

# Mitsubishi Programmable Controller

# MELSEC iQ-R

# MELSEC iQ-R Simple Motion Module Function Block Reference

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#### This FB list is for using the MELSEC iQ-R series simple motion module.

Name	Description
M+RD77_SetPositioningData	Sets positioning data (Da.1 to Da.10, Da.20 to Da.22, Da.27 to Da.29).
M+RD77_StartPositioning	Starts the positioning operation.
M+RD77_JOG	Performs the JOG operation or inching operation.
M+RD77_MPG	Performs the manual pulse generator operation.
M+RD77_ChangeSpeed	Changes the speed.
M+RD77_ChangeAccDecTime	Changes the acceleration/deceleration time at a speed change.
M+RD77_ChangePosition	Changes the target position.
M+RD77_Restart	Restarts the axis being stopped.
M+RD77_OperateError	Monitors errors and warnings, and resets errors.
M+RD77_InitializeParameter	Initializes the parameter.
M+RD77_WriteFlash	Writes the parameter, positioning data, and block start data in the buffer memory to the flash ROM.
M+RD77_ChangeServoParameter	Changes the servo parameter after the amplifier is activated.
M+RD77_ChangeTorqueControlMode	Sets torque limit values in the forward direction and reverse direction individually.
M+RD77_ChangeSpeedControlMode	Activates the speed control mode.
M+RD77_ChangePositionControlMode	Activates the position control mode.
M+RD77_ChangeContinuousTorqueMode	Activates the continuous operation to torque control mode.
M+RD77_Sync	Starts and ends the synchronous control.
M+RD77_ChangeSyncEncoderPosition	Changes the synchronous encoder axis current value and synchronous encoder axis current value per cycle.
M+RD77_DisableSyncEncoder	Disables inputs from the synchronous encoder axis.
M+RD77_EnableSyncEncoder	Enables inputs from the synchronous encoder axis.
M+RD77_ResetSyncEncoderError	Reads error information from the synchronous encoder axis, and resets the error.
M+RD77_ConnectSyncEncoder	Connects a synchronous encoder via CPU.
M+RD77_MoveCamReferencePosition	Adds the movement amount set in the synchronous control change value to the cam reference position to move the cam reference position.
M+RD77_ChangeCamPositionPerCycle	Changes the cam axis current value per cycle to a synchronous control change value.
M+RD77_ChangeMainShaftGearPositionPerCycle	Changes the current value per cycle after main shaft gear to a synchronous control change value.
M+RD77_ChangeAuxiliaryShaftGearPositionPerCycle	Changes the current value per cycle after auxiliary shaft gear to a synchronous control change value.
M+RD77_MoveCamPositionPerCycle	Adds the movement amount set in the synchronous control change value to a cam axis current value per cycle to move the cam axis current value per cycle.
M+RD77_MakeRotaryCutterCam	Automatically generates the cam for a rotary cutter.
M+RD77_CalcCamCommandPosition	Calculates a cam axis feed current value, and outputs the calculation result.
M+RD77_CalcCamPositionPerCycle	Calculates a cam axis current value per cycle, and outputs the calculation result.

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# **2** Simple Motion Module FB

## 2.1 M+RD77\_SetPositioningData

#### Name

M+RD77\_SetPositioningData

#### **Function overview** Item Description Sets positioning data (Da.1 to Da.10, Da.20 to Da.22, Da.27 to Da.29). Function overview Symbol M+RD77 SetPositioningData Execution command B:i\_bEN o\_bENO : B Execution status Module label DUT : i\_stModule o\_bOK : B Completed without error Target axis UW:i uAxis o bErr: B Error flag Positioning data No. UW : i\_uDataNo o\_uErrld : UW Error code Applicable hardware and Applicable module RD77MS16, RD77MS8, RD77MS4, RD77MS2 software Applicable CPU MELSEC iQ-R series Applicable engineering software GX Works3 Programming language Ladder Number of steps (maximum) 209 steps Function description • By turning ON i\_bEN (Execution command), the set positioning data is written to the buffer memory. • When the setting value of the target axis is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o\_uErrld (Error code). • When the setting value of the positioning data No. is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 101 (Hexadecimal) is stored in o\_uErrld (Error code). Compiling method Macro type FB operation type Pulsed execution (single scan execution type)

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Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Positioning data setting processing Write No processing	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code) 0	
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Positioning data setting No processing	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code) 0 Error code 0	
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>	

Error codes					
Error code	Description	Action			
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.			
101 (Hexadecimal)	The setting value of i_uDataNo (Positioning data No.) is out of the range. The positioning data No. is not within the range of 1 to 100.	Please try again after confirming the setting.			

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Positioning data No.	i_uDataNo	Word [unsigned]	1 to 100	Specify the positioning data No.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that setting the positioning data has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

#### ■Disclosed labels

Name	Variable name	Data type	Setting range	Description
Da.1: Operation pattern	pb_uOpePattern	Word [unsigned]	0: Positioning complete 1: Continuous positioning control 3: Continuous path control	Specify whether the positioning is completed with the data being executed, or continues with the following data. When 4 or higher, which is out of the setting range, is specified, bit 0 and 1 are enabled. For example, when 4 is set, 0 is applied.
Da.2: Control system	pp_ucmsys	vvora [unsigned]	<ul> <li>UTH: ABS1 1-24IS linear control (ABS)</li> <li>02H: INC1 1-axis linear control (INC)</li> <li>03H: FEED1 1-axis speed control (Forward)</li> <li>05H: VF1 1-axis speed control (Reverse)</li> <li>06H: VPF Speed-position switching control (Reverse)</li> <li>08H: PVF Position-speed switching control (Reverse)</li> <li>08H: PVF Position-speed switching control (Reverse)</li> <li>08H: PVF Position-speed switching control (ABS)</li> <li>09H: PVR Position-speed switching control (INC)</li> <li>09H: PVR Position-speed switching control (INC)</li> <li>00H: ABS2 2-axis linear interpolation control (INC)</li> <li>00H: FEED2 Fixed-feed control by 2-axis linear</li> <li>interpolation</li> <li>0DH: ABS^ Circular interpolation control with sub point</li> <li>designation (ABS)</li> <li>0EH: INC^ Circular interpolation control with sub point</li> <li>designation (ABS, CW)</li> <li>0FH: ABS. Circular interpolation control with center point</li> <li>designation (ABS, CCW)</li> <li>10H: ABS. Circular interpolation control with center point</li> <li>designation (ABS, CCW)</li> <li>11H: INC. Circular interpolation control with center point</li> <li>designation (INC, CW)</li> <li>12H: INC. Circular interpolation control with center point</li> <li>designation (INC, CW)</li> <li>13H: VF2 2-axis speed control (Forward)</li> <li>14H: VR2 2-axis speed control (Reverse)</li> <li>15H: ABS3 3-axis linear interpolation control (INC)</li> <li>17H: FEED3 Fixed-feed control by 3-axis linear</li> <li>interpolation</li> <li>16H: INC3 3-axis linear interpolation control (INC)</li> <li>17H: FEED3 Fixed-feed control (Reverse)</li> <li>14H: ABS4 4-axis linear interpolation control (INC)</li> <li>17H: FEED4 Fixed-feed control by 4-axis linear</li> <li>interpolation</li> <li>10H: VF3 4-axis speed control (Reverse)</li> <li>14H: NPO NOP instruction</li> <li>81H: INC4 4-axis speed control (Reverse)</li> <li>80H: NOP NOP instruction</li> <li>81H: COP Top of LOOP-LEND loop</li> <li>84H: LEND End of LOOP-LEND loop</li> <li>84H: LEND End of LOOP-LEND</li></ul>	Sets the control system for positioning control.
Da.3: Acceleration time No.	pb_uAccTimeNo	Word [unsigned]	0: Acceleration time 0 1: Acceleration time 1 2: Acceleration time 2 3: Acceleration time 3	Set any of the acceleration time 0 to 3 as the acceleration time for positioning. When 4 or higher, which is out of the setting range, is specified, bit 0 and 1 are enabled. For example, when 4 is set, 0 is applied.

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Name	Variable name	Data type	Setting range	Description
Da.4: Deceleration time No.	pb_uDecTimeNo	Word [unsigned]	0: Deceleration time 0 1: Deceleration time 1 2: Deceleration time 2 3: Deceleration time 3	Set any of the deceleration time 0 to 3 as the deceleration time for positioning. When 4 or higher, which is out of the setting range, is specified, bit 0 and 1 are enabled. For example, when 4 is set, 0 is applied.
Da.10: M code	pb_uMcode	Word [unsigned]	Da.2: Control system = 82H: JUMP instruction • 0 to 10 Da.2: Control system = 83H: LOOP • 1 to 65535 Da.2: Control system = Other than the above • 0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the condition data No., number of repetitions, or M code for the control system.
Da.9: Dwell time	pb_uDwellTime	Word [unsigned]	Da.2: Control system = 82H: JUMP instruction • 1 to 600 Da.2: Control system = 82H: Other than JUMP instruction • 0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the positioning data No. or dwell time for the control system.
Da.27: M code ON signal output timing	pb_uMcodeOnTimin g	Word [unsigned]	0: Setting value of Pr.18 M code ON signal output timing 1: WITH mode 2: AFTER mode	Set the timing to output the M code ON signal. When 4 or higher is specified, bit 0 and 1 are enabled. For example, when 4 is set, 0 is applied.
Da.28: ABS direction in degrees	pb_uABS	Word [unsigned]	0: Setting value of Cd.40 ABS direction in degrees 1: ABS circular right 2: ABS circular left 3: Takes a shortcut. (Specified direction ignored.)	Set the movement direction of ABS when the unit is degree under position control. When 4 or higher, which is out of the setting range, is specified, bit 0 and 1 are enabled. For example, when 4 is set, 0 is applied.
Da.29: Interpolation speed designation method	pb_uInterpolateSpd	Word [unsigned]	0: Setting value of Pr.20 Interpolation speed designation method. 1: Composite speed 2: Reference axis speed	Set whether to specify the composite speed or reference axis speed when performing liner interpolation or circular interpolation. When 8 or higher is specified, bit 0, 1, and 2 are enabled. For example, when 8 is set, 0 is applied.
Da.8: Command speed	pb_udCmdSpd	Double word [unsigned]	Pr.1: Unit setting = 0, 1, 2 • 1 to 2,000,000,000 Pr.1: Unit setting = 3 • 1 to 5,000,000	Set the command speed for positioning.
			FFFFFFFH: Current speed (Speed set for the previous positioning data No.)	The speed set for the previous positioning data No. is used for positioning control.

