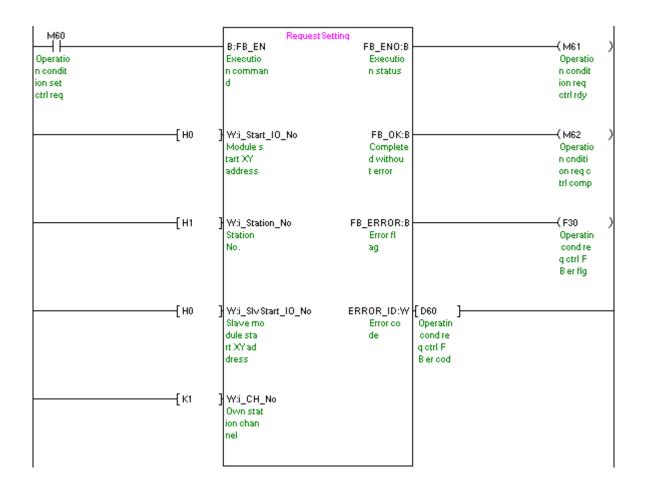




Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.

M+L60DA4-IEF_RequestSetting (Operating condition setting request)

By turning ON M60, the setting contents of the D/A conversion enable/disable setting, alert output setting, scaling function setting, and wave output function setting are enabled.



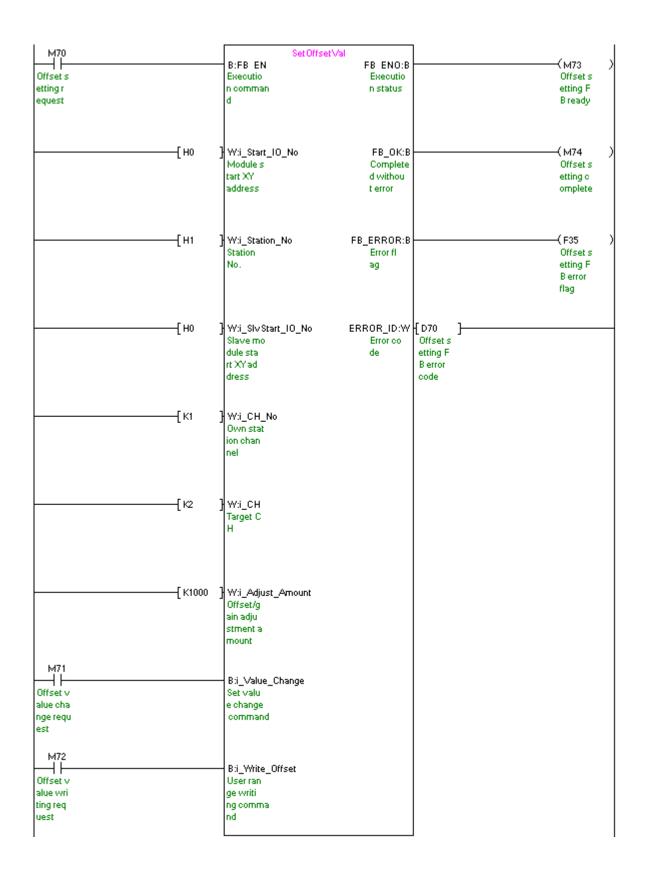


M+L60DA4-IEF_SetOffsetVal (Offset setting)

Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K2	Set the target channel to channel 2.
i_Adjust_Amount	K1000	Set the offset/gain adjustment amount to 1,000.
i_Value_Change	ON/OFF	By turning ON, the offset value is changed.
i_Write_Offset	ON/OFF	By turning ON, the user range is written.

By turning ON M71 after turning ON M70, the offset value of channel 2 is changed. By turning ON M72, the user range is written.





