

# MELSEC-Q QD73A1 Positioning Module FB Library Reference Manual

Applicable modules:

QD73A1

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## Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M088-A	2012/12/21	First edition

## 1. Overview

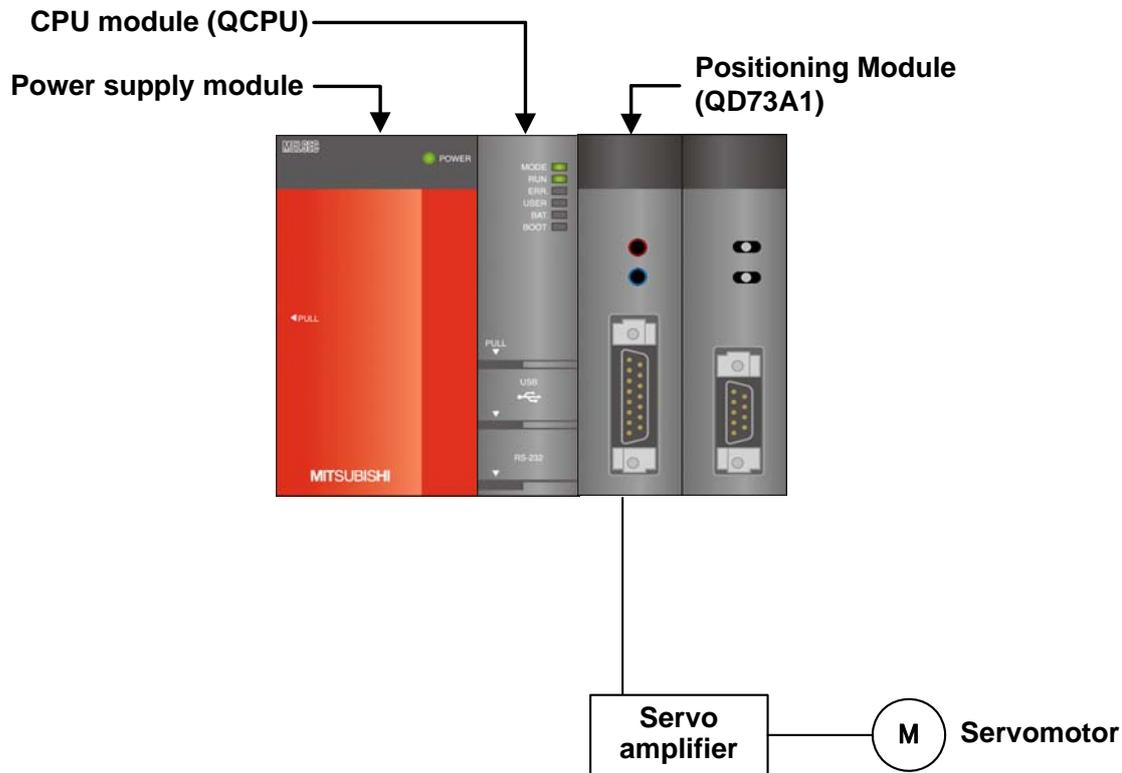
### 1.1 Overview of the FB Library

This FB Library is for using the MELSEC-Q QD73A1 single-axis positioning module.

### 1.2 Function of the FB Library

Item	Description
M+QD73A1_SetFPARAM	Sets fixed parameters (Pr.1 to Pr.4).
M+QD73A1_SetVPARAM	Sets variable parameters (Pr.5 to Pr.9).
M+QD73A1_SetZData	Sets OPR parameters (Pr.10 to Pr.13).
M+QD73A1_SetPosiData	Sets positioning data (Da.1 to Da.5).
M+QD73A1_CPUReady	Outputs the PLC READY signal.
M+QD73A1_StartPosi	Starts positioning.
M+QD73A1_JOG	Starts JOG.
M+QD73A1_StartFeed	Starts fixed-feed.
M+QD73A1_ChgCurrentVal	Changes the current value.
M+QD73A1_ChgSpeed	Changes the speed.
M+QD73A1_VPChgDistance	Changes the speed-position movement amount.
M+QD73A1_VPRestart	Restarts the control in the speed-position control switch mode.
M+QD73A1_ClearErrorCounter	Clears the deviation counter.
M+QD73A1_ErrorOperation	Monitors errors and resets errors.
M+QD73A1_SetZeroVal	Sets the zero setting for the analog output value.
M+QD73A1_SetGainVal	Sets the gain setting for the analog output value.

### 1.3 System Configuration Examples



### 1.4 Relevant manuals

MELSEC-Q QD73A1 Positioning Module User's Manual

QCPU 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

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+QD73A1\_SetFPARAM (Fixed parameter setting)

#### FB Name

M+QD73A1\_SetFPARAM

#### Function Overview

Item	Description							
Function overview	Sets fixed parameters (Pr.1 to Pr.4).							
Symbol	<p>The diagram shows the M+QD73A1_SetFPARAM function block with the following connections:</p> <ul style="list-style-type: none"> <li>Execution command: B : FB_EN</li> <li>Module start XY address: W : i_Start_IO_No</li> <li>Pr.1 Stroke limit upper limit: D : i_SLimitUpper</li> <li>Pr.2 Stroke limit lower limit: D : i_SLimitLower</li> <li>Pr.3 Numerator of command pulse multiplication for electronic gear: W : i_CMx</li> <li>Pr.4 Denominator of command pulse multiplication for electronic gear: W : i_CDv</li> <li>FB_ENO : B (Output): Execution status</li> <li>FB_OK : B (Output): Fixed parameter setting complete</li> </ul>							
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
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Engineering software	GX Works2 *1	<table border="1"> <thead> <tr> <th>Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later
	Language	Software version						
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	196 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.							

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the set fixed parameter is written to the buffer memory.</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.</li> <li>3) The fixed parameter written with this FB is validated when the PLC READY signal [Y(n+1)D] turns from OFF to ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) Every input must be provided with a value for proper FB operation.</li> <li>6) If the fixed parameter is set using the configuration function of GX Works 2, using this FB is unnecessary.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB. It features four horizontal axes: FB_EN (Execution command), FB_ENO (Execution status), Fixed parameter write processing, and FB_OK (Fixed parameter setting complete).  1. FB_EN transitions from OFF to ON (a pulse).  2. FB_ENO transitions from OFF to ON.  3. Fixed parameter write processing begins, showing a 'Write' phase followed by 'No processing' phases.  4. FB_OK transitions from OFF to ON, indicating that the fixed parameter setting is complete.  Arrows indicate the causal relationships: FB_EN causes FB_ENO to turn ON and the start of write processing. The completion of write processing causes FB_OK to turn ON. FB_ENO remains ON until the write processing is finished.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Pr.1 Stroke limit upper limit	i_SLimitUpper	Double Word	-2,147,483,648 to 2,147,483,647	Set the upper limit for the machine's movement range during positioning control.
Pr.2 Stroke limit lower limit	i_SLimitLower	Double Word	-2,147,483,648 to 2,147,483,647	Set the lower limit for the machine's movement range during positioning control.
Pr.3 Numerator of command pulse multiplication for electronic gear	i_CMX	Word	1 to 9,999 The following condition must be satisfied. $1/50 \leq \text{CMX}/\text{CDV} \leq 50$	Set the numerator of command pulse multiplication for electronic gear (CMX).
Pr.4 Denominator of command pulse multiplication for electronic gear	i_CDV	Word		Set the denominator of command pulse multiplication for electronic gear (CDV).

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Fixed parameter setting complete	FB_OK	Bit	OFF	ON: FB is completed without errors. OFF: FB is incomplete.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.2 M+QD73A1\_SetVPARAM (Variable parameter setting)

### FB Name

M+QD73A1\_SetVPARAM

### Function Overview

Item	Description																													
Function overview	Sets variable parameters (Pr.5 to Pr.9).																													
Symbol	<div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center; margin: 0;">M+QD73A1_SetVPARAM</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border: none;">Execution command</td> <td style="width: 30%; border: none;">B : FB_EN</td> <td style="width: 30%; border: none;">FB_ENO : B</td> <td style="width: 10%; border: none;">Execution status</td> </tr> <tr> <td style="border: none;">Module start XY address</td> <td style="border: none;">W : i_Start_IO_No</td> <td style="border: none;">FB_OK : B</td> <td style="border: none;">OPR data setting complete</td> </tr> <tr> <td style="border: none;">Pr.5 Speed limit value</td> <td style="border: none;">D : i_SpeedLimit</td> <td></td> <td></td> </tr> <tr> <td style="border: none;">Pr.6 Acceleration time</td> <td style="border: none;">W : i_AccTime</td> <td></td> <td></td> </tr> <tr> <td style="border: none;">Pr.7 Deceleration time</td> <td style="border: none;">W : i_DecTime</td> <td></td> <td></td> </tr> <tr> <td style="border: none;">Pr.8 In-position range</td> <td style="border: none;">W : i_InPosition</td> <td></td> <td></td> </tr> <tr> <td style="border: none;">Pr.9 Positioning mode</td> <td style="border: none;">W : i_PosiParam</td> <td></td> <td></td> </tr> </table> </div>		Execution command	B : FB_EN	FB_ENO : B	Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	OPR data setting complete	Pr.5 Speed limit value	D : i_SpeedLimit			Pr.6 Acceleration time	W : i_AccTime			Pr.7 Deceleration time	W : i_DecTime			Pr.8 In-position range	W : i_InPosition			Pr.9 Positioning mode	W : i_PosiParam		
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Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the set variable parameter is written to the buffer memory.</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.</li> <li>3) The variable parameter written with this FB is validated when the start signal [Y(n+1) 0 to 5] turns from OFF to ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) Every input must be provided with a value for proper FB operation.</li> <li>6) If the variable parameter is set using the configuration function of GX Works 2, using this FB is unnecessary.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB. It features four horizontal axes:     <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> Shows a single pulse that occurs once.</li> <li><b>FB_ENO (Execution status):</b> Shows a pulse that starts when FB_EN is turned ON and ends when FB_EN is turned OFF.</li> <li><b>Variable parameter write processing:</b> Shows a period of 'Write' activity that occurs during the FB_ENO pulse. This period is flanked by 'No processing' states.</li> <li><b>FB_OK (Variable parameter setting complete):</b> Shows a pulse that occurs at the end of the 'Write' period, indicating that the parameter setting is complete.</li> </ul> </p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Pr.5 Speed limit value	i_SpeedLimit	Double Word	10 to 4,000,000 (pulse/s) (in units of 10 pulse)	Set the upper speed limit during OPR, positioning, and JOG operations.
Pr.6 Acceleration time	i_AccTime	Word	2 to 9,999 (ms)	Specify the time for the speed to increase from zero to the Pr.5: speed limit value.
Pr.7 Deceleration time	i_DecTime	Word		Specify the time for the speed to decrease from the Pr.5: speed limit value to zero.
Pr.8 In-position range	i_InPosition	Word	1 to 20,479 (pulse)	Set the accumulated pulses with which the in-position signal [Xn6] turns ON.
Pr.9 Positioning mode	i_PosiMode	Word	0: Positioning control mode 1: Speed-position switching mode	Set the control mode for positioning.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Variable parameter setting complete	FB_OK	Bit	OFF	ON: FB is completed without errors. OFF: FB is incomplete.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

### 2.3 M+QD73A1\_SetZData (OPR data setting)

#### FB Name

M+QD73A1\_SetZData

#### Function Overview

Item	Description							
Function overview	Sets OPR parameters (Pr.10 to Pr.13).							
Symbol	<p>The diagram shows the M+QD73A1_SetZData function block with the following connections:</p> <ul style="list-style-type: none"> <li>Execution command: B : FB_EN</li> <li>Module start XY address: W : i_Start_IO_No</li> <li>Pr.10 OP address: D : i_OPAddress</li> <li>Pr.11 OPR speed: D : i_OPReed</li> <li>Pr.12 Creep speed: D : i_CreepSpeed</li> <li>Pr.13 Setting for the movement amount after near-point dog ON: D : i_DogOnLength</li> <li>FB_ENO : B (Execution status)</li> <li>FB_OK : B (OPR data setting complete)</li> </ul>							
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
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	Language	Software version						
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	194 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.							

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the set OPR parameter is written to the buffer memory.</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.</li> <li>3) The OPR parameter written with this FB is validated when the PLC READY signal [Y(n+1)D] turns from OFF to ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) Every input must be provided with a value for proper FB operation.</li> <li>6) If the OPR parameter is set using the configuration function of GX Works 2, using this FB is unnecessary.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB execution. It consists of four horizontal signal lines:</p> <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulsed signal that starts high and then returns to low.</li> <li><b>FB_ENO (Execution status):</b> A signal that transitions from high to low when FB_EN is first turned on, and returns to high when FB_EN returns to low.</li> <li><b>OPR data write processing:</b> A signal that shows a period of 'Write' activity between the first and second falling edges of FB_EN. The periods before and after are labeled 'No processing'.</li> <li><b>FB_OK (OPR data setting complete):</b> A signal that transitions from low to high at the end of the 'Write' period and remains high.</li> </ul>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Pr.10 OP address	i_OPAddress	Double Word	-2,147,483,648 to 2,147,483,647 (pulse/s)	Set the address used as the reference point for positioning control.
Pr.11 OPR speed	i_OPRSpeed	Double Word	1 to 4,000,000 (pulse/s)	Set the speed for OPR.
Pr.12 Creep speed	i_CreepSpeed	Double Word	1 to 4,000,000 (pulse/s)	Set the creep speed after near-point dog ON.
Pr.13 Setting for the movement amount after near-point dog ON	i_DogOnLength	Double Word	0 to 2,147,483,647 (pulse)	When the count method is set for the OPR method, set the movement amount to the OP after the near-point dog signal [XnC] ON.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
OPR data setting complete	FB_OK	Bit	OFF	ON: FB is completed without errors. OFF: FM is incomplete.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.4 M+QD73A1\_SetPosiData (Positioning data setting)

### FB Name

M+QD73A1\_SetPosiData

### Function Overview

Item	Description																									
Function overview	Sets positioning data (Da.1 to Da.5).																									
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">M+QD73A1_SetPosiData</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Execution command</td> <td style="width: 30%;">B : FB_EN</td> <td style="width: 40%;">FB_ENO : B — Execution status</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td>FB_OK : B — Positioning data setting complete</td> </tr> <tr> <td>Da.1 Positioning pattern</td> <td>W : i_PosiParam</td> <td></td> </tr> <tr> <td>Da.2 Positioning address P1</td> <td>D : i_PosiParam1</td> <td></td> </tr> <tr> <td>Da.3 Positioning speed V1</td> <td>D : i_PosiParam1</td> <td></td> </tr> <tr> <td>Da.4 Positioning address P2</td> <td>D : i_PosiParam2</td> <td></td> </tr> <tr> <td>Da.5 Positioning speed V2</td> <td>D : i_PosiParam2</td> <td></td> </tr> </tbody> </table>		M+QD73A1_SetPosiData			Execution command	B : FB_EN	FB_ENO : B — Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B — Positioning data setting complete	Da.1 Positioning pattern	W : i_PosiParam		Da.2 Positioning address P1	D : i_PosiParam1		Da.3 Positioning speed V1	D : i_PosiParam1		Da.4 Positioning address P2	D : i_PosiParam2		Da.5 Positioning speed V2	D : i_PosiParam2	
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Da.2 Positioning address P1	D : i_PosiParam1																									
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Da.4 Positioning address P2	D : i_PosiParam2																									
Da.5 Positioning speed V2	D : i_PosiParam2																									
Applicable hardware and software	Positioning Module	QD73A1																								
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">MELSEC-Q Series *1</td> <td style="text-align: center;">Basic model QCPU</td> </tr> <tr> <td style="text-align: center;">High performance model QCPU</td> </tr> <tr> <td style="text-align: center;">Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU																		
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	High performance model QCPU																									
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Engineering software	GX Works2 *1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">English version</td> <td style="text-align: center;">Version1.24A or later</td> </tr> <tr> <td style="text-align: center;">Chinese version</td> <td style="text-align: center;">Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later																		
	Language	Software version																								
English version	Version1.24A or later																									
Chinese version	Version1.49B or later																									
Programming language	Ladder																									
Number of steps	198 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.																									

