MELSEC-L Multiple Input (Voltage/Current/Temperature) Module FB Library Reference Manual

Applicable module: L60MD4-G

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Reference Manual Revision History

Reference Manual	Date	Description
Number		
FBM-M115-A	2014/6/30	First edition



1. Overview

1.1. Overview of the FB Library

This FB Library is for using MELSEC-L Multiple Input (Voltage/Current/Temperature) Module L60MD4-G (hereinafter L60MD4-G).

1.2. Function of the FB Library

Item	Description
M+L60MD4-G_InitialSetting	Sets the following data of the specified channel.
	Input type/range setting
	Centigrade/Fahrenheit display setting
M+L60MD4-G_SetAverage	Sets the averaging processing of the specified channel.
M+L60MD4-G_SetScaling	Sets the scaling of the specified channel.
M+L60MD4-G_SetDisconnect	Sets the disconnection detection of the specified channel.
M+L60MD4-G_SetInputSignalErr	Sets the input signal error detection of the specified channel.
M+L60MD4-G_SetProcessAlarm	Sets the process alarm of the specified channel.
M+L60MD4-G_SetRateAlarm	Sets the rate alarm of the specified channel.
M+L60MD4-G_RequestSetting	Validates the settings of each function.
M+L60MD4-G_ReadVal	Reads the conversion data of the specified channel.
M+L60MD4-G_ReadAllVal	Reads the conversion data of all channels.
M+L60MD4-G_ReadScalingVal	Reads the scaling value of the specified channel.
M+L60MD4-G_ReadAllScalingVal	Reads the scaling value of all channels.
M+L60MD4-G_ErrorOperation	Monitors error codes and resets errors.
M+L60MD4-G_ShiftOperation	Adds the shift amount to the digital value.
M+L60MD4-G_DiffOperation	Outputs the difference obtained by subtracting the standard value from the
	digital value.
M+L60MD4-G_ClipOperation	Limits a digital value at the digital clipping upper and lower limit values.



1.3. System Configuration Example



- 1.4. Relevant Manuals
- MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual
- 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)

1.5. Note



2. Details of the FB Library

2.1. M+L60MD4-G_InitialSetting (Initial setting)

FB Name

M+L60MD4-G_InitialSetting

Item	Description						
Function overview	Sets the following data of the specified channel.						
	Input type/range setting						
	Centigrade/Fahrenheit	display setting					
Symbol							
	M+L60MD4-G_InitialSetting						
	Module start XY address	Execution command — B : FB_EN FB_ENO : B FB_			Completed without error		
	Target CH — W	: iw_CH		FB_ERROR : B	Error flag		
	Input type/range setting W	: iw_TypeRange		ERROR_ID : W	/ Error code		
	Centigrade/Fahrenheit W	: iw_DisplayType					
Applicable hardware	Multiple input	L60MD4-G					
and software	(voltage/current/						
	temperature) module						
	CPU module						
		Series		Ν	Model		
		MELSEC-L Series	;	LCPU			
	Engineering software	GX Works2 *1					
		Language	Software version		version		
		English version	Version	1.24A or later			
		Chinese version	sion Version1.49B or later				
		*1 For software vers	sions app	licable to the m	nodules used, refer to		
		"Relevant manuals".					
Programming	Ladder						
language							
Number of steps	301 steps (for MELSEC-	L series CPU)					
	*The number of steps of	the FB in a program	depends	on the CPU m	odel that is used and		
	input and output defini	tion.					



Item	Description				
Function description	1) By turning ON FB_EN (Execution command), the input type/range setting and				
	Centigrade/Fahrenheit display setting of the specified channel are set.				
	1) FB operation is one-shot only, triggered by the FB_EN signal.				
	2) The setting value is validated when the Operating condition setting request signal (Yn9)				
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB				
	(M+L60MD4-G_RequestSetting) is executed.				
	3) When the setting value of iw_CH (Target CH) 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.				
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 two or more of these FBs are used, precaution must be taken to avoid repetition of				
	iw_CH (Target CH).				
	5) This FB uses index registers Z7 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) In either of the following cases 1) and 2), no errors occur in this FB; however an error				
	occurs in the module at an operating condition setting request. Please read the				
	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual for the				
	errors on the module.				
	1) When a value set for iw_TypeRange (Input type/range setting) or iw_DisplayType				
	(Centigrade/Fahrenheit display setting) is out of the setting range				
	2) When a value within 2 to 4 is set for iw_CH and a thermocouple input value is set for				
	iw_TypeRange while a value other than the thermocouple setting is set for CH1 Input				
	type/range setting (Un¥G500)				
FB operation type	Pulsed execution (1 scan execution type)				
Application example	Refer to "Appendix 1 FB Library Application Examples".				



Item	Description					
Timing chart	[When operation completes without error]	[When an error occurs]				
	FB_EN (Execution command)	FB_EN (Execution command)				
	FB_ENO (Execution status)	FB_ENO (Execution status)				
	"Input type/range setting" and "Centigrade/Fahrenheit display setting" write processing	"Input type/range setting" and "Centigrade/Fahrenheit display No processing setting" write processing				
	FB_OK (Completed without error)	FB_OK (Completed without error)				
	FB_ERROR (Error flag)	FB_ERROR (Error flag)				
	ERROR_ID (Error code) 0	ERROR_ID (Error code) 0 0 0				
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual					
	• 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 (Si	mple Project, Function Block)				

Error codes Error code list Error code Description Action

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



Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN		ON, OFF	ON: The FB is activated.
		Bit		OFF: The FB is not
				activated.
Module start XY	iw_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 L60MD4-G is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Target CH	iw_CH	Word	1 to 4	1 to 4: Specify the channel
		word		number.
Input type/range	iw_TypeRange		0000 _H	0000 _H : Conversion
setting			0010 _H to 0012 _H	disabled
			0020_{H} to 0024_{H}	[Current]
			0030 _H	0010 _H : 4 to 20 mA
			0040 _H to 0045 _H	0011 _H : 0 to 20 mA
			0050 _H to 005B _H	0012 _H : 4 to 20 mA
				(Expansion)
		Word		[Voltage]
				0020 _н : 1 to 5 V
				0021 _H : 0 to 5 V
				0022 _H : -10 to 10 V
				0023 _н : 0 to 10 V
				0024 _H : 1 to 5 V (Expansion)
				[Low voltage]
				0030 _H : -100 to 100 mV



Name (comment)	Label name	Data	Setting range	Description
		type		
				[Thermometric resistor]
				0040 _H : Pt100 (-20 to 120
				Centigrade)
				0041 _H : Pt100 (-200 to 850
				Centigrade)
				0042 _H : JPt100 (-20 to 120
				Centigrade)
				0043 _H : JPt100 (-200 to 600
				Centigrade)
				0044 _H : Pt1000 (-200 to 850
				Centigrade)
				0045 _H : Pt50 (-200 to 650
				Centigrade)
				[Thermocouple]
				0050 _H : B thermocouple
				0051 _H : R thermocouple
				0052 _H : S thermocouple
				0053 _H : K thermocouple
				0054 _H : E thermocouple
				0055 _H : J thermocouple
				0056 _H : T thermocouple
				0057 _H : N thermocouple
				0058 _H : U thermocouple
				0059 _H : L thermocouple
				005A _H : PLII thermocouple
				005B _H : W5Re/W26Re
				thermocouple
Centigrade/Fahrenh	iw_DisplayType	\M/ord	0, 1	0: Centigrade display
eit display setting		vvoid		1: Fahrenheit display



Output labels

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

FB Version Upgrade History

Version	Date	Description
1.00A	2014/6/30	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.



2.2. M+L60MD4-G_SetAverage (Averaging process setting)

FB Name

M+L60MD4-G_SetAverage

Item	Description						
Function overview	Sets the averaging proce	ssing of the specified	channel.				
Symbol		M+L60MD4-G_SetAverage					
	Execution command ——	B : FB_EN	B : FB_EN FB_ENO :		Execution status		
	Module start XY address	W : iw_Start_IO_No FB_OK :		FB_OK : B	Completed without error		
	Target CH	W : iw_CH	W : iw_CH FB_ERROR : B		Error flag		
	Averaging process setting Time average/Count average/Moving average settings	W : iw_Average_Type ERROR_ID : W - W : iw_Average_Times		Error code			
Applicable hardware	Multiple input	L60MD4-G					
and software	(voltage/current/						
	temperature) module						
	CPU module						
		Series		М	odel		
		MELSEC-L Series	6	LCPU			
	Engineering software	GX Works2 *1					
		Language		Software ve	ersion		
		English version	Version	1.24A or later			
		Chinese version	Version	1.49B or later			
		*1 For software vers	sions app	licable to the m	odules used, refer to		
		"Relevant manua	als".				
Programming	Ladder						
language							
Number of steps	417 steps (for MELSEC-L series CPU)						
	*The number of steps of t	The number of steps of the FB in a program depends on the CPU model that is used and					
	input and output definit	ion.					