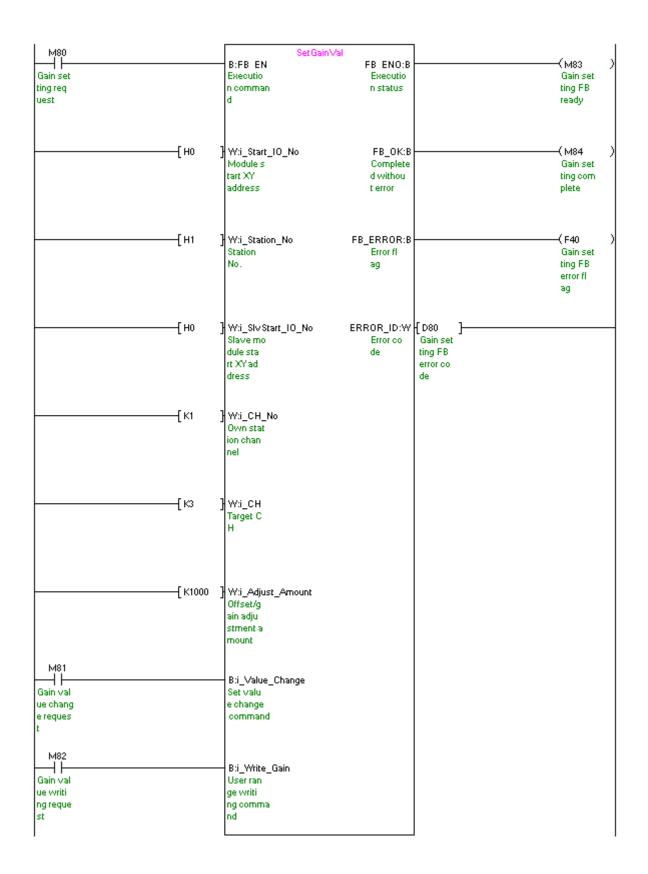


M+L60DA4-IEF_SetGainVal (Gain setting)

Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K3	Set the target channel to channel 3.
i_Adjust_Amount	K1000	Set the offset/gain adjustment amount to 1,000.
i_Value_Change	ON/OFF	By turning ON, the gain value is changed.
i_Write_Gain	ON/OFF	By turning ON, the user range is written.

By turning ON M81 after turning ON M80, the gain value of channel 3 is changed. By turning ON M82, the user range is written.



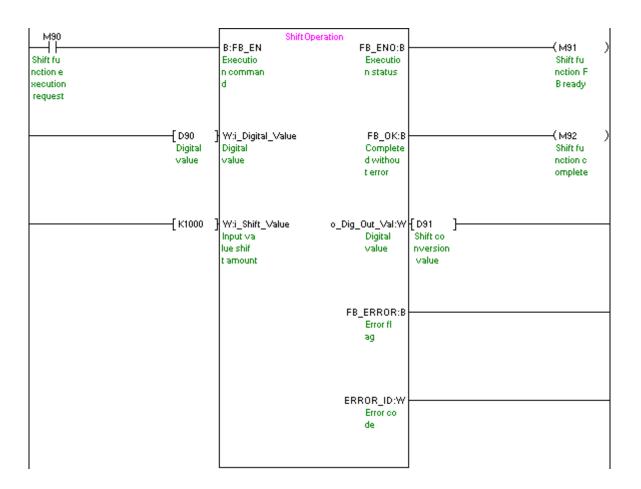




M+L60DA4-IEF_ShiftOperation (Shift operation)

Label name	Setting value	Description
i_Digital_Value	-	Set the digital value.
i_Shift_Value	K1000	Set the shift amount to 1,000.

By turning ON M90, the digital value to which the input value shift amount is added is output.

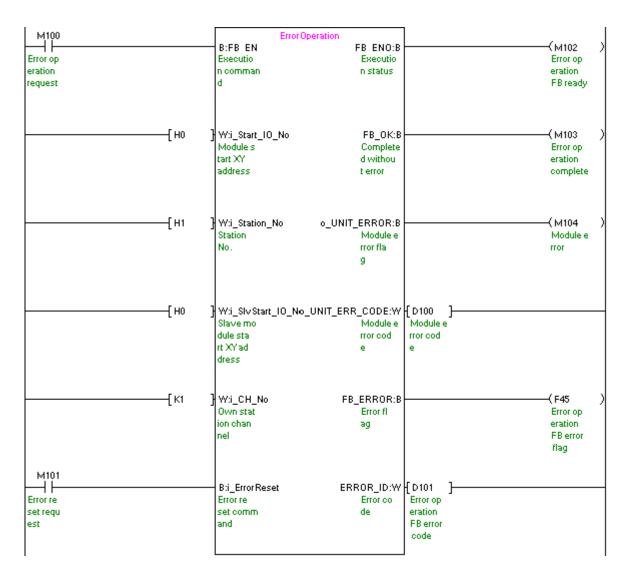




M+L60DA4-IEF_ErrorOperation (Error operation)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_ErrorReset	ON/OFF	Turn ON for the error reset.

