MELSEC-Q/L High-Speed Counter Module FB Library

Reference Manual

< CONTENTS >

Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M032-A	2010/08/06	First edition
FBM-M032-B	2011/04/30	Added "Reference Manual Revision History", "Overview", "Chinese version of GX Works2".

1. Overview

1.1 Overview of the FB Library

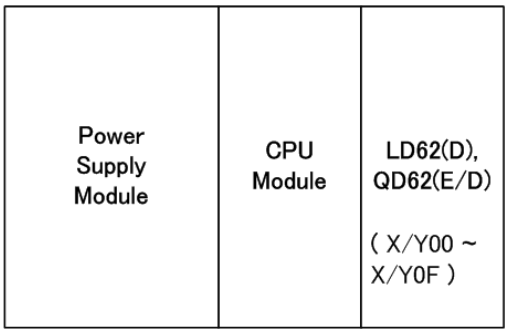
This FB library is for using the MELSEC-Q QD62(E/D) or MELSEC-L LD62(D) high-speed counter module.

1.2 Function of the FB Library

Item	Description
M+D62_SetRingCounter	Sets the ring counter upper limit and lower limit for a specified channel.
M+D62_CountEnable	Performs count operation (count start/stop) for a specified channel or all channels.
M+D62_PresentValueStorage	Monitors the present value for a specified channel.
M+D62_AllPresentValueStorage	Monitors the present value for all channels.
M+D62_SetCoincidenceOutput	Sets a coincidence output point and resets counter value coincidence for a specified channel.
M+D62_CoincidenceOutputEnable	Enables external coincidence output for a specified channel or all channels.
M+D62_PresetOperation	Performs a preset of present value.
M+D62_CountDisableOperation	Executes disable count function for a specified channel or all channels.
M+D62_LatchCounterOperation	Executes latch counter function.
M+D62_SamplingOperation	Executes sampling counter function.
M+D62_PeriodicPulseCounter	Executes periodic pulse counter function.
M+D62_OverflowDetection	Detects overflow.

1.3 System Configuration Example

I/O signals are allocated as shown in the figure below. Q series and L series have the same allocation.



(1) Q series system configuration Example

Module	Description
Q series programmable controller	Use base unit, power supply module, and Q series programming controller CPU module.
QD62(E/D)	MELSEC-Q high-speed counter module.

(2) L series system configuration Example

Module	Description
L series programmable controller	Use power supply module, and L series programming controller CPU module.
LD62(D)	MELSEC-L high-speed counter module.

1.4 Relevant manual

MELSEC-Q High-Speed Counter Module User's Manual

MELSEC-L High-Speed Counter Module User's Manual

1.5 Note

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

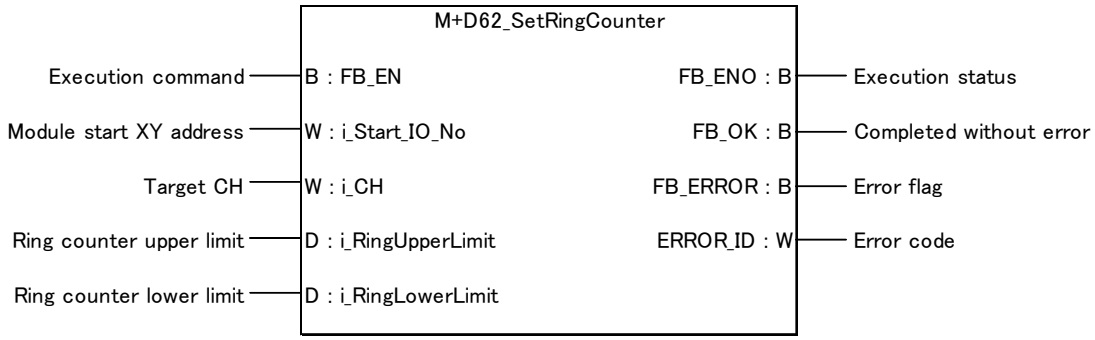
2. Details of the FB Library

2.1 M+D62_SetRingCounter (Ring counter setting)

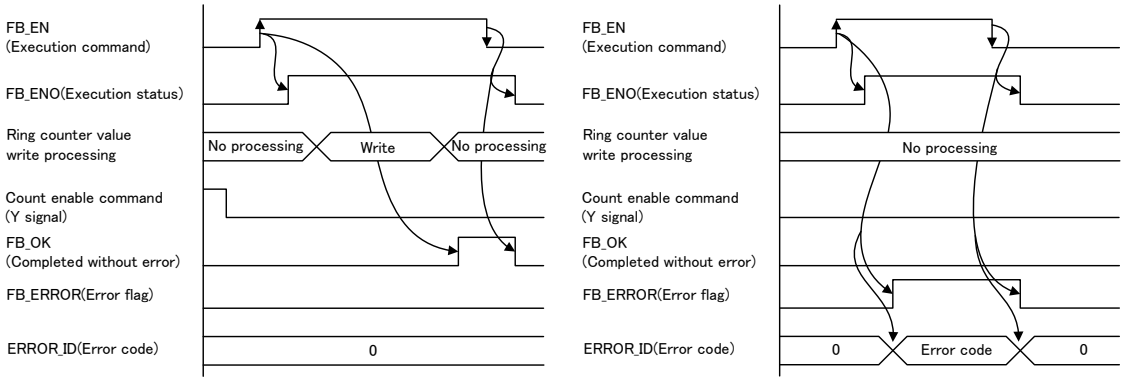
FB Name

M+D62_SetRingCounter

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Sets the ring counter upper limit and lower limit for a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table>
</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 128* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) When FB_EN (Execution command) is turned ON, the set ring counter lower and upper value are stored in the buffer memory. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) When count enable command (Y signal) is ON, the FB does not complete its execution until turned OFF. (Please turn OFF count enable command (Y signal).) 8) If the parameter is set using GX Configurator-CT or the configuration function of GX Works 2, using this FB is unnecessary. 9) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.
Ring counter upper limit	i_RingUpperLimit	D	-2,147,483,648~ 2,147,483,647	Specify the ring counter upper limit.
Ring counter lower limit	i_RingLowerLimit	D	-2,147,483,648~ 2,147,483,647	Specify the ring counter lower limit.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the setting of ring counter upper and lower value is completed.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_SetRingCounter function block.

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

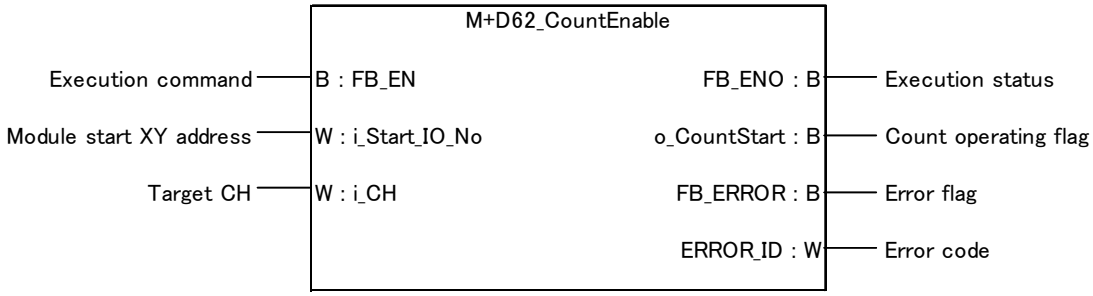
Before using any Mitsubishi products, please read all the relevant manuals.

2.2 M+D62_CountEnable (Count enable operation)

FB Name

M+D62_CountEnable

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Performs count operation (count start/stop) for a specified channel or all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
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<tr><td>Series</td><td>Model</td></tr>
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<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
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<tr><td>CPU module</td><td>
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<tr><td>Universal model</td></tr>
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</table>
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<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
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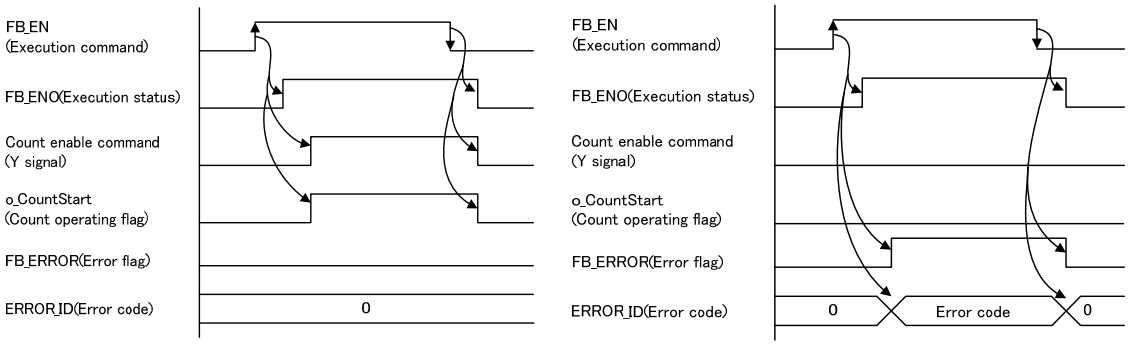
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 137* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON/OFF FB_EN (Execution command), the count operation is started or stopped. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2 or 15.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2 or 15	1~2: Specify the CH number. 15: Specify all CHs.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Count operating flag	o_CountStart	B	OFF	ON: Count enable command (X signal) is ON. OFF: Count enable command (X signal) is OFF.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_CountEnable function block.

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

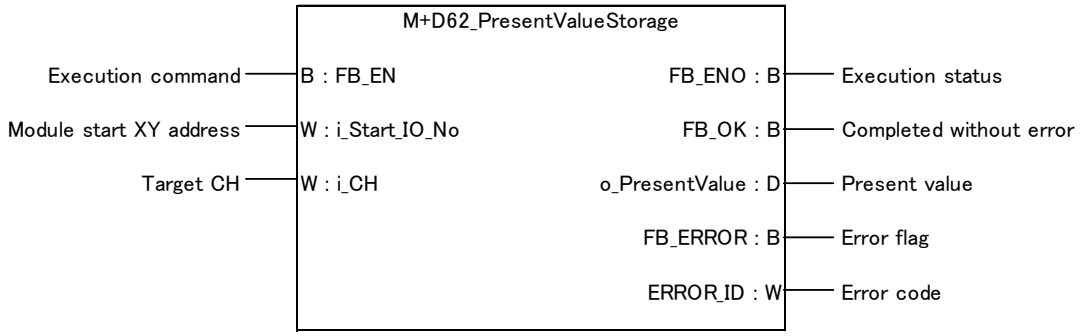
Before using any Mitsubishi products, please read all the relevant manuals.

2.3 M+D62_PresentValueStorage (Present value monitoring)

FB Name

M+D62_PresentValueStorage

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Monitors the present value for a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
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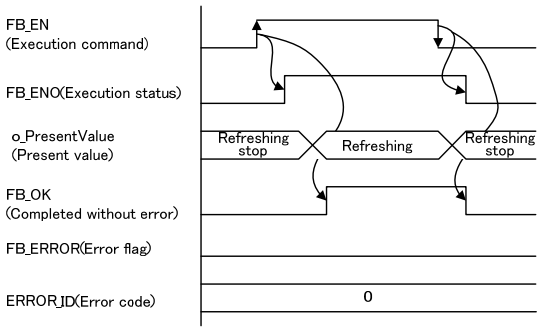
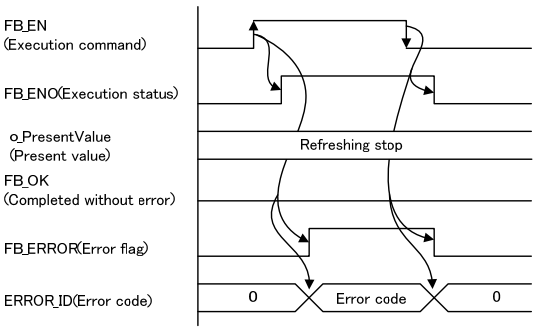
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table>
</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 97* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) When FB_EN (Execution command) is turned ON, the present value is read from the buffer memory. 2) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9, Z8, and Z7. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Real-time execution
Application example	Refer to Appendix 1 - FB Library Application Examples
Timing chart	[When operation completes without error]  [When an error occurs] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the present value is being read.
Present value	o_PresentValue	D	0	Store the present value.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_PresentValueStorage function block.