Function description 1) By turning ON FB_EN (Execution command), the averaging processing of the spect channel is set.
channel is set.
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 (
is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB
(M+L60MD4-G_RequestSetting) is executed.
4) When the setting value of iw_CH (Target CH) is out of range, the FB_ERROR outp
turns ON and processing is interrupted, and the error code is stored in ERROR_ID
code).
Refer to the error code explanation section for details.
5) When the setting value of iw_Average_Type (Averaging process setting) is out of r
the FB_ERROR output turns ON and processing is interrupted, and the error code
stored in ERROR_ID (Error code).
Refer to the error code explanation section for details.
Compiling method Macro type
Restrictions and1) 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
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 two or more of these FBs are used, precaution must be taken to avoid repetit
iw_CH (Target CH).
5) This FB uses index registers Z7 to Z9. Please do not use these index registers in a
() Even viscot be previded with a value for prevention
6) Every input must be provided with a value for proper FB operation.
To operate the L60WiD4-G, set the input type/range setting according to the device
system to be connected. Set the proper settings for the device and system with the
parameter setting in GX works2 or the initial setting FB (M+L60MD4-G_InitialSetting
For details on now to use the parameter setting in GX works2, refer to GX works2
7) When a value set for iw Average Times (Time average/Count average/Moving av
settings) is out of the setting range no errors occur in this EB: however an error oc
in the module at an operating condition setting request. Please read the MELSEC-
Multiple Input (//oltage/Current/Temperature) Module User's Manual for the errors
module
FB operation type Pulsed execution (1 scan execution type)
Application example Refer to "Appendix 1 FB Library Application Examples"



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Item	Description				
Timing chart	[When operation completes without error]	[When an error occurs]			
	FB_EN (Execution command) FB_ENO (Execution status) Averaging process setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	FB_EN (Execution command) FB_ENO (Execution status) Averaging process setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)			
Relevant manuals	 MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual 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. iw_CH	Please try again after confirming the setting.
	(Target CH) is not within the range of 1 to	
	4.	
11 (Decimal)	The specified averaging processing type is	Please try again after confirming the setting.
	not valid. iw_Average_Type (Averaging	
	process setting) is not within the range of 0	
	to 3 _H .	



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	iw_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 L60MD4-G is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Target CH	iw_CH	Word	1 to 4	Specify the channel
		word		number.
Averaging process	iw_Average_Type		0 _H : Sampling processing	Specify the averaging
setting		Word	1 _H : Time average	processing type.
		word	2 _H : Count average	
			3 _H : Moving average	
Time average/Count	iw_Average_Times		Time average	Set the time average, count
average/Moving			8 to 18000 (100 ms)	average, and moving
average settings		Word	Count average	average of the specified
		vvoru	4 to 36000 (times)	channel.
			Moving average	
			2 to 1000 (times)	

Output labels

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



FB Version Upgrade History

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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.



2.3. M+L60MD4-G_SetScaling (Scaling setting)

FB Name

M+L60MD4-G_SetScaling

Item	Description				
Function overview	Sets the scaling of the specified channel.				
Symbol	Execution command —— Module start XY address ——	M+L60MD4-G_SetScaling B : FB_EN FB_E W : iw_Start_IO_No FB.		FB_ENO : B FB_OK : B	Execution status Completed without error
	Target CH —— Scaling enable/disable —— Scaling upper limit value —— Scaling lower limit value ——	W : iw_CH B : ib_Scl_Enable W : iw_Scl_U_Lim W : iw_Scl_L_Lim		FB_ERROR : B ERROR_ID : W	Error flag Error code
Applicable hardware and software	Multiple input (voltage/current/ temperature) module	L60MD4-G			
	CPU module	Series MELSEC-L Series	3	LCPU	Model
	Engineering software	GX Works2 *1			
		Language		Software v	version
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers "Relevant manua	sions app als".	blicable to the m	odules used, refer to
Programming	Ladder				
language					
Number of steps	352 steps (for MELSEC-L series CPU)*The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.				



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the scaling 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 (Yn9)
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB
	(M+L60MD4-G_RequestSetting) is executed.
	4) When the setting value of iw_CH (Target CH) is out of range, 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
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 two or more of these FBs are used, precaution must be taken to avoid repetition
	of iw_CH (Target CH).
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
	8) In either of the following cases 1) and 2), no errors occur in this FB; however an error
	occurs in the module at an operating condition setting request. Please read the
	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual for the
	errors on the module.
	1) When a value set for iw_Scl_U_Lim (Scaling upper limit value) or iw_Scl_L_Lim
	(Scaling lower limit value) is out of the setting range
	2) When the values set for iw_Scl_U_Lim (Scaling upper limit value) and iw_Scl_L_Lim
	(Scaling lower limit value) are the same
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 FB Library Application Examples".



Item	Description				
Timing chart	[When operation completes without error] [When an error occurs]				
	FB_EN (Execution command) FB_EN (Execution status) Scaling setting write processing No processing FB_OK (Completed without error) No processing FB_EROR (Error flag) FB_EROR (Error flag) ERROR_ID (Error code) 0	to processing			
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual				
	• 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	x)			

Error codes Error code list Error code Description Action

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



Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		Mord	of the CPU.	is connected. (For example, enter
		word	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	
Target CH	iw_CH	Word	1 to 4	Specify the channel number.
Scaling	ib_Scl_Enable	Dit	ON, OFF	ON: Enable the scaling.
enable/disable		ы		OFF: Disable the scaling.
Scaling upper limit	iw_Scl_U_Lim	Mord	-32,000 to	Specify the scaling upper limit value.
value		word	32,000	
Scaling lower limit	iw_Scl_L_Lim	Mord	-32,000 to	Specify the scaling lower limit value.
value		word	32,000	

Output labels

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



FB Version Upgrade History

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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.



2.4. M+L60MD4-G_SetDisconnect (Disconnection detection setting)

FB Name

M+L60MD4-G_SetDisconnect

Item	Description				
Function overview	Sets the disconnection de	etection of the specifie	ed chann	el.	
Symbol	Execution command — Module start XY address — Target CH — Conversion setting for disconnection detection Conversion setting value for disconnection detection	M+L60MD4-C B : FB_EN W : iw_Start_IO_No W : iw_CH W : iw_DisconnType W : iw_DisconnVal	5_SetDisconner	ct FB_ENO : B FB_OK : B FB_ERROR : B ERROR_ID : W	Execution status Completed without error Error flag Error code
Applicable hardware and software	Multiple input (voltage/current/ temperature) module	L60MD4-G			
	CPU module	Series MELSEC-L Series	3	LCPU	lodel
	Engineering software	GX Works2 *1 Language English version Chinese version *1 For software vers "Relevant manua	Version Version sions app als".	Software v n1.24A or later n1.49B or later blicable to the m	ersion odules used, refer to
Programming language					
Number of steps	372 steps (for MELSEC-L *The number of steps of the input and output definiti	. series CPU) he FB in a program d ion.	epends c	on the CPU mod	lel that is used and



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the disconnection detection 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 (Yn9)
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB
	(M+L60MD4-G_RequestSetting) is executed.
	4) When the setting value of iw_CH (Target CH) is out of range, 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
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 two or more of these FBs are used, precaution must be taken to avoid repetition
	of iw_CH (Target CH).
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
	8) When a value set for iw_DisconnType (Conversion setting for disconnection detection)
	is out of the setting range, no errors occur in this FB; however an error occurs in the
	module at a operating condition setting request. Please read the MELSEC-L Multiple
	Input (Voltage/Current/Temperature) Module User's Manual for the errors on the
	module.
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 FB Library Application Examples".



Item	Description			
Timing chart	[When operation completes without error] [When an error occurs]			
	FB_EN (Execution command) FB_ENO (Execution status) FB_ENO (Execution status) No processing Disconnection detection setting write processing No processing FB_OK (Completed without error) FB_EROR (Error flag) FB_EROR (Error flag) FB_EROR (Error flag)			
Relevant manuals	 MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual 			
	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. iw_CH	Please try again after confirming the
	(Target CH) is not within the range of 1 to 4.	setting.

Labels

Input labels

Name (comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		ЫІ		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		Word	of the CPU.	is connected. (For example, enter
		word	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	
Target CH	iw_CH	Word	1 to 4	Specify the channel number.
Conversion setting	iw_DisconnType		0 _H : Value just	Specify the conversion setting for
for disconnection			before	disconnection detection.
detection		Word	disconnection	
			2 _H : Downscale	
			3 _H : Any value	
Conversion setting	iw_DisconnVal		-32768 to 32767	Specify the conversion setting value
value for		Word		for disconnection detection.
disconnection		word		
detection				



Output labels

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Bit OFF C		ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the disconnection
error		ЫІ	UFF	detection setting is completed.
Error flag	FB_ERROR			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	2014/6/30	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.