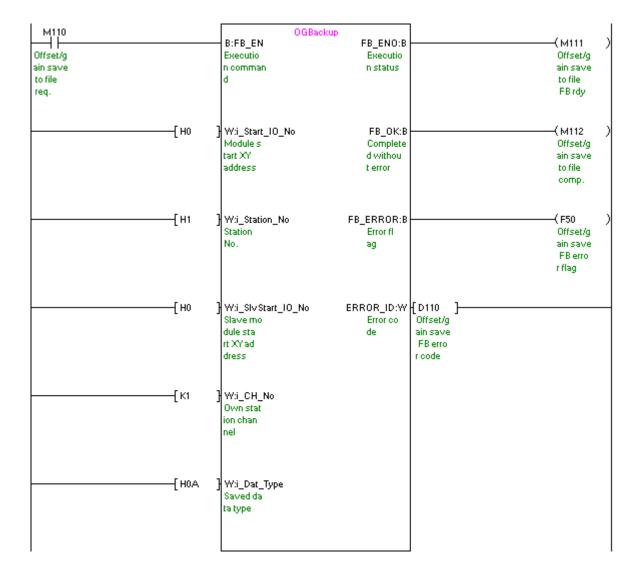
By turning ON M100, the error code is output when an error occurs. By turning ON M101 after the error output, the error is reset.





Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_Dat_Type	H0A	Set "voltage" to channel 1 and 3, "current" to channel 2 and 4 for the saved
		data type.

By turning ON M110, the offset/gain value of the user range setting is read and saved in the memory card inserted in the CPU module in a file format.

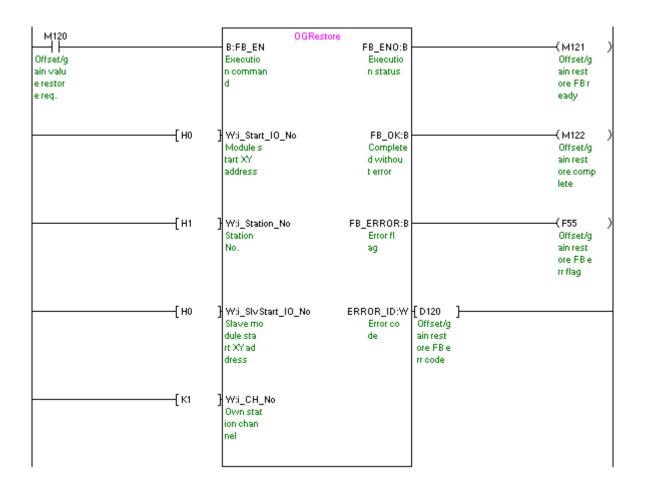




M+L60DA4-IEF_OGRestore (Offset/gain value restore)		
Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.

M+L60DA4-IEF_OGRestore (Offset/gain value restore)

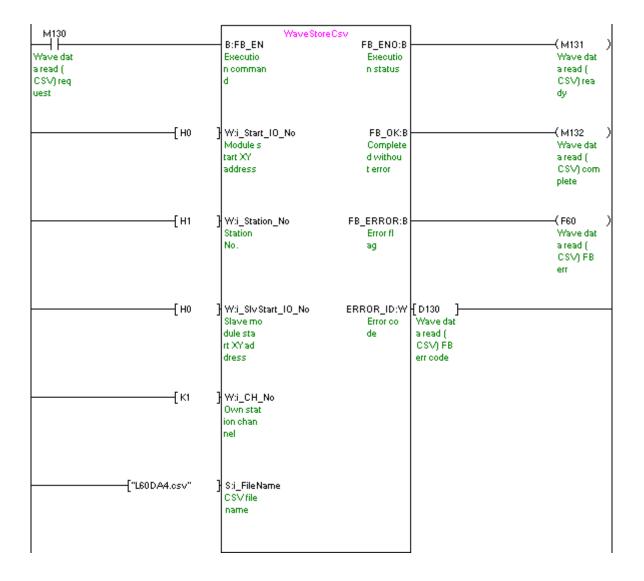
By turning ON M120, the offset/gain setting value saved in the file is restored to the module.





Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_FileName	"L60DA4.	Set "L60DA4.csv" as the name of the CSV file to where the parameters and
	CSV"	the wave data of the wave output function are stored.