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

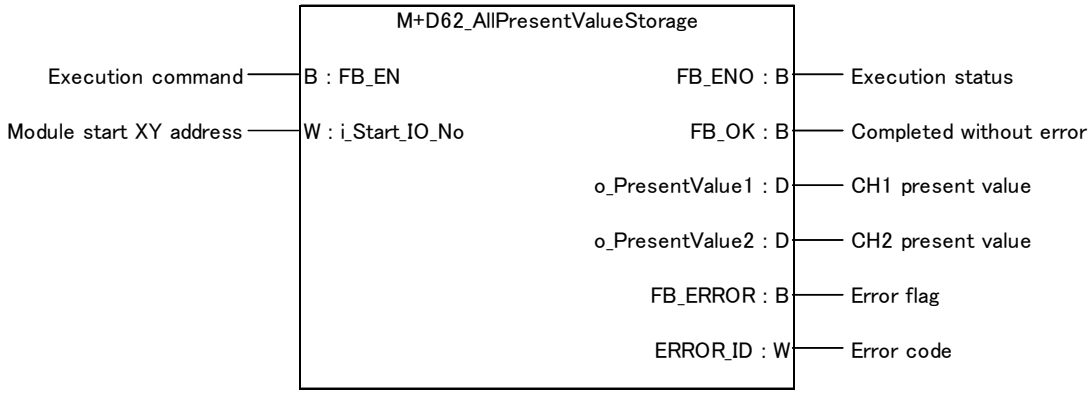
Before using any Mitsubishi products, please read all the relevant manuals.

2.4 M+D62_AllPresentValueStorage (Present value monitoring (All CHs))

FB Name

M+D62_AllPresentValueStorage

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Monitors the present value for all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
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<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
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</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
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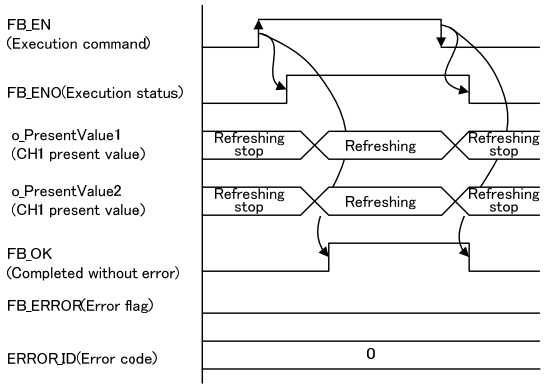
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
</table>

Item	Description
Programming language	Ladder
Number of steps (maximum value)	For high performance model CPU: 64* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) When FB_EN (Execution command) is turned ON, the present value is read from the buffer memory.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Real-time execution
Application example	Refer to Appendix 1 - FB Library Application Examples
Timing chart	[When operation completes without error] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
None	None	None

Label

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the present value is being read.
CH1 present value	o_PresentValue1	D	0	Store the present value of CH1.
CH2 present value	o_PresentValue2	D	0	Store the present value of CH2.
Error flag	FB_ERROR	B	OFF	Always OFF
Error code	ERROR_ID	W	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_AllPresentValueStorage function block.

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

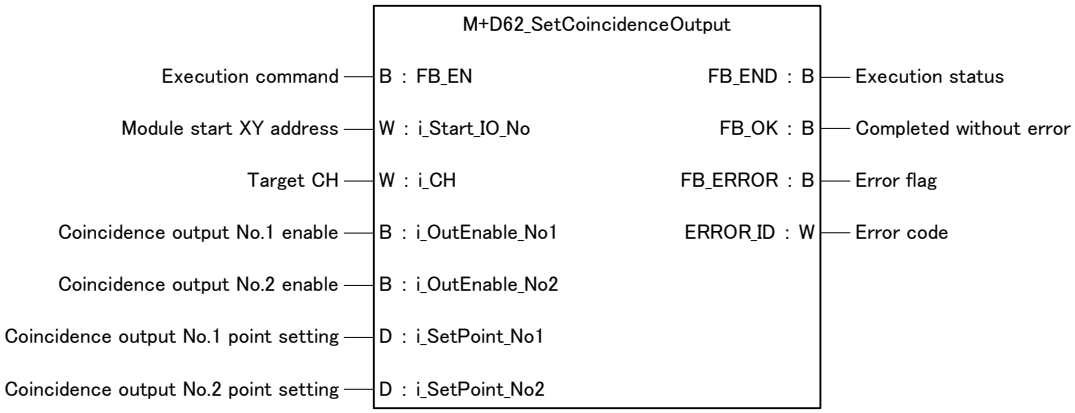
Before using any Mitsubishi products, please read all the relevant manuals.

2.5 M+D62_SetCoincidenceOutput (Coincidence output function setting)

FB Name

M+D62_SetCoincidenceOutput

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Sets a coincidence output point and resets counter value coincidence for a specified channel.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
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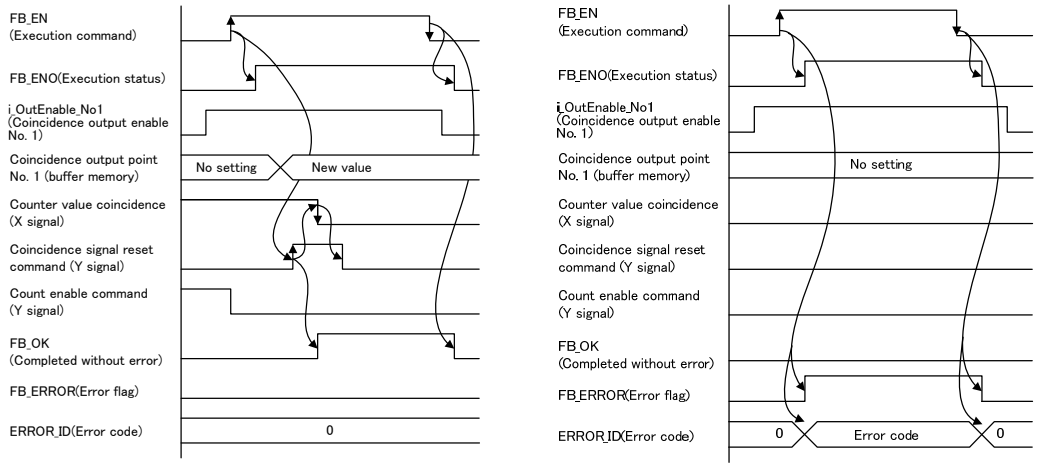
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><th>Series</th><th>Language</th><th>Software version</th></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
</table>

Item	Description
Programming language	Ladder
Number of steps (maximum value)	For high performance model CPU: 199* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) After turning ON i_OutEnable_No1 (Coincidence output No.1 enable), turn ON FB_EN (Execution command) to enable i_SetPoint_No1 (Coincidence output No.1 point setting). When i_OutEnable_No1 (Coincidence output No.1 enable) is not turned ON, i_SetPoint_No1 (Coincidence output No.1 point setting) is not written in the buffer memory and coincidence signal No. 1 reset command (Y signal) is not turned ON either. (The same operation is applied to No.2) Turn ON both i_OutEnable_No1 (Coincidence output No.1 enable) and i_OutEnable_No2 (Coincidence output No.2 enable) to use both No.1 and No.2. 2) By turning ON FB_EN (Execution command), i_SetPoint_No1 (Coincidence output No.1 point setting) is written in the buffer memory and coincidence signal No. 1 reset command (Y signal) is turned ON. When counter value coincidence (X signal) is turned OFF, coincidence signal No. 1 reset command (Y signal) is turned OFF. (The same operation is applied to No.2) 3) Counter value coincidence (X signal) and external coincidence output are turned ON again even if counter value coincidence (X signal) and external coincidence output are reset with this FB while the present value is the coincidence output point. 4) FB operation is one-shot only, triggered by the FB_EN signal. 5) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type

Item	Description
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9, Z8, Z7, Z6, and Z5. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] [When an error occurs] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.
Coincidence output No.1 enable	i_OutEnable_No1	B	ON, OFF	ON: Coincidence output No.1 is used. OFF: Coincidence output No.1 is not used. When ON, the function is enabled by turning on FB_EN (Execution command).

Name	Variable name	Data type	Setting range	Description
Coincidence output No.2 enable	i_OutEnable_No2	B	ON, OFF	ON: Coincidence output No.2 is used. OFF: Coincidence output No.2 is not used. When ON, the function is enabled by turning ON FB_EN (Execution command).
Coincidence output No.1 point setting	i_SetPoint_No1	D	-2,147,483,648~ 2,147,483,647	Specify the coincidence output No.1 point setting value.
Coincidence output No.2 point setting	i_SetPoint_No2	D	-2,147,483,648~ 2,147,483,647	Specify the coincidence output No.2 point setting value.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that counter value coincidence (X signal) has been reset.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_SetCoincidenceOutput function block.

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

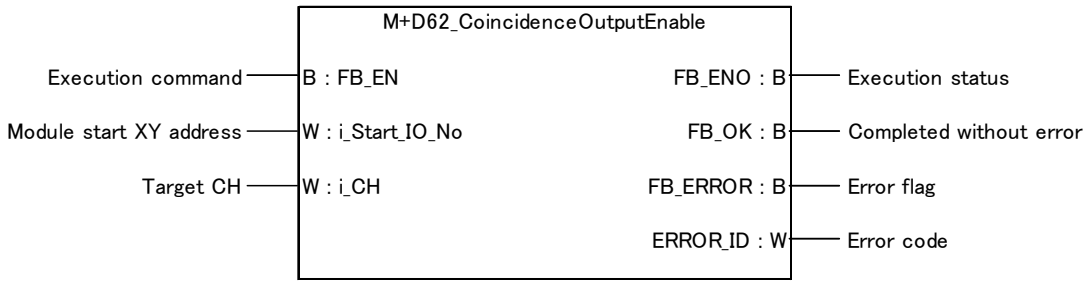
Before using any Mitsubishi products, please read all the relevant manuals.

2.6 M+D62_CoincidenceOutputEnable (Coincidence output enable setting)

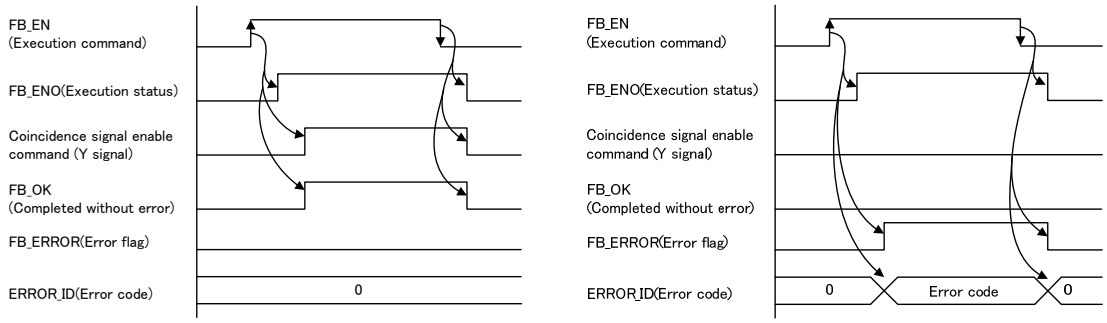
FB Name

M+D62_CoincidenceOutputEnable

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Enables external coincidence output for a specified channel or all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table></td></tr>
<tr><td>CPU module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)</td></tr>
<tr><td>Engineering software</td><td>GX Works2<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table></td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 139* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON/OFF FB_EN (Execution command), the coincidence output is enabled/disabled. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2 or 15.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2 or 15	1~2: Specify the CH number. 15: Specify all CHs.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that coincidence signal enable command (Y signal) is ON.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_CoincidenceOutputEnable function block.

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

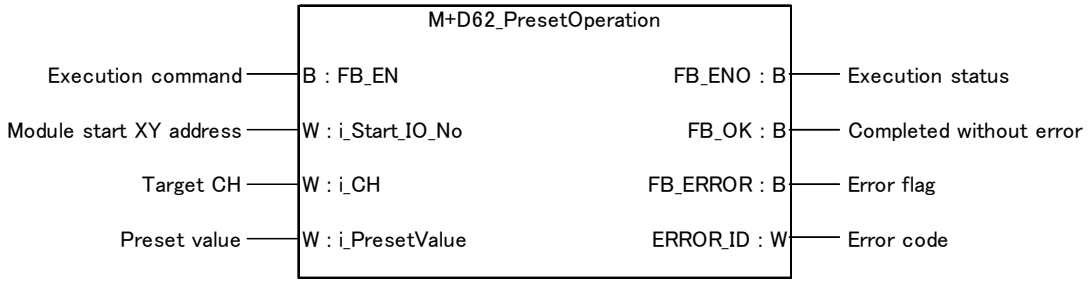
Before using any Mitsubishi products, please read all the relevant manuals.