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the set positioning data is written to the buffer memory.</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.</li> <li>3) The positioning data written with this FB is validated when the start signal [Y(n+1) 1 to 3] turns from OFF to ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) Every input must be provided with a value for proper FB operation.</li> <li>6) If the positioning data is set using the configuration function of GX Works 2, using this FB is unnecessary.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB. It features four horizontal axes:     <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulsed signal that transitions from OFF to ON and then back to OFF.</li> <li><b>FB_ENO (Execution status):</b> A signal that transitions from OFF to ON when FB_EN is turned ON and returns to OFF when FB_EN is turned OFF.</li> <li><b>Positioning data writing processing:</b> A signal that is OFF during 'No processing' periods and transitions to ON during the 'Write' period, which occurs while FB_EN is ON.</li> <li><b>FB_OK (Positioning data setting complete):</b> A signal that transitions from OFF to ON at the end of the 'Write' period and remains ON until the next 'No processing' period begins.</li> </ul>     Arrows indicate the causal relationships: FB_EN rising causes FB_ENO to rise and the 'Write' period to start. The end of the 'Write' period causes FB_OK to rise. FB_EN falling causes FB_ENO to fall and the 'No processing' period to start.   </p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ● Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Da.1 Positioning pattern	i_PosiParam	Word	0: Positioning 1: Two-phase trapezoidal positioning control	Set the positioning pattern.
Da.2 Positioning address P1	i_PosiParam1	Double Word	1) For absolute positioning start -2,147,483,648 to 2,147,483,647 (pulse) 2) For incremental system positioning and speed-position control switch mode 0 to 2,147,483,647 (pulse)	Designate the target position/movement amount for positioning control.
Da.3 Positioning speed V1	i_PosiParam1	Double Word	1 to 4,000,000 (pulse/s)	Set the command speed for positioning.
Da.4 Positioning address P2	i_PosiParam2	Double Word	1) For absolute positioning start -2,147,483,648 to 2,147,483,647 (pulse) 2) For incremental positioning 0 to 2,147,483,647 (pulse)	This label is valid only for the two-phase trapezoidal positioning control. Set the target address after reaching positioning address P1.

Name (Comment)	Label name	Data type	Setting range	Description
Da.5 Positioning speed V2	i_PosiSpeed2	Double Word	1 to 4,000,000 (pulse/s)	This label is valid only for the two-phase trapezoidal positioning control. Set the command speed to positioning address P2.

●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Positioning data setting complete	FB_OK	Bit	OFF	ON: FB is completed without errors. OFF: FM is incomplete.

### FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.5 M+QD73A1\_CPUReady (PLC READY signal ON)

### FB Name

M+QD73A1\_CPUReady

### Function Overview

Item	Description								
Function overview	Outputs the PLC READY signal.								
Symbol	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center; margin: 0;">M+QD73A1_CPUReady</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border: none;">Execution command</td> <td style="width: 30%; border: none;">B : FB_EN</td> <td style="width: 30%; border: none;">FB_ENO : B</td> <td style="width: 10%; border: none;">Execution status</td> </tr> <tr> <td style="border: none;">Module start XY address</td> <td style="border: none;">W : i_Start_IO_No</td> <td style="border: none;">FB_OK : B</td> <td style="border: none;">Signal ON complete</td> </tr> </table> </div>	Execution command	B : FB_EN	FB_ENO : B	Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	Signal ON complete
Execution command	B : FB_EN	FB_ENO : B	Execution status						
Module start XY address	W : i_Start_IO_No	FB_OK : B	Signal ON complete						
Applicable hardware and software	Positioning Module	QD73A1							
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">MELSEC-Q Series *1</td> <td style="text-align: center;">Basic model QCPU</td> </tr> <tr> <td style="text-align: center;">High performance model QCPU</td> </tr> <tr> <td style="text-align: center;">Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU	
Series	Model								
MELSEC-Q Series *1	Basic model QCPU								
	High performance model QCPU								
	Universal model QCPU								
Engineering software	GX Works2 *1	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">English version</td> <td style="text-align: center;">Version1.24A or later</td> </tr> <tr> <td style="text-align: center;">Chinese version</td> <td style="text-align: center;">Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later	
	Language	Software version							
English version	Version1.24A or later								
Chinese version	Version1.49B or later								
Programming language	Ladder								
Number of steps	207 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.								
Function description	1) By turning ON FB_EN (Execution command), the PLC ready signal [Y(n+1)D] is turned ON. 2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.								
Compiling method	Macro type								

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) Every input must be provided with a value for proper FB operation.</li> <li>6) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB execution. It features four horizontal signal lines: FB_EN (Execution command), FB_ENO (Execution status), PLC READY signal [Y(n+1)D], and FB_OK (Signal ON complete). The PLC READY signal is shown as a pulse that occurs first. Following this, the FB_EN signal transitions from a low state to a high state. The FB_ENO signal then transitions from a high state to a low state, indicating the start of execution. Finally, the FB_OK signal transitions from a low state to a high state, signifying the completion of the signal ON process. Arrows indicate the causal relationships between these signals.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Signal ON complete	FB_OK	Bit	OFF	When ON, it indicates that the PLC READY signal ON is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.6 M+QD73A1\_StartPosi (Positioning start)

### FB Name

M+QD73A1\_StartPosi

### Function Overview

Item	Description																	
Function overview	Starts positioning.																	
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="text-align: center; margin: 0;">M+QD73A1_StartPosi</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">Execution command</td> <td style="width: 30%; padding: 2px;">B : FB_EN</td> <td style="width: 30%; padding: 2px;">FB_ENO : B</td> <td style="width: 10%; padding: 2px;">— Execution status</td> </tr> <tr> <td style="padding: 2px;">Module start XY address</td> <td style="padding: 2px;">W : i_Start_IO_No</td> <td style="padding: 2px;">FB_OK : B</td> <td style="padding: 2px;">— Execution complete</td> </tr> <tr> <td style="padding: 2px;">Start type</td> <td style="padding: 2px;">W : i_Start_Type</td> <td style="padding: 2px;">FB_ERROR : B</td> <td style="padding: 2px;">— Error flag</td> </tr> <tr> <td></td> <td></td> <td style="padding: 2px;">ERROR_ID : W</td> <td style="padding: 2px;">— Error code</td> </tr> </table> </div>		Execution command	B : FB_EN	FB_ENO : B	— Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	— Execution complete	Start type	W : i_Start_Type	FB_ERROR : B	— Error flag			ERROR_ID : W	— Error code
Execution command	B : FB_EN	FB_ENO : B	— Execution status															
Module start XY address	W : i_Start_IO_No	FB_OK : B	— Execution complete															
Start type	W : i_Start_Type	FB_ERROR : B	— Error flag															
		ERROR_ID : W	— Error code															
Applicable hardware and software	Positioning Module	QD73A1																
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">MELSEC-Q Series *1</td> <td style="text-align: center;">Basic model QCPU</td> </tr> <tr> <td style="text-align: center;">High performance model QCPU</td> </tr> <tr> <td style="text-align: center;">Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU										
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	Universal model QCPU																	
Engineering software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">English version</td> <td style="text-align: center;">Version1.24A or later</td> </tr> <tr> <td style="text-align: center;">Chinese version</td> <td style="text-align: center;">Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later											
Language	Software version																	
English version	Version1.24A or later																	
Chinese version	Version1.49B or later																	
Programming language	Ladder																	
Number of steps	<p>328 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>																	

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the positioning required for the start type is started.</li> <li>2) The FB is started when the start signal [Y(n+1)0 to 3] required for the start type is turned ON.</li> <li>3) When FB_EN (Execution command) is turned ON, the following conditions must be satisfied to turn ON the start signal [Y(n+1)0 to 3] required for the start type. When the following conditions are not satisfied, the start signal [Y(n+1)0 to 3] is not turned ON, but FB_OK (Execution complete) is turned ON. (In this case, module errors at start will not occur.) [Conditions] QD73A1 READY signal [Xn1]: ON All start signals [Y(n+1)0 to 3]: OFF All start complete signals [X(n+1)0 to 3]: OFF BUSY signal [Xn4]: OFF</li> <li>4) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.</li> <li>5) When the start complete signal [X(n+1)0 to 3] is ON or FB_EN (Execution command) is OFF, the start signal [Y(n+1)0 to 3] is turned OFF.</li> <li>6) When the setting value of the start type 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.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) 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.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) The data is not set at start in the FB. Data necessary for each control of positioning start No. must be set in the parameters and buffer memory beforehand.</li> <li>8) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>

Item	Description
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>[When operation completes without error]</p> </div> <div style="width: 45%;"> <p>[When an error occurs]</p> </div> </div> <p>*1: The start signal [Y(n+1)0 to 3] is turned ON or OFF according to the start type.</p> <ol style="list-style-type: none"> <li>1) Start type = 0: OPR start signal [Y(n+1)0]</li> <li>2) Start type = 1: Absolute positioning start signal [Y(n+1)1]</li> <li>3) Start type = 2: Forward start signal (in incremental system positioning and speed-position control switch mode) [Y(n+1)2]</li> <li>4) Start type = 3: Reverse start signal (in incremental system positioning and speed-position control switch mode) [Y(n+1)3]</li> </ol>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

### Error code

●Error code list

Error code	Description	Action
1000 (Decimal)	The start type is not valid. The start type is not within the range of 0 to 3.	Please try again after confirming the setting.

### Labels

●Input labels

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

Name (Comment)	Label name	Data type	Setting range	Description
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Start type	i_Start_Type	Word	0: OPR start 1: Absolute positioning start 2: Forward start (in incremental system positioning and speed-position control switch mode) 3: Reverse start (in incremental system positioning and speed-position control switch mode)	Set the start type required for the positioning start control.

●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Execution complete	FB_OK	Bit	OFF	When ON, it indicates that the execution is completed.
Error flag	FB_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code	ERROR_ID	Word	0	FB error code output.

**FB Version Upgrade History**

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.7 M+QD73A1\_JOG (JOG start)

### FB Name

M+QD73A1\_JOG

### Function Overview

Item	Description																			
Function overview	Starts JOG.																			
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">M+QD73A1_JOG</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Execution command</td> <td style="width: 30%;">B : FB_EN</td> <td style="width: 40%;">FB_ENO : B — Execution status</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td>FB_OK : B — Operation start complete</td> </tr> <tr> <td>Forward JOG command</td> <td>B : i_FowardJOG</td> <td></td> </tr> <tr> <td>Reverse JOG command</td> <td>B : i_ReverseJOG</td> <td></td> </tr> <tr> <td>Cd.3: JOG speed</td> <td>D : i_JOGSpeed</td> <td></td> </tr> </tbody> </table>		M+QD73A1_JOG			Execution command	B : FB_EN	FB_ENO : B — Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B — Operation start complete	Forward JOG command	B : i_FowardJOG		Reverse JOG command	B : i_ReverseJOG		Cd.3: JOG speed	D : i_JOGSpeed	
M+QD73A1_JOG																				
Execution command	B : FB_EN	FB_ENO : B — Execution status																		
Module start XY address	W : i_Start_IO_No	FB_OK : B — Operation start complete																		
Forward JOG command	B : i_FowardJOG																			
Reverse JOG command	B : i_ReverseJOG																			
Cd.3: JOG speed	D : i_JOGSpeed																			
Applicable hardware and software	Positioning Module	QD73A1																		
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU												
	Series	Model																		
MELSEC-Q Series *1	Basic model QCPU																			
	High performance model QCPU																			
	Universal model QCPU																			
Engineering software	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">GX Works2 *1</th> </tr> <tr> <th style="width: 50%;">Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	GX Works2 *1		Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later											
GX Works2 *1																				
Language	Software version																			
English version	Version1.24A or later																			
Chinese version	Version1.49B or later																			
Programming language	Ladder																			
Number of steps	269 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.																			

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) After FB_EN (Execution command) is turned ON, JOG operation is carried out by turning ON i_FowardJOG (Forward JOG command) or i_ReverseJOG (Reverse JOG command).</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is always executed.</li> <li>3) When i_FowardJOG (Forward JOG command) and i_ReverseJOG (Reverse JOG command) are simultaneously turned ON, the operation stops.</li> <li>4) After FB_EN (Execution command) is turned ON, the operation will stop if FB_EN (Execution command) is turned OFF during i_FowardJOG (Forward JOG command) or i_ReverseJOG (Reverse JOG command) operation.</li> <li>5) The operation will stop if i_ReverseJOG (Reverse JOG command) is turned ON during the forward JOG operation. When i_ReverseJOG (Reverse JOG command) is turned OFF from ON, the forward JOG operation will start again. (Work in the same way for the opposite operation.)</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) It is dangerous to set the JOG speed to a large value from the beginning. For safety, first set to a smaller value and check the movement. Then, gradually increase the value to an optimum speed for control.</li> <li>2) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>3) The FB cannot be used in an interrupt program.</li> <li>4) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do not use this FB in programs that are only executed once such as a subroutine, FOR-NEXT loop, etc. because it is impossible to turn OFF.</li> <li>5) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>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.</li> <li>7) Every input must be provided with a value for proper FB operation.</li> <li>8) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application Examples"

Item	Description
Timing chart	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p><b>For forward JOG command</b></p> </div> <div style="width: 45%;"> <p><b>For reverse JOG command</b></p> </div> </div>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Forward JOG command	i_FowardJOG	Bit	ON, OFF	Turn ON for forward JOG operation.
Reverse JOG command	i_ReverseJOG	Bit	ON, OFF	Turn ON for reverse JOG operation.
Cd.3 JOG speed	i_JOGSpeed	Double Word	1 to 4,000,000 (pulse/s)	Set the JOG speed.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Operation start complete	FB_OK	Bit	OFF	ON: JOG command is ON. OFF: JOG command is OFF.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.8 M+QD73A1\_StartFeed (Fixed-feed start)

### FB Name

M+QD73A1\_StartFeed

### Function Overview

Item	Description															
Function overview	Starts fixed-feed.															
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">M+QD73A1_StartFeed</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Execution command</td> <td>B : FB_EN</td> <td style="width: 30%; text-align: right;">FB_ENO : B</td> <td style="width: 10%; text-align: right;">Execution status</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td style="text-align: right;">FB_OK : B</td> <td style="text-align: right;">Execution complete</td> </tr> <tr> <td>Fixed-feed start</td> <td>B : i_Start_Feed</td> <td></td> <td></td> </tr> </tbody> </table>		M+QD73A1_StartFeed		Execution command	B : FB_EN	FB_ENO : B	Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	Execution complete	Fixed-feed start	B : i_Start_Feed		
M+QD73A1_StartFeed																
Execution command	B : FB_EN	FB_ENO : B	Execution status													
Module start XY address	W : i_Start_IO_No	FB_OK : B	Execution complete													
Fixed-feed start	B : i_Start_Feed															
Applicable hardware and software	Positioning Module	QD73A1														
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU								
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MELSEC-Q Series *1	Basic model QCPU															
	High performance model QCPU															
	Universal model QCPU															
Engineering software	GX Works2 *1 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later									
Language	Software version															
English version	Version1.24A or later															
Chinese version	Version1.49B or later															
Programming language	Ladder															
Number of steps	302 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.															