Name	Variable name	Data type	Setting range	Description
Da.6: Positioning address	pb_dPositAdr	Double word [signed]	Pr.1: Unit setting = 0, 1, 3 • Da.2: Control system = 06H to 09H: 0 to 2,147,483,647 Pr.1: Unit setting = 0, 1, 3 • Da.2: Control system = Other than 06H to 09H: - 2,147,483,648 to 2,147,483,647 Pr.1: Unit setting = 2 • Da.2: Control system = 01H, 0AH, 15H, 1AH, 81H, 20H, 22H, 23H: 0 to 35,999,999 Pr.1: Unit setting = 2 • Da.2: Control system = 02H, 0BH, 16H, 1BH, 03H, 0CH, 17H, 1CH, 20H, 22H, 23H: -2,147,483,648 to 2,147,483,647 Pr.1: Unit setting = 2 • Da.2: Control system = 06H, 07H: 0 to 2,147,483,647 (INC mode), 0 to 35,999,999 (ABS mode) Pr.1: Unit setting = 2 • Da.2: Control system = 08H, 09H: 0 to 2,147,483,647	Specify the target position or movement amount for positioning control. The setting value differs depending on the control system.
Da.7: Arc address	pb_dArcAdr	Double word [signed]	Pr.1: Unit setting = 0, 1, 3 • -2,147,483,648 to 2,147,483,647 Pr.1: Unit setting = 2 • Unused (Set 0.)	Use this label only when performing circular interpolation control. For the control with sub point designation, set the sub point address. For the control with center point designation, set the center point address of the arc.
Da.20: Axis to be interpolated No. 1	pb_uInterpolatedAx No1	Word [unsigned]	0H: Axis 1 1H: Axis 2 2H: Axis 3 3H: Axis 4 4H: Axis 5 5H: Axis 6 6H: Axis 7 : EH: Axis 15 FH: Axis 16	Set the interpolation-target axis 1 when performing interpolation operation. Values out of the setting range or the own axis cannot be set as the interpolation- target axis. Set 0 to disable the interpolation. When 100H or higher is set, lower 8 bits (bit 0 to 7) are enabled. For example, when 101H is set, 1H is applied.
Da.21: Axis to be interpolated No. 2	pb_uInterpolatedAx No2	Word [unsigned]	0H: Axis 1 1H: Axis 2 2H: Axis 3 3H: Axis 4 4H: Axis 5 5H: Axis 6 6H: Axis 7 : EH: Axis 15 FH: Axis 16	Set the interpolation-target axis 2 when performing interpolation operation. Values out of the setting range or the own axis cannot be set as the interpolation- target axis. Set 0 to disable the interpolation or for 2-axis interpolation control. When 100H or higher is set, lower 8 bits (bit 0 to 7) are enabled. For example, when 101H is set, 1H is applied.

Name	Variable name	Data type	Setting range	Description
Da.22: Axis to be	pb_uInterpolatedAx	Word [unsigned]	0H: Axis 1	Set the interpolation-target
interpolated No. 3	No3		1H: Axis 2	axis 3 when performing
			2H: Axis 3	interpolation operation.
			3H: Axis 4	Values out of the setting
			4H: Axis 5	range or the own axis cannot
			5H: Axis 6	be set as the interpolation-
			6H: Axis 7	target axis.
			:	Set 0 to disable the
			:	interpolation, for 2-axis
			EH: Axis 15	interpolation control, or for 3-
			FH: Axis 16	axis interpolation control.
				When 100H or higher is set,
				lower 8 bits (bit 0 to 7) are
				enabled.
				For example, when 101H is
				set, 1H is applied.

version upgrade history				
Version	Date	Description		
00D	2014/06/30	First edition		

M+RD77\_StartPositioning

#### Function overview Item Description Function overview Starts the positioning operation. Symbol M+RD77 StartPositioning Execution command Execution status B:i\_bEN o bENO: B Module label DUT : i\_stModule o\_bOK : B Completed without error Target axis UW : i\_uAxis Error flag o bErr : B Cd.3: Positioning UW : i\_uStartNo o uErrld : UW Error code start No. Applicable hardware and Applicable module RD77MS16, RD77MS8, RD77MS4, RD77MS2 software Applicable CPU MELSEC iQ-R series GX Works3 Applicable engineering software Programming language Ladder Number of steps (maximum) 410 steps Function description • By turning ON i\_bEN (Execution command), the control corresponding to i\_uStartNo (Cd.3: Positioning start No.) is started. • This FB is activated by turning ON the positioning start signal (Y10 to Y1F). • Only when the conditions are met, the positioning start signal (Y10 to Y1F) is turned ON by turning ON i\_bEN (Execution command). The conditions are the following: RD77 READY (X0) is ON, positioning start signal (Y10 to Y1F) is OFF, start complete signal (Md.31) is OFF, and BUSY signal (X10 to X1F) is OFF. If any of the conditions is not met, the error code 200 (hexadecimal) is stored in o\_uErrld (Error code). • When the start complete signal (Md.31) is turned ON or i bEN (Execution command) is turned OFF, the positioning start signal (Y10 to Y1F) is turned OFF. • When the setting value of the target axis is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o\_uErrId (Error code). • When the setting value of the positioning start No. is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 102 (Hexadecimal) is stored in o\_uErrld (Error code). Compiling method Macro type FB operation type Pulsed execution (multiple scan execution type)

Item	Description	
Timing chart	When operation completes without an e	rror
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Parameter writing processing	No processing Write No processing
	Positioning start signal	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	I
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Parameter writing processing	No processing
	Positioning start signal	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recover the required system operation.</li> <li>The FB cannot be used in an interrup</li> <li>Ensure that i_bEN (Execution command that are only executed once such as a turned OFF.</li> <li>This FB turns ON and OFF the position (Y10 to Y1F) by the other means while</li> <li>When this FB is used twice or more on interlock to prevent the FBs from bein</li> <li>When this FB is used twice or more provided by the module I</li> <li>This FB does not set the data when st memory.</li> <li>Every input must be provided with a v</li> </ul>	ry processing. Program the error recovery processing separately in accordance with t program. Ind) is capable of being turned OFF by the program. Do not use this FB in programs a subroutine and FOR-NEXT loop because i_bEN (Execution command) cannot be uning start signal (Y10 to Y1F). Thus, do not turn ON or OFF the positioning start signal e this FB is being executed. If other FB that operates the Y signal same as the signal this FB does, create an g activated at the same time. Derecaution must be taken to avoid repetition of the target axis. Dalaces, a duplicated coil warning may occur during compile operation due to the Y label. However, this is not a problem and the FB will operate without an error. The program of the start No. must be set on the parameter or buffer alue for proper FB operation.

Error codes		
Error code	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.
102 (Hexadecimal)	The setting value of i_uStartNo (Cd.3: Positioning start No.) is out of the range. The positioning start No. is not within the range of 1 to 600, 7000 to 7004, and 9001 to 9004.	Please try again after confirming the setting.
200 (Hexadecimal)	The condition for positioning start is not met. Any of the following conditions is not met. • RD75 READY: On • Positioning start signal: Off • Start complete signal: Off • BUSY signal: Off	Execute the FB when all of the following conditions are met. • RD75 READY: On • Positioning start signal: Off • Start complete signal: Off • BUSY signal: Off

## ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.3: Positioning start No.	i_uStartNo	Word [unsigned]	1 to 600: Positioning data No. 7000 to 7004: Block start designation 9001: Machine home position return 9002: Fast-home position return 9003: Current value changing 9004: Simultaneous starting of multiple axes	Set the positioning start No. corresponding to the control to be started in Cd.3: Positioning start No.

## ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that executing this FB has been completed. However, this label does not turn ON when a module error occurs at the start.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_JOG

#### Function overview Description Item Function overview Performs the JOG operation or inching operation. Symbol M+RD77\_JOG Execution command B:i\_bEN o\_bENO : B Execution status Module label DUT: i stModule Completed without error o bOK: B Error flag o\_bErr : B Target axis UW : i\_uAxis Forward run JOG command B:i\_bFJog o\_uErrld : UW Error code Reverse run JOG command B:i\_bRJog Cd.17: JOG speed UD : i\_udJogSpeed Cd.16: Inching movement amount -UW : i\_uInching RD77MS16, RD77MS8, RD77MS4, RD77MS2 Applicable hardware and Applicable module software Applicable CPU MELSEC iQ-R series Applicable engineering software GX Works3 Programming language Ladder Number of steps (maximum) 384 steps Function description • By turning ON i\_bFJog (Forward run JOG command) or i\_bRJog (Reverse run JOG command) after i\_bEN (Execution command) is turned ON, the JOG operation or inching operation is performed. • When i\_bFJog (Forward run JOG command) and i\_bRJog (Reverse run JOG command) are ON at the same time, the operation stops. • When i\_bEN (Execution command) is turned OFF from ON during operation that has been started by i\_bFJog (Forward run JOG command) or i\_bRJog (Reverse run JOG command), the operation stops. • When i\_bRJog (Reverse run JOG command) is turned ON during forward run JOG operation, the operation stops. However, when i\_bRJog (Reverse run JOG command) is turned OFF from ON, the forward run JOG operation restarts. (This relation is also applied to the reverse run JOG operation and i\_bFJog (Forward run JOG command). • When the setting value of the target axis is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o uErrld (Error code). Compiling method Macro type FB operation type Real-time execution