2.7 M+D62_PresetOperation (Preset function operation)

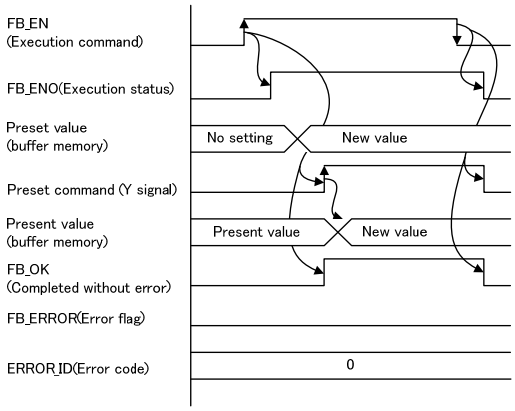
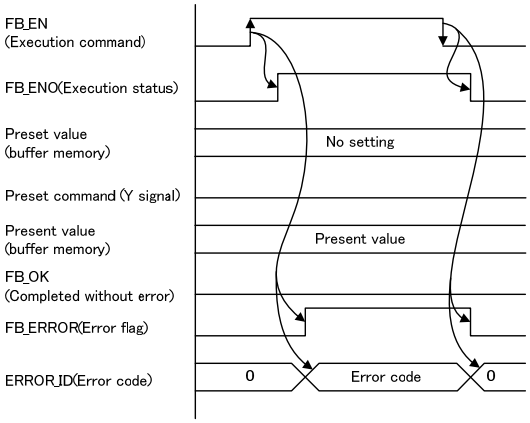
FB Name

M+D62_PresetOperation

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Performs a preset of present value.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table>
</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><th>Series</th><th>Language</th><th>Software version</th></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 139* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON FB_EN (Execution command), the present value is rewritten to i_PresetValue (Preset value). 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 8) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error codes

■ Error code list

Error code	Description	Action
10(Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.
Preset value	i_PresetValue	D	-2,147,483,648~ 2,147,483,647	Specify the preset value.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that preset command (Y signal) is ON.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_PresetOperation function block.

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

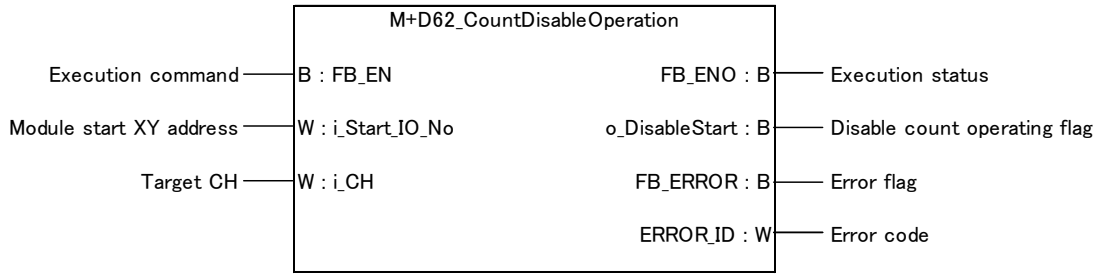
Before using any Mitsubishi products, please read all the relevant manuals.

2.8 M+D62_CountDisableOperation (Disable count function operation)

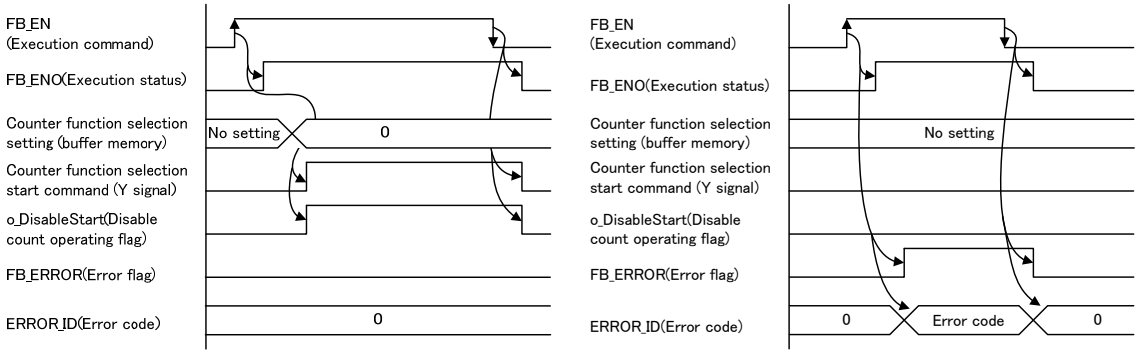
FB Name

M+D62_CountDisableOperation

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Executes disable count function for a specified channel or all channels.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table>
</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><th>Series</th><th>Language</th><th>Software version</th></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 174* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON FB_EN (Execution command), the disable count function is executed. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) Turn OFF the counter function selection start command (Y signal) signal when using the FB. When the signal is ON, the disable count function of the target channel will not be executed. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 9) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
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] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error Codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2 or 15.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2 or 15	1~2: Specify the CH number. 15: Specify all CHs.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Disable count operating flag	o_DisableStart	B	OFF	When ON, it indicates that the execution command for disable count is ON.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_CountDisableOperation function block.

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

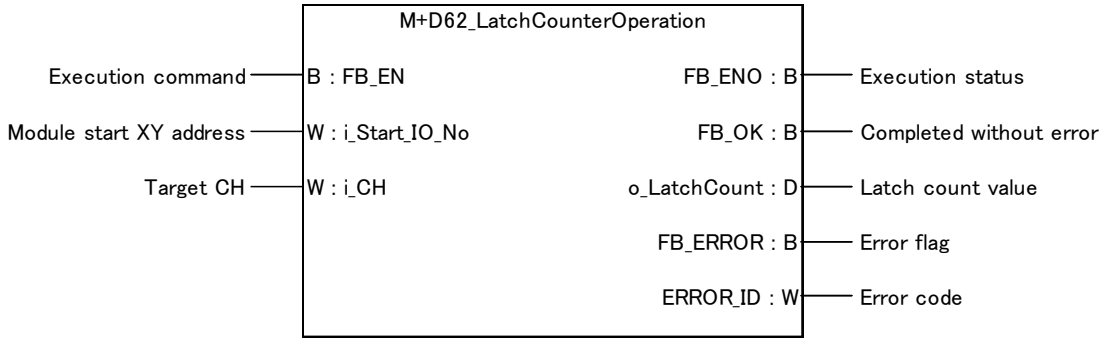
Before using any Mitsubishi products, please read all the relevant manuals.

2.9 M+D62_LatchCounterOperation (Latch counter function operation)

FB Name

M+D62_LatchCounterOperation

Function Overview

<table>
<tr><th>Item</th><th colspan="2">Description</th></tr>
<tr><td>Function overview</td><td colspan="2">Executes latch counter function.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
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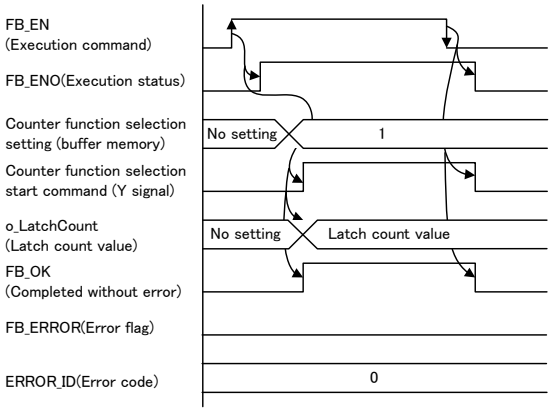
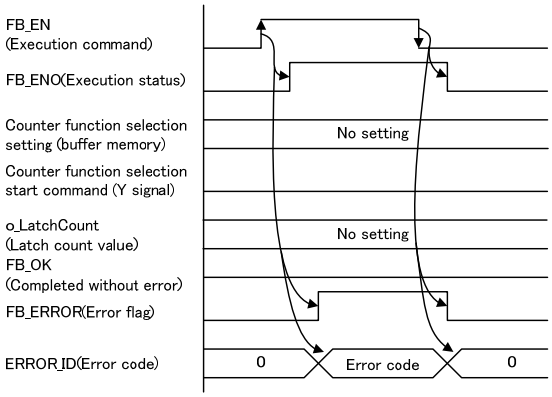
<tr><td>CPU module</td><td>
<table>
<tr><th>Series</th><th>Model</th></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><th>Series</th><th>Language</th><th>Software version</th></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 144* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON FB_EN (Execution command), the latch counter function is executed. 2) FB operation is one-shot only, triggered by the FB_EN signal. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) Turn OFF the counter function selection start command (Y signal) signal when using the FB. When the signal is ON, the latch counter function of the target channel will not be executed. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 9) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to Appendix 1 - FB Library Application Examples

Item	Description
Timing chart	[When operation completes without error] [When an error occurs]  
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error Codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the execution command for latch counter is ON.
Latch count value	o_LatchCount	D	0	Store the latch count value.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_LatchCounterOperation function block.

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

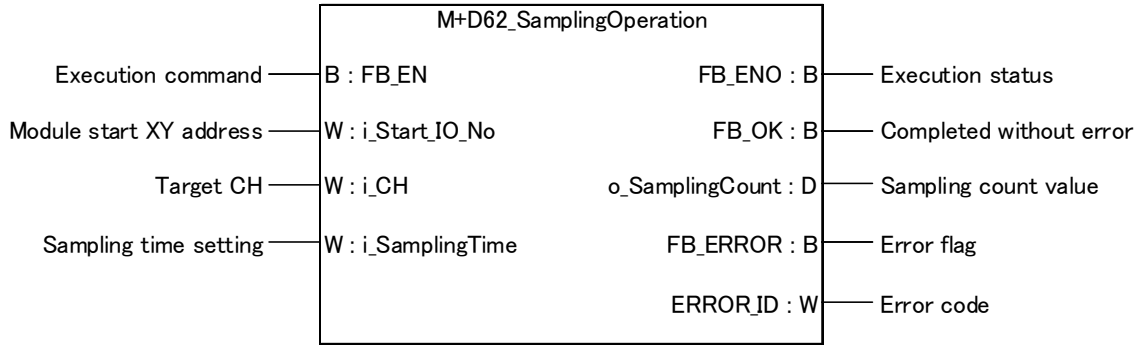
Before using any Mitsubishi products, please read all the relevant manuals.