2.5. M+L60MD4-G_SetInputSignalErr (Input signal error detection setting)

FB Name

M+L60MD4-G_SetInputSignalErr

Item	Description				
Function overview	Sets the input signal error	detection of the spec	cified con	version channel	I (CH1 to CH4).
Symbol	Execution command — Module start XY address — Target CH —	M+L60MD4-G_ B : FB_EN W : iw_Start_IO_No W : iw_CH	SetInputSignal	FB_ENO : B FB_OK : B FB_ERROR : B FB_ERROR : B	Execution status Completed without error Error flag Error sodo
	Input signal error detection setting	W : iw_Sig_Err_Level			
Applicable hardware	Multiple input	L60MD4-G			
and software	(voltage/current/				
	temperature) module				
	CPU module				
		Series		N	lodel
		MELSEC-L Series	;	LCPU	
	Engineering software	GX Works2 *1			
		Language		Software ve	ersion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers	sions app	licable to the mo	odules used, refer to
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	389 steps (for MELSEC-L	series CPU)			
	*The number of steps of the FB in a program depends on the CPU model that is used and				
	input and output definition	on.			



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the input signal error detection 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 (Yn9)
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB
	(M+L60MD4-G_RequestSetting) is executed.
	4) When the setting value of iw_CH (Target CH) is out of range, 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 input signal error detection setting is out of range, the FB_ERROR output
	turns ON and processing is interrupted, and the error code is stored in ERROR_ID.
	Refer to the error code explanation section for details.
Compiling method	Macro type



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 two or more of these FBs are used, precaution must be taken to avoid repetition	
	of iw_CH (Target CH).	
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and	
	system to be connected. Set the proper settings for the device and system with the	
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).	
	For details on how to use the parameter setting in GX Works2, refer to GX Works2	
	Version 1 Operating Manual (Common).	
	8) In either of the following cases 1) and 2), no errors occur in this FB; however an error	
	occurs in the module at an operating condition setting request. Please read the	
	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual for the	
	errors on the module.	
	1) When iw_Sig_Err_Type (Input signal error detection setting) is set to "4 _H : Simple	
	disconnection detection" while either of "4 to 20 mA (Expansion)" or "0 to 5 V	
	(Expansion) is not selected in Input type/range setting (Un¥G500 to 503) of iw_CH	
	(Target CH)	
	2) When a value set for iw_Sig_Err_Level (Input signal error detection setting value) is	
	out of the setting range	
FB operation type	Pulsed execution (1 scan execution type)	
Application example	Refer to "Appendix 1 FB Library Application Examples".	
Timing chart	[When operation completes without error] [When an error occurs]	
	FB_EN (Execution command) FB_EN (Execution command)	
	FB_ENO (Execution status)	
	Input signal error detection setting write processing Write Write No processing Unput signal error detection setting write processing Write Vo processing Write Vo processing	
	FB_OK FB_OK (Completed without error) FB_OK	
	FB_ERROR (Error flag) FB_ERROR (Error flag)	
	ERROR_ID (Error code) 0 ERROR_ID (Error code) 0	



Item	Description
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual
	• 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. iw_CH	Please try again after confirming the
	(Target CH) is not within the range of 1 to 4.	setting.
11 (Decimal)	The input signal error detection setting is not	Please try again after confirming the
	valid. iw_Sig_Err_Type (Input signal error	setting.
	detection setting) is not within the range of $0_{\rm H}$	
	to 4 _H .	



Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	D'/	ON, OFF	ON: The FB is activated.
		BI		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		Mord	of the CPU.	is connected. (For example, enter
		vvoru	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	
Target CH	iw_CH	Word	1 to 4	Specify the channel number.
Input signal error	iw_Sig_Err_Type		0 _H : Disable	Set the input signal error detection
detection setting			1 _H : Upper and	setting value.
			lower limit	
			detection	
			2 _H : Lower limit	
		Word	detection	
			3 _H : Upper limit	
			detection	
			4 _H : Simple	
			disconnection	
			detection	
Input signal error	iw_Sig_Err_Level		0 to 250	Specify the input signal error
detection setting		Word	(Unit: 0.1%)	detection setting value.
value				

Output labels

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



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FB Version Upgrade History

Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_SetProcessAlarm (Process alarm setting)

FB Name

M+L60MD4-G_SetProcessAlarm

Item	Description				
Function overview	Sets the process alarm of the specified channel.				
Symbol	Execution command Module start XY address Target CH Process alarm upper upper limit value Process alarm upper lower limit value Process alarm lower upper limit value Process alarm lower upper limit value Process alarm lower lower limit value	M+L60MD4-G_SetProcessAlarm B : FB_EN FB_ENO : B W : iw_Start_IO_No FB_EROR : B W : iw_CH FB_ERROR : B B : ib_Pro_Enable ERROR_ID : W W : iw_Pro_UU_Lim W : iw_Pro_UL_Lim W : iw_Pro_LU_Lim W : iw_Pro_LLLim		Execution status Completed without error Error flag Error code	
Applicable hardware and software	Multiple input (voltage/current/ temperature) module CPU module	L60MD4-G Series Model MELSEC-L Series LCPU		odel	
	Engineering software	GX Works2 *1 Language English version Chinese version *1 For software vers "Relevant manua	Version Version sions app als".	Software ve 1.24A or later 1.49B or later blicable to the mo	odules used, refer to
Programming language	Ladder				
Number of steps	 241 steps (for MELSEC-L series CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition. 				



Item	Description				
Function description	1) By turning ON FB_EN (Execution command), the process alarm of the specified channel				
	is set.				
	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 (Yn9)				
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB				
	(M+L60MD4-G_RequestSetting) is executed.				
	4) When the setting value of iw_CH (Target CH) is out of range, 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				
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 two or more of these FBs are used, precaution must be taken to avoid repetition of				
	iw_CH (Target CH).				
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and				
	system to be connected. Set the proper settings for the device and system with the				
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).				
	For details on how to use the parameter setting in GX Works2, refer to GX Works2				
	Version 1 Operating Manual (Common).				
	8) In any of the following cases 1) to 3), no errors occur in this FB; however an error occurs				
	in the module at an operating condition setting request. Please read the MELSEC-L				
	Multiple Input (Voltage/Current/Temperature) Module User's Manual for the errors on the				
	module.				
	1) When a value that exceeds iw_Pro_LU_Lim (Process alarm lower upper limit value) is				
	set for iw_Pro_LL_Lim (Process alarm lower lower limit value)				
	2) When a value that exceeds iw_Pro_UL_Lim (Process alarm upper lower limit value) is				
	set for iw_Pro_LU_Lim (Process alarm lower upper limit value)				
	3) When a value that exceeds iw_Pro_UU_Lim (Process alarm upper upper limit value)				
	is set for iw_Pro_UL_Lim (Process alarm upper lower limit value)				
FB operation type	Pulsed execution (1 scan execution type)				



Item	Description				
Application example	Refer to "Appendix 1 FB Library Application Examples".				
Timing chart	[When operation completes without error]	[When an error occurs]			
	FB_EN (Execution command) FB_ENO (Execution status) Process alarm setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	FB_EN (Execution command) FB_ENO (Execution status) Process alarm setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)			
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual				
	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. iw_CH	Please try again after confirming the setting.
	(Target CH) is not within the range of 1 to	
	4.	



Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
Execution command	FB_EN	туре	ON, OFF	ON: The FB is activated.
		Bit		OFF: The FB is not activated.
Module start XY	iw_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 L60MD4-G is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Target CH	iw_CH	Word	1 to 4	Specify the channel number.
Process alarm	ib_Pro_Enable		ON, OFF	ON: Enable the warning
enable/disable		Bit		output of the process alarm.
				OFF: Disable the warning
				output of the process alarm.
Process alarm upper	iw_Pro_UU_Lim	Word	-32,768 to 32,767	Specify the process alarm
upper limit value		word		upper upper limit value.
Process alarm upper	iw_Pro_UL_Lim	Word	-32,768 to 32,767	Specify the process alarm
lower limit value		word		upper lower limit value.
Process alarm lower	iw_Pro_LU_Lim	Word	-32,768 to 32,767	Specify the process alarm
upper limit value		word		lower upper limit value.
Process alarm lower	iw_Pro_LL_Lim	Word	-32,768 to 32,767	Specify the process alarm
lower limit value		word		lower lower limit value.

Output labels

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


Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_SetRateAlarm (Rate alarm setting)

FB Name

M+L60MD4-G_SetRateAlarm

Function Overview

Item	Description				
Function overview	Sets the rate alarm of the specified channel.				
Symbol	M+L60MD4-G_SetRateAlarm				
	Execution command ——	B : FB_EN		FB_ENO : B	Execution status
	Module start XY address	W : iw_Start_IO_No		FB_OK : B	Completed without error
	Target CH	W : iw_CH		FB_ERROR : B	Error flag
	Rate alarm enable/disable	B : ib_Rate_Enable		ERROR_ID : W	Error code
	Rate alarm alert detection cycle	W : iw_Rate_Out			
	Rate alarm upper limit value ——	W : iw_Rate_U_Lim			
	Rate alarm lower limit value	W : iw_Rate_L_Lim			
		1			
Applicable hardware	Multiple input	L60MD4-G			
and software	(voltage/current/				
	temperature) module				
	CPU module				
		Series		Model	
		MELSEC-L Series	;	LCPU	
	Engineering software	GX Works2 *1			
		Language		Software ve	rsion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers	sions app	licable to the mo	odules used, refer to
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	233 steps (for MELSEC-L	series CPU)			
	*The number of steps of t	he FB in a program d	lepends o	on the CPU mod	el that is used and
	input and output definiti	on.			
		011.			