Item	Description	ion				
Timing chart	When operat	ion completes w	ithout an error			
	i_bEN					
	(Execution co	mmand)				
	o_bENO (Exe	ecution status)			<b></b>	
	i_bFJog			▼		
	(Forward run J	JOG command)			$\mathbf{V}$	
	(Reverse run .	JOG command)				
	o_bOK (Completed w	vithout error)	×.			
	o_bErr (Error	flag)				
	o_uErrld (Erro	or code)		0		
	When an erro	or occurs				
	i_bEN			×.		
	(Execution co	ommand)				
	o_bENO (Exe	ecution status)	T		_v	
	JOG operatio	n		Standby		
	o_bOK		λ		\	
	(Completed w	vithout error)				
	o_bErr (Error	flag)		$\backslash$	$\backslash$	
	o_uErrld (Erre	or code)	0	Error code	0	
Restrictions and precautions	The FB do     the require	es not include e d system operat	rror recovery processing. Prog ion.	gram the error recovery proces	sing separately in accordance with	
	• The FB car	nnot be used in	an interrupt program.			
	<ul> <li>Ensure tha that are on</li> </ul>	it i_bEN (Execut ily executed onc	ion command) is capable of b e such as a subroutine and F	eing turned OFF by the progra DR-NEXT loop because i_bEN	m. Do not use this FB in programs (Execution command) cannot be	
	turned OFF	F.		-		
	This FB tur turn ON or	OFF the forward	the forward run JOG start sig frun JOG start signal (Cd.181	nal (Cd.181) or reverse run JO ) or reverse run JOG start sign:	G start signal (Cd.182). Thus, do not al (Cd.182) by the other means while	
	this FB is b	being executed.	ar more or other CD that and	rates the Visional same as the	aignal this ED daga arouts on	
	<ul> <li>when this interlock to</li> </ul>	PB is used twice prevent the FB	s from being activated at the	rates the Y signal same as the ame time.	signal this FB does, create an	
	When this	FB is used twice	or more, precaution must be	taken to avoid repetition of the	e target axis.	
	Setting a la the value g	arge value for the gradually while c	e JOG speed from the beginni hecking the operation to deter	ng is dangerous. For the safety mine the value optimal for the	, set a small value first, and increase control.	
	• When valu	es other than 0	are set in both i_ulnching (Cd	16: Inching movement amount	t) and i_udJogSpeed (Cd.17: JOG	
	<ul> <li>speed), inc</li> <li>When this</li> </ul>	FB is used in tw	s performed. o or more places, a duplicate	d coil warning may occur during	g compile operation due to the Y	
	signal bein	signal being operated by the module label. However, this is not a problem and the FB will operate without an error.				
	• Every input	t must be provid	eu with a value for proper FB	operation.		
Error codes						
Error code		Description		Action		
100 (Hexadecimal) The s out of within		The setting value out of the range within the range	ue of i_uAxis (Target axis) is e. The target axis is not e of 1 to 16.	Please try again after confirm forward run JOG command o ON i_bEN from OFF, and turr or reverse run JOG command	ing the setting. (Turn OFF the r reverse run JOG command, turn n ON the forward run JOG command d again.)	

#### ∎Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Forward run JOG command	i_bFJog	Bit	ON, OFF	Turn ON this label when performing the forward run JOG operation or forward run inching operation.
Reverse run JOG command	i_bRJog	Bit	ON, OFF	Turn ON this label when performing the reverse run JOG operation or reverse run inching operation.
Cd.17: JOG speed	i_udJogSpeed	Double word [unsigned]	Pr.1: Unit setting = mm • 0 to 200000000 Pr.1: Unit setting = inch • 0 to 200000000 Pr.1: Unit setting = degree • 0 to 200000000 Pr.1: Unit setting = pulse • 0 to 100000000	Specify the JOG speed. For inching operation, set 0.
Cd.16: Inching movement amount	i_ulnching	Word [unsigned]	0 to 65535 0: JOG operation (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Specify the inching movement amount. For JOG operation, set 0.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	ON: The JOG command is ON. OFF: The JOG command is OFF.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The generated error code is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_MPG

## Function overview

Item	Description				
Function overview	Performs the manual pulse generator operation.				
Symbol					
		M+RD77_MPG			
	Execution command ——	B:i_bEN	o_bENO : B -	—— Execution status	
	Module label ——— I	DUT : i_stModule	o_bOK : B -	—— Completed without error	
	Target axis ——	JW : i_uAxis	o_bErr : B	Error flag	
	Cd.20: Manual pulse generator —— I 1 pulse input magnification	JD : i_udMPGInputMagnification	o_uErrld : UW -	Error code	
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD77MS4	, RD77MS2		
software	Applicable CPU	MELSEC iQ-R series			
	Applicable engineering software	GX Works3			
Programming language	Ladder				
Number of steps (maximum)	336 steps				
Function description	<ul> <li>By turning ON or OFF i_bEN (Execution command), manual pulse generator operation is enabled or disabled.</li> <li>This FB is constantly executed after i_bEN (Execution command) is turned ON.</li> <li>The workpiece moves according to the pulses input from the manual pulse generator while o_bOK (Completed without error) is ON.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Real-time execution				

Item	Description			
Timing chart	When operation completes without an error			
	i_bEN (Execution command)			
	o_bENO (Execution status)			
	o_bOK (Completed without error)			
	o_bErr (Error flag)			
	o_uErrld (Error code) 0			
	When an error occurs			
	i_bEN (Execution command)			
	o_bENO (Execution status)			
	o_bOK (Completed without error)			
	o_bErr (Error flag)			
	o_uErrld (Error code) 0 Error code 0			
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> </ul>	:h		
	Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF			
	• Do not change i_uAxis (Target axis) while i_bEN (Execution command) is ON.			
	<ul> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>			
		-		

## Error codes

Error code	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.

#### Labels

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.20: Manual pulse generator 1 pulse input magnification	i_udMPGInputMagnifi cation	Double word [unsigned]	1 to 10,000	Set the input magnification of the manual pulse generator 1 pulse. When the setting value is 0, the magnification is 1. When the setting value is 10,001 or higher, the magnification is 10,000.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the manual pulse generator operation has been enabled.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_ChangeSpeed

Function overvie	w				
Item	Description	Description			
Function overview	Changes the speed.				
Symbol					
	Γ	M+RD77_ChangeSpeed			
	Execution command ——	3 : i_bEl	N	o_bENO : B	— Execution status
	Module label ——	DUT : i_	stModule	о_bOK : В	— Completed without error
	Target axis	UW : i_uAxis		o_bErr : B	— Error flag
	Cd.14: New speed value —— L	JD : i_u	dSpeedChangeValue	o_uErrld : UW	— Error code
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD	77MS4, RD77MS2	
software	Applicable CPU		MELSEC iQ-R series		
	Applicable engineering software		GX Works3		
Programming language	Ladder				
Number of steps (maximum)	210 steps				
Function description	<ul> <li>By turning ON i_bEN (Execution command), the speed used for the control is changed to a new speed.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (multiple scan	execut	ion type)		



2

Error codes				
Error code	Description	Action		
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.		
201 (Hexadecimal)	This FB is executed before positioning operation starts.	Please try again during positioning operation.		

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.14: New speed value	i_udSpeedChangeValue	Double word [unsigned]	Pr.1: Unit setting = mm • 0 to 200000000 Pr.1: Unit setting = inch • 0 to 200000000 Pr.1: Unit setting = degree • 0 to 200000000 Pr.1: Unit setting = pulse • 0 to 100000000	Set a new speed.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing the speed has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The generated error code is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeAccDecTime

## **Function overview**

Item	Description			
Function overview	Changes the acceleration/deceleration time at a speed change.			
Symbol		M+RD77_ChangeAccDecTime		
	Execution command ——	B : i_bEN	o_bENO : B	—— Execution status
	Module label ——	DUT : i_stModule	o_bOK : B	—— Completed without error
	Target axis ——	UW : i_uAxis	o_bErr : B	——— Error flag
	Acceleration/deceleration time	B : i_bEnable	o_uErrld : UW	—— Error code
	Cd.10: New acceleration time —— value	UD : i_udNewAccelerationTime		
	Cd.11: New deceleration time —— value	UD : i_udNewDecelerationTime		
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD77MS4, RD77MS2		
software	Applicable CPU	MELSEC iQ-R series		
	Applicable engineering software	GX Works3		
Programming language	Ladder	1		
Number of steps (maximum)	212 steps			
Function description	<ul> <li>By turning ON i_bEN (Execution command), the setting of the acceleration/deceleration time is changed according to i_bEnable (Acceleration/deceleration time change enabled flag). When i_bEnable (Acceleration/deceleration time change enabled flag) is ON, i_udNewAccelerationTime (Cd.10: New acceleration time value) and i_udNewDecelerationTime (Cd.11: New deceleration time value) are set and Cd.12: Acceleration/deceleration time change during speed change, enable/ disable selection is changed to 1: Enables modifications to accelerationTime (Cd.10: New acceleration time. When i_bEnable (Acceleration/ deceleration time value) and i_udNewDeceleration/ deceleration time change enabled flag) is OFF, i_udNewAccelerationTime (Cd.10: New acceleration time value) and i_udNewDecelerationTime (Cd.11: New deceleration time value) are not set and Cd.12: Acceleration/deceleration time change during speed change, enable/disable selection is changed to 0: Disables modifications to acceleration/deceleration/deceleration/time.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>			
Compiling method	Macro type			
FB operation type	Pulsed execution (single scan execution type)			

Item	Description	
Timing chart	When operation completes without an error • (When Cd.12: Acceleration/deceleration time	change during speed change, enable/disable selection is enabled)
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	i_bEnable (Acceleration/deceleration time change enabled flag)	
	Cd.10/Cd.11: New acceleration time value/New deceleration time value	Current value New value
	Acceleration/deceleration time change enabled or disabled	Disabled Enabled Disabled
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	(When Cd.12: Acceleration/deceleration time	I change during speed change, enable/disable selection is disabled)
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	i_bEnable (Acceleration/deceleration time change enabled flag)	
	Cd.10/Cd.11: New acceleration time value/New deceleration time value	Current value
	Acceleration/deceleration time	Enabled
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	i_bEnable (Acceleration/deceleration time change enabled flag)	
	Cd.10/Cd.11: New acceleration time value/New deceleration time value	Current value
	Acceleration/deceleration time	Disabled
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0

Item	Description
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>A duplicated coil warning may occur during compile operation. However, this is not a problem and the FB will operate without an error.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>

#### Error codes

Error code	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.