Item	Description
Function description	<p>1) After FB_EN (Execution command) is turned ON, turning on i_Start_Feed (Fixed-feed command) changes the current feed value to 0 and starts the positioning.</p> <p>2) The FB is started when the absolute positioning start signal [Y(n+1)1] is turned ON.</p> <p>3) After FB_EN (Execution command) is turned ON, the following conditions must be satisfied to turn ON the absolute positioning start signal [Y(n+1)1] by i_Start_Feed (Fixed-feed command).</p> <p>When the following conditions are not satisfied, the absolute positioning start signal [Y(n+1)1] is not turned ON, but FB_OK (Execution complete) is turned ON. (In this case, module errors at start will not occur.)</p> <p>[Conditions]</p> <p>QD73A1 READY signal [Xn1]: ON</p> <p>Absolute positioning start signal [Y(n+1)1]: OFF</p> <p>Absolute positioning start complete signal [X(n+1)1]: OFF</p> <p>BUSY signal [Xn4]: OFF</p> <p>4) After FB_EN (Execution command) is turned ON, i_Start_Feed (Fixed-feed command) is turned ON. Then, the FB is completed in multiple scans.</p> <p>5) When the absolute positioning start complete signal [X(n+1)1] is ON or FB_EN (Execution command) is OFF, the absolute positioning start signal [Y(n+1)1] is turned OFF.</p>
Compiling method	Macro type

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) The data is not set at start in the FB. Data necessary for the fixed-feed start must be set in the parameters and buffer memory beforehand.</li> <li>6) When this FB is executed with the accumulated pulses in the deviation counter, the actual current value at a current value change may not be 0. To set the actual current value to 0 at the current value change, clear the deviation counter before executing this FB.</li> <li>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.</li> <li>8) Every input must be provided with a value for proper FB operation.</li> <li>9) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of signals for the FB. It shows the relationship between the execution command (FB_EN), status signals (FB_ENO, FB_OK), and various input parameters (i_Start_Feed, Cd.1, Cd.7, Md.1) and output signals (Absolute positioning signal, Start complete signal). The chart indicates that the execution command is a pulse, and the status signals are active-low pulses. The input parameters are set before the execution command is issued. The output signals are generated during the execution period.</p>

Item	Description
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Fixed-feed start	i_Start_Feed	Bit	ON, OFF	Turn ON for fixed-feed operation.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Execution complete	FB_OK	Bit	OFF	When ON, it indicates that the execution is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

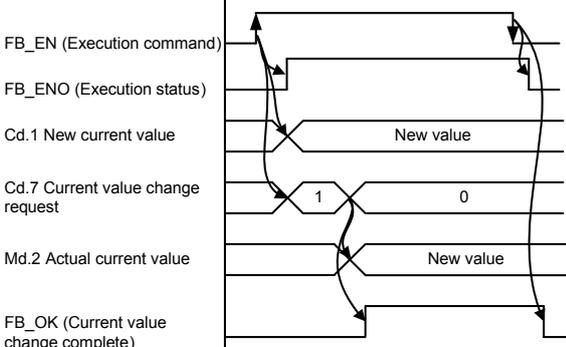
## 2.9 M+QD73A1\_ChgCurrentVal (Current value change)

### FB Name

M+QD73A1\_ChgCurrentVal

### Function Overview

Item	Description							
Function overview	Changes the current value.							
Symbol								
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
	Series	Model						
MELSEC-Q Series *1	Basic model QCPU							
	High performance model QCPU							
	Universal model QCPU							
Engineering software	<p>GX Works2 *1</p> <table border="1"> <thead> <tr> <th>Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later	
Language	Software version							
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	<p>235 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>							
Function description	<p>1) By turning ON FB_EN (Execution command), the current feed value is changed to the newly specified address.</p> <p>2) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.</p>							
Compiling method	Macro type							

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) When this FB is executed with the accumulated pulses in the deviation counter, the actual current value may not be 0. To set the actual current value to 0, clear the deviation counter before executing this FB.</li> <li>6) If FB_EN (Execution command) is turned ON while the BUSY signal [Xn4] is ON, the request will be ignored. In this case, FB_OK (Current value change complete) is not turned ON.</li> <li>7) Every input must be provided with a value for proper FB operation.</li> <li>8) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	 <p>The timing chart illustrates the sequence of events for the FB library function block. It shows the following signals and their states over time:</p> <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulsed signal that starts high and then returns to low.</li> <li><b>FB_ENO (Execution status):</b> A signal that is high when FB_EN is active and low otherwise.</li> <li><b>Cd.1 New current value:</b> A signal that changes to a 'New value' when FB_EN is first activated.</li> <li><b>Cd.7 Current value change request:</b> A signal that is set to 1 when FB_EN is activated and returns to 0 when the current value change is complete.</li> <li><b>Md.2 Actual current value:</b> A signal that changes to the 'New value' when Cd.7 returns to 0.</li> <li><b>FB_OK (Current value change complete):</b> A signal that is set to 1 when the actual current value has reached the new value and returns to 0 when FB_EN is deactivated.</li> </ul>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Cd.1 New current value	i_CurrentChgVal	Double Word	-2,147,483,648 to 2,147,483,647	Set the new current value.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Current value change request complete	FB_OK	Bit	OFF	When ON, it indicates that the current value change is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	First edition

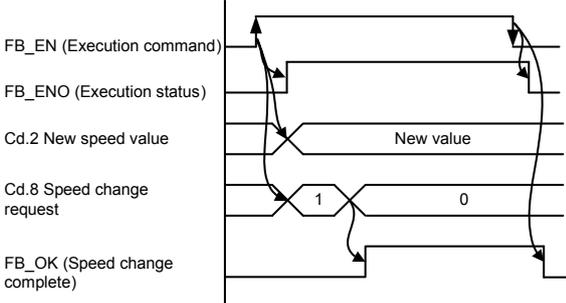
## Note

This chapter includes information related to the function block.

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

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



Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) If FB_EN (Execution command) is turned ON while the BUSY signal [Xn4] is OFF, the request will be ignored. In this case, FB_OK (Speed change complete) is not turned ON.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	 <p>The timing chart illustrates the sequence of events for a speed change request. It shows five signals over time: FB_EN (Execution command), FB_ENO (Execution status), Cd.2 New speed value, Cd.8 Speed change request, and FB_OK (Speed change complete). FB_EN is a pulsed signal that starts high and then returns to low. FB_ENO is active (high) during the high pulse of FB_EN. Cd.2 New speed value is a signal that changes to a 'New value' when the speed change request is active. Cd.8 Speed change request is a signal that transitions from 1 to 0. FB_OK is active (high) after the speed change request returns to 0 and remains active until FB_EN returns to low.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Cd.2 New speed value	i_SpeedChgVal	Double Word	1 to 4,000,000 (pulse/s)	Set the new speed.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Speed change request complete	FB_OK	Bit	OFF	When ON, it indicates that the speed change is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	First edition

## Note

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

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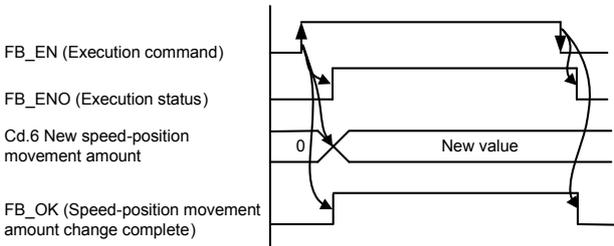
## 2.11 M+QD73A1\_VPChgDistance (Speed-position movement amount change)

### FB Name

M+QD73A1\_VPChgDistance

### Function Overview

Item	Description													
Function overview	Changes the speed-position movement amount.													
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">M+QD73A1_VPChgDistance</th> </tr> </thead> <tbody> <tr> <td style="width: 33%;">Execution command</td> <td style="width: 33%;">B : FB_EN</td> <td style="width: 33%;">FB_ENO : B</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td>FB_OK : B</td> </tr> <tr> <td>Cd.6 New speed-position movement amount</td> <td>D : i_VPChgDintance</td> <td></td> </tr> </tbody> </table>		M+QD73A1_VPChgDistance			Execution command	B : FB_EN	FB_ENO : B	Module start XY address	W : i_Start_IO_No	FB_OK : B	Cd.6 New speed-position movement amount	D : i_VPChgDintance	
M+QD73A1_VPChgDistance														
Execution command	B : FB_EN	FB_ENO : B												
Module start XY address	W : i_Start_IO_No	FB_OK : B												
Cd.6 New speed-position movement amount	D : i_VPChgDintance													
Applicable hardware and software	Positioning Module	QD73A1												
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU						
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MELSEC-Q Series *1	Basic model QCPU													
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Engineering software	GX Works2 *1 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later							
Language	Software version													
English version	Version1.24A or later													
Chinese version	Version1.49B or later													
Programming language	Ladder													
Number of steps	229 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.													
Function description	1) By turning ON FB_EN (Execution command), the positioning address for the positioning control in the speed-position control switch mode is changed. 2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.													
Compiling method	Macro type													

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) If FB_EN (Execution command) is turned ON while the BUSY signal [Xn4] is OFF, the request will be ignored. In this case, FB_OK (Speed-position movement amount change complete) is not turned ON.</li> <li>6) When this FB is used during the speed control in the speed-position switch mode, the positioning address can be changed. However, during the positioning control, the positioning address cannot be changed with this FB.</li> <li>7) Every input must be provided with a value for proper FB operation.</li> <li>8) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (1 scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	 <p>The timing chart illustrates the sequence of events for the FB library. It shows four signals over time:     <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulse that starts the execution process.</li> <li><b>FB_ENO (Execution status):</b> A pulse that occurs immediately after FB_EN is turned on, indicating the start of execution.</li> <li><b>Cd.6 New speed-position movement amount:</b> A signal that starts at 0 and then changes to a 'New value' during the execution period.</li> <li><b>FB_OK (Speed-position movement amount change complete):</b> A pulse that occurs at the end of the execution period, indicating that the movement amount change is complete.</li> </ul> </p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Cd.6 New speed-position movement amount	i_VPChgDistance	Double Word	1 to 2,147,483,647 (pulse)	Set the new movement amount.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Speed-position movement amount change request complete	FB_OK	Bit	OFF	When ON, it indicates that the speed-position movement amount change is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

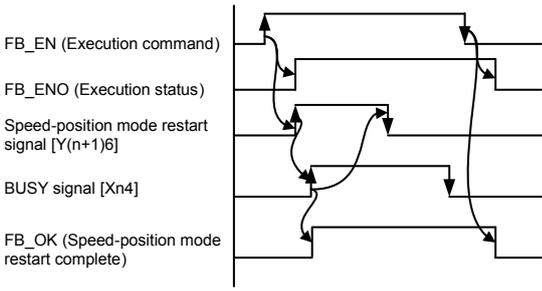
## 2.12 M+QD73A1\_VPRestart (Speed-position mode restart)

### FB Name

M+QD73A1\_VPRestart

### Function Overview

Item	Description							
Function overview	Restarts the control in the speed-position control switch mode.							
Symbol	<div style="display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: right;"> <p>Execution command — B : FB_EN</p> <p>Module start XY address — W : i_Start_IO_No</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>M+QD73A1_VPRestart</p> </div> <div style="text-align: left;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Speed-position mode restart request complete</p> </div> </div>							
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
	Series	Model						
MELSEC-Q Series *1	Basic model QCPU							
	High performance model QCPU							
	Universal model QCPU							
Engineering software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later	
Language	Software version							
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	<p>213 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>							
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), speed-position switch mode control that stopped when a stop cause has occurred restarts.</li> <li>2) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.</li> <li>3) When the BUSY signal is ON or FB_EN (Execution command) is OFF, the speed-position mode restart signal [Y(n+1)6] is turned OFF.</li> </ol>							
Compiling method	Macro type							

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index register Z9. Please do not use the index register in an interrupt program.</li> <li>5) 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.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	 <p>The timing chart illustrates the sequence of signals for the FB. It shows five signals over time: FB_EN (Execution command), FB_ENO (Execution status), Speed-position mode restart signal [Y(n+1)6], BUSY signal [Xn4], and FB_OK (Speed-position mode restart complete). FB_EN is a pulsed signal that starts the execution. FB_ENO is active-low, going low when execution begins and high when it ends. The restart signal is a pulsed signal that occurs during execution. The BUSY signal is active-low, going low when execution starts and high when it ends. FB_OK is active-low, going low when the restart is complete and high when it ends.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Speed-position mode restart request complete	FB_OK	Bit	OFF	When ON, it indicates that the speed-position mode restart is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.13 M+QD73A1\_ClearErrorCounter (Deviation counter clear)

### FB Name

M+QD73A1\_ClearErrorCounter

### Function Overview

Item	Description											
Function overview	Clears the deviation counter.											
Symbol	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">M+QD73A1_ClearErrorCounter</th> </tr> </thead> <tbody> <tr> <td style="width: 30%;">Execution command</td> <td>B : FB_EN</td> <td style="width: 30%; text-align: right;">FB_ENO : B</td> <td style="width: 10%; text-align: right;">Execution status</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td style="text-align: right;">FB_OK : B</td> <td style="text-align: right;">Deviation counter clear command complete</td> </tr> </tbody> </table>		M+QD73A1_ClearErrorCounter		Execution command	B : FB_EN	FB_ENO : B	Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	Deviation counter clear command complete
M+QD73A1_ClearErrorCounter												
Execution command	B : FB_EN	FB_ENO : B	Execution status									
Module start XY address	W : i_Start_IO_No	FB_OK : B	Deviation counter clear command complete									
Applicable hardware and software	Positioning Module	QD73A1										
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU				
	Series	Model										
MELSEC-Q Series *1	Basic model QCPU											
	High performance model QCPU											
	Universal model QCPU											
Engineering software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later					
Language	Software version											
English version	Version1.24A or later											
Chinese version	Version1.49B or later											
Programming language	Ladder											
Number of steps	<p>232 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>											
Function description	<p>1) By turning ON FB_EN (Execution command), the accumulated pulses in the deviation counter are cleared.</p> <p>2) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.</p>											
Compiling method	Macro type											