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the rate alarm of the specified channel is
	set.
	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 (Yn9)
	is turned OFF \rightarrow ON \rightarrow OFF or the Operating condition setting request FB
	(M+L60MD4-G_RequestSetting) is executed.
	4) When the setting value of iw_CH (Target CH) is out of range, 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
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 two or more of these FBs are used, precaution must be taken to avoid repetition of
	iw_CH (Target CH).
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
	8) In either of the following cases 1) and 2), no errors occur in this FB; however an error
	occurs in the module at an operating condition setting request. Please read the
	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual for the
	errors on the module.
	1) When a value set for iw_Rate_Out (Rate alarm alert detection cycle) is out of the
	setting range
	2) When a value that exceeds iw_Rate_U_Lim (Rate alarm upper limit value) is set for
	iw_Rate_L_Lim (Rate alarm lower limit value)
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 FB Library Application Examples".



Item	Description		
Timing chart	[When operation completes without error]	[When an error occurs]	
	FB_EN (Execution command) FB_ENO (Execution status) Rate alarm setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	FB_EN (Execution command) FB_ENO (Execution status) Rate alarm setting write processing FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)	
Relevant manuals	 MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual 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 10 (Decimal) The specified channel is not valid. iw_CH (Target CH) is not within the range of 1 to



4.

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	iw_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 L60MD4-G is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Target CH	iw_CH	Word	1 to 4	Specify the channel
		word		number.
Rate alarm	ib_Rate_Enable		ON, OFF	ON: Enable the alert output
enable/disable		Dit		of the rate alarm.
		Dit		OFF: Disable the alert
				output of the rate alarm.
Rate alarm alert	iw_Rate_Out	Word	1 to 36000	Specify the rate alarm alert
detection cycle		word		detection cycle.
Rate alarm upper	iw_Rate_U_Lim	Word	-32,768 to 32,767	Specify the rate alarm
limit value		word		upper limit value.
Rate alarm lower	iw_Rate_L_Lim	Word	-32,768 to 32,767	Specify the rate alarm
limit value		word		lower limit value.

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



Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_RequestSetting (Operating condition setting request)

FB Name

M+L60MD4-G_RequestSetting

Function Overview

Item	Description			
Function overview	Validates the settings of each function.			
Symbol	Mul 60MD4 G. PoquertSatting			
	Execution command ——	B : FB_EN	FB_ENO : B Execution status	
	Module start XY address	W : iw_Start_IO_No	FB_OK : B Completed without error	
			FB_ERROR : B Error flag	
Applicable hardware	Multiple input	L60MD4-G		
and software	(voltage/current/			
	temperature) module			
	CPU module			
		Series	Model	
		MELSEC-L Series	LCPU	
			·	
	Engineering software	GX Works2 *1		
		Language	Software version	
		English version	Version1.24A or later	
		Chinese version	Version1.49B or later	
		*1 For software versions app	plicable to the modules used, refer	
		to "Relevant manuals".		
Programming	Ladder			
language				
Number of steps	277 steps (for MELSEC-I	L series CPU)		
	*The number of steps of	the FB in a program depends	on the CPU model that is used and	
	input and output definit	tion.		
Function description	1) By turning ON FB_EN	N (Execution command), the se	ettings of all channels (CH1 to CH4)	
	are enabled. For information on the settings that are enabled, refer to MELSEC-L			
	Multiple Input (Voltage/Current/Temperature) 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.			
Compiling method	Macro type			



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Item	Description					
Restrictions and	1) When this FB is executed while the L60MD4-G is being operated, the conversion is					
precautions	stopped. 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) The FB cannot be used in an interrupt program.					
	5) This FB uses index register Z9. Please do not use the index register 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 L60MD4-G, set the input type/range setting according to the device and					
	system to be connected. Set the proper settings for the device and system with the					
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).					
	For details on how to use the parameter setting in GX Works2, refer to GX Works2					
	Version 1 Operating Manual (Common).					
FB operation type	Pulsed execution (multiple scan execution type)					
Application example	Refer to "Appendix 1 FB Library Application Examples".					
Timing chart	[When operation completes without error]					
	(Execution command)					
	FB_ENO (Execution status)					
	request (Yn9) Operating condition setting					
	Completed flag (Xn9) FB_OK (Completed without even)					
	FB_ERROR (Error flag)					
	ERROR_ID (Error code) 0					
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual					
	• 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
None	None	None

Input labels				
Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		\\/ord	of the CPU.	is connected. (For example, enter
		vvord	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	

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



Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_ReadVal (Read conversion data)

FB Name

M+L60MD4-G_ReadVal

Function Overview

Item	Description				
Function overview	Reads the conversion data of the specified channel.				
Symbol Applicable hardware and	Execution command — B : Module start XY address — W : Target CH — W : Multiple input (voltage/current/	M+L60MD4-0 : FB_EN : iw_Start_IO_No : iw_CH L60MD4-G	G_ReadVal	FB_ENO : B Execution status FB_OK : B Completed without error ow_Value : W Conversion data FB_ERROR : B Error flag ERROR_ID : W Error code	
Software	CPU module	Series MELSEC-L Series		Model	
	Engineering software	GX Works2 *1 Language Software version English version Version1.24A or later Chinese version Version1.49B or later *1 For software versions applicable to the modules used, refer to "Relevant manuals".			
Programming language	Ladder				
Number of steps	 305 steps (for MELSEC-L series CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition. 				



Item	Description
Function	1) By turning ON FB_EN (Execution command), the conversion data of the specified
description	channel (CH1 to CH4) is read.
	2) The read ow_Value (Conversion data) depends on the input type/range setting and
	averaging processing function setting.
	3) When the conversion completed flag (XnE) is OFF, reading the conversion data of the
	specified channel is not executed.
	4) When the setting value of iw_CH (Target CH) 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 digital output value is set in the auto refresh setting of the intelligent function
	module, this FB is unnecessary.
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 two or more of these FBs are used, precaution must be taken to avoid repetition of
	iw_CH (Target CH).
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
FB operation type	Real-time execution
Application	Refer to "Appendix 1 FB Library Application Examples".
example	



Item	Description			
Timing chart	[When operation completes without error] FB_EN (Execution command) FB_ENO (Execution status) ow_Value (Conversion data) OW_Value (Conversion data) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	FB_EN (Execution command) FB_ENO (Execution status) ow_Value (Conversion data) FB_OK (Completed without error) FB_ERROR (Error flag) FB_ERROR (Error flag) ERROR_ID (Error code)		
Relevant manuals	 MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual 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. iw_CH	Please try again after confirming the setting.
	(Target CH) is not within the range of 1 to	
	4.	



Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN		ON, OFF	ON: The FB is activated.
		Bit		OFF: The FB is not
				activated.
Module start XY	iw_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 L60MD4-G is
			CPU user's manual.	connected. (For example,
				enter H10 for X10.)
Target CH	iw_CH	Word	1 to 4	Specify the channel
		vvolu		number.

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Dit	OFF	ON: Execution command is ON.
		DIL	OFF	OFF: Execution command is OFF.
Completed without	FB_OK			When ON, it indicates that the conversion
error		DIL	OFF	value is being read.
Conversion data	ow_Value	Word	0	The conversion value is stored.
Error flag	FB_ERROR	Dit	OFF	When ON, it indicates that an error has
		DIL	OFF	occurred.
Error code	ERROR_ID	Word	0	FB error code output.



Version	Date	Description
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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+L60MD4-G_ReadAllVal (Read all A/D conversion data)

FB Name

M+L60MD4-G_ReadAllVal

Function Overview

Item	Description			
Function overview	Reads the conversion data of CH1 to CH4.			
Symbol	Execution command — B : Module start XY address — W : F	M+L60MD4-G_R - B : FB_EN - W : iw_Start_IO_No		FB_ENO : B Execution status FB_OK : B Completed without error w_Value_CH1 : W CH1 Conversion data w_Value_CH2 : W CH2 Conversion data w_Value_CH3 : W CH3 Conversion data w_Value_CH4 : W CH4 Conversion data FB_ERROR : B Error flag ERROR_ID : W Error code
Applicable hardware and software	Multiple input (voltage/current/ temperature) module CPU module	E L60MD4-G Series N MELSEC-L Series LCPU CALANGUAGE GX Works2 *1 Language Software v English version Version1.24A or later Chinese version Version1.49B or later *1 For software versions applicable to the m to "Relevant manuals".		Model
	Engineering software			Software version 1.24A or later 1.49B or later Dicable to the modules used, refer
Programming language	Ladder			
Number of steps	265 steps (for MELSEC-L series CPU) *The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.			