## Labels

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Acceleration/ deceleration time change enabled flag	i_bEnable	Bit	ON: Enabled OFF: Disabled	Set this label to enable or disable acceleration/deceleration time changes.
Cd.10: New acceleration time value	i_udNewAcceleratio nTime	Double word [unsigned]	0 to 8,388,608 (ms)	Set a new acceleration time. When 0 is set, the acceleration time is not changed after the speed is changed. In this case, the previously set acceleration time is applied to the control.
Cd.11: New deceleration time value	i_udNewDeceleratio nTime	Double word [unsigned]	0 to 8,388,608 (ms)	Set a new deceleration time. When 0 is set, the deceleration time is not changed after the speed is changed. In this case, the previously set deceleration time is applied to the control.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that setting acceleration/deceleration time change has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_ChangePosition

#### Function overview

Item	Description				
Function overview	Changes the target position.				
Symbol					
		M+RD77_ChangePosition	n		
	Execution command ——	B:i_bEN	o_bENO : B	— Execution status	
	Module label ——	DUT : i_stModule	o_bOK : B	Completed without     error	
	Target axis	UW : i_uAxis	o_bErr : B	—— Error flag	
	Cd.27: Target position change —— value (New address)	D : i_dTargetNewPosition	o_uErrld : UW	—— Error code	
	Cd.28: Target position change —— value (New speed)	UD : i_udTargetNewSpeed			
Applicable bardware and	Applicable module		77MS2		
software		MELSEC IO_P series	111132		
		GX Works3			
Programming language	Ladder	GA WORKSD			
Number of store (maximum)					
Number of steps (maximum)					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the target position is changed according to the value set in i_dTargetNewPosition (Cd.27: Target position change value (New address)) and the speed is changed according to the value set in i_udTargetNewSpeed (Cd.28: Target position change value (New speed)) during position control.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (multiple scan execution	ution type)			

Item	Description
Timing chart	When operation completes without an error
	i_bEN (Execution command)
	o_bENO (Execution status)
	Cd.27: Target position       Current value       New value         change value (New address)       Current value       New value         cd.28: Target position       Current value       New value         change value (New speed)       Current value       New value         o_bOK       (Completed without error)       Image: Value (New speed)
	o_uErrld (Error code) 0
	When an error occurs
	i_bEN (Execution command)
	o_bENO (Execution status)
	Cd.27/Cd.28: Target position change value
	o_bOK (Completed without error) o_bErr (Error flag)
	o_uErrId (Error code) 0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> <li>When i_bEN (Execution command) is turned ON while the BUSY signal (X10 to X1F) is OFF, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 201 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>

Error codes				
Error code	Description	Action		
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.		
201 (Hexadecimal)	This FB is executed before positioning operation starts.	Please try again during positioning operation.		

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.27: Target position change value (New address)	i_dTargetNewPositi on	Double word [signed]	Pr.1: Unit setting = mm • ABS: -2147483648 to +2147483647 • INC: -2147483648 to +2147483647 Pr.1: Unit setting = inch • ABS: -2147483648 to +2147483647 • INC: -2147483648 to +2147483647 Pr.1: Unit setting = degree • ABS: 0 to 35999999 • INC: -2147483648 to +2147483647 Pr.1: Unit setting = pulse • ABS: -2147483648 to +2147483647 • INC: -2147483648 to +2147483647	Set the new positioning address when changing the target position during positioning operation.
Cd.28: Target position change value (New speed)	i_udTargetNewSpee d	Double word [unsigned]	Pr.1: Unit setting = mm • 0 to 200000000 Pr.1: Unit setting = inch • 0 to 2000000000 Pr.1: Unit setting = degree • 0 to 2000000000 Pr.1: Unit setting = pulse • 0 to 1000000000	Set the new speed when changing the target position during positioning operation. When 0 is set, the speed is not changed.

## ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the module has accepted the target position change values.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The generated error code is stored.

Version	Date	Description			
00D	2014/06/30	First edition			

M+RD77\_Restart

#### Function overview Description Item Function overview Restarts the axis being stopped. Symbol M+RD77\_Restart o\_bENO : B Execution command B:i\_bEN Execution status DUT : i\_stModule Module label o\_bOK : B Completed without error W : i\_uAxis Target axis o\_bErr : B Error flag o\_uErrld : UW Error code RD77MS16, RD77MS8, RD77MS4, RD77MS2 Applicable hardware and Applicable module software Applicable CPU MELSEC iQ-R series Applicable engineering software GX Works3 Programming language Ladder Number of steps (maximum) 263 steps Function description • Only when the conditions are met, the positioning operation that is stopped due to an error is restarted by turning ON i\_bEN (Execution command). The conditions are the following: the positioning complete signal (Md.31: Status) is OFF and the axis operation status is a stop. When any of the conditions is not met, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 202 (Hexadecimal) is stored in o\_uErrld (Error code). • When the setting value of the target axis is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o\_uErrld (Error code). Compiling method Macro type FB operation type Pulsed execution (multiple scan execution type)

Item	Description
Timing chart	When operation completes without an error
	i_bEN (Execution command)
	o_bENO (Execution status)
	Restart command
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0
	When an error occurs
	i_bEN (Execution command)
	o_bENO (Execution status)
	Restart command
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> </ul>
	<ul> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>

Error codes					
Error code	Description	Action			
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.			
202 (Hexadecimal)	The conditions for positioning restart are not met. Any of the following conditions is not met. • Positioning complete signal: Off • Axis operation status: Stop	<ul><li>Please try again after confirming the setting.</li><li>Positioning complete signal: Off</li><li>Axis operation status: Stop</li></ul>			

## ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.

## ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the module has accepted the restart command request.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The generated error code is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_OperateError

#### Function overview Description Item Function overview Monitors errors and warnings, and resets errors Symbol M+RD77\_OperateError Execution command B:i\_bEN o\_bENO : B Execution status DUT : i\_stModule Module label o\_bOK : B Completed without error UW : i\_uAxis o bModuleErr : B Axis error detection Target axis Error reset command B : i\_bErrReset o\_uModuleErrId : UW Axis error code o\_bModuleWarn : B Axis warning detection o\_uModuleWarnId : UW Axis warning code o\_bErr : B Error flag o\_uErrld : UW Error code Applicable hardware and Applicable module RD77MS16, RD77MS8, RD77MS4, RD77MS2 software Applicable CPU MELSEC iQ-R series Applicable engineering software GX Works3 Programming language Ladder Number of steps (maximum) 407 steps Function description • By turning ON i\_bEN (Execution command), errors of the target axis are monitored. • When a module error occurs, an error code is stored in o\_uModuleErrld (Axis error code). · After i\_bEN (Execution command) is turned ON, the generated error is reset by turning ON i\_bErrReset (Error reset command). • When a warning occurs in the module, the warning can be reset by turning ON i\_bErrReset (Error reset command). • When the setting value of the target axis is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o\_uErrld (Error code). Compiling method Macro type FB operation type Real-time execution

Item	Description
Timing chart	When operation completes without an error
	i_bEN (Execution command) o_bENO (Execution status) i_bErReset (Error reset command) Axis error reset Error detection signal o_bModuleErr (Axis error detection) o_uModuleErrld (Axis error code) o_bModuleWarm (Axis warning detection) o_uModuleWarm (Axis warning detection) o_uModuleWarm (Axis warning detection) o_uModuleWarm (Axis warning detection) o_bOK (Completed without error)
	o_bErr (Error flag) o_uErrld (Error code) When an error occurs
	i_bEN (Execution command) o_bENO (Execution status) i_bErrReset (Error reset command)
	Error detection signal
	o_bModuleErr       (Axis error detection)       o_uModuleErrld       (Axis error code)       o_bModuleWarn       (Axis warning detection)       o_uModuleWarnd       (Axis warning code)
	o_bOK (Completed without error) o_bErr (Error flag)
	o_uErrld (Error code) 0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Do not change i_uAxis (Target axis) while i_bEN (Execution command) is ON.</li> <li>Every input must be provided with a value for proper FB operation</li> </ul>

Error codes				
Error code	Description	Action		
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.		

#### ∎Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Error reset command	i_bErrReset	Bit	ON, OFF	ON: Errors are reset. OFF: Errors are not reset.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that resetting the error has been completed.
Axis error detection	o_bModuleErr	Bit	OFF	When ON, it indicates that an axis error has occurred.
Axis error code	o_uModuleErrId	Word [unsigned]	0	An error code of an error that has occurred in the module of the specified axis is stored.
Axis warning detection	o_bModuleWarn	Bit	OFF	When ON, it indicates that an axis warning has occurred.
Axis warning code	o_uModuleWarnId	Word [unsigned]	0	A warning code of a warning that has occurred in the module of the specified axis is stored.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The generated error code is stored.

Version	Date	Description		
00D	2014/06/30	First edition		

#### M+RD77\_InitializeParameter

unction overview				
Item	Description			
Function overview	Initializes the parameter.			
Symbol		M+RD77_InitializeParameter		
	Execution command ——B : i_bEN	o_bENO : B Execution status		
	Module labelDUT : i_stM	Iodule o_bOK : B Completed without error		
		o_bErr : B ——— Error flag		
		o_uErrId : UW ——— Error code		
Applicable hardware and	Applicable module	BD77MS16 RD77MS8 RD77MS4 RD77MS2		
software	Applicable CPU	MELSEC IQ-R series		
	Applicable engineering software	GX Works3		
Programming language	Ladder			
Number of steps (maximum)	45 steps			
Function description	By turning ON i_bEN (Execution command), the setting data stored in the buffer memory and the flash ROM of the RD77 is reset to the factory setting.			
Compiling method	Macro type			
FB operation type	Pulsed execution (multiple scan execution type)			
Timing chart	i_bEN (Execution command) o_bENO (Execution status) Cd.2: Module initialization req o_bOK (Completed without e			
	o_uErrld (Error code)	0		
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>Every input must be provided with a value for proper FB operation.</li> <li>Before using this FB, make sure that the PLC READY signal (Y0) is OFF.</li> <li>After the setting data is initialized, reset the CPU module or restart the power of the programmable controller.</li> </ul>			

Error codes				
Error code	Description	Action		
None None None				

#### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that initializing the parameter has been completed.
Error flag	o_bErr	Bit	OFF	Always OFF
Error code	o_uErrld	Word [unsigned]	0	Always 0