Item	Description
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) If FB_EN (Execution command) is turned ON while the BUSY signal [Xn4] is ON, the request will be ignored. In this case, FB_OK (Deviation counter clear complete) is not turned ON.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of signals for the FB. It features four horizontal axes: FB_EN (Execution command), FB_ENO (Execution status), Cd.4 Deviation counter clear command, and FB_OK (Deviation counter clear complete). The FB_EN signal is a pulsed signal that starts high and then goes low. The FB_ENO signal is a square wave that is high when FB_EN is high and low when FB_EN is low. The Cd.4 Deviation counter clear command is a single pulse that occurs while FB_EN is high. The FB_OK signal is a square wave that is high during the duration of the Cd.4 Deviation counter clear command pulse and then returns to low. A '1' is marked on the Cd.4 Deviation counter clear command signal, and a '0' is marked on the FB_OK signal during its high state.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Deviation counter clear command complete	FB_OK	Bit	OFF	When ON, it indicates that the deviation counter clear is completed.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.14 M+QD73A1\_ErrorOperation (Error operation)

### FB Name

M+QD73A1\_ErrorOperation

### Function Overview

Item	Description																					
Function overview	Monitors errors and resets errors.																					
Symbol	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="text-align: center;">M+QD73A1_ErrorOperation</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Execution command</td> <td style="width: 30%;">B : FB_EN</td> <td style="width: 30%;">FB_ENO : B</td> <td>Execution status</td> </tr> <tr> <td>Module start XY address</td> <td>W : i_Start_IO_No</td> <td>FB_OK : B</td> <td>Error reset complete</td> </tr> <tr> <td>Error reset command</td> <td>B : i_ErrorReset</td> <td>o_UNIT_ERROR : B</td> <td>Error detection</td> </tr> <tr> <td></td> <td></td> <td>o_UNIT_ERR_CODE1 : W</td> <td>Error code 1</td> </tr> <tr> <td></td> <td></td> <td>o_UNIT_ERR_CODE2 : W</td> <td>Error code 2</td> </tr> </table> </div>		Execution command	B : FB_EN	FB_ENO : B	Execution status	Module start XY address	W : i_Start_IO_No	FB_OK : B	Error reset complete	Error reset command	B : i_ErrorReset	o_UNIT_ERROR : B	Error detection			o_UNIT_ERR_CODE1 : W	Error code 1			o_UNIT_ERR_CODE2 : W	Error code 2
Execution command	B : FB_EN	FB_ENO : B	Execution status																			
Module start XY address	W : i_Start_IO_No	FB_OK : B	Error reset complete																			
Error reset command	B : i_ErrorReset	o_UNIT_ERROR : B	Error detection																			
		o_UNIT_ERR_CODE1 : W	Error code 1																			
		o_UNIT_ERR_CODE2 : W	Error code 2																			
Applicable hardware and software	Positioning Module	QD73A1																				
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU														
		Series	Model																			
MELSEC-Q Series *1	Basic model QCPU																					
	High performance model QCPU																					
	Universal model QCPU																					
Engineering software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later															
Language	Software version																					
English version	Version1.24A or later																					
Chinese version	Version1.49B or later																					
Programming language	Ladder																					
Number of steps	<p>272 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>																					

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) When FB_EN (Execution command) is turned ON, an error is monitored.</li> <li>2) An error code is stored in o_ErrorCode1 (Error code 1) and o_UNIT_ERR_CODE2 (Error code 2) when a module error occurs.</li> <li>3) After FB_EN (Execution command) is turned ON, an error is reset when i_ErrorReset (Error reset command) is turned ON during error occurrence.</li> <li>4) After FB_EN (Execution command) is turned ON, the FB is always executed.</li> <li>5) When i_ErrorReset (Error reset command) is turned ON without errors, the error reset signal [Y(n+1)8] is not turned ON but FB_OK (Error reset complete) is turned ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) 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.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) To operate the QD73A1, the intelligent function module switches such as encoder I/F setting and multiplication setting must be properly configured according to the connected devices and systems.</li> </ol>
FB operation type	Real-time execution
Application example	Refer to "Appendix 1 - FB Library Application Examples"
Timing chart	<p>The timing chart illustrates the sequence of events for the FB library. It shows the following signals and their behavior:</p> <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulse that starts the monitoring process.</li> <li><b>FB_ENO (Execution status):</b> A signal that is active (high) during the execution of the FB.</li> <li><b>i_ErrorReset (Error reset command):</b> A pulse that resets the error state.</li> <li><b>Error reset signal [Y(n+1)8]:</b> A signal that is turned ON when an error is reset.</li> <li><b>Error detection [Xn8]:</b> A signal that is turned ON when an error occurs.</li> <li><b>o_UNIT_ERROR (Error detection):</b> A signal that is turned ON when an error occurs.</li> <li><b>o_UNIT_ERR_CODE1 (Error code 1):</b> A signal that is set to the value of Error code 1 when an error occurs.</li> <li><b>o_UNIT_ERR_CODE2 (Error code 2):</b> A signal that is set to the value of Error code 2 when an error occurs.</li> <li><b>FB_OK (Error reset complete):</b> A signal that is turned ON when the error is reset.</li> </ul> <p>The chart shows that when FB_EN is turned ON, the system monitors for errors. If an error occurs (Error detection and o_UNIT_ERROR become high), the error codes are stored. When i_ErrorReset is turned ON, the error reset signal is turned ON, and FB_OK is turned ON, indicating that the error has been reset.</p>

Item	Description
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Error reset command	i_ErrorReset	Bit	ON, OFF	ON: An error is reset. OFF: An error is not reset.

### ●Output labels

Name (Comment)	Label name	Data type	Initial value	Description
Execution status	FB_ENO	Bit	OFF	ON: Execution command is ON. OFF: Execution command is OFF.
Error reset complete	FB_OK	Bit	OFF	When ON, it indicates that an error reset is completed.
Error detection	o_UNIT_ERROR	Bit	OFF	When ON, it indicates that an error has occurred.
Error code 1	o_UNIT_ERR_CODE1	Word	0	Return an error code 1 caused in the module.
Error code 2	o_UNIT_ERR_CODE2	Word	0	Return an error code 2 caused in the module.

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.15 M+QD73A1\_SetZeroVal (Zero setting)

### FB Name

M+QD73A1\_SetZeroVal

### Function Overview

Item	Description							
Function overview	Sets the zero setting for the analog output value.							
Symbol	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Execution command — B : FB_EN</p> <p>Module start XY address — W : i_Start_IO_No</p> <p>Zero/gain adjustment amount — W : i_Adjust_Amount</p> <p>Set value change command — B : i_Value_Change</p> <p>Zero adjustment data writing command — B : i_Write_ZeroData</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 0 10px; text-align: center;"> <p>M+QD73A1_SetZeroVal</p> </div> <div style="flex: 1;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> </div> </div>							
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Series</th> <th style="width: 50%;">Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center;">MELSEC-Q Series *1</td> <td style="text-align: center;">Basic model QCPU</td> </tr> <tr> <td style="text-align: center;">High performance model QCPU</td> </tr> <tr> <td style="text-align: center;">Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
Series	Model							
MELSEC-Q Series *1	Basic model QCPU							
	High performance model QCPU							
	Universal model QCPU							
Applicable hardware and software	Engineering software	<p>GX Works2 *1</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Language</th> <th style="width: 50%;">Software version</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">English version</td> <td style="text-align: center;">Version1.24A or later</td> </tr> <tr> <td style="text-align: center;">Chinese version</td> <td style="text-align: center;">Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later
	Language	Software version						
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	<p>392 steps (for MELSEC-Q series universal model CPU)</p> <p>* The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.</p>							

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the zero setting for the analog output value is set.</li> <li>2) After FB_EN (Execution command) is turned ON, i_Write_ZeroData (Zero adjustment data writing command) is turned ON. Then, the FB is completed in multiple scans.</li> <li>3) To adjust the analog output value, set i_Adjust_Amount (Zero/gain adjustment amount) and turn ON from OFF i_Value_Change (Set value change command) during the FB_EN (Execution command) ON.</li> <li>4) To register the zero setting value to the QD73A1 after the zero setting is completed, turn ON from OFF i_Write_ZeroData (Zero adjustment data writing command) during FB_EN (Execution command) ON.</li> <li>5) If "In the zero/gain adjustment mode (switch setting)" is not set, the zero setting request after FB_EN (Execution command) is turned ON will be ignored. In this case, i_Write_ZeroData (Zero adjustment data writing command) is turned ON, and FB_OK (Completed without error) is not turned ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) 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.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) Before using this FB, the mode must be shifted to the zero/gain adjustment mode through the intelligent function module switch setting. For the shifting method through the intelligent function module switch setting, please read MELSEC-Q QD73A1 Positioning Module User's Manual.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"

Item	Description
Timing chart	<p>The timing chart illustrates the sequence of signals for zero/gain adjustment. It shows the following signals and their timing relationships:</p> <ul style="list-style-type: none"> <li><b>FB_EN (Execution command):</b> A pulse that starts the process.</li> <li><b>FB_ENO (Execution status):</b> A pulse that occurs when the process starts and ends when it completes.</li> <li><b>Cd.10 Zero/gain adjustment specification:</b> A signal that transitions from 0 to 1.</li> <li><b>Zero/gain adjustment change request [YnB]:</b> A pulse that occurs when the specification changes.</li> <li><b>Zero/gain adjustment change complete flag [X(n+1)B]:</b> A pulse that occurs when the change is complete.</li> <li><b>Md.10 Zero/gain adjustment status:</b> A signal that transitions from 1 to 0 and back to 1.</li> <li><b>i_Value_Change (Set value change command):</b> A pulse that starts the set value change process.</li> <li><b>Set value change request [YnC]:</b> A pulse that occurs when the set value change is requested.</li> <li><b>Set value change complete flag [X(n+1)C]:</b> A pulse that occurs when the set value change is complete.</li> <li><b>i_Write_ZeroData (Zero adjustment data writing command):</b> A pulse that starts the data writing process.</li> <li><b>Zero/gain adjustment data writing request [YnA]:</b> A pulse that occurs when the data writing is requested.</li> <li><b>Zero/gain adjustment data writing complete flag [X(n+1)A]:</b> A pulse that occurs when the data writing is complete.</li> <li><b>FB_OK (Completed without error):</b> A pulse that occurs when the entire process is completed without error.</li> </ul>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Zero/gain adjustment amount	i_Adjust_Amount	Word	-3,000 to 3,000	Specify the adjustment amount for the analog output adjustment.
Set value change command	i_Value_Change	Bit	ON, OFF	Turn ON for analog output change. Turn OFF after the analog output change.
Zero adjustment data writing command	i_Write_ZeroData	Bit	ON, OFF	Turn ON for the registration of the adjusted zero adjustment value to the QD73A1. Turn OFF after the registration.

### ●Output labels

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

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	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 positioning modules or programmable controller CPUs.

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

## 2.16 M+QD73A1\_SetGainVal (Gain setting)

### FB Name

M+QD73A1\_SetGainVal

### Function Overview

Item	Description							
Function overview	Sets the gain setting for the analog output value.							
Symbol	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Execution command — B : FB_EN</p> <p>Module start XY address — W : i_Start_IO_No</p> <p>Zero/gain adjustment amount — W : i_Adjust_Amount</p> <p>Set value change command — B : i_Value_Change</p> <p>Gain adjustment data writing command — B : i_Write_GainData</p> </div> <div style="border: 1px solid black; padding: 5px; margin: 0 10px; text-align: center;"> <p>M+QD73A1_SetGainVal</p> </div> <div style="flex: 1;"> <p>FB_ENO : B — Execution status</p> <p>FB_OK : B — Completed without error</p> </div> </div>							
Applicable hardware and software	Positioning Module	QD73A1						
	CPU module	<table border="1" style="width: 100%;"> <thead> <tr> <th>Series</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td rowspan="3">MELSEC-Q Series *1</td> <td>Basic model QCPU</td> </tr> <tr> <td>High performance model QCPU</td> </tr> <tr> <td>Universal model QCPU</td> </tr> </tbody> </table> <p>*1 Not applicable to QCPU-A (A mode)</p>	Series	Model	MELSEC-Q Series *1	Basic model QCPU	High performance model QCPU	Universal model QCPU
Series	Model							
MELSEC-Q Series *1	Basic model QCPU							
	High performance model QCPU							
	Universal model QCPU							
Engineering software	GX Works2 *1	<table border="1" style="width: 100%;"> <thead> <tr> <th>Language</th> <th>Software version</th> </tr> </thead> <tbody> <tr> <td>English version</td> <td>Version1.24A or later</td> </tr> <tr> <td>Chinese version</td> <td>Version1.49B or later</td> </tr> </tbody> </table> <p>*1 For software versions applicable to the modules used, refer to "Relevant manuals".</p>	Language	Software version	English version	Version1.24A or later	Chinese version	Version1.49B or later
	Language	Software version						
English version	Version1.24A or later							
Chinese version	Version1.49B or later							
Programming language	Ladder							
Number of steps	404 steps (for MELSEC-Q series universal model CPU) * The number of steps of the FB in a program depends on the CPU model that is used and input and output definition.							