By turning ON M130, the parameters and wave data of the wave output function are read from "L60DA4.csv" and stored in the buffer memory.

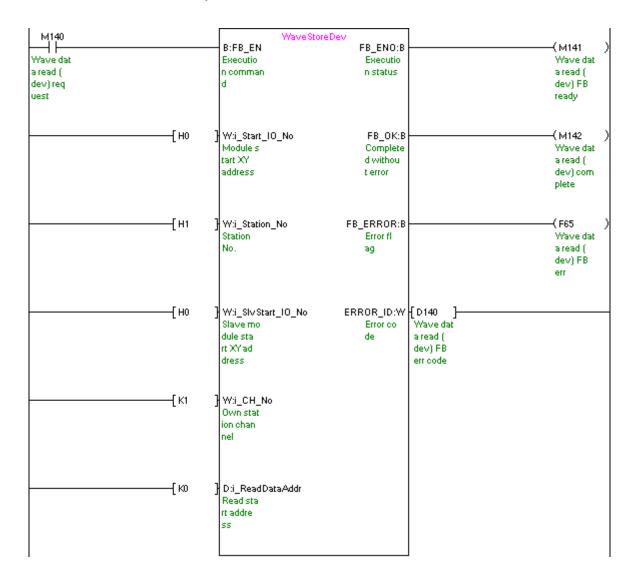




Label name	Setting value	Description
i_Start_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_ReadDataAddr	K0	Set ZR0 as the read start address where the parameters and the wave
		data of the wave output function are stored.

M+L60DA4-IEF_WaveDataStoreDev (Read wave data (device))

By turning ON M140, the parameters and wave data of the wave output function are read from the file register ZR0 or later, and stored in the buffer memory.

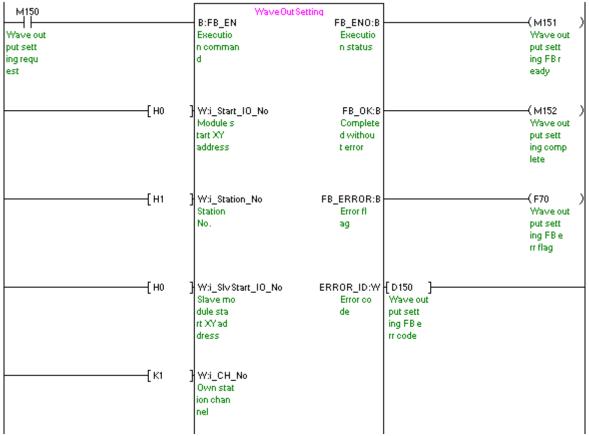




M+L60DA4-IEF_WaveOutSetting ((Wave output setting)
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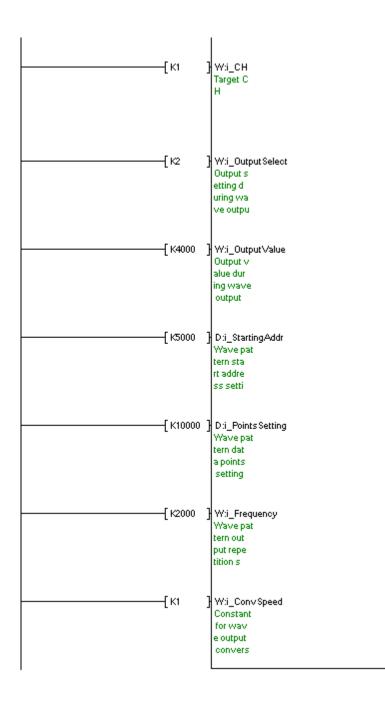
Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K1	Set the target channel to channel 1.
i_OutputSelect	K2	Set "Output setting during wave output stop" to 2 (Output value during wave output stop).
i_OutputValue	K4000	Set the output setting value during the wave output stop to 4,000.
i_StartingAddr	K5000	Set the start address of the wave pattern to be output to 5,000.
i_PointsSetting	K10000	Set the data points of the wave pattern to be output to 10,000.
i_Frequency	K2000	Set the wave output times to 2,000.
i_ConvSpeed	K1	Set the constant for wave output conversion cycle to 1.

By turning ON M150, the wave output setting of channel 1 is performed.