Version	Date	Description
00D	2014/06/30	First edition
M+RD77\_WriteFlash

Function overview       Writes the parameter, positioning data, and block start data in the buffer memory to the flash ROM.         Symbol       Execution command       B : [_bEN       o_bENO : B       Execution s         Module label       DUT : [_stModule       o_bOK : B       Completed         o_bErr : B	Item	Description			
Symbol       Interce processing processing and processing processing processing separately in account for the reguine system operation.         Symbol       Interce processing processing. Program the error recovery processing. Program the error recovery processing. Program.         Symbol       Interce processing. Program.         Symbol       Interce processing. Program the error recovery processing. Program the error recovery processing. Program.         Symbol       Interce processing. Program the error recovery processing. Program the error recovery processing. Program.	Function overview	Writes the parameter positioning data and block start data in the buffer memory to the flash ROM			
Applicable nordware and software       Applicable module       RD77MS16, RD77MS4, RD77MS4, RD77MS2         Applicable hardware and software       Applicable cPU       MELSEC Q-R series         Applicable nordware and software       Applicable engineering software       GX Works3         Programming language       Ladder         Number of sleps (maximum)       45 sleps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       L_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       L_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         O_bENO (Execution status)       O_bENO (Execution status)         O_bENO (Execution command)       O_bENO (Execution status)         O_bENT (Error flag)       O_bENT (Error flag)         O	Symbol	······································			
Execution command       B: LbEN       o_bENO: B       Execution s         Module label       DUT: i_stModule       o_bOK: B       Completed         o_bErr: B       Error flag       o_uErrid: UW       Error code         Applicable hardware and software       Applicable cPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       I_bEN (Execution command) o_bENO (Execution command) o_bENO (Execution status) Cd 1: Flash ROM writing request o_bOK (Completed without error) o_bErr (Error flag) o_uErrid (Error code)       0       1       0         0       0       0       0       0       0       0		M+RD77_WriteFlash			
Execution command       B: i_ bEN       o_bENO: B       Execution s         Module label       DUT: i_stModule       o_bOK: B       Completed         o_bERr: B       Error flag       o_uErrld: UW       Error code         Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2       Error code         Applicable hardware and software       Applicable engineering software       GX Works3       Error code         Programming language       Ladder       Macro type       Execution command), the setting data in the buffer memory is written to the flash ROM.         Compling method       Macro type       Plosed execution (multiple scan execution type)       Timing chart         I					
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable cPU       MELSEC iO_R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON LbEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status) c_bENC (Completed without error) o_bErr (Error flag) o_uErrid (Error code)       0         0       1       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.		Execution command —— B : i_bEN		o_bENO : B Execution status	
Module label       DUT : i_stModule       o_bOK : B       Completed         o_bErr : B       Error flag         o_uErrid : UW       Error code         Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable hardware and software       Applicable CPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bEN (Execution status)         Cd.1: Flash ROM writing request o_bOK (Completed without error) o_bErr (Error flag)       0         o_bErr (Error flag)       0         o_uErrid (Error code)       0         The FB does not include error recovery processing. Program the error recovery processing separately in accom- the required system operation.         The FB does not include error recovery processing. Program the error recovery processing separately in accom- the required system operation.					
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable hardware and software       Applicable CPU       MELSEC IG-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON L_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command)         o_bENO (Execution status)       0         cd.1: Flash ROM writing request       0         o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrId (Error code)       0		Module label DUT : i_st	Module	o_bOK : B Completed without err	
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable CPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), o_bEN (Execution status)         Cd 1: Flash ROM writing request       0         o_bOK (Completed without error)       0_bErr (Error flag)         o_uterrid (Error code)       0         .       the FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         .       The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.				o bErr B Error flag	
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable CPU       MELSEC IQ-R series         Applicable ongineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Founction description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), o_bENO (Execution status)         o_bENO (Execution status)       0         o_bENO (Completed without error)       0         o_bOK (Completed without error)       0         o_bOK (Completed without error)       0         o_bER description status)       0         o_bER (Error code)       0					
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable CPU       MELSEC (Q-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON I_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compliang method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), o_bENO (Execution status)         o_bENO (Execution status)       0         o_bEKr (Completed without error)       0_bEKr (Error flag)         o_uErrid (Error code)       0         * The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         * The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.				o_uErrld : UW Error code	
Applicable hardware and software       Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable CPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), o_bENO (Execution status)         Cd.1: Flash ROM writing request       0         o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrld (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.					
Applicable hardware and software       Applicable module       RD77MS16, RD77MS4, RD77MS4, RD77MS2         Applicable CPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command), o_bENO (Execution status)         Cd.1: Flash ROM writing request       0         o_bENO (Completed without error)       0_bErr (Error flag)         o_uErrld (Error code)       0         * The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.         * The FB cannot be used in an interrupt program.					
software       Applicable CPU       MELSEC iQ-R series         Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status)         Cd.1: Flash ROM writing request       0         o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrId (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accor the required system operation.         • The FB cannot be used in an interrupt program.       • The FB cannot be used in an interrupt program.	Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD77MS4	, RD77MS2	
Applicable engineering software       GX Works3         Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status)         Cd.1: Flash ROM writing request o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrId (Error code)       0         0       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         • The FB cannot be used in an interrupt program.       • The FB cannot be used in an interrupt program.	software	Applicable CPU	MELSEC iQ-R series		
Programming language       Ladder         Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status)         Cd.1: Flash ROM writing request o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrId (Error code)       0         * The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         * The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.		Applicable engineering software GX Works3			
Number of steps (maximum)       45 steps         Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status) Cd.1: Flash ROM writing request o_bOK (Completed without error) o_bErr (Error flag) o_uErrld (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.       • The FB does not include error recovery program.	Programming language	Ladder			
Function description       By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.         Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command) o_bENO (Execution status)         Cd.1: Flash ROM writing request o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrId (Error code)       0         * The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.         * The FB cannot be used in an interrupt program.	Number of steps (maximum)	45 steps			
Compiling method       Macro type         FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command)         o_bENO (Execution status)       o_bENO (Execution status)         Cd.1: Flash ROM writing request       0         o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrld (Error code)       0         * The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.         * The FB cannot be used in an interrupt program.	Function description	By turning ON i_bEN (Execution command), the setting data in the buffer memory is written to the flash ROM.			
FB operation type       Pulsed execution (multiple scan execution type)         Timing chart       i_bEN (Execution command)         o_bENO (Execution status)       o_bENO (Execution status)         Cd.1: Flash ROM writing request       0         o_bOK (Completed without error)       0         o_bErr (Error flag)       0         o_uErrld (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.         • The FB cannot be used in an interrupt program.	Compiling method	Macro type			
Timing chart       i_bEN (Execution command)         o_bENO (Execution status)       o_bENO (Execution status)         Cd.1: Flash ROM writing request       0       1       0         o_bOK (Completed without error)       0       0       1       0         o_bErr (Error flag)       0       0       0       0         o_uErrld (Error code)       0       0       0       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.       • The FB cannot be used in an interrupt program.	FB operation type	Pulsed execution (multiple scan execution	ion type)		
i_bEN (Execution command)         o_bENO (Execution status)         Cd.1: Flash ROM writing request         o_bOK (Completed without error)         o_bErr (Error flag)         o_uErrId (Error code)         0         <	Timing chart		I		
Image: Derive (Execution command)         o_bENO (Execution status)         Cd.1: Flash ROM writing request         o_bOK (Completed without error)         o_bErr (Error flag)         o_uErrld (Error code)         0         * The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.         * The FB cannot be used in an interrupt program.		i hEN (Execution command)			
o_bENO (Execution status)         Cd.1: Flash ROM writing request         o_bOK (Completed without error)         o_bErr (Error flag)         o_uErrId (Error code)         0			) \ <u>_</u>		
Cd.1: Flash ROM writing request       0       1       0         o_bOK (Completed without error)       0       0       1       0         o_bErr (Error flag)       0       0       0       0         o_uErrld (Error code)       0       0       0       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.       • The FB cannot be used in an interrupt program.		o_bENO (Execution status)	¥	\ ★	
Cd.1: Flash ROM writing request       0       1       0         o_bOK (Completed without error)					
o_bOK (Completed without error)         o_bErr (Error flag)         o_uErrld (Error code)         0         Restrictions and precautions         • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         • The FB cannot be used in an interrupt program.         • The FB cannot be used in an enterrupt program.		Cd.1: Flash ROM writing req	juest 0	1 0	
o_bErr (Error flag)         o_uErrld (Error code)         0         0         Restrictions and precautions         • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         • The FB cannot be used in an interrupt program.         • The FB cannot be used in an interrupt program.		a bOK (Completed without a			
o_bErr (Error flag)					
no_uErrId (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.         • The FB cannot be used in an interrupt program.         • The FB cannot be used in an interrupt program.		o_bErr (Error flag)			
o_uErrId (Error code)       0         Restrictions and precautions       • The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.       • The FB cannot be used in an interrupt program.         • The FB cannot be used in an interrupt program.       • The FB cannot be used in an interrupt program.					
Restrictions and precautions <ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accord the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>The FB (Decomposition expensed) is expected of the intervent OFF but the energy of the intervent of the interv</li></ul>		o_uErrld (Error code) 0			
<ul> <li>Restrictions and precautions</li> <li>The FB does not include error recovery processing. Program the error recovery processing separately in account the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> </ul>					
<ul> <li>The FB cannot be used in an interrupt program.</li> <li>The FB Cannot be used in an interrupt program.</li> </ul>	Restrictions and precautions	The FB does not include error recove	ery processing. Program the error rec	overy processing separately in accordance with	
- Ensure that is hEN (Even ution commend) is seenable of heirs thread OFF by the second of the two the SP is		<ul> <li>The FB cannot be used in an interrup</li> </ul>	t program.		
• Ensure that I_DEN (Execution command) is capable of being turned OFF by the program. Do not use this FB if		Ensure that i_bEN (Execution comma	and) is capable of being turned OFF I	by the program. Do not use this FB in programs	
that are only executed once such as a subroutine and FOR-NEXT loop because i_bEN (Execution command)		that are only executed once such as a	a subroutine and FOR-NEXT loop be	cause i_bEN (Execution command) cannot be	
turned OFF.		turned OFF.			
<ul> <li>Every input must be provided with a value for proper FB operation.</li> <li>Before using this FB, make sure that the PLC READY signal (Y0) is OFF</li> </ul>		<ul> <li>Every input must be provided with a v</li> <li>Before using this EB make sure that</li> </ul>	the PLC READY signal (V0) is OFF		

Error codes			
Error code	Description	Action	
None	None	None	

# Labels ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that writing the setting data to the flash ROM has been completed.
Error flag	o_bErr	Bit	OFF	Always OFF
Error code	o_uErrld	Word [unsigned]	0	Always 0

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeServoParameter

### Function overview

Item	Description					
Function overview	Changes the servo parameter	Changes the servo parameter after the amplifier is activated.				
Symbol						
			M+RD77_ChangeServoParame	eter		
	Execution command ——	B:i_bEN	١	o_bENO : B	—— Execution status	
	Module label	DUT : i_s	stModule	o_bOK : B	——— Completed without error	
	Target axis	UW : i_u	Axis	o_bErr : B	Error flag	
	Cd.131: Parameter No. ——	-UW : i_uParameterNo.		o_uErrld : UW	Error code	
	Cd.132: Change data ——	D : i_dCł	nangeValue			
Applicable hardware and	Applicable module	L	RD77MS16, RD77MS8, RD77MS4,	RD77MS2	1	
software	Applicable CPU		MELSEC iQ-R series			
	Applicable engineering softwa	ire	GX Works3			
Programming language	Ladder	Ladder				
Number of steps (maximum)	236 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the servo parameter after the amplifier is started is changed.</li> <li>When the target axis of the input label is incorrectly set, o_bErr turns ON and the error code is stored in o_bErrld.</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple sca	ulsed execution (multiple scan execution type)				

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Parameter writing processing	No processing Write No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Parameter writing processing	No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery process the required system operation.</li> <li>The FB cannot be used in an interrupt program Ensure that i_bEN (Execution command) is cat that are only executed once such as a subrout turned OFF.</li> <li>When this FB is used twice or more, precaution Every input must be provided with a value for Before using this FB, make sure that commune When this FB fails writing the parameter, o_bC.</li> <li>The setting items and range differ depending of the setting items and range differ depending of the setting items.</li> </ul>	ssing. Program the error recovery processing separately in accordance with n. pable of being turned OFF by the program. Do not use this FB in programs tine and FOR-NEXT loop because i_bEN (Execution command) cannot be n must be taken to avoid repetition of the target axis. proper FB operation. ication with the servo amplifier is established. DK (Completed without error) does not turn ON. on the module used in the system.