2.10 M+D62_SamplingOperation (Sampling counter function operation)

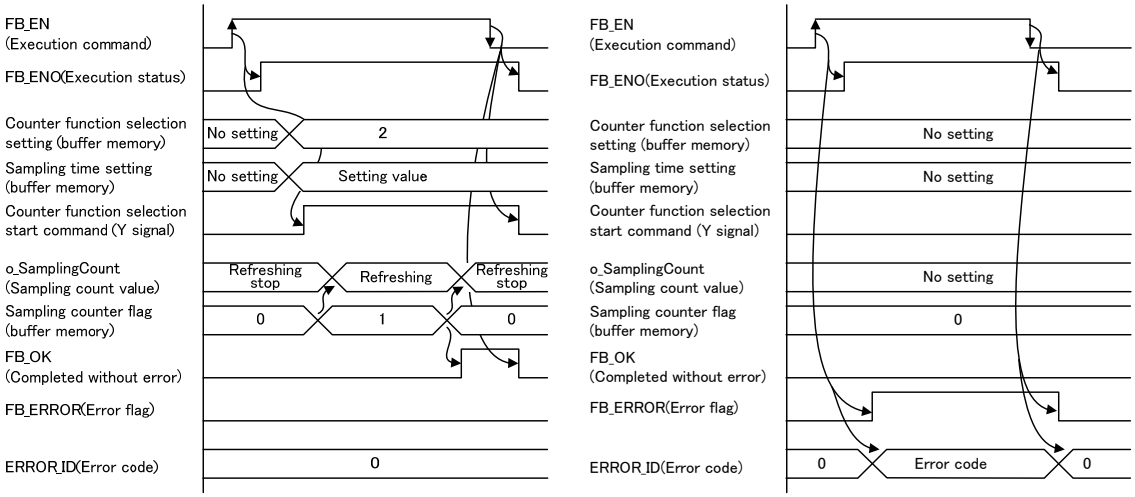
FB Name

M+D62_SamplingOperation

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Executes sampling counter function.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table></td></tr>
<tr><td>CPU module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)</td></tr>
<tr><td>Engineering software</td><td>GX Works2<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table></td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 176* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON FB_EN (Execution command), the sampling count starts with the preset i_SamplingTime (Sampling time setting (unit: 10ms)), and the sampling count value is read from the buffer memory. 2) When the sampling time period elapses, FB_OK (Completed without error) is turned ON, and the processing is completed. 3) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) Turn OFF the counter function selection start command (Y signal) signal when using the FB. When the signal is ON, the sampling counter function of the target channel will not be executed. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 9) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to Appendix 1 - FB Library Application Examples

Item	Description
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error Codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.
Sampling time setting (unit: 10ms)	i_SamplingTime	W	1~65,535*1	Set the sampling time. (unit: 10ms) *1: Setting method •1~32,767: Set in decimal. •32,768~65,535: Set after converted into hexadecimal.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the sampling time period elapses, and sampling counter function is ended.
Sampling count value	o_SamplingCount	D	0	Store the sampling count value.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_SamplingOperation function block.

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

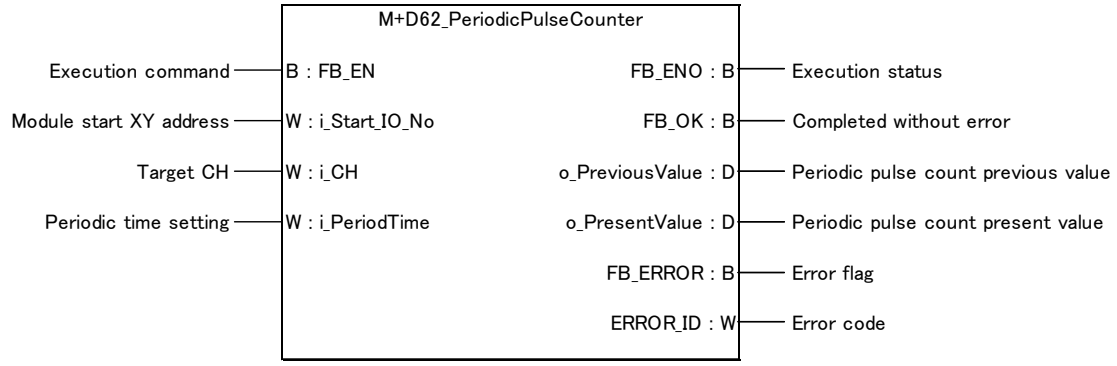
Before using any Mitsubishi products, please read all the relevant manuals.

2.11 M+D62_PeriodicPulseCounter (Periodic pulse counter function operation)

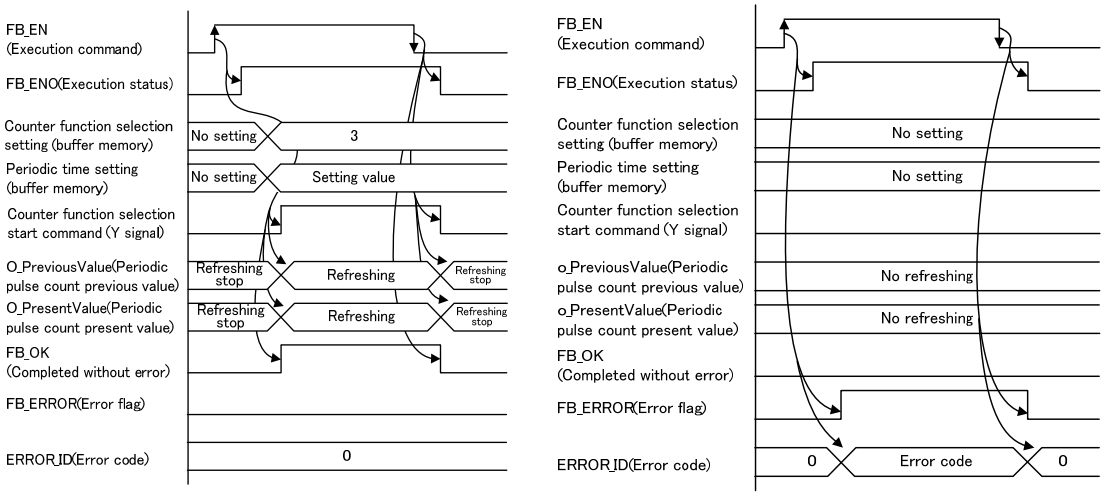
FB Name

M+D62_PeriodicPulseCounter

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Executes periodic pulse counter function.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table>
</td></tr>
<tr><td>CPU module</td><td>
<table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)
</td></tr>
<tr><td>Engineering software</td><td>GX Works2
<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table>
</td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 169* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) By turning ON FB_EN (Execution command), the periodic pulse count starts with the preset i_PeriodTime (Periodic time setting (unit: 10ms)), and the periodic pulse count previous value and periodic pulse count present value are read from the buffer memory. 2) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) Turn OFF the counter function selection start command (Y signal) signal when using the FB. When the signal is turned ON, the periodic pulse counter function of the target channel will not be executed. 5) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 6) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers in an interrupt program. 7) Every input must be provided with a value for proper FB operation. 8) When this FB is used in two or more places, a duplicated coil warning will occur during compile operation due to the Y signal being operated by index modification. However this is not a problem and the FB will operate without error. 9) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to Appendix 1 - FB Library Application Examples

Item	Description
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error Codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.
Periodic time setting (unit: 10 ms)	i_PeriodTime	W	1~65,535*1	Set periodic time setting. (unit: 10ms) *1: Setting method •1~32,767: Set in decimal. •32,768~65,535: Set after converted into hexadecimal.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Completed without error	FB_OK	B	OFF	When ON, it indicates that the periodic pulse counter function is started.
Periodic pulse count previous value	o_PreviousValue	D	0	Store the periodic pulse count previous value.
Periodic pulse count present value	o_PresentValue	D	0	Store the periodic pulse count present value.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_PeriodicPulseCounter function block.

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

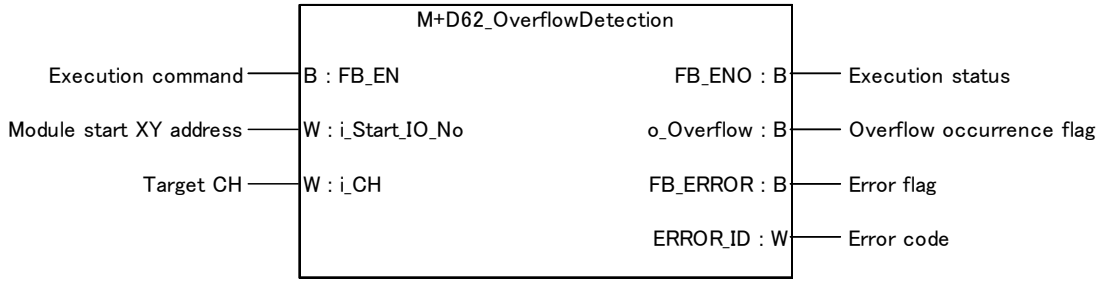
Before using any Mitsubishi products, please read all the relevant manuals.

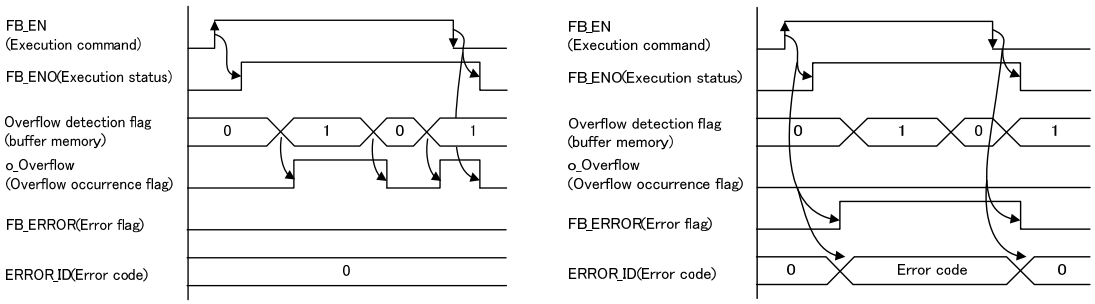
2.12 M+D62_OverflowDetection (Overflow detection)

FB Name

M+D62_OverflowDetection

Function Overview

<table>
<tr><td>Item</td><td colspan="2">Description</td></tr>
<tr><td>Function overview</td><td colspan="2">Detects overflow.</td></tr>
<tr><td>Symbol</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="3">Applicable hardware and software</td><td>High-Speed Counter Module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td>MELSEC-Q Series</td><td>QD62(E/D)</td></tr>
<tr><td>MELSEC-L Series</td><td>LD62(D)</td></tr>
</table></td></tr>
<tr><td>CPU module</td><td><table>
<tr><td>Series</td><td>Model</td></tr>
<tr><td rowspan="3">MELSEC-Q Series</td><td>Basic model</td></tr>
<tr><td>High performance model *</td></tr>
<tr><td>Universal model</td></tr>
<tr><td>MELSEC-L Series</td><td>LCPU</td></tr>
</table>
* Not applicable for QCPU (A mode)</td></tr>
<tr><td>Engineering software</td><td>GX Works2<table>
<tr><td>Series</td><td>Language</td><td>Software version</td></tr>
<tr><td rowspan="2">MELSEC-Q/L Series</td><td>English</td><td>Ver 1.31H or later</td></tr>
<tr><td>Chinese</td><td>Ver 1.49B or later</td></tr>
</table></td></tr>
<tr><td>Programming language</td><td colspan="2">Ladder</td></tr>
</table>

Item	Description
Number of steps (maximum value)	For high performance model CPU: 100* *The value is the number of steps in the label program, and is therefore stated as a reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).
Function description	1) While FB_EN (Execution command) is ON, o_Overflow (Overflow occurrence flag) turns ON if overflow occurs. 2) When the target CH setting value is out of range, the FB_ERROR output turns ON, processing is interrupted, and the error code is stored in ERROR_ID (Error code). Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and precautions	1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation. 2) The FB cannot be used in an interrupt program. 3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF. 4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target CH. 5) This FB uses index registers Z9, Z8, and Z7. Please do not use these index registers in an interrupt program. 6) Every input must be provided with a value for proper FB operation. 7) The pulse input mode, counting speed setting, and counter format must be properly configured to match systems and devices connected to the QD62(E/D) or LD62(D).
FB operation type	Real-time execution
Application example	Refer to Appendix 1 - FB Library Application Examples
Timing chart	[When operation completes without error] [When an error occurs] 
Relevant manuals	•MELSEC-Q High-Speed Counter Module User's Manual •MELSEC-L High-Speed Counter Module User's Manual

Error Codes

■ Error code list

Error code	Description	Action
10 (Decimal)	The specified target channel is not valid. The target channel is not within the range of 1 to 2.	Please try again after confirming the setting.

Labels

■ Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	B	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the D62 module is mounted. (For example, enter H10 for X10.)
Target CH	i_CH	W	1~2	Specify the CH number.

■ Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	B	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Overflow occurrence flag	o_Overflow	B	OFF	ON: Overflow being occurred. OFF: No overflow detected.
Error flag	FB_ERROR	B	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2010/08/06	First edition

Note

This chapter includes information related to the M+D62_OverflowDetection function block.

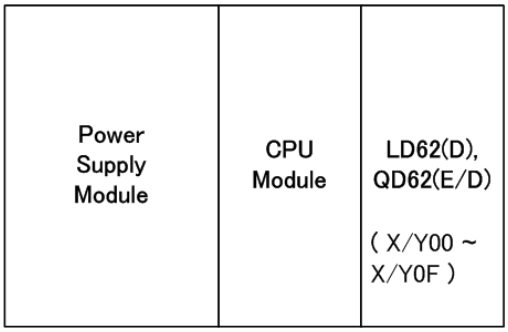
It does not include information on restrictions of use such as combination with high-speed counter modules or programmable controller CPUs.