Item	Description		
Function description	1) By turning ON FB_EN (Execution command), the conversion data of CH1 to CH4 are		
	read.		
	2) The read ow_Value_CH1 (CH1 Conversion data) to ow_Value_CH4 (CH4 Conversion		
	data) depend on the input type/range setting and averaging processing function setting.		
	3) When the conversion completed flag (XnE) is OFF, reading the conversion data of CH1		
	to CH4 is not executed.		
	4) When the digital output value is set in the auto refresh setting of the intelligent function		
	module, this FB is unnecessary.		
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) This FB uses index registers Z8 and Z9. Please do not use these index registers in an		
	interrupt program.		
	5) Every input must be provided with a value for proper FB operation.		
	6) To operate the L60MD4-G, set the input type/range setting according to the device and		
	system to be connected. Set the proper settings for the device and system with the		
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).		
	For details on how to use the parameter setting in GX Works2, refer to GX Works2		
	Version 1 Operating Manual (Common).		
FB operation type	Real-time execution		
Application example	Refer to "Appendix 1 FB Library Application Examples".		
Timing chart	[When operation completes without error]		
	FB_EN (Execution command)		
	FB_ENO (Execution status)		
	ow_Value_CH_ Refresh stop Refreshing Refresh stop		
	FB_OK (Completed		
	without error)		
	ERROR ID (Error code) 0		
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual		
	• 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)		



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Error codes		
Error code list		
Error code	Description	Action
None	None	None



Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		\\/ord	of the CPU.	is connected. (For example, enter
		vvora	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	

Output labels

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO			ON: Execution command is ON.
		ы	011	OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that the conversion
error		ЫІ	OFF	value is being read.
CH1 Conversion	ow_Value_CH1	Word	0	The digital output value of CH1 is stored.
data		word	0	
CH2 Conversion	ow_Value_CH2	Word	0	The digital output value of CH2 is stored.
data		word	0	
CH3 Conversion	ow_Value_CH3	Word	0	The digital output value of CH3 is stored.
data		word	0	
CH4 Conversion	ow_Value_CH4	Word	0	The digital output value of CH4 is stored.
data		word	0	
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_ReadScalingVal (Read scaling value)

FB Name

M+L60MD4-G_ReadScalingVal

Function Overview

Item	Description				
Function overview	Reads the scaling value of the specified channel.				
Symbol	Execution command M+L60MD4-G_R Execution command B : FB_EN Module start XY address W : iw_Start_IO_No Target CH W : iw_CH		_ReadScaling\	/al FB_ENO : B FB_OK : B ow_Scaling_Value : W FB_ERROR : B ERROR_ID : W	Execution status Completed without error Scaling value Error flag Error code
Applicable hardware	Multiple input	L60MD4-G			
and software	(voltage/current/				
	emperature) module				
	CPU module				
		Series		M	odel
		MELSEC-L Series	6	LCPU	
	Engineering software	GX Works2 *1			
		Language		Software ve	ersion
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers	sions app	licable to the mo	odules used, refer to
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	380 steps (for MELSEC-L series CPU)				
	*The number of steps o	*The number of steps of the FB in a program depends on the CPU model that is used and			
	input and output define	nition.			



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the scaling value of the specified
	conversion channel (CH1 to CH4) is read.
	2) The read ow_Scaling_Value (Scaling value) depends on the input type/range setting, the
	averaging processing function setting, and scaling function setting.
	3) In either of the following cases, the scaling value is not read.
	 When the scaling enable/disable setting (Un¥G53) is disabled
	 When the conversion completed flag (XnE) is OFF
	4) When the setting value of iw_CH (Target CH) 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 scaling value is set in the auto refresh setting of the intelligent function
	module, this FB is unnecessary.
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.
	 When two or more of these FBs are used, precaution must be taken to avoid repetition of iw CH (Target CH).
	5) This FB uses index registers Z7 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) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 FB Library Application Examples".



Item	Description		
Timing chart	[When operation completes without error]	[When an error occurs]	
	FB_EN (Execution command) FB_ENO (Execution status) ow_Scaling_Value (Scaling value) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code) 0	FB_EN (Execution command) FB_ENO (Execution status) ow_Scaling_Value (Scaling value) FB_OK (Completed without error) FB_ERROR (Error flag) ERROR_ID (Error code)	
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/	Temperature) Module User's Manual	
	MELSEC-L CPU Module User's Manual (Hardware Design, Maintenance and Inspection)		
	• GX Works2 Version 1 Operating Manual (Co	ommon)	
	• GX Works2 Version 1 Operating Manual (Si	mple Project, Function Block)	

Error codes

Labels

Error code list

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

Input labels Name (comment) Description Label name Data Setting range type ON: The FB is activated. Execution command FB_EN ON, OFF Bit OFF: The FB is not activated. Module start XY iw_Start_IO_No Depends on the Specify the starting XY address (in address I/O point range hexadecimal) where the L60MD4-G of the CPU. is connected. (For example, enter Word For details, refer H10 for X10.) to the CPU user's manual. Target CH iw_CH Word 1 to 4 Specify the channel number.



Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Dit	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that the scaling value
error				is being read.
Scaling value	ow_Scaling_Value	Word	0	The scaling value is stored.
Error flag	FB_ERROR	Dit	OFF	When ON, it indicates that an error has
		DIL	UFF	occurred.
Error code	ERROR_ID	Word	0	FB error code output.



Version	Date	Description
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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+L60MD4-G_ReadAllScalingVal (Read all scaling values)

FB Name

M+L60MD4-G_ReadAllScalingVal

Function Overview

Item	Description				
Function overview	Reads the scaling value of CH1 to CH4.				
Symbol	M+L60MD4-G_ReadAllScalingVal				
	Execution command — B	B : FB_EN		FB_ENO : B Execution status	
	Module start XY address W	iw_Start_IO_No		FB_OK : B Completed without error	
				ow_Scaling_CH1 : W CH1 Scaling value	
				ow_Scaling_CH2 : W CH2 Scaling value	
				ow_Scaling_CH3 : W CH3 Scaling value	
				ow_Scaling_CH4 : W CH4 Scaling value	
Applicable	Multiple input	L60MD4-G			
hardware and	(voltage/current/				
software	temperature) module				
	CPU module				
		Series		Model	
		MELSEC-L Series	6	LCPU	
	Engineering software	GX Works2 *1	•		-
		Language		Software version	
		English version	Version	1.24A or later	
		Chinese version	Version	1.49B or later	
		*1 For software vers	sions app	plicable to the modules used, refer the	0
		"Relevant manua	als".		
Programming	Ladder				
language					
Number of steps	319 steps (for MELSEC-L series CPU)				
	*The number of steps of	the FB in a program	depends	on the CPU model that is used and	k
	input and output defini	tion.			
	· · ·				



Item	Description			
Function	1) By turning ON FB_EN (Execution command), the scaling values of CH1 to CH4 are read.			
description	2) The read ow_Scaling_CH1 (CH1 Scaling value) to ow_Scaling_CH4 (CH4 Scaling			
	value) depend on the input type/range setting, the averaging processing function setting,			
	and scaling function (conversion) setting.			
	3) The scaling value is not read from the channel for which the scaling enable/disable			
	setting (Un¥G53) is disabled.			
	4) When the conversion completed flag (XnE) is OFF, reading the scaling value of CH1 to			
	CH4 is not executed.			
	5) When the scaling value is set in the auto refresh setting of the intelligent function			
	module, this FB is unnecessary.			
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) This FB uses index registers Z8 and Z9. Please do not use these index registers in an			
	interrupt program.			
	5) Every input must be provided with a value for proper FB operation.			
	6) To operate the L60MD4-G, set the input type/range setting according to the device and			
	system to be connected. Set the proper settings for the device and system with the			
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).			
	For details on how to use the parameter setting in GX Works2, refer to GX Works2			
	Version 1 Operating Manual (Common).			
FB operation type	Real-time execution			
Application	Refer to "Appendix 1 FB Library Application Examples".			
example				
Timing chart	[When operation completes without error]			
	FB_EN (Execution command)			
	FB_ENO (Execution status)			
	ow_Scaling_CHD (CHI)Scaling value) Refresh stop			
	FB_OK (Completed without error)			
	FB_ERROR (Error flag)			
	ERROR_ID (Error code) 0			



Item	Description
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual
	• 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		
None	None	None		

Input labels				
Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		Bit		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		Word	of the CPU.	is connected. (For example, enter
		word	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Rit	OFF	ON: Execution command is ON.
		ы	011	OFF: Execution command is OFF.
Completed without	FB_OK	Rit	OFF	When ON, it indicates that the scaling value
error		DIL	OFF	is being read.
CH1 Scaling value	ow_Scaling_CH1	Word	0	The scaling value of CH1 is stored.
CH2 Scaling value	ow_Scaling_CH2	Word	0	The scaling value of CH2 is stored.
CH3 Scaling value	ow_Scaling_CH3	Word	0	The scaling value of CH3 is stored.
CH4 Scaling value	ow_Scaling_CH4	Word	0	The scaling value of CH4 is stored.
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0



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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+L60MD4-G_ErrorOperation (Error operation)