Item	Description
Function description	<ol style="list-style-type: none"> <li>1) By turning ON FB_EN (Execution command), the gain setting for the analog output value is set.</li> <li>2) After FB_EN (Execution command) is turned ON, i_Write_GainData (Gain adjustment data writing command) is turned ON. Then, the FB is completed in multiple scans.</li> <li>3) To adjust the analog output value, set i_Adjust_Amount (Zero/gain adjustment amount) and turn ON from OFF i_Value_Change (Set value change command) during the FB_EN (Execution command) ON.</li> <li>4) To register the gain setting value to the QD73A1 after the gain setting is completed, turn ON from OFF i_Write_GainData (Gain adjustment data writing command) during FB_EN (Execution command) ON.</li> <li>5) If "In the zero/gain adjustment mode (switch setting)" is not set, the gain setting request after FB_EN (Execution command) is turned ON will be ignored. In this case, i_Write_GainData (Gain adjustment data writing command) is turned ON, and FB_OK (Completed without error) is not turned ON.</li> </ol>
Compiling method	Macro type
Restrictions and precautions	<ol style="list-style-type: none"> <li>1) The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>2) The FB cannot be used in an interrupt program.</li> <li>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.</li> <li>4) This FB uses index registers Z8 and Z9. Please do not use these index registers in an interrupt program.</li> <li>5) 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.</li> <li>6) Every input must be provided with a value for proper FB operation.</li> <li>7) Before using this FB, the mode must be shifted to the zero/gain adjustment mode through the intelligent function module switch setting. For the shifting method through the intelligent function module switch setting, please read MELSEC-Q QD73A1 Positioning Module User's Manual.</li> </ol>
FB operation type	Pulsed execution (multiple scan execution type)
Application example	Refer to "Appendix 1 - FB Library Application Examples"

Item	Description
Timing chart	<p>The timing chart illustrates the sequence of signals for zero/gain adjustment. The signals are:</p> <ul style="list-style-type: none"> <li>FB_EN (Execution command)</li> <li>FB_ENO (Execution status)</li> <li>Cd.10 Zero/gain adjustment specification</li> <li>Zero/gain adjustment change request [YnB]</li> <li>Zero/gain adjustment change complete flag [X(n+1)B]</li> <li>Md.10 Zero/gain adjustment status</li> <li>i_Value_Change (Set value change command)</li> <li>Set value change request [YnC]</li> <li>Set value change complete flag [X(n+1)C]</li> <li>i_Write_GainData (Gain adjustment data writing command)</li> <li>Zero/gain adjustment data writing request [YnA]</li> <li>Zero/gain adjustment data writing complete flag [X(n+1)A]</li> <li>FB_OK (Completed without error)</li> </ul> <p>The chart shows the timing relationships between these signals, with specific points labeled 0, 1, and 2.</p>
Relevant manuals	<ul style="list-style-type: none"> <li>•MELSEC-Q QD73A1 Positioning Module User's Manual</li> <li>•QCPU User's Manual (Hardware Design, Maintenance and Inspection)</li> <li>•GX Works2 Version 1 Operating Manual (Common)</li> <li>•GX Works2 Version 1 Operating Manual (Simple Project, Function Block)</li> </ul>

## Labels

### ●Input labels

Name (Comment)	Label name	Data type	Setting range	Description
Execution command	FB_EN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module start XY address	i_Start_IO_No	Word	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD73A1 is mounted. (For example, enter H10 for X10.)
Zero/gain adjustment amount	i_Adjust_Amount	Word	-3,000 to 3,000	Specify the adjustment amount for the analog output adjustment.
Set value change command	i_Value_Change	Bit	ON, OFF	Turn ON for analog output change. Turn OFF after the analog output change.
Gain adjustment data writing command	i_Write_GainData	Bit	ON, OFF	Turn ON for the registration of the adjusted gain adjustment value to the QD73A1. Turn OFF after the registration.

### ●Output labels

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

## FB Version Upgrade History

Version	Date	Description
1.00A	2012/12/21	First edition

## Note

This chapter includes information related to the function block.

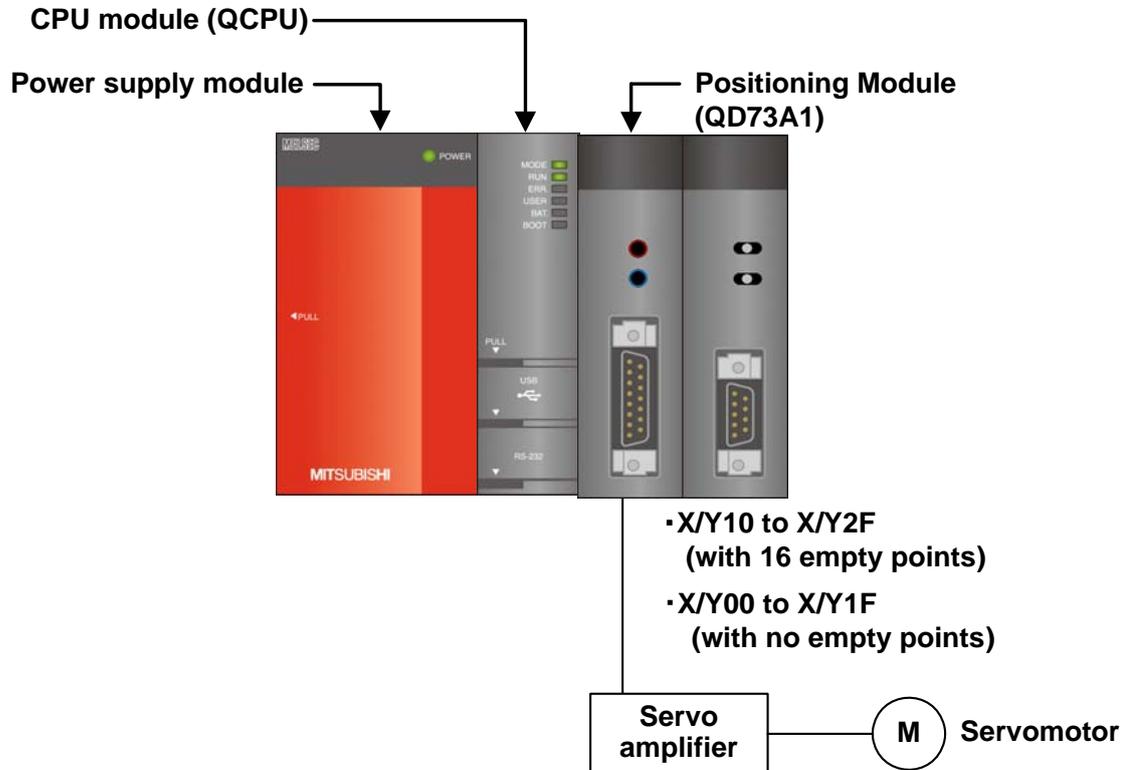
It does not include information on restrictions of use such as combination with positioning modules or programmable controller CPUs.

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

## Appendix 1. FB Library Application Examples

QD73A1 Application examples are as follows.

### 1) System Configuration Examples



#### Reminder

- Every input must be provided with a value for proper FB operation.

If not set, the values will be unspecified.

- Abbreviations may be used in the label comments due to the limitation on the number of the characters to display in GX Works2.

## 2) List of devices

### a) External input (commands)

Device	FB function name	Application (ON details)
M0	M+QD73A1_SetFPARAM	Fixed parameter setting request
M10	M+QD73A1_SetVPARAM	Variable parameter setting req.
M20	M+QD73A1_SetZData	OPR data setting request
M30	M+QD73A1_SetPosiData	Positioning data setting request
M40	M+QD73A1_CPUReady	PLC READY signal ON request
M50	M+QD73A1_StartPosi	Positioning start request
M60	M+QD73A1_JOG	JOG start request
M61		Forward JOG start
M62		Reverse JOG start
M70	M+QD73A1_StartFeed	Fixed-feed start request
M71		Fixed-feed start command
M80	M+QD73A1_ChgCurrentVal	Current value change request
M90	M+QD73A1_ChgSpeed	Speed change request
M100	M+QD73A1_VPChgDistance	Spd-pstn mvmt amt chng request
M110	M+QD73A1_VPRestart	Spd-pstn mode restart request
M120	M+QD73A1_ClearErrorCounter	Deviation counter clear request
M130	M+QD73A1_ErrorOperation	Error operation FB start
M131		Error reset request
M140	M+QD73A1_SetZeroVal	Zero setting request
M141		Zero setting value change cmd
M142		Zero ad. data writing request
M150	M+QD73A1_SetGainVal	Gain setting request
M151		Gain setting value change cmd
M152		Gain ad. data writing request

### b) External output (checks)

Device	FB function name	Application (ON details)
M1	M+QD73A1_SetFPARAM	Fixed parameter setting ready
M2		Fixed parameter setting complete
M11	M+QD73A1_SetVPARAM	Variable parameter setting ready
M12		Variable parameter setting comp.

Device	FB function name	Application (ON details)
M21	M+QD73A1_SetZData	OPR data setting ready
M22		OPR data setting complete
M31	M+QD73A1_SetPosiData	Positioning data setting ready
M32		Positioning data setting comp.
M41	M+QD73A1_CPUReady	PLC READY signal ON ready
M42		PLC READY signal ON complete
M51	M+QD73A1_StartPosi	Positioning start ready
M52		Execution complete
F50		Positioning start FB error
D50		Positioning start FB error code
M63	M+QD73A1_JOG	JOG operation ready
M64		JOG operation start complete
M72	M+QD73A1_StartFeed	Fixed-feed ready
M73		Fixed-feed operation start
M81	M+QD73A1_ChgCurrentVal	Current value change ready
M82		Current value change req comp.
M91	M+QD73A1_ChgSpeed	Speed change ready
M92		Speed change request complete
M101	M+QD73A1_VPChgDistance	Spd-pstn mvmt amt chng ready
M102		Spd-pstn mvmt amt chng req comp.
M111	M+QD73A1_VPRestart	Spd-pstn mode restart ready
M112		Spd-pstn mode restart req comp.
M121	M+QD73A1_ClearErrorCounter	Deviation counter clear ready
M122		Deviation counter clear cmd comp
M132	M+QD73A1_ErrorOperation	Error reset ready
M133		Error reset complete
M134		Error detection
D130		Error code 1
D131		Error code 2
M143	M+QD73A1_SetZeroVal	Zero setting FB ready
M144		Zero setting complete
M153	M+QD73A1_SetGainVal	Gain setting FB ready
M154		Gain setting complete

### 3) Program

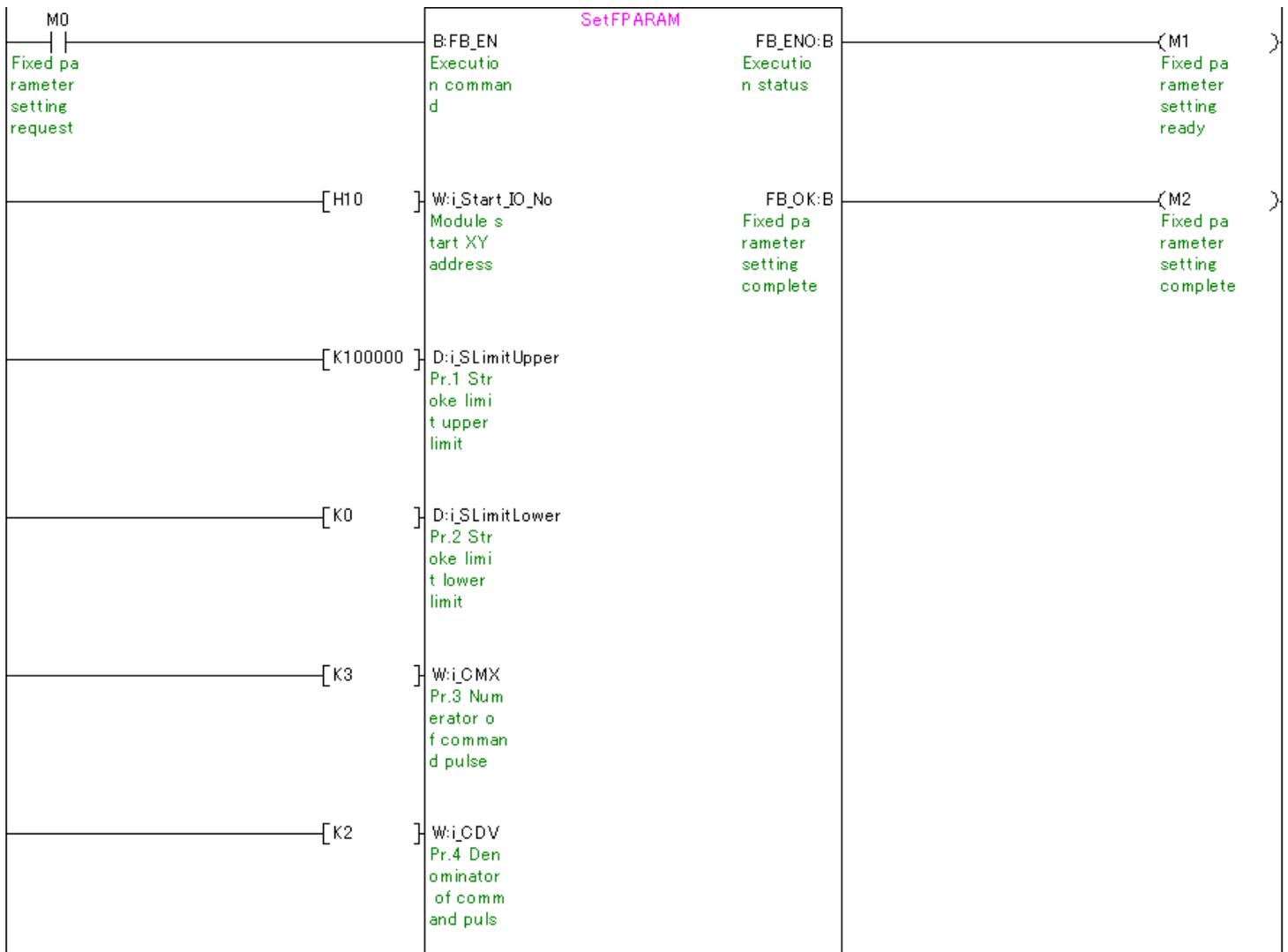
#### M+QD73A1\_SetFPARAM (Fixed parameter setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_SLimitUpper	K100000	Set the fixed parameter "Pr.1 Stroke limit upper limit" to 100,000 [pulse].
i_SLimitLower	K0	Set the fixed parameter "Pr.2 Stroke limit lower limit" to 0 [pulse].
i_CMX	K3	Set the fixed parameter "Pr.3 Numerator of command pulse multiplication for electronic gear" to 3.
i_CDV	K2	Set the fixed parameter "Pr.4 Denominator of command pulse multiplication for electronic gear" to 2.

By turning ON M0, the fixing parameters are set to the QD73A1.

To enable the setting values, turn ON from OFF the PLC READY signal [Y(n+1)D].