Error code	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.

■Input labels				
Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.131: Parameter No.	i_uParameterNo	Word [unsigned]	H0001 to H0C40	Set the servo parameter number to be changed. Set the data in the same specifications as [Cd.131] of the system control data. Even when the data No. different from the data specifications of [Cd.131] is specified, the execution of this FB is completed normally. In this case, an error may occur in the simple motion module. The following figure shows the data specifications of [Cd.131]. Setting value H O Parameter No. setting O1h to 40h Parameter group O: Writing mode O: Writing to the RAM 1: PB group 2: PC group 3: PD group 4: PE group 5: PF group 9: PO group A: PS group B: PL group C: PT group
Cd.132: Change data	i_dChangeValue	Double word [signed]	Refer to the Servo Amplifier Instruction Manual.	Set the servo parameter value to be changed.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing the servo parameter has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeTorqueControlMode

Function overview	W					
Item	Description					
Function overview	Activates the torque control mode.					
Symbol	M+RD77_ChangeTorqueControlMode					
	Execution command ——	B:i_bEN	o_bENO : B	Execution status		
	Module label	DUT : i_stModule	o_bOK : B	Completed without error		
	Target axis	UW : i_uAxis	o_bErr : B	—— Error flag		
	Cd.143: Command torque at torque control mode	W : i_wCommandTorque	Error code			
	Cd.144: Torque time constant at torque control mode —— (Forward direction) Cd.145: Torque time constant	UW : i_uTorqueTimeConstDrivingMode				
	at torque control mode —— (Negative direction)					
	Cd.146: Speed limit value at torque control mode	UD : i_udSpeedLimit				
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD7	7MS4, RD77MS2			
software	Applicable CPU	MELSEC iQ-R series				
	Applicable engineering software	GX Works3				
Programming language	Ladder					
Number of steps (maximum)	347 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the torque control mode is activated for the specified axis.</li> <li>When this FB is executed under torque control, the command torque and speed limit value are changed.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple scan exe	cution type)				

Item	Descriptio	'n				
Timing chart	When operation	tion completes without an error				
	i_b	EN (Execution command)				
	o_t	DENO (Execution status)				
	Co req	ntrol mode switching uest writing	No proc	cessing Write No processing		
	Sei	rvo status control mode	Currently ac	activated control mode		
	o_t	OOK (Completed without error)				
	o_t	bErr (Error flag)				
	٥_١	uErrId (Error code)		0		
	When an err	or occurs	1			
	i_t	DEN (Execution command)				
	٥_	bENO (Execution status)				
	Co	ontrol mode switching		No processing		
	re	quest writing				
	Se	ervo status control mode		Currently activated control mode		
	٥_	bOK (Completed without error)				
	٥_	bErr (Error flag)				
	٥_	uErrld (Error code)	0	0 Error code 0		
Restrictions and precautions	<ul> <li>The FB do the require</li> <li>The FB ca</li> <li>Ensure that that are or turned OF</li> <li>When this</li> <li>Every input</li> <li>When this</li> </ul>	bes not include error recovery proce ad system operation. Innot be used in an interrupt progra at i_bEN (Execution command) is of hly executed once such as a subror F. FB is used twice or more, precauti ut must be provided with a value for FB fails switching the mode, o_bC	ot include error recovery processing. Program the error recovery processing separately in accordance with stem operation. be used in an interrupt program. EN (Execution command) is capable of being turned OFF by the program. Do not use this FB in programs eccuted once such as a subroutine and FOR-NEXT loop because i_bEN (Execution command) cannot be s used twice or more, precaution must be taken to avoid repetition of the target axis. st be provided with a value for proper FB operation. ails switching the mode, o_bOK (Completed without error) does not turn ON.			
Error codes						
Error code		Description		Action		
100 (Hexadecimal)       The setting value of i_uAxis (Ta out of the range. The target ax within the range of 1 to 16.		et axis) is s not	Please try again after confirming the setting.			

#### ■Input labels Variable name Name Data type Setting range Description Execution i bEN Bit ON, OFF ON: The FB is activated. command OFF: The FB is not activated. Specify the module label of the Module label i\_stModule Structure The setting range differs depending on the MELSEC iQ-R simple motion module label. module. Target axis Word [unsigned] 1 to 16 i uAxis Specify the axis number. The setting range differs depending on the module used. Set the command torque at toque i\_wCommandTorque -10000 to 10000 Cd.143: Command Word [signed] torque at torque control mode. control mode Cd.144: Torque time i\_uTorqueTimeConstDrivingMode Word [unsigned] 0 to 65535 Set the time constant for the driving (0 to 32767: Set by constant at torque of torque control mode. decimal number. 32768 control mode (Forward direction) to 65535: Convert the number to hexadecimal number and set.) Cd.145: Torque time i\_uTorqueTimeConstRegenerativeMode 0 to 65535 Word [unsigned] Set the time constant for the constant at torque (0 to 32767: Set by regeneration of torque control control mode decimal number. 32768 mode. (Negative direction) to 65535: Convert the number to hexadecimal number and set.) Cd.146: Speed limit i udSpeedLimit Pr.1: Unit setting = mm Set the speed limit value at torque Double word [unsigned] value at torque • 0 to 200000000 control mode. control mode Pr.1: Unit setting = inch • 0 to 200000000 Pr.1: Unit setting = degree • 0 to 200000000 Pr.1: Unit setting = pulse • 0 to 100000000

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing control mode has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeSpeedControlMode

Function overview	N					
Item	Description					
Function overview	Activates the speed control n	node.				
Symbol		M+RD77_ChangeSpeedControlMode				
	Execution command	B : i_bEN		o_bENO : B	Execution status	
	Module label	DUT : i_st	Module	o_bOK : B -	Completed without error	
	Target axis	UW : i_uA	xis	o_bErr : B -	Error flag	
	Cd.140: Command speed at speed control mode	o_uErrld : UW D : i_dCommandSpeed			Error code	
	Cd.141: Acceleration time at speed control UW : i_uSpeedAccelerationTime mode					
	Cd.142: Deceleration time at speed control mode	UW : i_uS	peedDecelerationTime			
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77M	1S4, RD77MS2		
software	Applicable CPU		MELSEC iQ-R series			
	Applicable engineering softw	are	GX Works3			
Programming language	Ladder					
Number of steps (maximum)	303 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the speed control mode is activated for the specified axis.</li> <li>When this FB is executed under speed control, the command speed is changed.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple so	can executi	ion type)			

Item	Description				
Timing chart	When operation completes without an error				
	i_bEN (Execution command)				
	o_bENO (Execution status)				
	Control mode switching request writing	No processing Write No processing			
	Servo status control mode	Currently activated control mode			
	o_bOK (Completed without error)				
	o_bErr (Error flag)				
	o_uErrld (Error code)	0			
	When an error occurs	· ·			
	i_bEN (Execution command)				
	o_bENO (Execution status)				
	Control mode switching request writing	No processing			
	Servo status control mode	Currently activated control mode			
	o_bOK (Completed without error)				
	o_bErr (Error flag)				
	o_uErrld (Error code)	0 Error code 0			
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> <li>When this FB fails switching the mode, o_bOK (Completed without error) does not turn ON.</li> </ul>				
Error codes					
Error code	Description	Action			

Error codes		
Error code	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is out of the range. The target axis is not within the range of 1 to 16.	Please try again after confirming the setting.

# ∎Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.140: Command speed at speed control mode	i_dCommandSpeed	Double word [signed]	Pr.1: Unit setting = mm         -200000000 to +200000000         Pr.1: Unit setting = inch         -2000000000 to +200000000         Pr.1: Unit setting = degree         -2000000000 to +200000000         Pr.1: Unit setting = pulse         -1000000000 to +100000000	Set the command speed at speed control mode.
Cd.141: Acceleration time at speed control mode	i_uSpeedAccelerationTime	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the acceleration time at speed control mode.
Cd.142: Deceleration time at speed control mode	i_uSpeedDecelerationTime	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the deceleration time at speed control mode.

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing control mode has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangePositionControlMode

Function overview							
Item	Description						
Function overview	Activates the position control mode.						
Symbol							
			M+RD77_Chang	ePositionControlMode			
	Execution command ——	B : i_bEN	N	o_bENO : B	Execution status		
	Module label	DUT : i_s	stModule	o_bOK : B	Completed without error		
	Target axis	UW : i_u	Axis	o_bErr : B	Error flag		
				o_uErrld : UW	Error code		
Applicable hardware and	Applicable module		RD77MS16, RD7	77MS8, RD77MS4, RD77MS2			
software	Applicable CPU		MELSEC iQ-R series				
	Applicable engineering software		GX Works3				
Programming language	Ladder						
Number of steps (maximum)	347 steps						
Function description	<ul> <li>By turning ON i_bEN (Execution command), the position control mode is activated for the specified axis.</li> <li>When this FB is executed during position control, the execution is completed without any processing.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>						
Compiling method	Macro type						
FB operation type	Pulsed execution (multiple sca	n executi	ion type)				

Item	Description	1					
Timing chart	When operation	on completes without an error					
	i_bEl	N (Execution command)					
	o_bE	ENO (Execution status)					
	Conti	rol mode switching request writing	No pr	ocessing Write No processing			
	Serve	o status control mode	Currentl	y activated control mode Position control mode activated			
	o_bC	DK (Completed without error)		▲ ▼			
	o_bE	Err (Error flag)					
	o_uE	Errld (Error code)		0			
	When an error	roccurs	1				
	i_bEl	N (Execution command)					
o_bENO (Execution status)							
	Conti	rol mode switching request writing	switching request writing No processing				
	Serve	o status control mode		Currently activated control mode			
	o_bC	DK (Completed without error)					
	o_bE	Err (Error flag)					
	o_uE	Errld (Error code)		0 Error code 0			
Restrictions and precautions	<ul> <li>The FB doe the required</li> <li>The FB can</li> <li>Ensure that that are only turned OFF.</li> <li>When this F</li> <li>Every input</li> <li>When this F</li> </ul>	B does not include error recovery processing. Program the error recovery processing separately in accordance with equired system operation. B cannot be used in an interrupt program. re that i_bEN (Execution command) is capable of being turned OFF by the program. Do not use this FB in programs are only executed once such as a subroutine and FOR-NEXT loop because i_bEN (Execution command) cannot be d OFF. this FB is used twice or more, precaution must be taken to avoid repetition of the target axis. r input must be provided with a value for proper FB operation. this FB fails switching the mode, o_bOK (Completed without error) does not turn ON.					
Error codes							
Error code		Description		Action			
100 (Hexadecimal) T o w		The setting value of i_uAxis (Target a out of the range. The target axis is n within the range of 1 to 16.	axis) is ot	Please try again after confirming the setting.			