(Continues to the next page)







M+L60DA4-IEF_WaveOutReqSetting (Wave output start/stop request)

Label name	Setting value	Description
i_Start_IO_No	H0	Set the starting XY address where the L60DA4 is connected to 0H.
i_Station_No	H1	Set the target station number to 1.
i_SlvStart_IO_No	HO	Set the starting XY address where the L60DA4 is connected to 0H.
i_CH_No	K1	Set the own station channel to channel 1.
i_CH	K1	Set the target channel to channel 1.
i_Start_Stop_Req	K1	Set Wave output start/stop request to "1: Wave output start request".

By turning ON M160, the wave output of channel 1 is started.



M160			eOutReg		,
		B:FB EN	FB ENO:B		(M161
avelout		Executio	Executio		Wave out
t star		n comman	n status		put star
top r		a			t/stop F
uest		-			Bready
dest					bready
	——[но	} W:i_Start_IO_No	FB_OK:B		————(M162
		Module s	Complete		Wave out
		tart XY	d withou		put star
		address	t error		t/stop c
					omplete
	——[н1	Juwe Charling Ma	a Weine Chatrie CH1/W/	L D 160 1	
	[HI	W:i_Station_No	o_WaveStatusCH1:W		
		Station		: CH1 Wave	
		No.	output	output	
			status m	status m	
			onitor	onitor	
	———[но	Wi SUSPARIO N	o_WaveStatusCH2:W	ED161	
		Slave mo		: CH2 Wave	
		dule sta	output	output	
		rt XY ad	status m	status m	
		dress	onitor	onitor	
	——[кі	} w:i_CH_N₀	o_WaveStatusCH3:W	J D 162 1	
	[\/				
		Own stat		: CH3 Wave	
		ion chan	output	output	
		nel	status m	status m	
			onitor	onitor	
	—Г к1	} w:i_CH	o_WaveStatusCH4:W	[D163]	
	-	Target C		CH4 Wave	
		H	output	output	
		'	status m	status m	
			onitor	onitor	
	F				(
	——[кі	W:i_Start_Stop_Red			(F75
		Wave out	Error fl		Wave out
		put star	ag		put star
		t/stop r	-		t/stop e
		equest			rr flag
			ERROR_ID:W	[D164]	
			Error co	Wave out	
			de	put star	
				t/stop e	
				rr code	



Appendix 3. Storage Source "Wave Output Function Parameter and Data" and Storage Location Buffer Memory

The following table lists the relation between the storage source "Wave output function parameter and data" and the storage location buffer memory handled by M+L60DA4-IEF_WaveDataStoreCsv (Read wave data (CSV file)) and M+L60DA4-IEF_WaveDataStoreDev (Read wave data (device)).

						Chara	~~ ~~ ~~ ~	Charles a la setiere
					001/0		ge source	Storage location
-						le in the	Serial number	Buffer memory of the
No.	Parameter/data of the wave	S	etting range (decimal)	СН	memo	ry card	access format file	D/A converter
	output function		5 5 ()				register (ZR)	module
					_	<u>.</u>	(m: Reading start	(n: Module start XY
					Row	Column		address upper)
	Output setting during wave	0: 0V/		1	1	1	ZR (m + 0)	Un\G1008
0	output stop		set value					
			put value during wave	2	1	2	ZR (m + 1)	Un\G1009
	wave output stop for each	output	stop	3	1	3	ZR (m + 2)	Un\G1010
	channel.			4	1	4	ZR (m + 3)	Un\G1011
	2) Output value during wave output stop	(*1)	0 to 20,479 (practical range: 0 to	1	2	1	ZR (m + 8)	Un\G1016
	Set the value to be output for		20,000)	2	2	2	ZR (m + 9)	Un\G1017
	each channel when "2:			3	2	3	ZR (m + 10)	Un\G1018
	Output value during wave	(*2)	-20,480 to 20,479	4	2	4	ZR (m + 11)	Un\G1019
	output stop" is selected in	(2)	(practical range: -20,000				· · · ·	
	"Output setting during wave		to 20,000)					
	output stop".							
	•	5,000	to 54,999	1	3	1	ZR (m + 16 and 17)	Un\G1024 and 1025
	setting							
	Set the start address of the			2	3	2		Un\G1026 and 1027
	wave pattern to be output for			3	3	3		Un\G1028 and 1029
	each channel.			4	3	4		Un\G1030 and 1031
	 Wave pattern data points setting 		0,000 (points)	1	4	1	ZR (m + 32 and 33)	Un\G1040 and 1041
	Set the data points of the			2	4	2	ZR (m + 34 and 35)	Un\G1042 and 1043
	wave pattern to be output for			3	4	3	ZR (m + 36 and 37)	Un\G1044 and 1045
	each channel.			4	4	4	ZR (m + 38 and 39)	Un\G1046 and 1047
	Wave pattern output repetition setting		limited repetition 2,767: Specified number	1	5	1	ZR (m + 48)	Un\G1056
	Set the output times of the	of time	es	2	5	2	ZR (m + 49)	Un\G1057
	wave pattern for each			3	5	3	ZR (m + 50)	Un\G1058
	channel.			4	5	4	ZR (m + 51)	Un\G1059
	Constant for wave output conversion cycle	1 to 5	000	1	6	1	ZR (m + 56)	Un\G1064
	Set the constant to			2	6	2	ZR (m + 57)	Un\G1065
	determine the conversion			3	6	3	ZR (m + 58)	Un\G1066
	cycle (multiple of the			4	6	4	ZR (m + 59)	Un\G1067
	conversion speed) for each channel.			7	0	-		
7)		0 to 5	0,000 (points)		100	1	ZR (m + 98,99)	
,,,,	Set the total points of the wave data.	0 10 5	5,000 (points)		100		21((11 + 90,99)	-
8)	Wave data	-20 48	30 to 20,479		101 to	1	ZR (m + 100) to ZR	Un\G5000 to
~,			ical range: -20,000 to		50,100		(m + 50099)	Un\54999
		20,00						