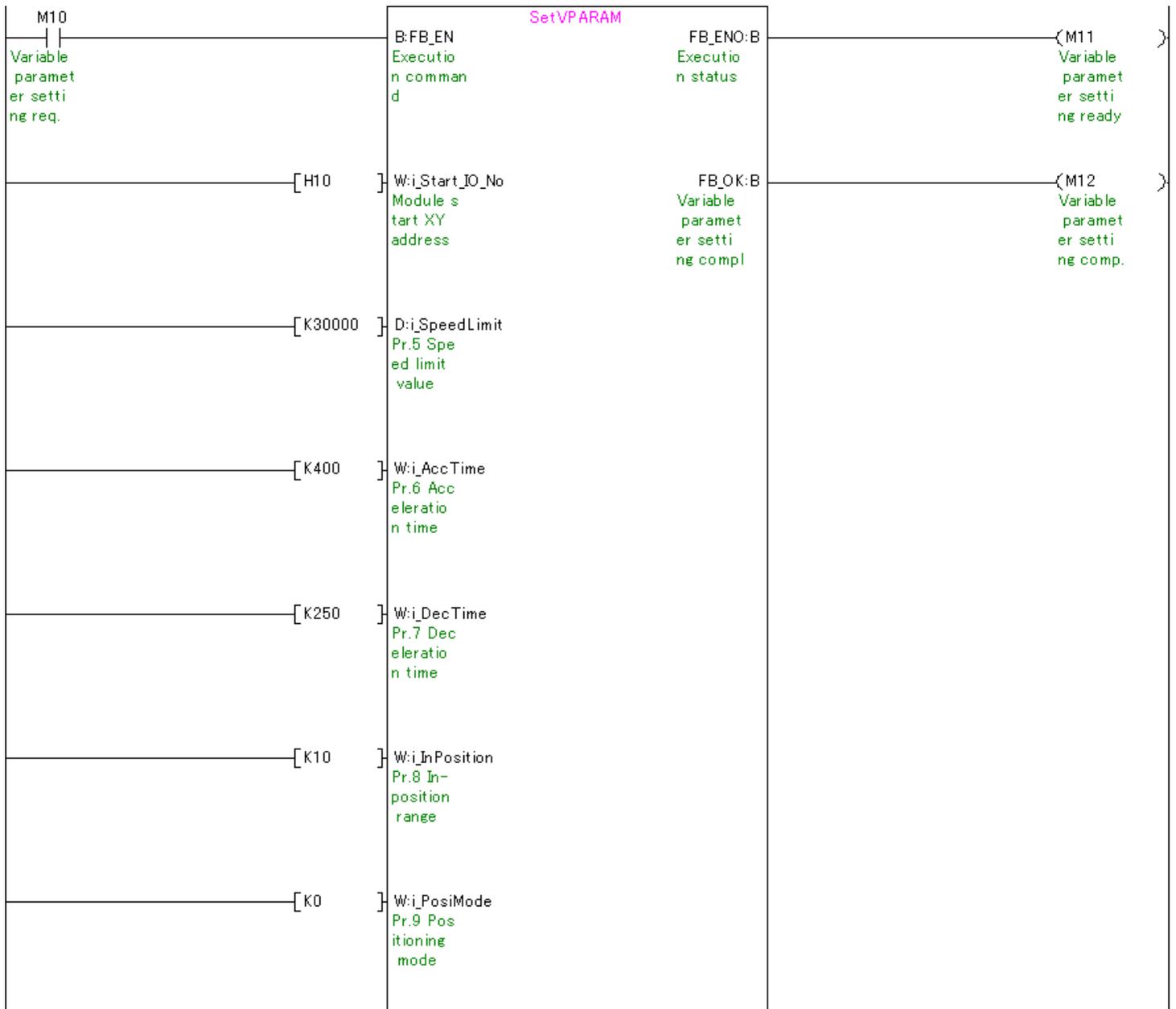


## M+QD73A1\_SetVPARAM (Variable parameter setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_SpeedLimit	K30000	Set the variable parameter "Pr.5 Speed limit value" to 30,000 [pulse/s].
i_AccTime	K400	Set the variable parameter "Pr.6 Acceleration time" to 400 [ms].
i_DecTime	K250	Set the variable parameter "Pr.7 Deceleration time" to 250 [ms].
i_InPosition	K10	Set the variable parameter "Pr.8 In-position range" to 10.
i_PosiMode	K0	Set the variable parameter "Pr.9 Positioning mode" to the positioning control mode.

By turning ON M10, the variable parameters are set to the QD73A1.



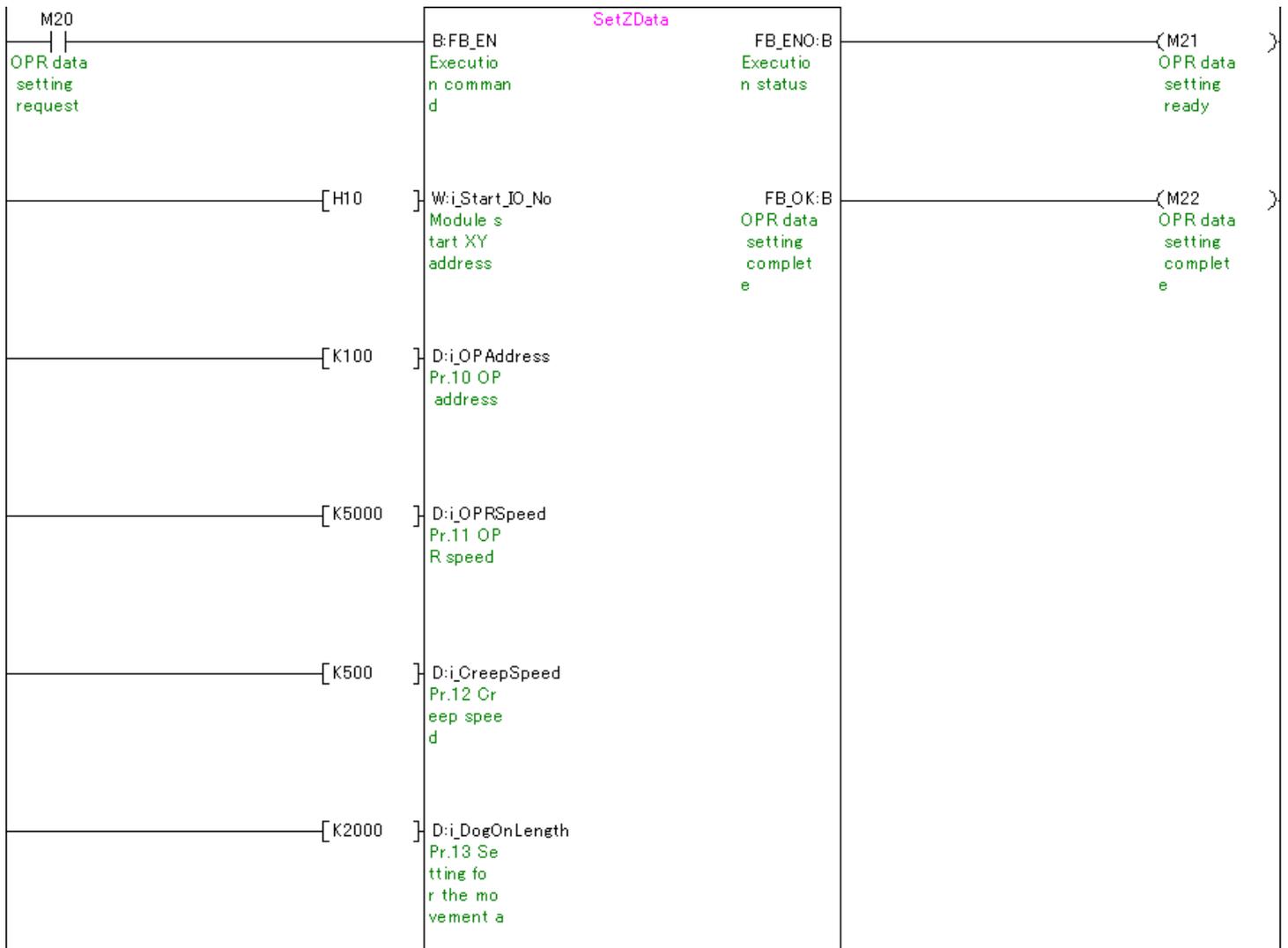
M+QD73A1\_SetZData (OPR data setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_OPAddress	K100	Set the OPR data "Pr.10 OP address" to 100 [pulse].
i_OPReSpeed	K5000	Set the OPR data "Pr.11 OPR speed" to 5,000 [pulse/s].
i_CreepSpeed	K500	Set the OPR data "Pr.12 Creep speed" to 500 [pulse/s].
i_DogOnLength	K2000	Set the OPR data "Pr.13 Setting for the movement amount after near-point dog ON" to 2,000 [pulse].

By turning ON M20, the OPR data is set to the QD73A1.

To enable the setting values, turn ON from OFF the PLC READY signal [Y(n+1)D].

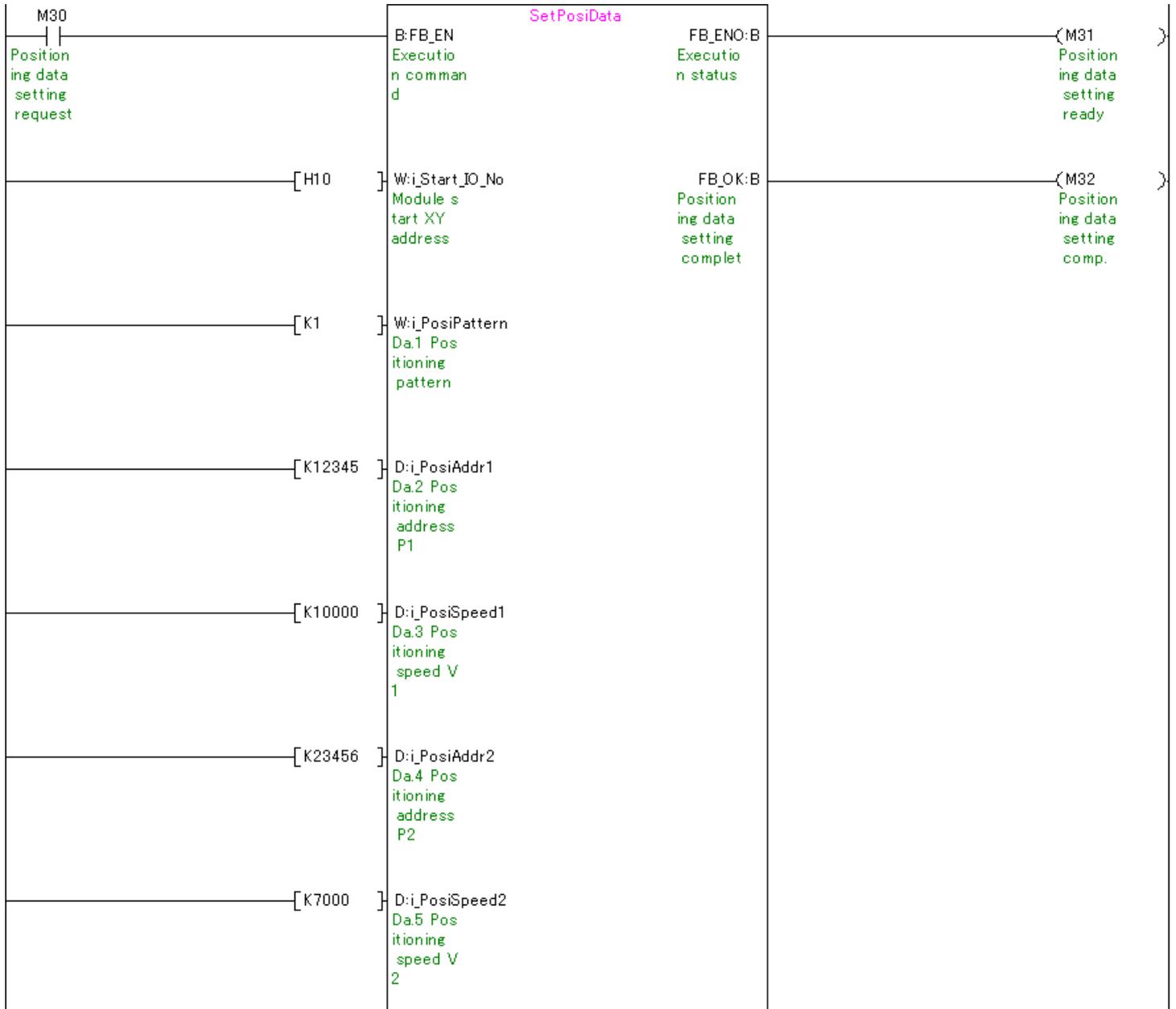


M+QD73A1\_SetPosiData (Positioning data setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_PosiParam	K1	Set the positioning data "Da.1 Positioning pattern" to "Two-phase trapezoidal positioning control".
i_PosiParam1	K12345	Set the positioning data "Da.2 Positioning address P1" to 12,345 [pulse].
i_PosiParam1	K10000	Set the positioning data "Da.3 Positioning speed V1" to 10,000 [pulse/s].
i_PosiParam2	K23456	Set the positioning data "Da.4 Positioning address P2" to 23,456 [pulse].
i_PosiParam2	K7000	Set the positioning data "Da.5 Positioning speed V2" to 7,000 [pulse/s].

By turning ON M30, the positioning data is set to the QD73A1.

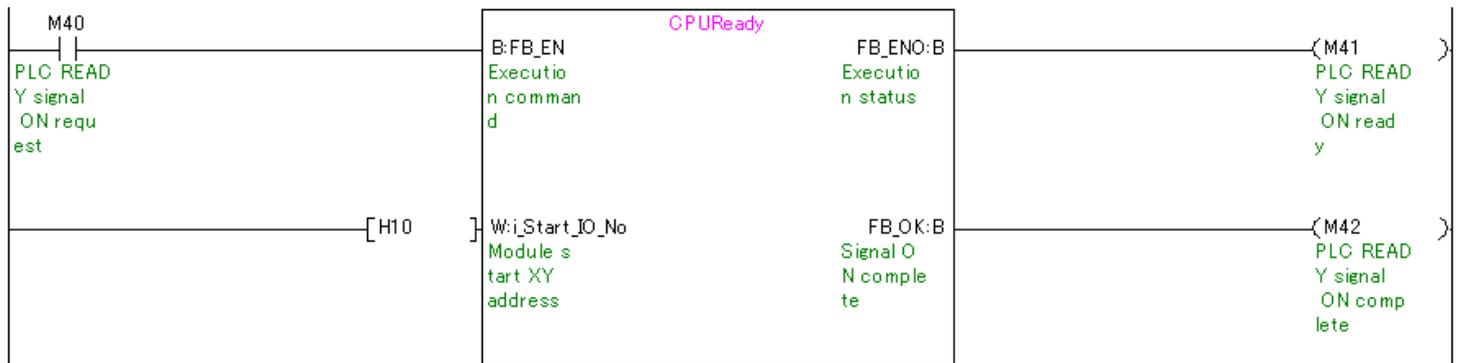


M+QD73A1\_CPUReady (PLC READY signal ON)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.

By turning ON M40, the PLC READY signal [Y(n+1)D] is turned ON.