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

Appendix 1 - FB Library Application Examples

D62 FB Application examples

System Configuration Example



Reminder

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

List of devices

External input (commands)

Device	FB function name	Application(ON details)
M0	Ring counter setting	Ring counter setting request
M10	Count enable operation	Count enable command
M20	Present value monitoring	Present value read request
M30	Present value monitoring (All CHs)	Present value read request
M40	Coincidence output function setting	Coincidence output set command
M41		Coincidence output No.1 enable
M42		Coincidence output No.2 enable
M50	Coincidence output enable setting	Coincidence enable command
M60	Preset function operation	Preset function execution cmd
M70	Disable count function operation	Disable count command
M80	Latch counter function operation	Latch counter command
M90	Sampling counter function operation	Sampling count command
M100	Periodic pulse counter function operation	Periodic pulse count command
M110	Overflow detection	Overflow detection command

Data register

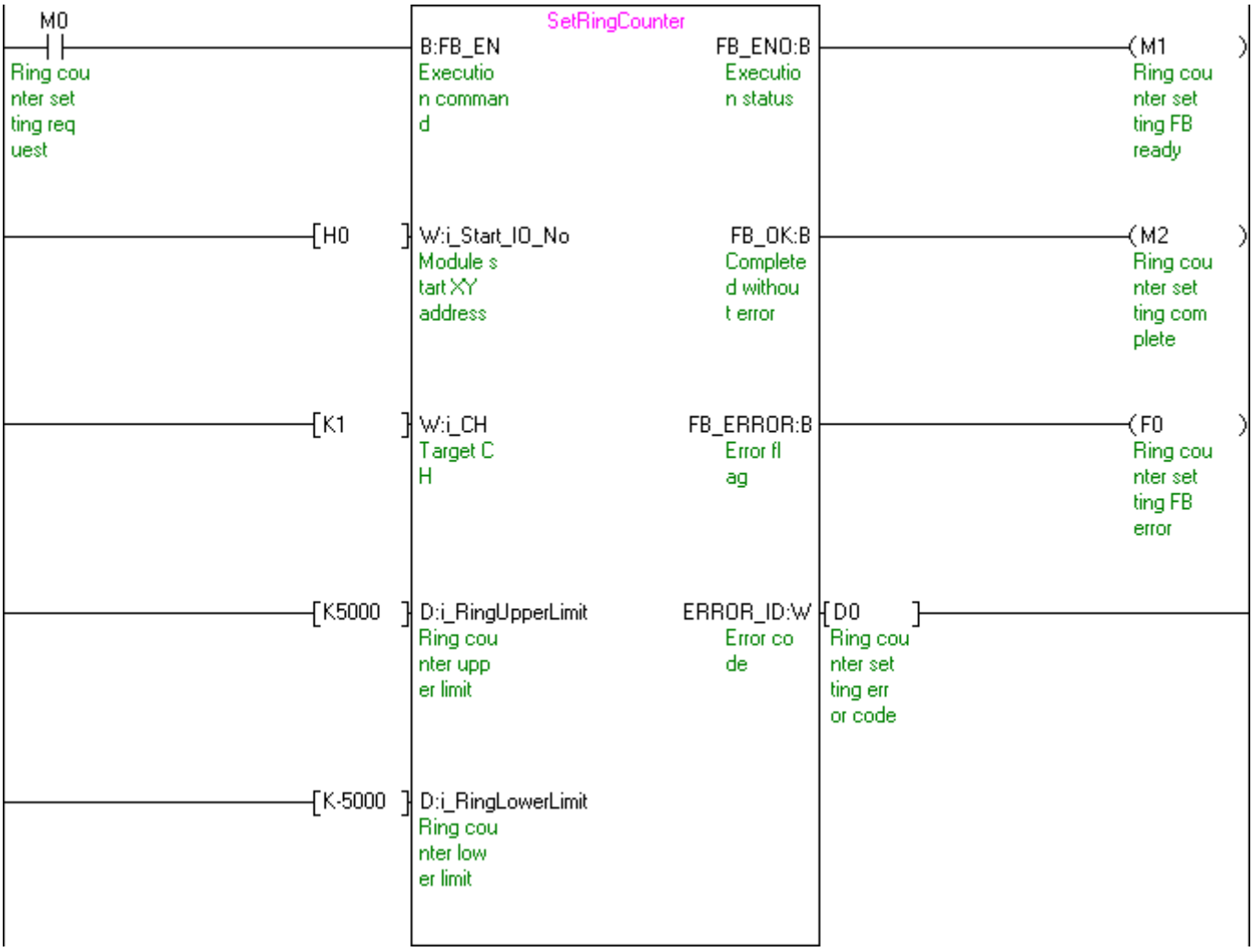
Device	FB function name	Application(ON details)
D0	Ring counter setting	Ring counter setting error code
D10	Count enable operation	Count enable FB error code
D20	Present value monitoring	Present value
D21		
D22		monitoring error code
D30	Present value monitoring (All CHs)	CH1 present value
D31		
D32		CH2 present value
D33		
D40	Coincidence output function setting	setting FB error code
D50	Coincidence output enable setting	Coincidence enable set err code
D60	Preset function operation	Preset fcn execution error code
D70	Disable count function operation	Disable count execution err code
D80	Latch counter function operation	Latch count value
D81		
D82		Latch counter execution err code
D90	Sampling counter function operation	Sampling count value
D91		
D92		Sampling execution error code
D100	Periodic pulse counter function operation	Periodic pls cnt previous value
D101		
D102		Periodic pls cnt present value
D103		
D104		Periodic pls counter error code
D110	Overflow detection	Overflow detection FB error code

External output (checks)

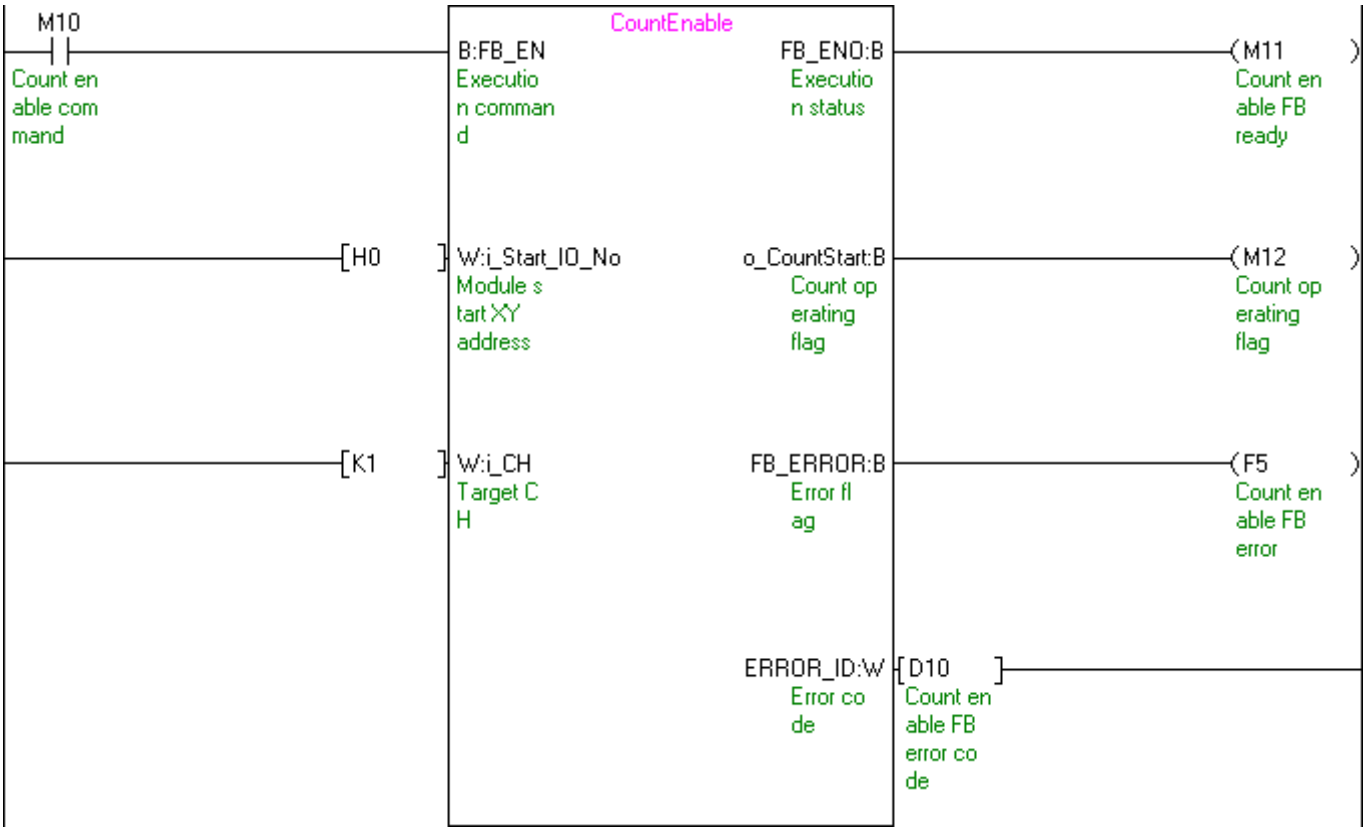
Device	FB function name	Application(ON details)
M1	Ring counter setting	Ring counter setting FB ready
M2		Ring counter setting complete
F0		Ring counter setting FB error
M11	Count enable operation	Count enable FB ready
M12		Count operating flag
F5		Count enable FB error
M21	Present value monitoring	Present value monitoring ready
M22		Present value read OP complete
F10		Present value monitoring error
M31	Present value monitoring (All CHs)	Present value monitoring ready
M32		Present value read OP complete
M43	Coincidence output function setting	Coincidence output fcn set ready
M44		Coincidence output fcn set comp
F15		Coincidence output fcn set error
M51	Coincidence output enable setting	Coincidence enable set ready
M52		Coincidence enable set complete
F20		Coincidence enable set error
M61	Preset function operation	Preset function execution ready
M62		Preset function execution comp
F25		Preset function execution error
M71	Disable count function operation	Disable count execution ready
M72		Disable count operating flag
F30		Disable count execution error
M81	Latch counter function opera	Latch counter execution ready
M82		Latch counter execution complete
F35		Latch counter execution error
M91	Sampling counter function operation	Sampling counter execution ready
M92		Sampling counter execution comp
F40		Sampling counter execution error
M101	Periodic pulse counter function operation	Periodic pls counter ready
M102		Periodic pls counter complete
F45		Periodic pls counter error
M111	Overflow detection	Overflow detection FB ready
M112		Overflow being detected
F50		Overflow detection FB error