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing control mode has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_ChangeContinuousTorqueMode

Function overviev	w					
Item	Description					
Function overview	Activates the continuous operation to torque control mode.					
Symbol						
		M+RD77_ChangeCo				
	Execution command ——	— B : i_bEN	o_bENO : B	Execution status		
	Module label ——	DUT : i_stModule	o_bOK : B ·	Completed without error		
	Target axis ——	UW : i_uAxis	o_bErr : B	Error flag		
	Cd.147: Speed limit value at continuous operation to —— torque control mode	D : i_dSpeedLimit	o_uErrld:UW,	—— Error code		
	Cd.148: Acceleration time at continuous operation to —— torque control mode	UW : i_uSpeedAcceleratio	onTime			
	Cd.149: Deceleration time at continuous operation to —— torque control mode	UW : i_uSpeedDecelerationTime W : i_wCommandTorque				
	Cd.150: Target torque at continuous operation to —— torque control mode					
	Cd.151: Torque time constant at continuous operation to torque —— control mode (Forward direction)	UW : i_uTorqueTimeConstDrivingMode				
	Cd.152: Torque time constant at continuous operation to torque —— control mode (Negative direction)					
	Cd.153: Control mode auto-shift selection	UW : i_uAutoSwitchingMode				
	Cd.154: Control mode auto-shift parameter	— D : i_dAutoSwitchingParameter				
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, F	RD77MS4, RD77MS2			
software	Applicable CPU	MELSEC iQ-R series				
	Applicable engineering software	GX Works3				
Programming language	Ladder					
Number of steps (maximum)	523 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the continuous operation to torque control mode is activated for the specified axis.</li> <li>When this FB is executed during continuous operation to torque control mode, the speed limit value and target torque are changed.</li> <li>When the setting value of the target axis is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple scan execution type)					

Item	Description				
Timing chart	When operation completes without an error • When the control mode auto-shift selection is	set to 0			
	i_bEN (Execution command)				
	o_bENO (Execution status)				
	Control mode switching request writing	No processing Write No processing			
	Servo status control mode	Currently activated control mode			
	o_bOK (Completed without error)				
	o_bErr (Error flag)				
	o_uErrld (Error code)	0			
	When the control mode auto-shift selection is	 set to other than 0 			
	i_bEN (Execution command)				
	o_bENO (Execution status)				
	Control mode switching request writing	No processing Write No processing			
	Feed current value or real current value	Mode switching condition value			
	Servo status control mode	Currently activated control mode			
	o_bOK (Completed without error)	<b>↓</b>			
	o_bErr (Error flag)				
	o_uErrld (Error code)	0			
	When an error occurs	l			
	i_bEN (Execution command)				
	o_bENO (Execution status)				
	Control mode switching request writing	No processing			
	Servo status control mode	Currently activated control mode			
	o_bOK (Completed without error)				
	o_bErr (Error flag)				
	o_uErrld (Error code)	0 Error code 0			

Item	Description				
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>Ensure that i_bEN (Execution command) 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 and FOR-NEXT loop because i_bEN (Execution command) cannot be turned OFF.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the target axis.</li> <li>Every input must be provided with a value for proper FB operation.</li> <li>When this FB fails switching the mode, o_bOK (Completed without error) does not turn ON.</li> </ul>				
Error codes					
Error code	Description Action				

	Description	Action
100 (Hexadecimal)	The setting value of i_uAxis (Target axis) is	Please try again after confirming the setting.
	out of the range. The target axis is not	
	within the range of 1 to 16.	

Labels		

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Target axis	i_uAxis	Word [unsigned]	1 to 16	Specify the axis number. The setting range differs depending on the module used.
Cd.147: Speed limit value at continuous operation to torque control mode	i_dSpeedLimit	Double word [signed]	Pr.1: Unit setting = mm • -200000000 to +200000000 Pr.1: Unit setting = inch • -2000000000 to +200000000 Pr.1: Unit setting = degree • -2000000000 to +200000000 Pr.1: Unit setting = pulse • -1000000000 to +100000000	Set the speed limit value at continuous operation to torque control mode.
Cd.148: Acceleration time at continuous operation to torque control mode	i_uSpeedAccelerationTime	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the acceleration time at continuous operation to torque control mode.
Cd.149: Deceleration time at continuous operation to torque control mode	i_uSpeedDecelerationTime	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the deceleration time at continuous operation to torque control mode.
Cd.150: Target torque at continuous operation to torque control mode	i_wCommandTorque	Word [signed]	-10000 to 10000	Set the target torque at continuous operation to torque control mode.
Cd.151: Torque time constant at continuous operation to torque control mode (Forward direction)	i_uTorqueTimeConstDriving Mode	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the time constant for the driving at continuous operation to torque control mode.
Cd.152: Torque time constant at continuous operation to torque control mode (Negative direction)	i_uTorqueTimeConstRegene rativeMode	Word [unsigned]	0 to 65535 (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the time constant for the regeneration at continuous operation to torque control mode.
Cd.153: Control mode auto-shift selection	i_uAutoSwitchingMode	Word [unsigned]	0 to 2	Set the switching condition of the control mode to switch to continuous operation to torque control mode.

Name	Variable name	Data type	Setting range	Description
Cd.154: Control mode auto-shift parameter	i_dAutoSwitchingParameter	Double word [signed]	Pr.1: Unit setting = mm • -2147483648 to +2147483648 Pr.1: Unit setting = inch • -2147483648 to +2147483648 Pr.1: Unit setting = degree • 0 to 35999999 Pr.1: Unit setting = pulse • -2147483648 to +2147483648	Set the condition value when the control mode auto-shift selection is set to 1 or 2.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing control mode has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_Sync

#### **Function overview** Description Item Function overview Starts and ends the synchronous control. Symbol M+RD77\_Sync B:i\_bEN Execution status Execution command o\_bENO : B Module label -DUT : i\_stModule o\_bOK : B Completed without error Output axis No. UW:i uOutputAxis o bErr : B - Error flag - Error code o\_uErrld : UW Applicable hardware and RD77MS16, RD77MS8, RD77MS4, RD77MS2 Applicable module software Applicable CPU MELSEC iQ-R series Applicable engineering software GX Works3 Programming language Ladder Number of steps (maximum) 178 steps Function description • By turning ON i\_bEN (Execution command), synchronous control of the output axis No. is started. Turning OFF i\_bEN (Execution command) ends the synchronous control. • When the setting value of the output axis No. is out of the range, o\_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o\_uErrld (Error code). • The synchronous control does not start while the READY signal (X0) is OFF, the BUSY signal (X10 to X1F) is ON, or the error detection signal is ON. Compiling method Macro type FB operation type Pulsed execution (multiple scan execution type)

Item	Descriptio	on			
Timing chart	When opera	tion completes without an erro	or		
	i_bEl	N (Execution command)			
	o_bE	ENO (Execution status)			
	Axis	operation status	Standby	Synchronous control activated	Standby
	o_bC	DK (Completed without error)			
	o_bE	Err (Error flag)			
	o_uE	Errld (Error code)		0	
	When an err	or occurs	1		
	i_bEN	(Execution command)			
	o_bEl	NO (Execution status)			
	Axis o	operation status		Standby	
	o_bO	K (Completed without error)			
	o_bEr	т (Error flag)			
	o_uEr	rtld (Error code)	0	Error code	0
Restrictions and precautions	<ul> <li>The FB do the require</li> <li>The FB ca</li> <li>When this</li> <li>Every input</li> </ul>	bes not include error recovery ed system operation. annot be used in an interrupt p FB is used twice or more, pro ut must be provided with a val	processing. Proc program. ecaution must be lue for proper FB	ogram the error recovery processing sep e taken to avoid repetition of the output a 3 operation.	arately in accordance with axis No.
Error codes					
Error code		Description		Action	
100 (Hexadecimal)		The output axis No. is not within the setting range.		Please try again after confirming the s	setting.

# ∎Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Specify the axis number for which synchronous control is started. The setting range differs depending on the module used.

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that synchronous control has been started.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeSyncEncoderPosition

Function overviev	w				
Item	Description				
Function overview	Changes the synchronous encoder axis current value and synchronous encoder axis current value per cycle.				
Symbol					
	Execution command ——B : i_	bEN	o_bENO : B -	—— Execution status	
	Module label —— DUT	: i_stModule	o_bOK : B -	—— Completed without error	
	Synchronous encoder —— UW : axis No.	i_uSyncEncAxis	o_bErr : B -	—— Error flag	
	Cd.320: Synchronous — UW : encoder axis control start	i_uStartControl	o_uErrld : UW -	—— Error code	
	Cd.322: Synchronous — D : i_ encoder axis current value setting address	dNewPosition			
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RI	D77MS4, RD77MS2		
software	Applicable CPU	MELSEC iQ-R series			
	Applicable engineering software	GX Works3			
Programming language	Ladder				
Number of steps (maximum)	215 steps				
Function description	<ul> <li>The operation method differs depending on the setting value of the synchronous encoder axis control start. When the setting value is 1, the synchronous encoder axis current value is changed by turning ON i_bEN (Execution command). When the setting value is 101 to 116, the synchronous encoder axis current value is changed by the high speed input request [DI] after i_bEN (Execution command) is turned ON.</li> <li>When the setting value of the synchronous encoder axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the synchronous encoder axis for which the synchronous encoder axis enabled flag is OFF, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 301 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (single scan execution	on type)			

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous encoder axis control method	No processing 0: Current value change
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrId (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous encoder axis control method	No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery pr the required system operation.</li> <li>The FB cannot be used in an interrupt pro</li> <li>When this FB is used twice or more, preca</li> <li>Every input must be provided with a value</li> </ul>	ocessing. Program the error recovery processing separately in accordance with gram. aution must be taken to avoid repetition of the synchronous encoder axis No. for proper FB operation.