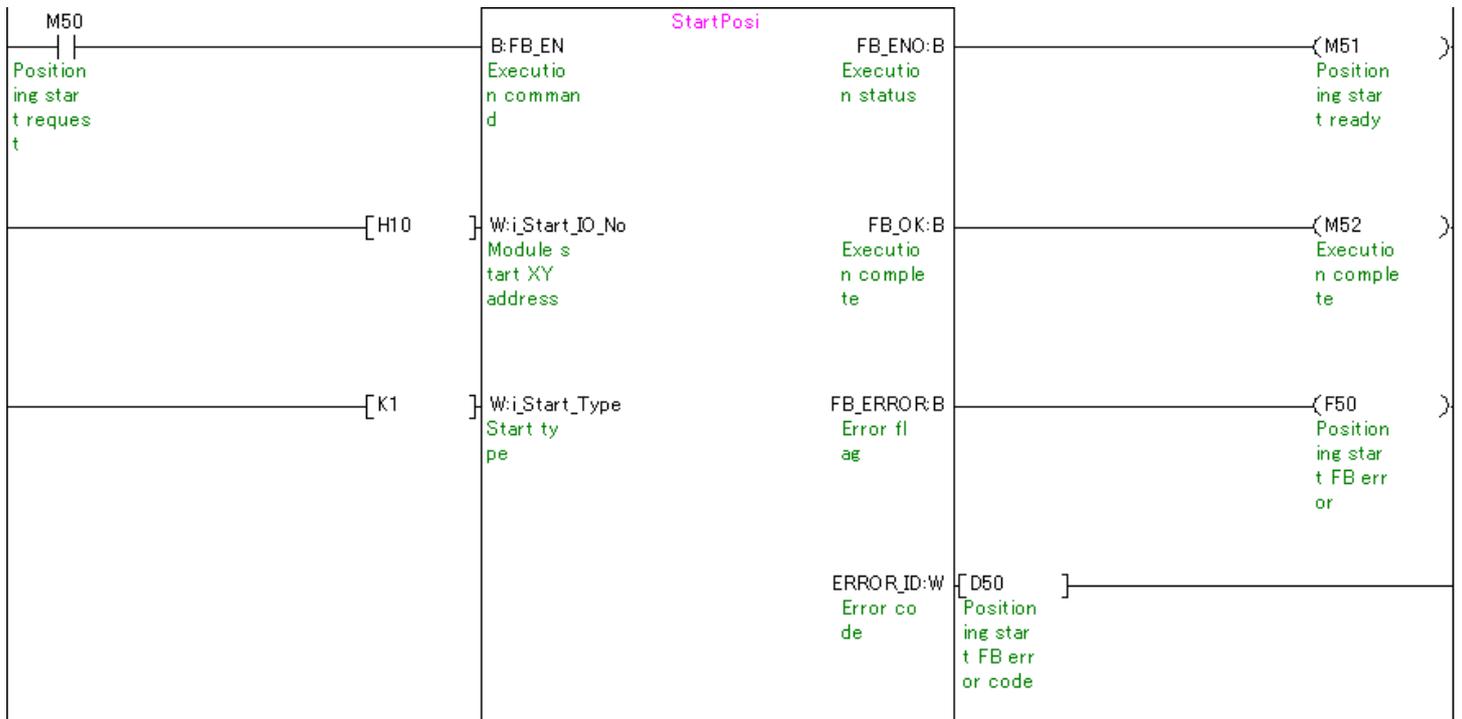


M+QD73A1\_StartPosi (Positioning start)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_Start_Type	K1	Specify the absolute positioning start.

By turning ON M50, the positioning set by i\_Start\_Type (start type) is started.



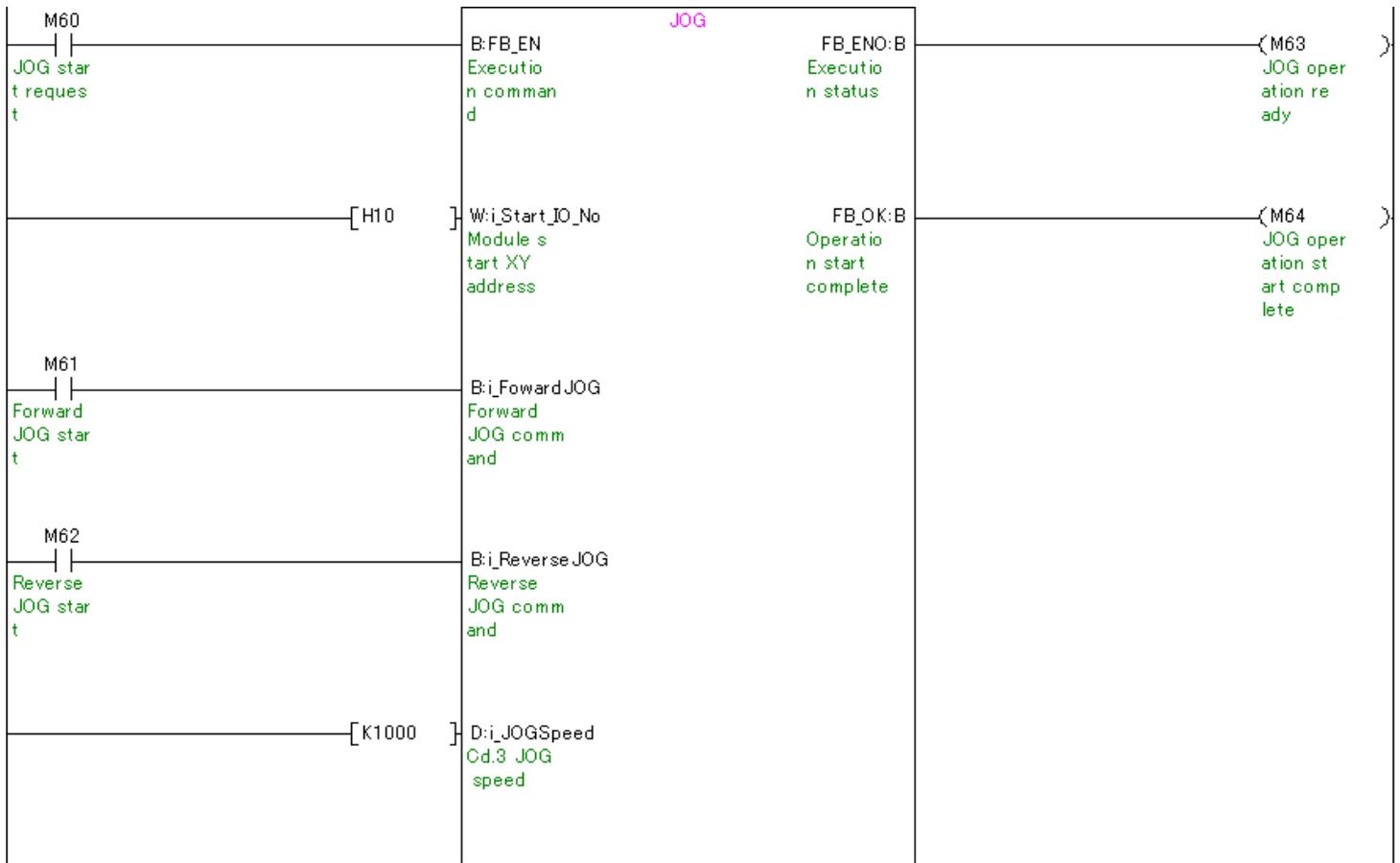
## M+QD73A1\_JOG (JOG start)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_JOGSpeed	K1000	Set the control data "Cd.3 JOG speed" to 1,000 [pulse/s].

By turning ON M60 with M61 ON, the JOG operation is started in the forward direction.

By turning ON M60 with M62 ON, the JOG operation is started in the reverse direction.

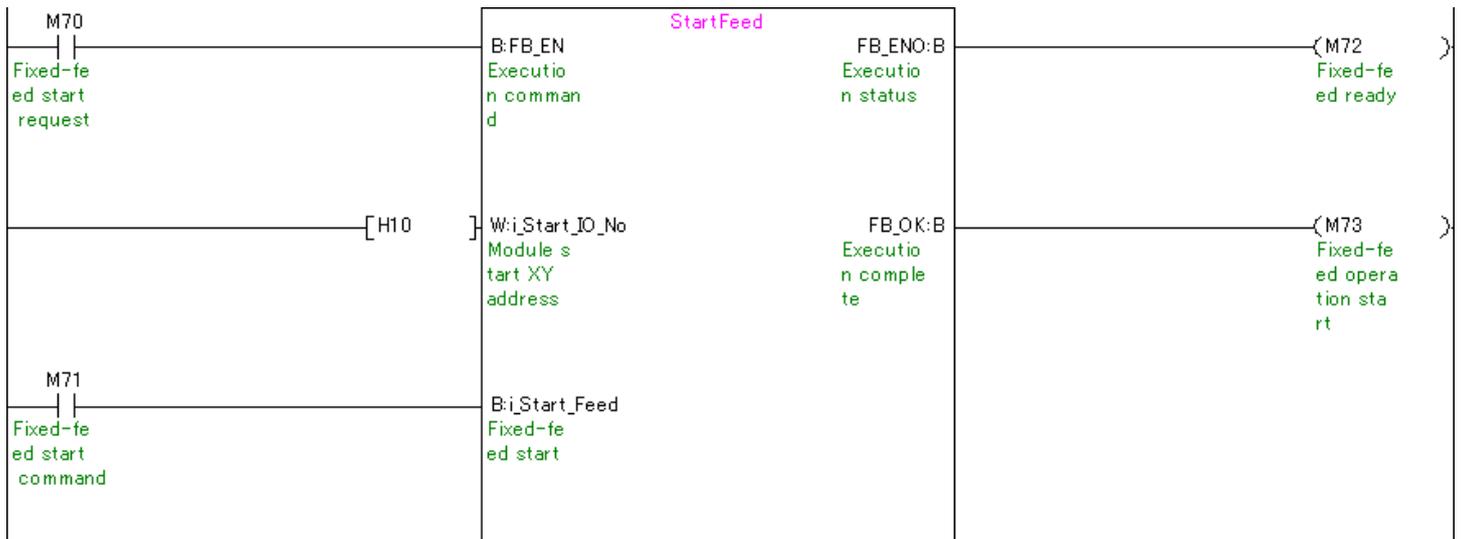


## M+QD73A1\_StartFeed (Fixed-feed start)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.

By turning ON M70 with M71 ON, the fixed-feed is started.

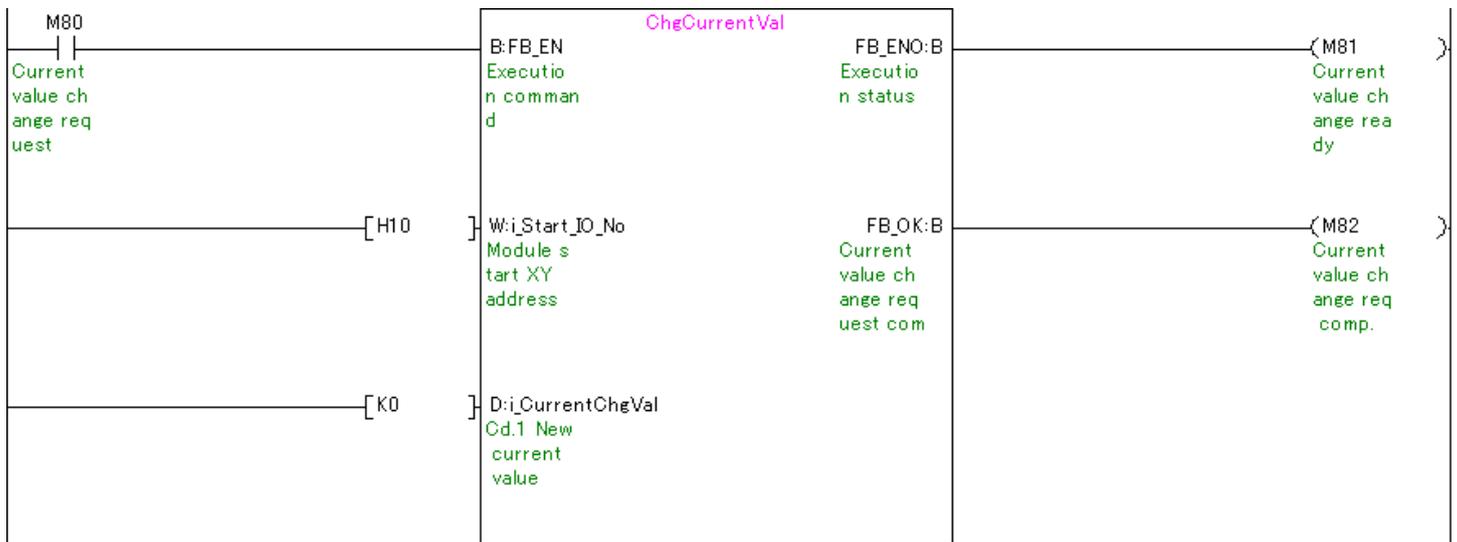


M+QD73A1\_ChgCurrentVal (Current value change)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_CurrentChgVal	K0	Set the control data "Cd.1 New current value" to 0 [pulse].

By turning ON M80, the value is changed to the new current value set in i\_CurrentChgVal (Cd.1 New current value)

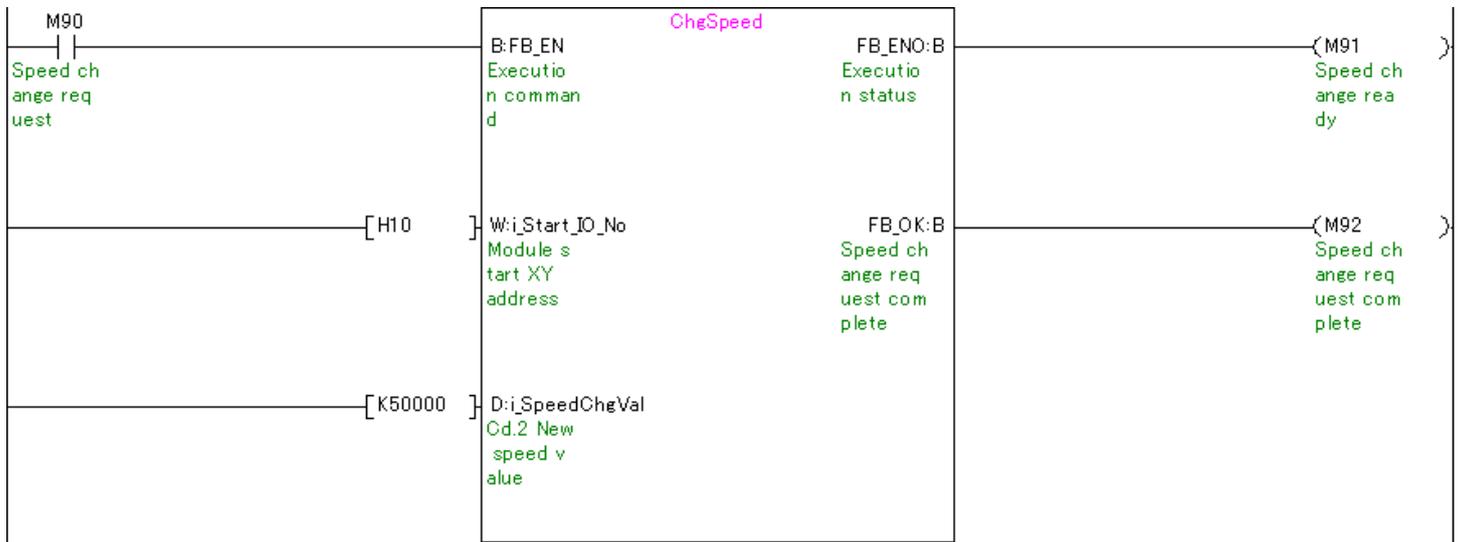


M+QD73A1\_ChgSpeed (Speed change)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_SpeedChgVal	K50000	Set the control data "Cd.2 New speed value" to 50,000 [pulse/s].