Program

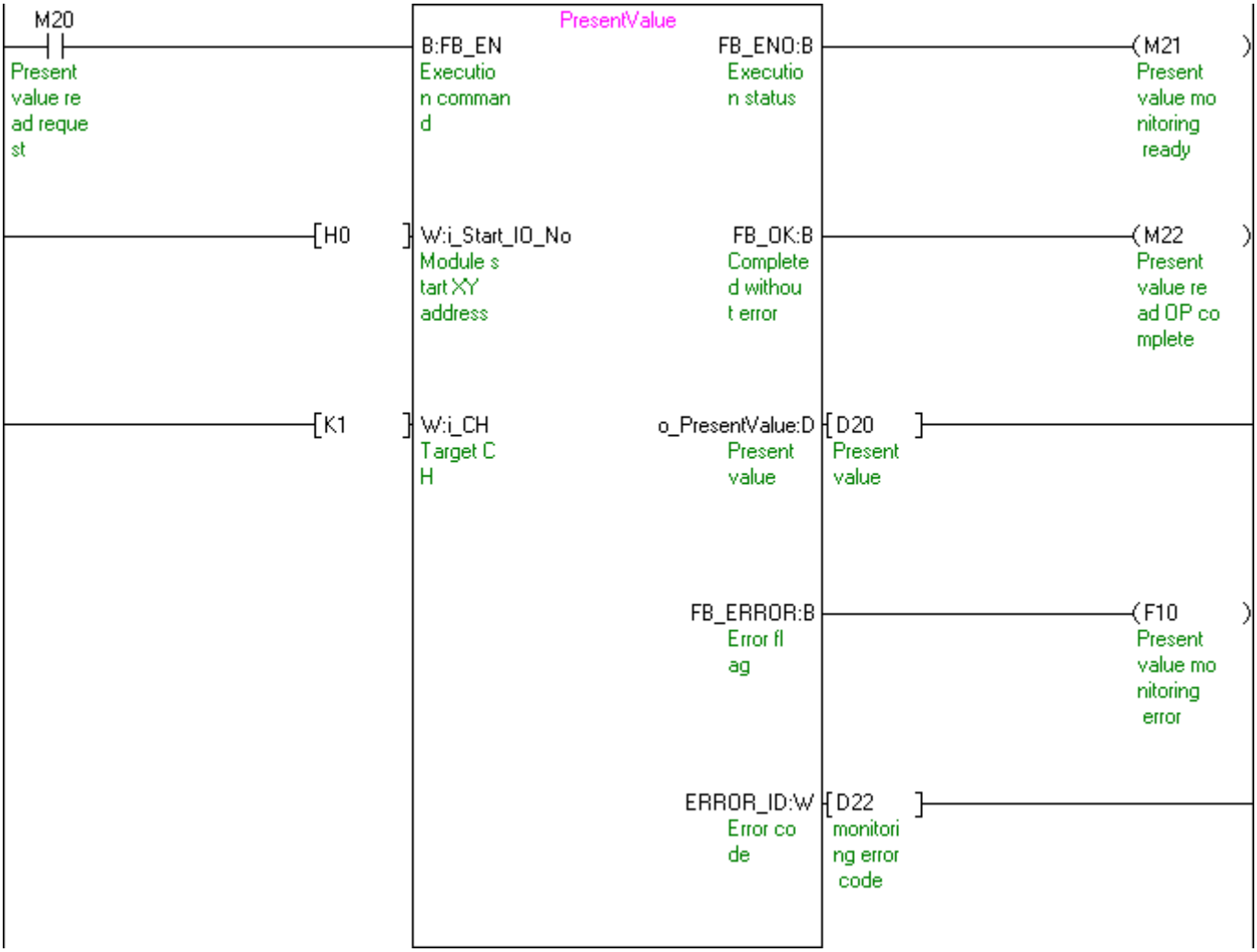
M+D62_SetRingCounter (Ring counter setting)



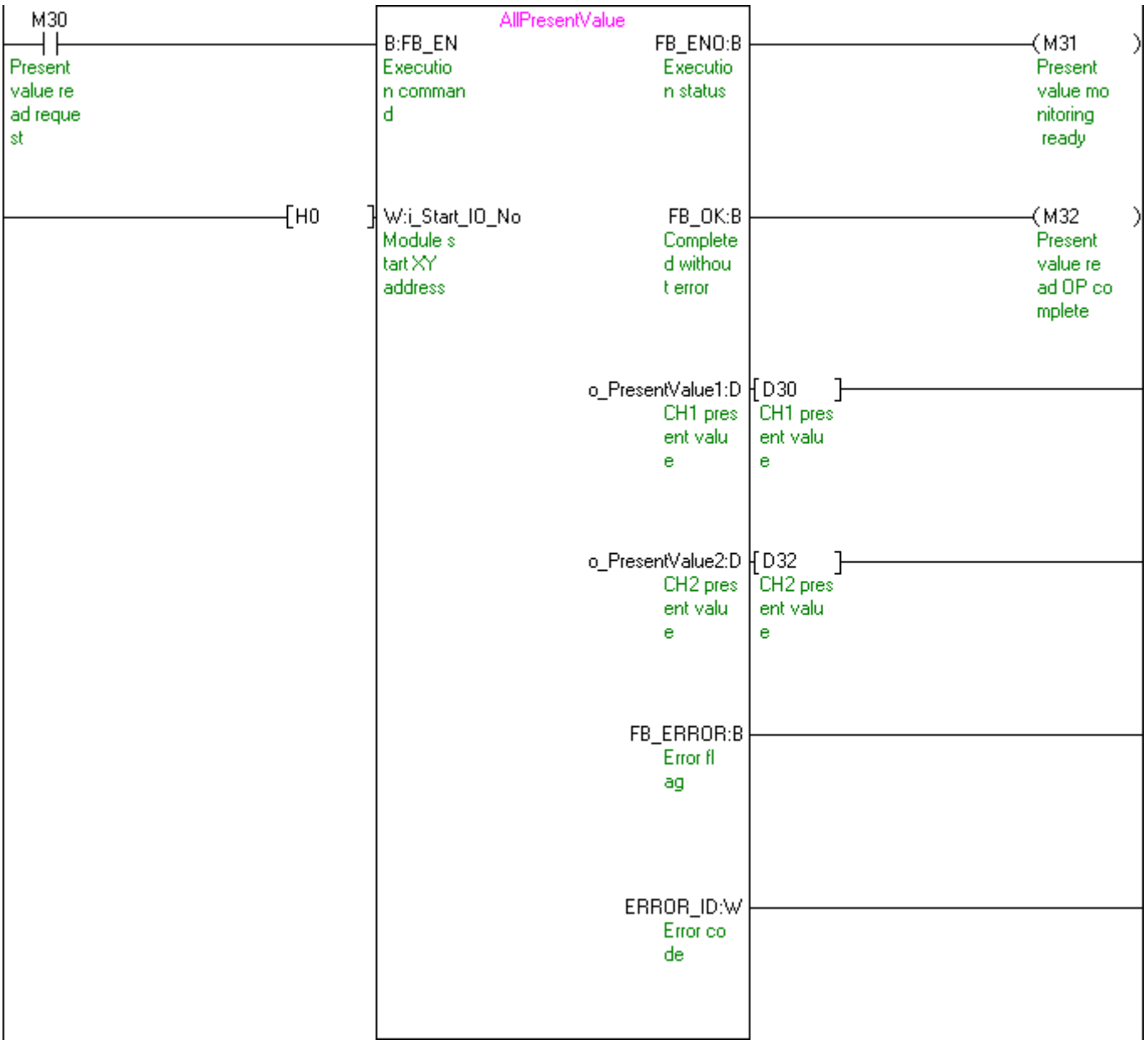
M+D62_CountEnable (Count enable operation)



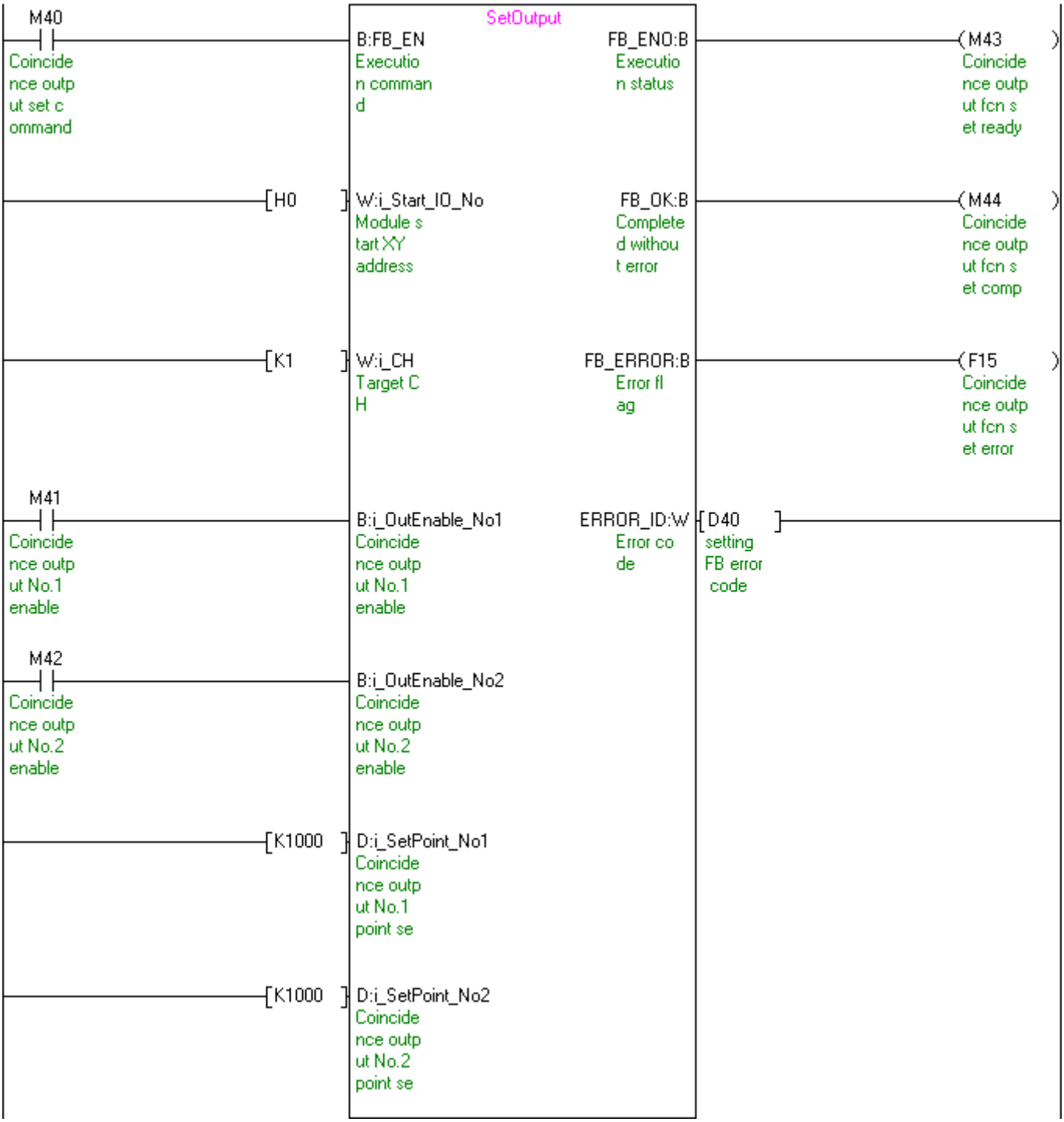
M+D62_PresentValueStorage (Present value monitoring)



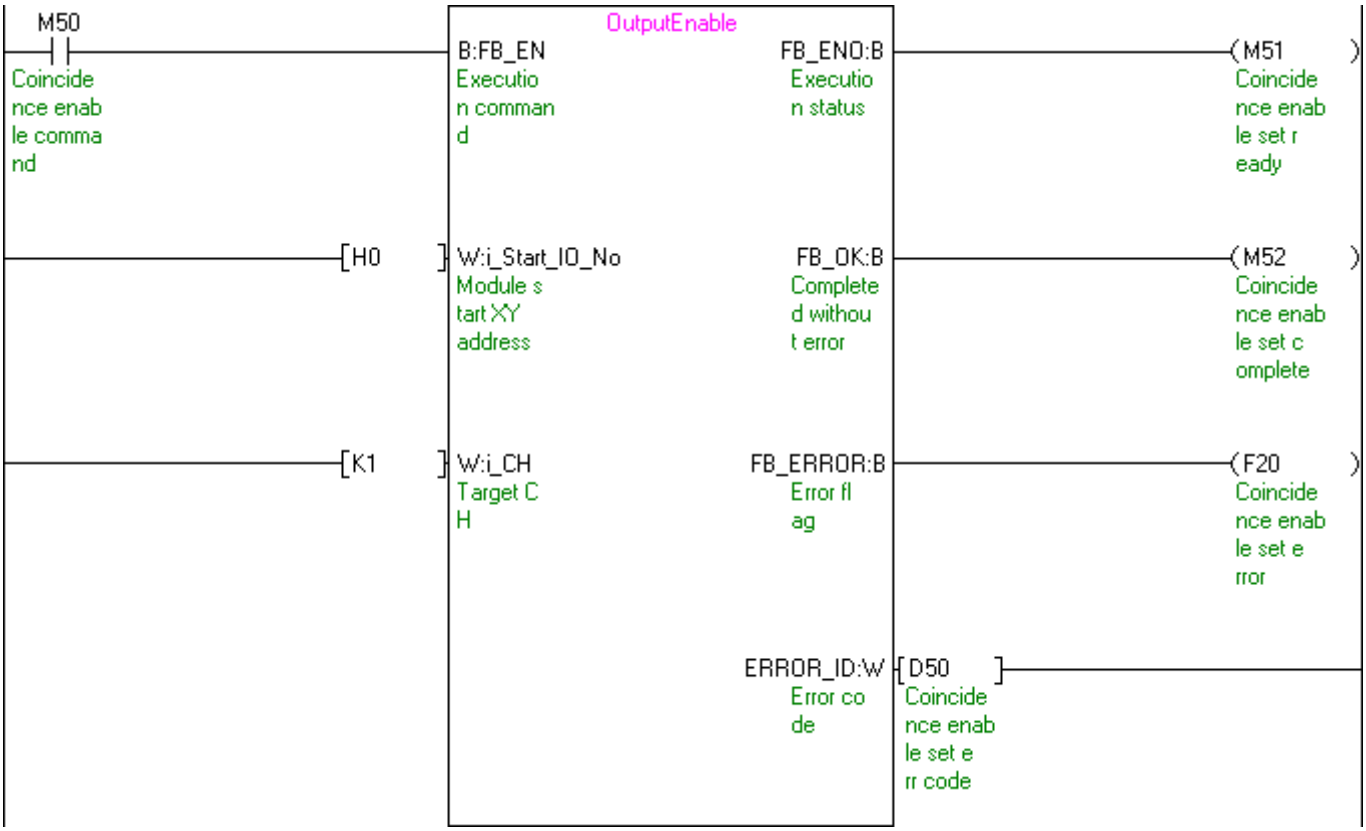
M+D62_AllPresentValueStorage (Present value monitoring (All CHs))