FB Name

M+L60MD4-G_ErrorOperation

Function Overview

Item	Description		
Function overview	Monitors error codes and resets errors.		
Symbol			
	Execution command ——	M+L60MD4-G_ErrorOperatio	FB_ENO : B Execution status
	Module start XY address	W : iw_Start_IO_No	FB_OK : B Completed without error
		0W_	UNIT_ERR_CODE : W Module error code
			FB_ERROR : B Error flag
			ERROR_ID : W Error code
Applicable hardware	Multiple input	L60MD4-G	
and software	(voltage/current/		
	temperature) module		
	CPU module		
		Series	Model
		MELSEC-L Series	LCPU
	Engineering software	GX Works2 *1	
		Language	Software version
		English version	Version1.24A or later
		Chinese version	Version1.49B or later
		*1 For software versions app	plicable to the modules used, refer to
_		"Relevant manuals".	
Programming	Ladder		
language			
Number of steps	291 steps (for MELSEC-L	₋ series CPU)	
	*The number of steps of t	the FB in a program depends	on the CPU model that is used and
	input and output definition.		
Function description	1) By turning on FB_EN (Execution command), the current error code in the target		
	intelligent function module is output.		
	2) After FB_EN (Execution command) is turned ON, the error is reset when		
	ib_Error_Reset (Error reset request) is turned ON during error occurrence.		
Compiling method	Macro type		



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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) This FB uses index registers Z8 and Z9. Please do not use these index registers in an		
	interrupt program.		
	5) Every input must be provided with a value for proper FB operation.		
	6) 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.		
	7) To operate the L60MD4-G, set the input type/range setting according to the device and		
	system to be connected. Set the proper settings for the device and system with the		
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).		
	For details on how to use the parameter setting in GX Works2, refer to GX Works2		
	Version 1 Operating Manual (Common).		
FB operation type	Real-time execution		
Application example	Refer to "Appendix 1 FB Library Application Examples".		
Timing chart	[When operation completes without error]		
	FB_EN		
	(Execution command)		
	FB_ENO (Execution status)		
	(Error reset command)		
	Error clear request (YnF)		
	Error flag (XnF)		
	ob_UNIT_ERR		
	(Module error code)		
	FB_OK (Completed without error)		
	FB_ERROR (Error flag)		
	VR_ID (Error code) 0		
Relevant manuals	MELSEC Multiple Ipput ()/oltage/Current/Temperature) Medule Llearle Menuel		
Relevant manuals	• MELSEC-L CPU Module User's Manual (Hardware Design Maintenance and Inspection)		
	WIELSEC-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)		



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Error codes			
Error code list			
Error code	Description	Action	
None	None	None	

Øinput labels				
Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated.
		BIT		OFF: The FB is not activated.
Module start XY	iw_Start_IO_No		Depends on the	Specify the starting XY address (in
address			I/O point range	hexadecimal) where the L60MD4-G
		Word	of the CPU.	is connected. (For example, enter
		word	For details, refer	H10 for X10.)
			to the CPU	
			user's manual.	
Error reset	ib_Error_Reset	Dit	ON, OFF	Turn ON for the error reset.
command		טונ		Turn OFF after the error reset.

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO			Execution command is ON. (Module errors
		Bit	OFF	are being monitored.)
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that an error reset is
error		ЫІ	UFF	completed.
Module error flag	ob_UNIT_ERROR		When ON, it indicates that a module error	
		ЫІ	OFF	has occurred.
Module error code	ow_UNIT_ERR_CO	Mard 0	Stores the error code of the current error.	
	DE			
Error flag	FB_ERROR	Bit	OFF	Always OFF
Error code	ERROR_ID	Word	0	Always 0



Version	Date	Description
1.00A	2014/6/30	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+L60MD4-G_ShiftOperation (Shift operation)

FB Name

M+L60MD4-G_ShiftOperation

Function Overview

Item	Description			
Function overview	Adds the shift amount to the digital value.			
Symbol	Mul SOND4 C. ShiftOnerstine			
	Execution command ——	B : FB_EN	FB_ENO : B Execution status	
	Digital value ——	W : iw_Digital_Value	FB_OK : B Completed without error	
	Shift amount	W : iw_Shift_Value	ow_Dig_Out_Val : W Digital output value	
			FB_ERROR : B Fror flag	
Applicable hardware	Multiple input	L60MD4-G		
and software	(voltage/current/			
	temperature) module			
	CPU module			
		Series	Model	
		MELSEC-L Series	LCPU	
	Engineering software	GX Works2 *1		
		Language	Software version	
		English version	Version1.24A or later	
		Chinese version	Version1.49B or later	
		*1 For software versions app	plicable to the modules used, refer to	
		"Relevant manuals".		
Programming	Ladder			
language				
Number of steps	166 steps (for MELSEC-L	₋ series CPU)		
	*The number of steps of t	the FB in a program depends	on the CPU model that is used and	
	input and output definit	ion.		
Function description	1) By turning ON FB_EN (Execution command), the shift amount is added to a digital			
	value*1.			
	*1 Input the conversion data read from the L60MD4-G with M+L60MD4-G_ReadVal or			
	others as the digita	others as the digital value.		
	2) If the value after the addition is out of the range from -32,768 to 32,767, the value is			
	fixed to -32,768 or 32,767.			



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Description		
Macro type		
1) The FB does not include error recovery processing. Program the error recovery		
processing separately in accordance with the required system operation.		
2) The FB cannot be used in an interrupt program.		
3) Please ensure that the FB_EN signal is capable of being turned OFF by the program.		
Do not use this FB in programs that are only executed once such as a subroutine,		
FOR-NEXT loop because it is impossible to turn OFF.		
4) Every input must be provided with a value for proper FB operation.		
5) To operate the L60MD4-G, set the input type/range setting according to the device and		
system to be connected. Set the proper settings for the device and system with the		
parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).		
For details on how to use the parameter setting in GX Works2, refer to GX Works2		
Version 1 Operating Manual (Common).		
6) When FB_OK (Completed without error) is ON, ow_Dig_Out_Val (Digital output value) is		
enabled.		
7) By turning OFF FB_EN, ow_Dig_Out_Val (Digital output value) is cleared to 0.		
Real-time execution		
Refer to "Appendix 1 FB Library Application Examples".		
[When operation completes without error]		
(Execution command)		
FB_ENO (Execution status)		
Shift processing shift processing stop		
FB_OK (Completed		
FB ERROR (Error flag)		
ERROR_ID (Error code) 0		
• MELSEC-L Multiple input (Voltage/Current/Temperature) Module User's Manual • 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		
	None	None	None		


Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		DIL		OFF: The FB is not activated.
Digital value	iw_Digital_Value	Word	-32,768 to	Specify a digital value.
		vvoru	32,767	
Shift amount	iw_Shift_Value	Word	-32,768 to	Specify the shift amount.
		vvoru	32,767	

Output labels

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Rit	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Completed without	FB_OK	Dit		When ON, it indicates that the shift operation
error				is being executed.
Digital output value	ow_Dig_Out_Val	Word 0		The digital value after the 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	2014/6/30	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.



2.15. M+L60MD4-G_DiffOperation (Differential conversion process)

FB Name

M+L60MD4-G_DiffOperation

Function Overview

Item	Description				
Function overview	Outputs the difference obt	tained by subtracting	the stand	dard value from	the digital value.
Symbol	Execution command —— Digital value ——	M+L60MD4-C B : FB_EN W : iw_Digital_Value	G_DiffOperation	FB_ENO : B FB_OK : B ow_Dig_Out_Val : W ow_Standard_Val : W FB_ERROR : B ERROR_ID : W	Execution status Completed without error Digital output value Differential conversion standard Error flag Error code
Applicable hardware and software	Multiple input (voltage/current/ temperature) module	L60MD4-G			
	CPU module	Series MELSEC-L Series		LCPU	Nodel
	Engineering software	GX Works2 *1 Language English version Chinese version *1 For software vers "Relevant manua	Version Version sions app als".	Software v 1.24A or later 1.49B or later blicable to the m	ersion odules used, refer to
Programming language	Ladder				
Number of steps	183 steps (for MELSEC-L *The number of steps of the input and output definiti	. series CPU) he FB in a program d ion.	lepends o	on the CPU mod	del that is used and



Item	Description
Function description	 By turning ON FB_EN (Execution command), the differential conversion process is executed.
	2) iw_Digital_Value (Digital value) when FB_EN (Execution command) changes from OFF
	to ON is ow_Standard_Val (Differential conversion standard). As long as FB_EN
	(Execution command) remains ON, the difference obtained by subtracting
	ow_Standard_Val (Differential conversion standard) from iw_Digital_Value (Digital value) is output.
	*1 Input the conversion data read from the L60MD4-G with M+L60MD4-G_ReadVal or
	others as the digital value.
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) Every input must be provided with a value for proper FB operation.
	5) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
	6) When FB_OK (Completed without error) is ON, ow_Dig_Out_Val (Digital output value)
	and ow_Standard_Val (Differential conversion standard) are enabled.
	7) By turning OFF FB_EN, ow_Dig_Out_Val (Digital output value) and ow_Standard_Val
	(Differential conversion standard) are cleared to 0.
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 FB Library Application Examples".
Timing chart	[When operation completes without error]
	FB_EN (Execution command)
	FB_ENO (Execution status)
	Differential conversion status No conversion Differential conversion No conversion
	ow_Standard_Val (Differential conversion standard) 0 Differential conversion standard 0
	(Completed without error)
	FB_ERROR (Error flag)
	ERROR_ID (Error code) 0



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Item	Description
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual
	• 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
None	None	None

Labels

Input labels

Name (comment)	Label name	Data	Setting	Description
		type	range	
Execution command	FB_EN	Dit	ON, OFF	ON: The FB is activated.
		ЫІ		OFF: The FB is not activated.
Digital value	iw_Digital_Value	\//ord	-32,768 to	Specify a digital value for which the
		word	32,767	differential conversion is to be executed.