By turning ON M90, the value is changed to the new speed value set in i\_SpeedChgVal (Cd.2 New speed value)

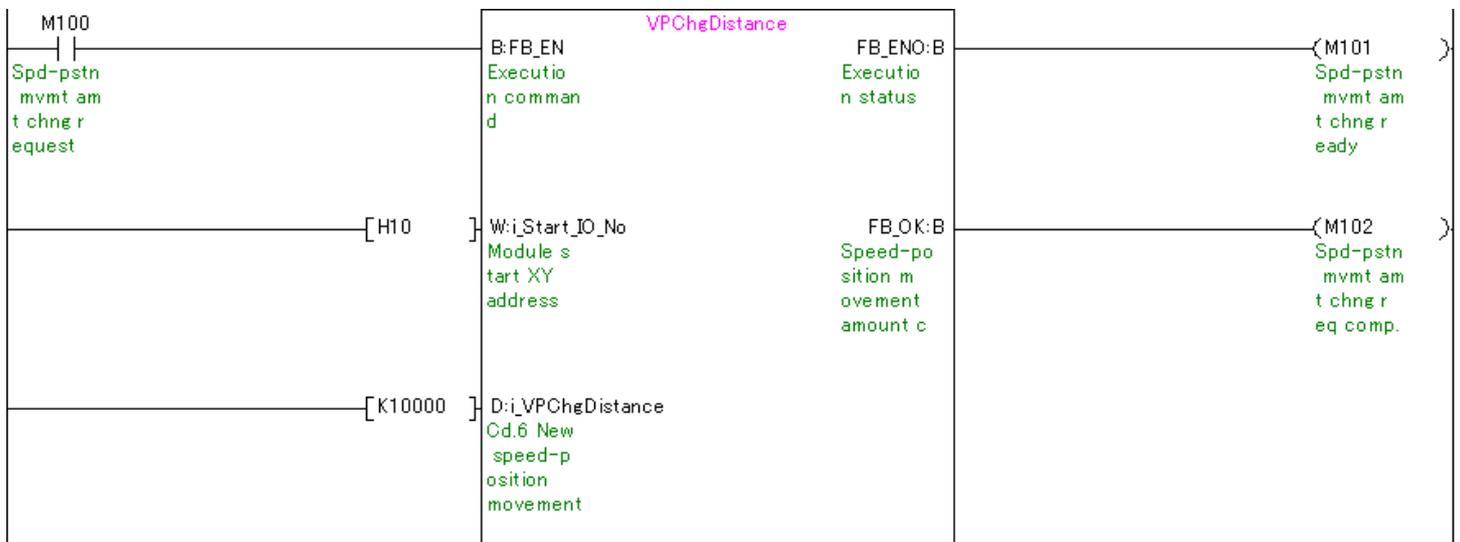


M+QD73A1\_VPChgDistance (Speed-position movement amount change)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_VPChgDistance	K10000	Set the control data "Cd.6 New speed-position movement amount" to 10,000 [pulse].

By turning ON M100, the value is changed to the value set in i\_VPChgDistance (Cd.6 New speed-position movement amount).

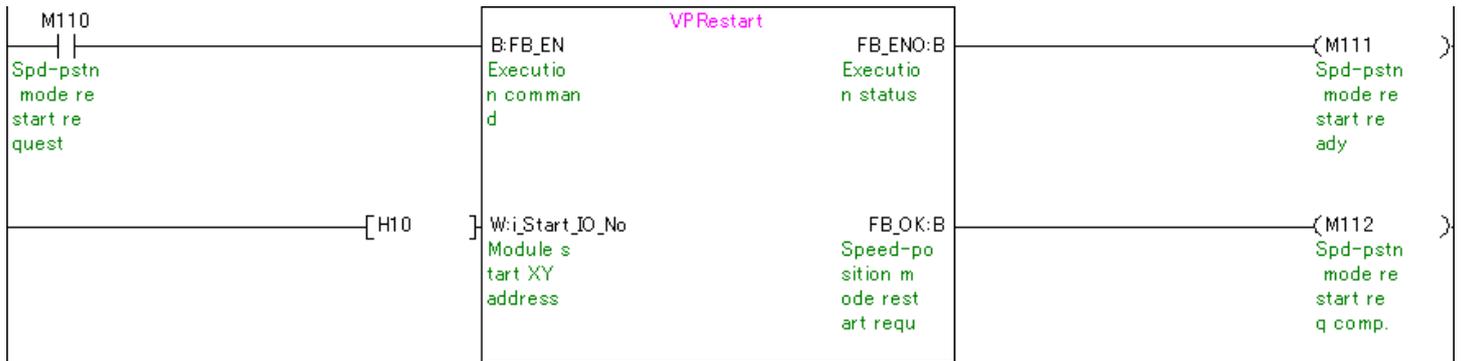


M+QD73A1\_VPRestart (Speed-position mode restart)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.

By turning ON M110, the positioning control that has stopped during the speed-position control switch mode restarts.

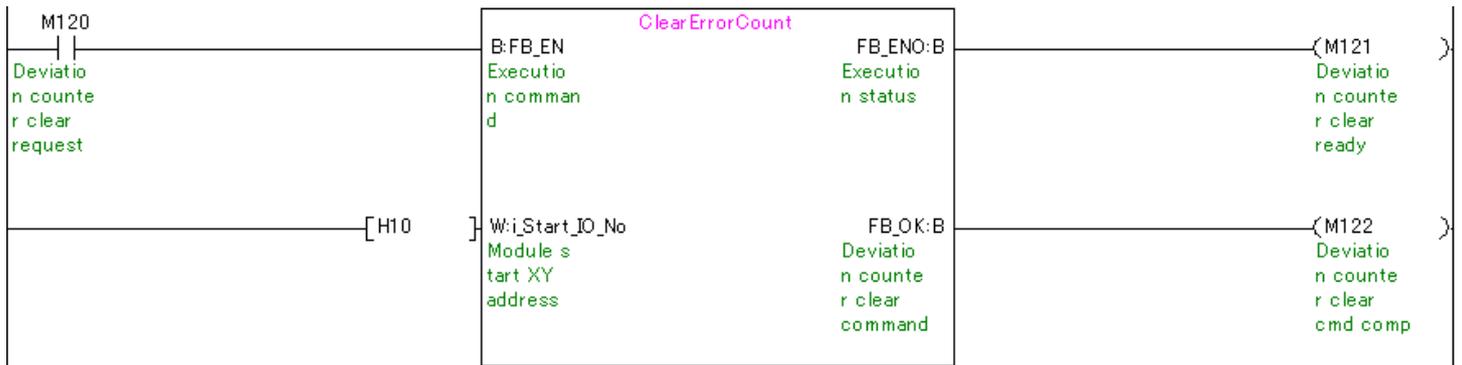


M+QD73A1\_ClearErrorCounter (Deviation counter clear)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.

By turning ON M120, the accumulated pulses stored in the deviation counter are cleared.

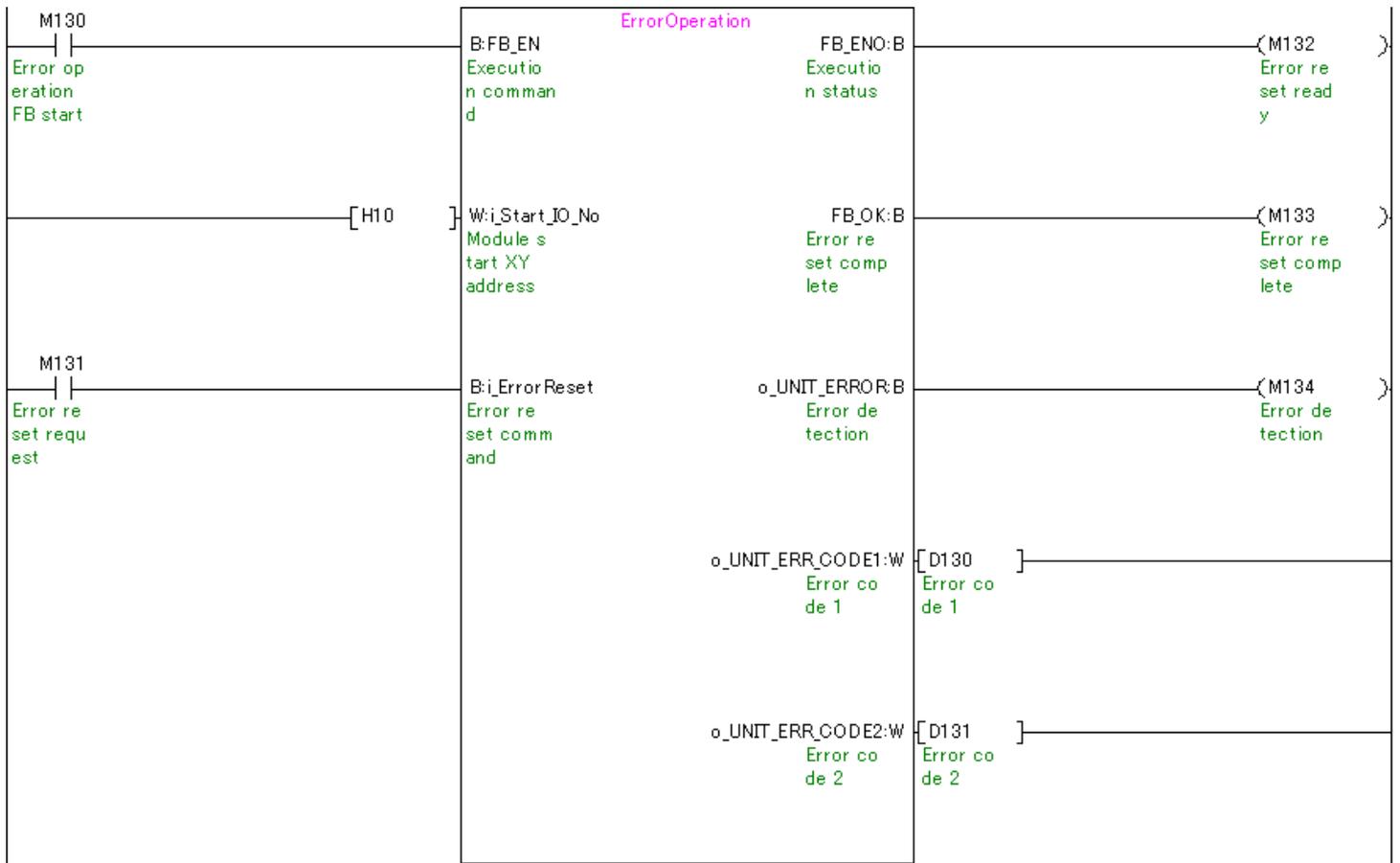


M+QD73A1\_ErrorOperation (Error operation)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.

By turning ON M130, an error is monitored. By turning ON M131 with M130 ON, an error is reset.



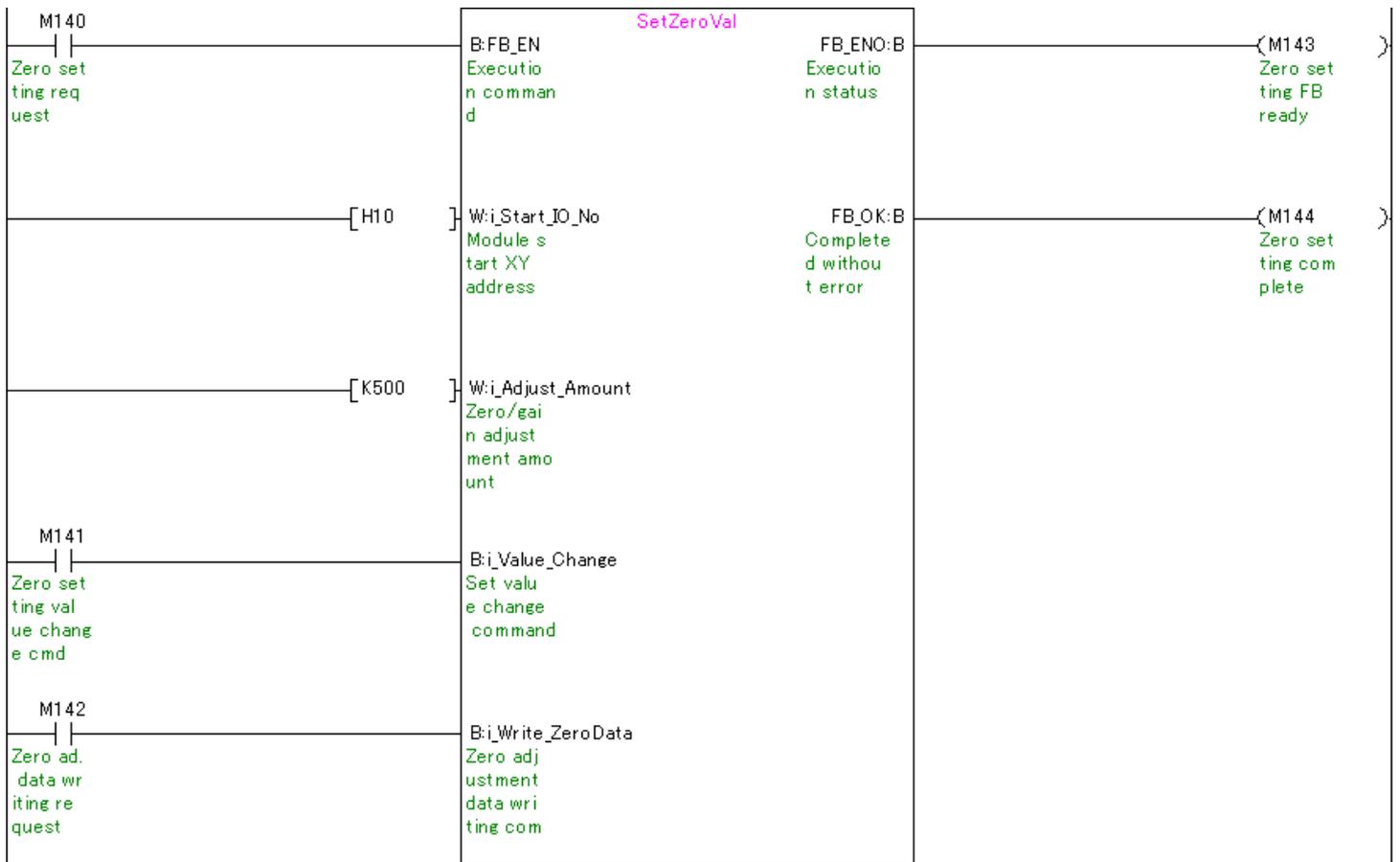
M+QD73A1\_SetZeroVal (Zero setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_Adjust_Amount	K500	Set the zero/gain adjustment amount to 500.

By turning ON M140, the zero adjustment is performed. By setting the adjustment amount to i\_Adjust\_Amount (zero/gain adjustment amount) and turning ON M141, the analog output value is adjusted.

By turning ON M142, the zero adjustment value is input to the QD73A1.



## M+QD73A1\_SetGainVal (Gain setting)

The following shows the example program with the conditions described in the table below.

Label name	Setting value	Description
i_Start_IO_No	H10	Specify the starting XY address of the second slot where the QD73A1 is mounted to 10H.
i_Adjust_Amount	K500	Set the zero/gain adjustment amount to 500.

By turning ON M150, the gain adjustment is performed. By setting the adjustment amount to i\_Adjust\_Amount (zero/gain adjustment amount) and turning ON M151, the analog output value is adjusted.

By turning ON M152, the gain adjustment value is input to the QD73A1.