Table 1 Storage Source "Wave Ou	Itout Function Parameter and Data"	' and Storage Location Buffer Memory
Table I Storage Source Mave Ou		and olorage cocation build memory

*1: When the output range of the D/A converter module is 0 to 5V, 1 to 5V, 0 to 20mA, or 4 to 20mA

*2: When the output range of the D/A converter module is -10 to 10V

* The number 1) to 8) in the table corresponds to the number in the row and column example of a CSV file in Appendix 4.



Appendix 4. CSV File Format for Wave Data Reading FB (CSV File)

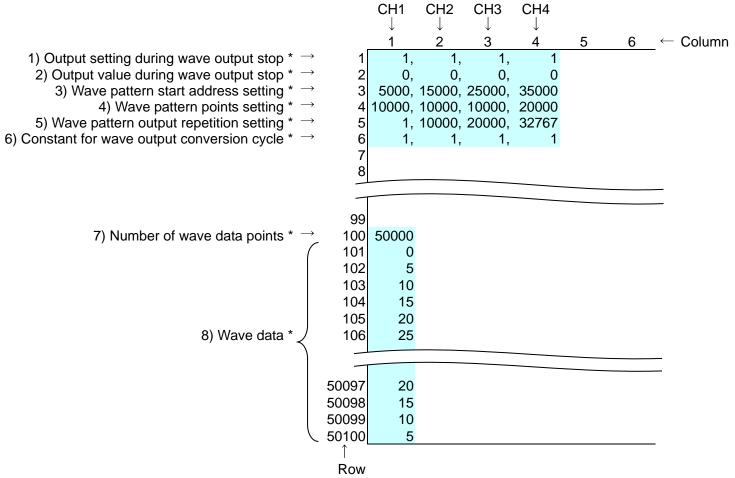
This section shows the CSV file format that M+L60DA4-IEF_WaveDataStoreCsv (Read wave data (CSV file)) handles. (A CSV file has an extension ".csv" and can be opened in general applications such as Microsoft Excel and Notepad.)

The following table lists the CSV format specification.

Item	Description		
Delimiter	Comma (,)		
Linefeed code	CRLF (0x0D, 0x0A)		
Character code	ASCII or Shift JIS		

The number of characters for the CSV file name must be within 12 including the extension ".csv". (Two-byte characters can be used. One two-byte character equals to two one-byte characters.) (Example) L60DA4_1.csv, wd000001.csv, WaveData.csv

The following figure shows a row and column example of a CSV file. In this example, the number of wave data points is 50000 (points) (maximum).



* The number 1) to 8) corresponds to each item of "Table 1 Storage Source "Wave Output Function Parameter and Data" and Storage Location Buffer Memory" in Appendix 3. For details on the items, refer to the table.