Output labels

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Rit	OFF	ON: Execution command is ON.
		ы	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Bit OFF		When ON, it indicates that the differential
error				conversion is being executed.
Digital output value	ow_Dig_Out_Val	Word 0		The digital value for which the differential
				conversion has been executed is stored.
Differential	ow_Standard_Val	Word 0		The differential conversion standard (a digital
conversion standard				value when FB_EN is turned ON) 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	2014/6/30	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.

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2.16. M+L60MD4-G_ClipOperation (Digital clipping operation)

FB Name

M+L60MD4-G_ClipOperation

Function Overview

Item	Description				
Function overview	Limits a digital value at th	e digital clipping uppe	er and lov	wer limit values.	
Symbol Applicable hardware and software	Execution command — Digital value — Digital clipping upper limit value — Digital clipping lower limit value — Multiple input (voltage/current/	M+L60MD4- B : FB_EN W : iw_Digital_Value W : iw_Clip_U_Lim W : iw_Clip_L_Lim	G_ClipOperatio	n FB_ENO : B FB_OK : B ow_Dig_Out_Val : W FB_ERROR : B ERROR_ID : W	Execution status Completed without error Digital output value Error flag Error code
	CPU module	Series MELSEC-L Series	;	M LCPU	lodel
	Engineering software	GX Works2 *1 Language English version Chinese version *1 For software vers "Relevant manua	Version Version sions app als".	Software vo 1.24A or later 1.49B or later blicable to the m	ersion odules used, refer to
Programming language Number of steps	Ladder 175 steps (for MELSEC-L *The number of steps of t input and output definit	- series CPU) he FB in a program d ion.	lepends o	on the CPU mod	del that is used and



Item	Description
Function description	1) By turning ON FB_EN (Execution command), the digital clipping operation is started.
	2) If iw_Digital_Value (Digital value)*1 exceeds iw_Clip_U_Lim (Digital clipping upper limit
	value) or falls below iw_Clip_L_Lim (Digital clipping lower limit value) while FB_EN
	(Execution command) is ON, iw_Digital_Value (Digital value) is limited at the upper or
	lower limit value.
	*1 Input the conversion data read from the L60MD4-G with M+L60MD4-G_ReadVal or
	others as the digital value.
	3) If iw_Clip_U_Lim (Digital clipping upper limit value) is equal to or less than
	iw_Clip_L_Lim (Digital clipping lower limit value), the FB_ERROR output turns ON and
	processing is interrupted, and the error code is stored in ERROR_ID.
	Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and	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) Every input must be provided with a value for proper FB operation.
	5) To operate the L60MD4-G, set the input type/range setting according to the device and
	system to be connected. Set the proper settings for the device and system with the
	parameter setting in GX Works2 or the initial setting FB (M+L60MD4-G_InitialSetting).
	For details on how to use the parameter setting in GX Works2, refer to GX Works2
	Version 1 Operating Manual (Common).
	6) When FB_OK (Completed without error) is ON, ow_Dig_Out_Val (Digital output value) is
	enabled.
	7) By turning OFF FB_EN, ow_Dig_Out_Val (Digital output value) is cleared to 0.
FB operation type	
Application example	Refer to "Appendix 1 FB Library Application Examples".
liming chart	[When operation completes without error] [When an error occurs]
	FB_EN (Execution command)
	FB_ENO (Execution status)
	Digital clipping operation Digital clipping processing stop processing stop
	FB_OK (Completed without error)
	FB_ERROR (Error flag) FB_ERROR (Error flag) ERROR ID (Error code) 0 FB_ERROR ID (Error code) 0



Item	Description
Relevant manuals	MELSEC-L Multiple Input (Voltage/Current/Temperature) Module User's Manual
	• 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		
11 (Decimal)	The digital clipping upper limit value is	Please try again after confirming the setting.		
	equal to or less than the lower limit value.			

Labels

Input labels

Name (comment)	Label name	Data	Setting range	Description
		type		
Execution command	FB_EN	Rit.	ON, OFF	ON: The FB is activated.
		BI		OFF: The FB is not activated.
Digital value	iw_Digital_Value		-32,768 to	Specify a digital value for which the
		Word	32,767	digital clipping operation is to be
				executed.
Digital clipping upper	iw_Clip_U_Lim	Word	-32,768 to	Specify the digital clipping upper limit
limit value		word	32,767	value.
Digital clipping lower	iw_Clip_L_Lim	Word	-32,768 to	Specify the digital clipping lower limit
limit value		word	32,767	value.

Output labels

Name (comment)	Label name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	Dit	OFF	ON: Execution command is ON.
		Ы	OFF	OFF: Execution command is OFF.
Completed without	FB_OK	Dit	OFF	When ON, it indicates that the digital clipping
error		ЫІ	OFF	operation is being executed.
Digital output value	ow_Dig_Out_Val	Word	0	The digital value for which the digital clipping
		word	0	operation has been executed is stored.
Error flag	FB_ERROR	Dit		When ON, it indicates that an error has
		ЫІ	OFF	occurred.
Error code	ERROR_ID	Word	0	FB error code output.



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FB Version Upgrade History

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Appendix 1. FB Library Application Examples

L60MD4-G FB application examples are as follows.

1) System configuration



Reminder

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

2) Global label setting

None

3) Application example settings

a) Common setting

Input and output item	Value	Description
Module start XY address	0	Specify the starting XY address where the
		L60MD4-G is connected.



List of devices

a) External input (command)

Device	FB name	Application (ON details)
M0	M+L60MD4-G_InitialSetting	Initial setting request
M10	M+L60MD4-G_SetAverage	Averaging proc setting request
M20	M+L60MD4-G_SetScaling	Scaling setting request
M21		Scaling enable:ON/disable:OFF
M30	M+L60MD4-G_SetDisconnect	Disconnection detection set req.
M40	M+L60MD4-G_SetInputSignalErr	Input signal error setting req.
M50	M+L60MD4-G_SetProcessAlarm	Process alarm setting request
M51		Process alarm enable/disable set
M60	M+L60MD4-G_SetRateAlarm	Rate alarm setting request
M61		Rate alarm enable/disable set
M70	M+L60MD4-G_RequestSetting	Operating condition setting req.
M80	M+L60MD4-G_ReadVal	Conversion value reading request
M90	M+L60MD4-G_ReadAllVal	All conversion value reading req
M100	M+L60MD4-G_ReadScalingVal	Scaling value reading request
M110	M+L60MD4-G_ReadAllScalingVal	All scaling value reading req.
M120	M+L60MD4-G_ErrorOperation	Error operation request
M121		Error reset request
M130	M+L60MD4-G_ShiftOperation	Shift operation request
D130		Digital value
M140	M+L60MD4-G_DiffOperation	Diff conversion process request
D140		Digital value
M150	M+L60MD4-G_ClipOperation	Digital clipping operation req.
D150		Digital value



b) External output (check)

Device	FB name	Application (ON details)
M1	M+L60MD4-G_InitialSetting	Initial setting FB ready
M2		Initial setting complete
F0		Initial setting FB error
D0		Initial setting FB error code
M11	M+L60MD4-G_SetAverage	Averaging proc setting FB ready
M12		Averaging proc setting complete
F1		Averaging proc setting FB error
D10		Averaging proc set FB error code
M22	M+L60MD4-G_SetScaling	Scaling setting FB ready
M23		Scaling setting complete
F2		Scaling setting FB error
D20		Scaling setting FB error code
M31	M+L60MD4-G_SetDisconnect	Disconnection detect set FB rdy.
M32		Disconnection detection set comp
F3		Disconnection detect set FB err.
D30		Disconnect detect set FB err cod
M41	M+L60MD4-G_SetInputSignalErr	Input signal error set FB ready
M42		Input signal error setting comp.
F4		Input signal err setting FB err
D40		Input signal err set FB err code
M52	M+L60MD4-G_SetProcessAlarm	Process alarm setting FB ready
M53		Process alarm setting complete
F5		Process alarm setting FB error
D50		Process alarm set FB error code
M62	M+L60MD4-G_SetRateAlarm	Rate alarm setting FB ready
M63		Rate alarm setting complete
F6		Rate alarm setting FB error
D60		Rate alarm setting FB error code
M71	M+L60MD4-G_RequestSetting	Operate condition set req FB rdy
M72		Operating condition set req comp