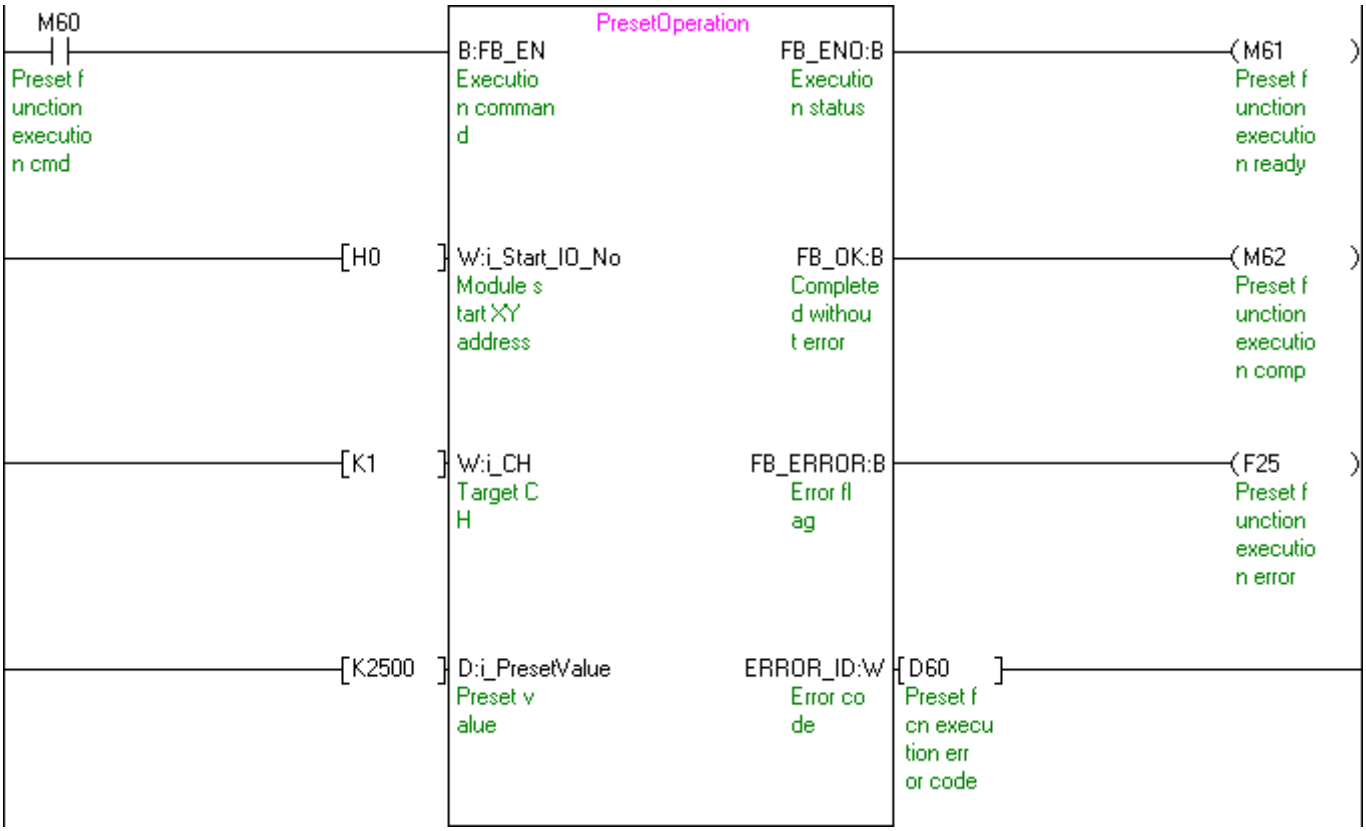
M+D62_SetCoincidenceOutput (Coincidence output function setting)



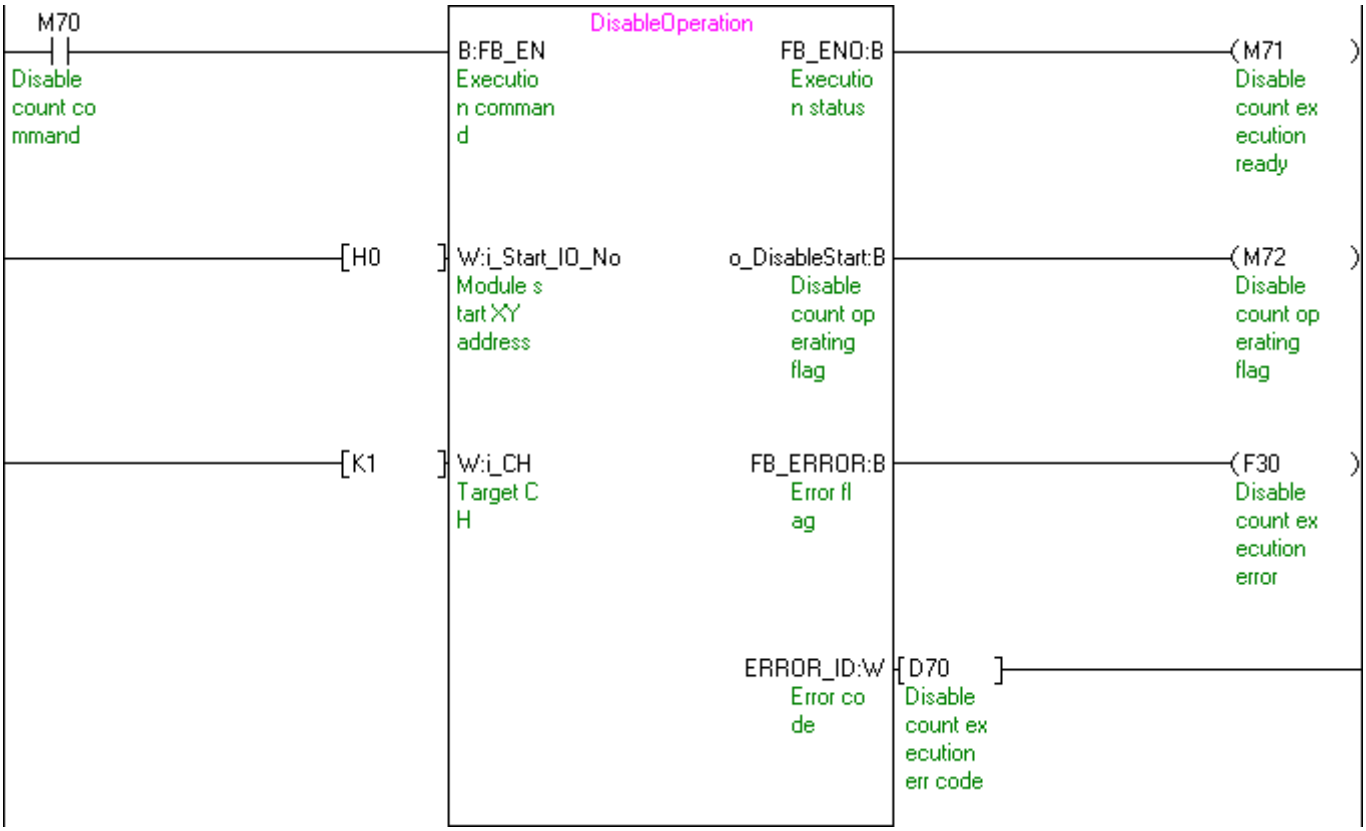
M+D62_CoincidenceOutputEnable (Coincidence output enable setting)



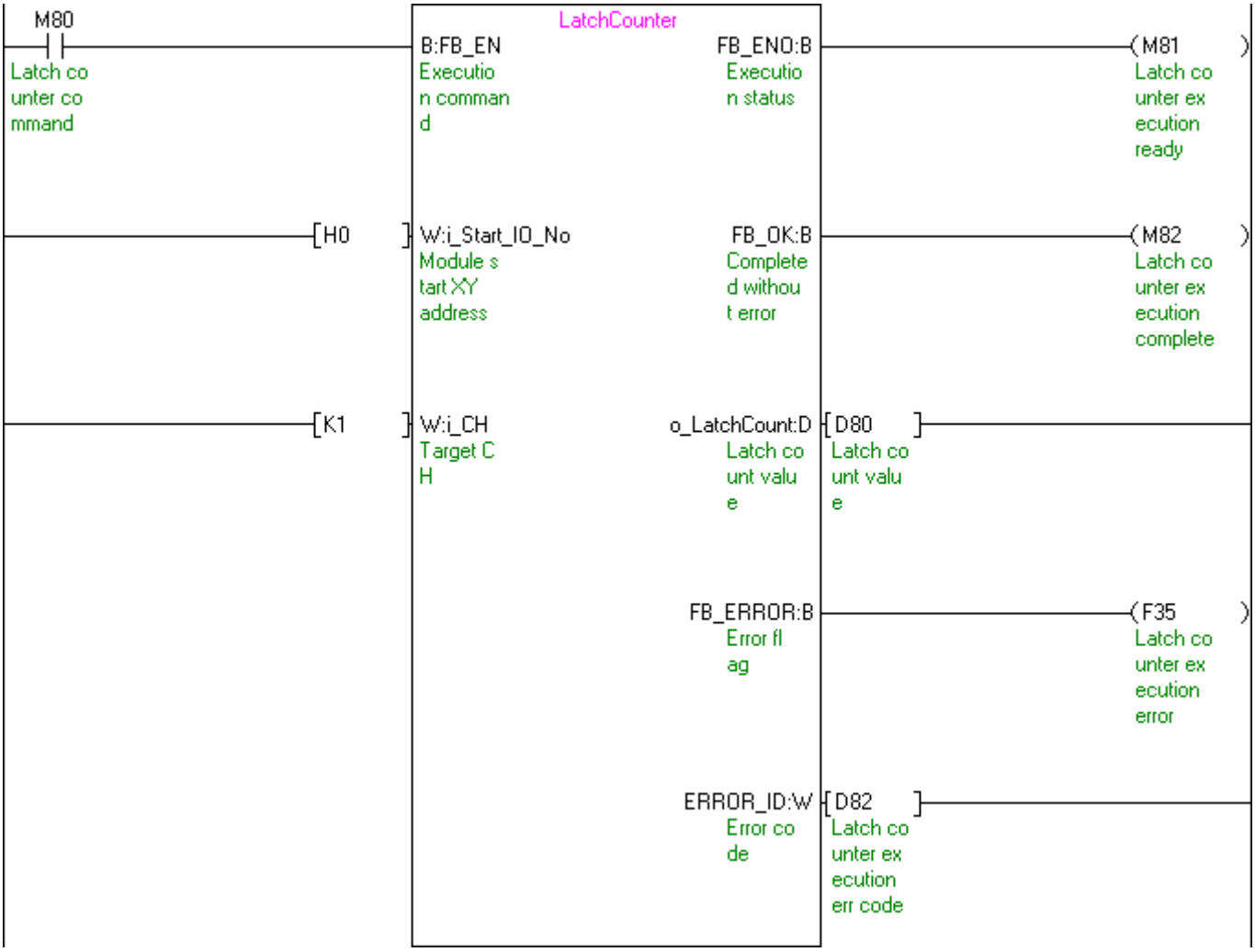
M+D62_PresetOperation (Preset function operation)