Device	FB name	Application (ON details)
M81	M+L60MD4-G_ReadVal	Conversion value read FB ready
M82		Conversion value read complete
F8		Conversion value read FB error
D80		Conversion data
D81		Conversion value read FB err cod
M91	M+L60MD4-G_ReadAllVal	Conversion value all read FB rdy
M92		Conversion value read comp. all
D90		CH1 Conversion data
D91		CH2 Conversion data
D92		CH3 Conversion data
D93		CH4 Conversion data
M101	M+L60MD4-G_ReadScalingVal	Scaling value reading FB ready
M102		Scaling value reading complete
F10		Scaling value reading FB error
D100		Scaling value
D101		Scaling value read FB error code
M111	M+L60MD4-G_ReadAllScalingVal	Scaling value all read FB ready
M112		Scaling value all read complete
D110		CH1 Scaling value
D111		CH2 Scaling value
D112		CH3 Scaling value
D113		CH4 Scaling value
M122	M+L60MD4-G_ErrorOperation	Error operation FB ready
M123		Error operation complete
M124		Module error
D120		Module error code
M131	M+L60MD4-G_ShiftOperation	Shift operation FB ready
M132		Shift operation complete
D131		Shift conversion value
M141	M+L60MD4-G_DiffOperation	Diff conversion proc FB ready
M142		Diff conversion process complete
D141		Differential conversion value
D142		Differential conversion standard



Device	FB name	Application (ON details)
M151	M+L60MD4-G_ClipOperation	Digital clipping operate FB rdy.
M152		Digital clipping operation comp.
F15		Digital clipping operate FB err.
D151		Digital output value
D152		Digital clip operate FB err code



Label name	Setting	Description
	value	
iw_Start_IO_No	H0	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
iw_TypeRange	H10	Set the input type/range setting to 4 to 20 mA.
iw_DisplayType	K0	Set the Centigrade/Fahrenheit display setting to the Centigrade display.

M+L60MD4-G_InitialSetting (Initial setting)

By turning ON M0, the setting values of the input type/range setting and Centigrade/Fahrenheit display setting of channel 1 are written to the buffer memory.





Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
iw_Average_Type	H1	Set the averaging process type to "Time average".
iw_Average_Times	K100	Set the time average to 100.

M+L60MD4-G_SetAverage (Averaging process setting)

By turning ON M10, the averaging processing type setting value of channel 1 is written to the buffer memory.





Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
ib_Scl_Enable	ON/OFF	Turn ON to enable the scaling.
iw_Scl_U_Lim	K30000	Set the scaling upper limit value to 30,000.
iw_Scl_L_Lim	K-30000	Set the scaling lower limit value to -30,000.

M+L60MD4-G_SetScaling (Scaling setting)

By turning ON M20, the scaling setting value of channel 1 is written to the buffer memory.





Label name	Setting	Description	
	value		
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.	
iw_CH	K1	Set the target channel to channel 1.	
iw_DisconnType	H3	Set the conversion setting for disconnection detection of channel 1 to "3:	
		Any value".	
iw_DisconnVal	K-30000	Set the conversion setting value for disconnection detection to -30,000.	

M+L60MD4-G_SetDisconnect (Disconnection detection setting)

By turning ON M30, the conversion setting and conversion setting value for disconnection detection of channel 1 are written to the buffer memory.





Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
iw_Sig_Err_Type	H1	Set the input signal error detection setting of channel 1 to "Upper and lower
		limit detection".
iw_Sig_Err_Level	K100	Set the input signal error detection setting value to 10.0%.

M+L60MD4-G_SetInputSignalErr (Input signal error detection setting)

By turning ON M40, the input signal error detection setting value of channel 1 is written to the buffer memory.





Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
ib_Pro_Enable	ON/OFF	Turn ON to enable the process alarm.
iw_Pro_UU_Lim	K3000	Set the process alarm upper upper limit value to 3,000.
iw_Pro_UL_Lim	K2950	Set the process alarm upper lower limit value to 2,950.
iw_Pro_LU_Lim	K2050	Set the process alarm lower upper limit value to 2,050.
iw_Pro_LL_Lim	K2000	Set the process alarm lower lower limit value to 2,000.

M+L60MD4-G_SetProcessAlarm (Process alarm setting)

By turning ON M50, the process alarm setting value of channel 1 is written to the buffer memory.







Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.
ib_Rate_Enable	ON/OFF	Turn ON to enable the rate alarm.
iw_Rate_Out	K5	Set the rate alarm alert detection cycle to 5 times.
iw_Rate_U_Lim	K50	Set the rate alarm upper limit value to 50.
iw_Rate_L_Lim	K-50	Set the rate alarm lower limit value to -50.

M+L60MD4-G_SetRateAlarm (Rate alarm setting)

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







M+L60MD4-G_RequestSetting (Operating condition setting request)

Label name	Setting	Description
	value	
iw_Start_IO_No	H0	Set the starting XY address where the L60MD4-G is connected to 0H.

By turning ON M70, the following settings are enabled.

- Input type/range setting
- Centigrade/Fahrenheit display setting
- Averaging processing setting
- Scaling setting
- Disconnection detection setting
- Input signal error detection setting
- Process alarm setting
- Rate alarm setting





Mitteomb4-6_Read val (Read conversion data)			
Label name	Setting	Description	
	value		
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.	
iw_CH	K1	Set the target channel to channel 1.	

M+L60MD4-G_ReadVal (Read conversion data)

By turning ON M80, the conversion data of channel 1 is read.





M+L60MD4-G_ReadAllVal (Read all A/D conversion data)

Label name	Setting	Description	
	value		
iw_Start_IO_No	H0	Set the starting XY address where the L60MD4-G is connected to 0H.	

By turning ON M90, the conversion data of channel 1 to channel 4 are read.





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Label name	Setting value	Description
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
iw_CH	K1	Set the target channel to channel 1.

M+L60MD4-G_ReadScalingVal (Read scaling value)

By turning ON M100, the scaling value of channel 1 is read.





M+L60MD4-G_	ReadAllScalingVa	l (Read all	scaling v	/alues)
		\		/

Label name	Setting	Description	
	value		
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.	

By turning ON M110, the scaling values of channel 1 to channel 4 are read.





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M+L60MD4-G	ErrorOperation	(Error	operation)
		· ·	/

Label name	Setting	Description
	value	
iw_Start_IO_No	HO	Set the starting XY address where the L60MD4-G is connected to 0H.
ib_Error_Reset	ON/OFF	Turn ON for the error reset.

By turning ON M120, the error code is output when an error occurs. By turning ON M121 after the error output, the error is reset.





M+L60MD4-G_ShiftOperation (Shift operation)

Label name	Setting	Description
	value	
iw_Digital_Value	-	Store a digital output value for which the shift amount is to be added.
iw_Shift_Value	K1000	Set the shift amount to 1,000.

By turning ON M130, the digital value after the shift amount is added is output.

M130	ShiftOp	eration	
	B:FB_EN	FB_ENO:B	(M131)
Shift op	Executio	Executio	Shift op
eration	n comman	n status	eration
request	d		FB ready
[D130 Digital value	} W:iw_Digital_Value Digital value	FB_OK:B Complete d withou t error	(M132) Shift op eration complete
{K100) } W:iw_Shift_Value Shift am ount	ow_Dig_Out_Val:W {D131 Digital Shift co output v nversio	
		FB_ERROR:B	
		ag	
		ERROR_ID:W Error co de	



M+L60MD4-G_DiffOperation (Differential conversion process)

Label name	Setting	Description
	value	
iw_Digital_Value	-	Store a digital value for which the differential conversion is to be executed.

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

M140		DiffOp	eration]	
		B:FB_EN	FB_ENO:B		(M141)
Diff con		Executio	Executio		Diff con
version		n comman	n status		version
process		d			proc FB
request					ready
	D140	Wiw Digital Value	FB_OK·B		(M142)
	Digital	Digital	Complete		Diff.con
	value	value	d withou		version
			terror		Drocess
			C CHOI		complete
					complete
			D: 0 . V		
			ow_Dig_Out_Val:W		
			Digital	Differen	
			output v	tial con	
			alue	version	
				value	
			ow_Standard_Val:W	[D142]	
			Differen	Differen	
			tial con	tial con	
			version	version	
			standard	standard	
			FB ERROR:B		
			Error fl		
			ao		
			-5		
			ERROR_ID:W		
			Error co		
			de		
]	
					I



Label name	Setting	Description
	value	
iw_Digital_Value	-	Store a digital value for which the digital clipping operation is executed.
iw_Clip_U_Lim	K12000	Set the digital clipping upper limit value to 12,000.
iw_Clip_L_Lim	K0	Set the digital clipping lower limit value to 0.

M+L60MD4-G_ClipOperation (Digital clipping operation)

By turning ON M150, if the input digital value exceeds the digital clipping upper limit value or falls below the lower limit value, the value is limited at the upper or lower limit value and then output.