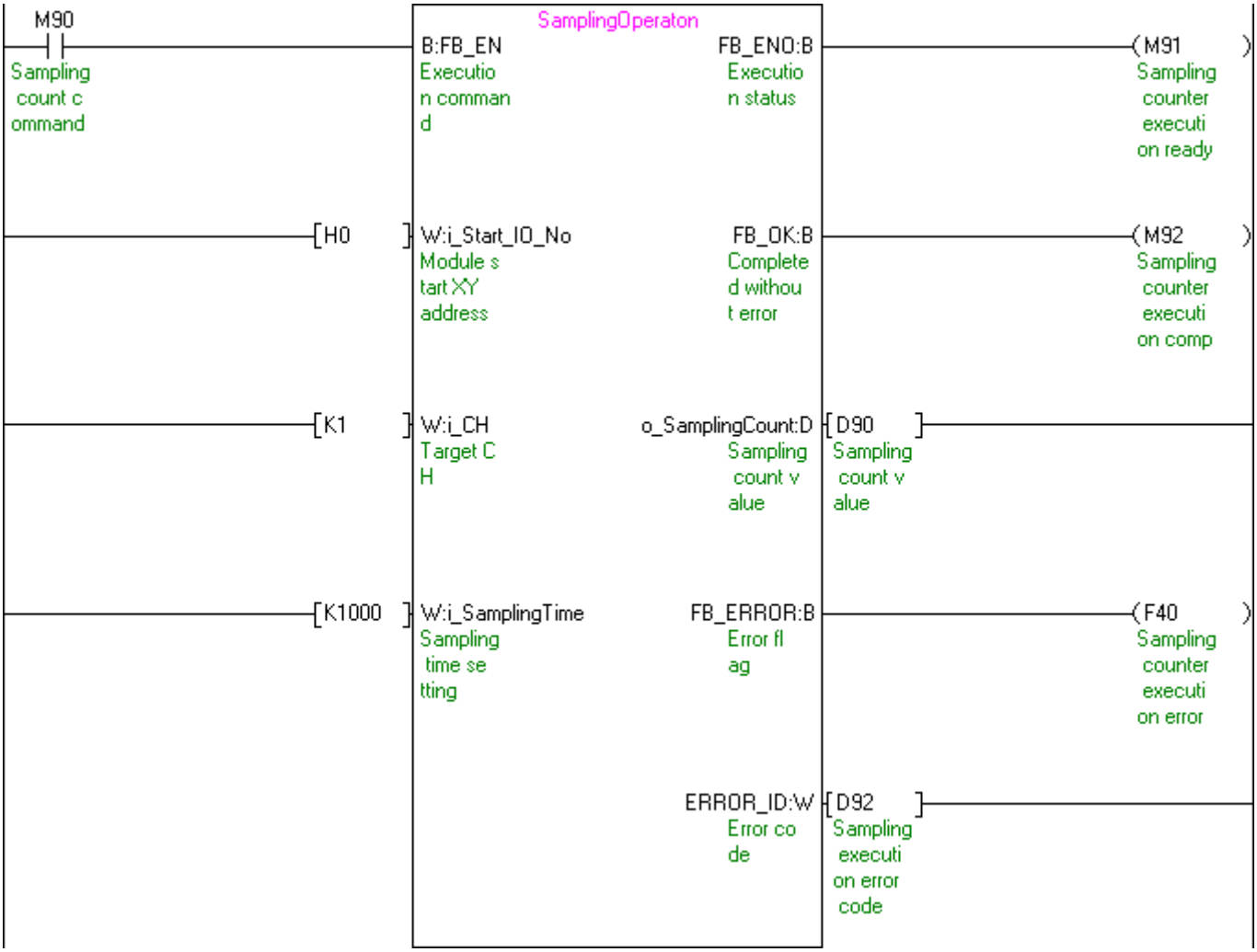
M+D62_CountDisableOperation (Disable count function operation)



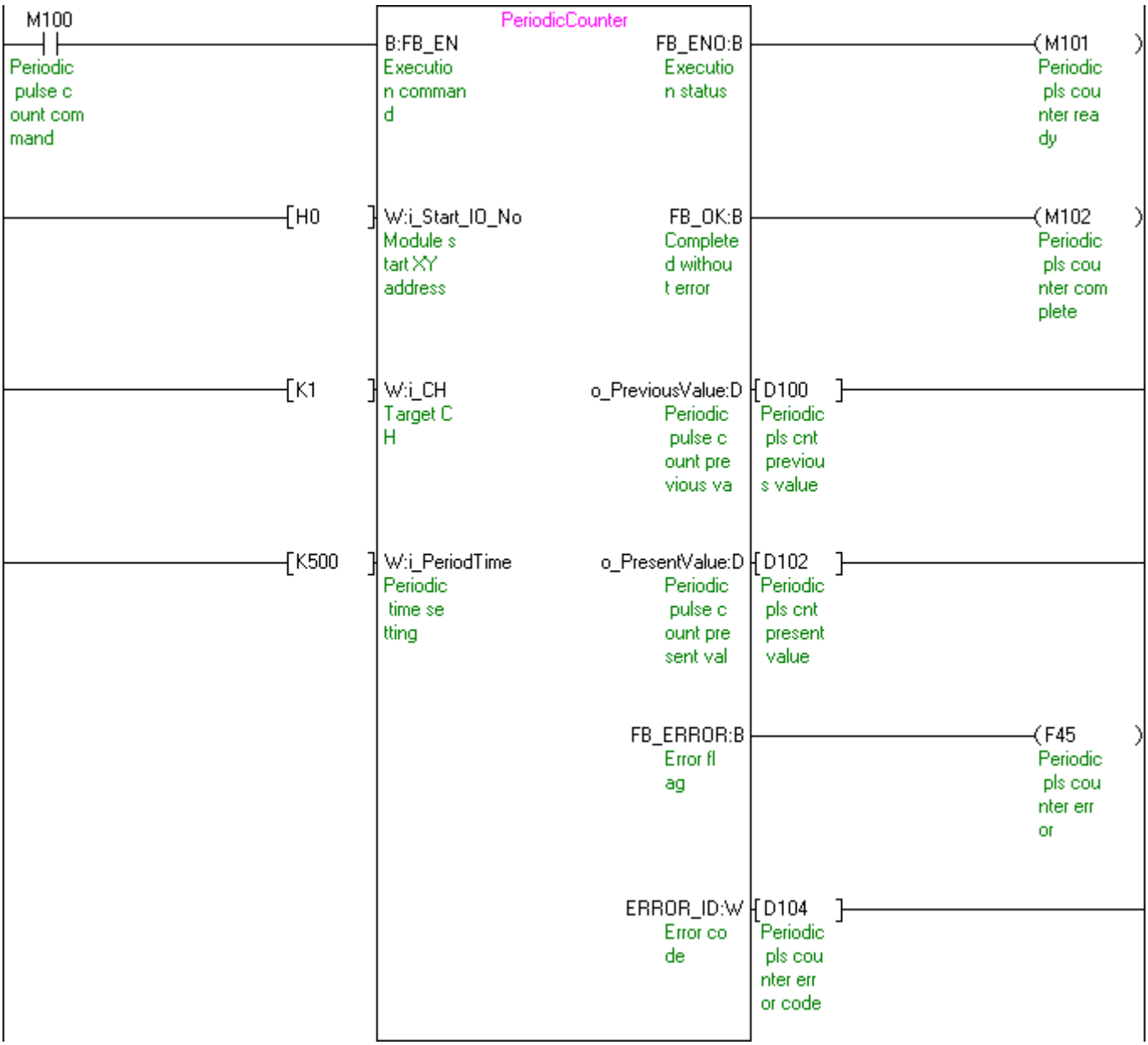
M+D62_LatchCounterOperation (Latch counter function operation)



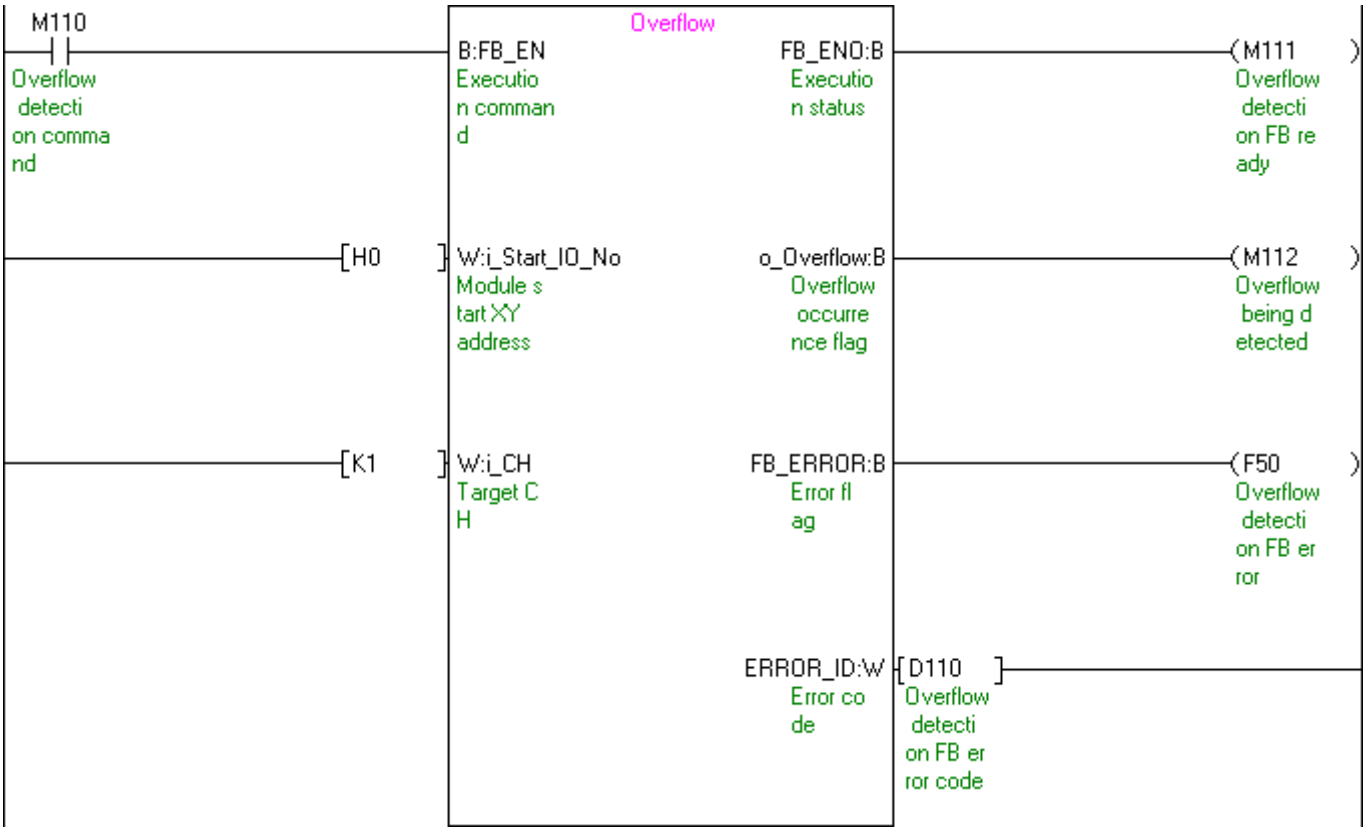
M+D62_SamplingOperation (Sampling counter function operation)



M+D62_PeriodicPulseCounter (Periodic pulse counter function operation)



M+D62_OverflowDetection (Overflow detection)



Appendix 2 - Note for using index registers in a program

(1) Note

When a program uses the same index register as the FB, an OPERATION ERROR (error code: 4101) may be detected by an index modification consistency check (to see whether a device address exceeds a device range).

(2) Countermeasures

Take either of these countermeasures to prevent this problem from occurring.

1) Do not use an index register that is used by an FB.

2) When using an index register in a program that is already used by an FB, please deselect the "Check Device Range at Indexing" checkbox in the PLC RAS tab of the L Parameter Setting dialog window.