# Error codes

Error code	Description	Action
100 (Hexadecimal)	The synchronous encoder axis No. is not within the setting range.	Please try again after confirming the setting.
301 (Hexadecimal)	The synchronous encoder axis enabled flag of the synchronous encoder axis No. is OFF.	Please try again after confirming the setting.

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Synchronous encoder axis No.	i_uSyncEncAxis	Word [unsigned]	1 to 4: Synchronous encoder axis number	Set the synchronous encoder axis number whose current value is to be changed.
Cd.320: Synchronous encoder axis control start	i_uStartControl	Word [unsigned]	1: Start for synchronous encoder axis control 101 to 116: High-speed input start for synchronous encoder axis control (axis 1 to axis 16)	When 1 is set, synchronous encoder axis control is started. When 101 to 116 is set, the synchronous encoder axis control starts based on the high-speed input request (external command signal). The setting range differs depending on the module used.
Cd.322: Synchronous encoder axis current value setting address	i_dNewPosition	Double word [signed]	Pr.321: Unit setting = mm • -2147483648 to 2147483647 Pr.321: Unit setting = inch • -2147483648 to 2147483647 Pr.321: Unit setting = degree • -2147483648 to 2147483647 Pr.321: Unit setting = pulse • -2147483648 to 2147483647	Set the new current value after a current value change.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that setting the synchronous encoder axis current value change has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_DisableSyncEncoder

Fu	nc	cti	on	ov	erv	view	

Item	Description					
Function overview	Disables inputs from the synchronous encoder axis.					
Symbol	MUDD77 DisableQuesEssader					
			M+RD77_DisableSync	cencoder		
	Execution command ——	B : i_bE	EN	o_bENO : B -	—— Execution status	
	Module label ——	DUT : i	_stModule	o_bOK : B -	Completed without error	
	Synchronous encoder —— axis No.	UW : i_	uSyncEncAxis	o_bErr : B -	—— Error flag	
	Cd.320: Synchronous ——	UW : i_	uStartControl	o_uErrld : UW -	Error code	
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77MS4, RD77MS2			
software	Applicable CPU		MELSEC iQ-R series			
	Applicable engineering software		GX Works3			
Programming language	Ladder					
Number of steps (maximum)	170 steps					
Function description	<ul> <li>The operation method differs depending on the setting value of the synchronous encoder axis control start. When the setting value is 1, the synchronous encoder axis counter is disabled by turning ON i_bEN (Execution command). When the setting value is 101 to 116, the synchronous encoder axis counter is disabled by the high speed input request [DI] after i_bEN (Execution command) is turned ON.</li> <li>When the setting value of the synchronous encoder axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the synchronous encoder axis for which the synchronous encoder axis enabled flag is OFF, o bErr (Error flag) turns ON, the FB processing is interrupted, and the error code is interrupted, and the error code axis for which the synchronous encoder axis enabled flag is OFF, o bErr (Error flag) turns ON, the FB processing is interrupted.</li> </ul>					
	(Error code).					
Compiling method	Macro type					
FB operation type	Pulsed execution (single scan execution type)					

Item	Description	
Timing chart	When operation completes without an error	r -
	i_bEN (Execution command) o_bENO (Execution status)	
	Synchronous encoder axis control method o_bOK (Completed without error)	No processing 1: Counter disable
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	1
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous encoder axis control method	No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery preserved the required system operation.</li> <li>The FB cannot be used in an interrupt provided the this FB is used twice or more, precerved the transformation of the provided with a value.</li> </ul>	processing. Program the error recovery processing separately in accordance with ogram. caution must be taken to avoid repetition of the synchronous encoder axis No. le for proper FB operation.
Error codes		
Error code	Description	Action

Error code	Description	Action
100 (Hexadecimal)	The synchronous encoder axis No. is not within the setting range.	Please try again after confirming the setting.
301 (Hexadecimal)	The synchronous encoder axis enabled flag of the synchronous encoder axis No. is OFF.	Execute the FB again after turning ON the synchronous encoder axis setting enabled flag.

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Synchronous encoder axis No.	i_uSyncEncAxis	Word [unsigned]	1 to 4: Synchronous encoder axis number	Set the synchronous encoder axis number whose inputs are to be disabled.
Cd.320: Synchronous encoder axis control start	i_uStartControl	Word [unsigned]	1: Start for synchronous encoder axis control 101 to 116: High-speed input start for synchronous encoder axis control (axis 1 to axis 16)	When 1 is set, synchronous encoder axis control is started. When 101 to 116 is set, the synchronous encoder axis control starts based on the high-speed input request (external command signal). The setting range differs depending on the module used.

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that disabling the synchronous encoder axis counter has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version upgrade history				
Version	Date	Description		
00D	2014/06/30	First edition		

#### M+RD77\_EnableSyncEncoder

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Fun	ction	OVAr	VIDW
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Item	Description				
Function overview	Enables inputs from the synchronous encoder axis.				
Symbol					
			M+RD77_EnableSyncEncode	er	
	Execution command ——	B : i_bEN		o_bENO : B -	— Execution status
	Module label ——	DUT : i_	stModule	o_bOK : B -	—— Completed without error
	Synchronous encoder —— axis No.	UW : i_i	uSyncEncAxis	o_bErr : B	—— Error flag
	Cd.320: Synchronous —— encoder axis control start	UW : i_i	uStartControl	o_uErrld : UW -	—— Error code
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77MS4, RD77MS2		
software	Applicable CPU		MELSEC iQ-R series		
	Applicable engineering software		GX Works3		
Programming language	Ladder				
Number of steps (maximum)	170 steps				
Function description	<ul> <li>The operation method differs depending on the setting value of the synchronous encoder axis control start. When the setting value is 1, the synchronous encoder axis counter is enabled by turning ON i_bEN (Execution command). When the setting value is 101 to 116, the synchronous encoder axis counter is enabled by the high speed input request [DI] after i_bEN (Execution command) is turned ON.</li> <li>When the setting value of the synchronous encoder axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the synchronous encoder axis for which the synchronous encoder axis enabled flag is OFF, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 301 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (single scan ex	kecution	i type)		

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous encoder axis control method	No processing 2: Counter enable
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous encoder axis control method	No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery p the required system operation.</li> <li>The FB cannot be used in an interrupt provided with a value twice or more, precevery input must be provided with a value.</li> </ul>	rocessing. Program the error recovery processing separately in accordance with ogram. aution must be taken to avoid repetition of the synchronous encoder axis No. a for proper FB operation.

# Error codes

Error code	Description	Action
100 (Hexadecimal)	The synchronous encoder axis No. is not within the setting range.	Please try again after confirming the setting.
301 (Hexadecimal)	The synchronous encoder axis enabled flag of the synchronous encoder axis No. is OFF.	Execute the FB again after turning ON the synchronous encoder axis setting enabled flag.

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Synchronous encoder axis No.	i_uSyncEncAxis	Word [unsigned]	1 to 4: Synchronous encoder axis number	Set the synchronous encoder axis number whose inputs are to be enabled.
Cd.320: Synchronous encoder axis control start	i_uStartControl	Word [unsigned]	1: Start for synchronous encoder axis control 101 to 116: High-speed input start for synchronous encoder axis control (axis 1 to axis 16)	When 1 is set, synchronous encoder axis control is started. When 101 to 116 is set, the synchronous encoder axis control starts based on the high-speed input request (external command signal). The setting range differs depending on the module used.

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that enabling the synchronous encoder axis counter has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ResetSyncEncoderError

Function overview	N				
Item	Description				
Function overview	Reads error information from the synchronous encoder axis, and resets the error.				
Symbol					
			M+RD77_F	ResetSyncEncoderError	
	Execution command	B : i_bEN		o_bENO : B	—— Execution status
	Module label	DUT : i_stl	Module	o_bOK : B	Completed without error
	Synchronous ——— encoder axis No.	-UW : i_uSyncEncAxis		o_bModuleErr : B	—— Error detection
	Error reset request	Error reset requestB : i_bReset		o_uErrorNo : UW	Error No.
				o_bModuleWarn : B	—— Warning detection
		o_uWarningNo : UW Warning No			—— Warning No.
				o_bErr : B	—— Error flag
			o_uErrld : UW		—— Error code
Applicable hardware and	Applicable module		RD77MS16, RD7	77MS8, RD77MS4, RD77MS2	
software	Applicable CPU		MELSEC iQ-R series		
	Applicable engineering softwa	are	GX Works3		
Programming language	Ladder				
Number of steps (maximum)	360 steps				
Function description	<ul> <li>By turn ON i_bEN (Execution command), the synchronous encoder axis error and warning information of the synchronous encoder axis No. are read.</li> <li>When the error reset request is ON, the error and warning are reset.</li> <li>When the setting value of the synchronous encoder axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Real-time execution				



Item	Description	
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	i_bResetError (Error reset request)	
	Synchronous encoder axis reset	
	o_uErrorNo (Error No.)	0
	o_uWarningNo (Warning No.)	0
	Synchronous encoder axis error flag	
	Synchronous encoder axis warning flag	
	o_bModuleErr (Error detection)	
	o_bModuleWarn (Warning detection)	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery proces the required system operation.</li> <li>The FB cannot be used in an interrupt program</li> <li>When this FB is used twice or more, precautio</li> <li>Every input must be provided with a value for</li> </ul>	ssing. Program the error recovery processing separately in accordance with n. on must be taken to avoid repetition of the synchronous encoder axis No. proper FB operation.

# Error codes

Error code	Description	Action
100 (Hexadecimal)	The synchronous encoder axis No. is not within the setting range.	Please try again after confirming the setting.

# Labels

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Synchronous encoder axis No.	i_uSyncEncAxis	Word [unsigned]	1 to 4	Set the synchronous encoder axis number from which the error No. and warning No. are read.
Error reset request	i_bResetError	Bit	ON, OFF	Turn ON this label to reset errors. Turn OFF this label after the error reset is completed.

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the error detection flag and warning detection flag of the synchronous encoder axis status have been turned OFF.
Error detection	o_bModuleErr	Bit	OFF	When ON, it indicates that the synchronous encoder axis error has occurred.
Error No.	o_uErrorNo	Word [unsigned]	0	When the synchronous encoder axis error is detected, the error code corresponding to the error is stored.
Warning detection	o_bModuleWarn	Bit	OFF	When ON, it indicates that the synchronous encoder axis warning has occurred.
Warning No.	o_uWarningNo	Word [unsigned]	0	When the synchronous encoder axis warning is detected, the warning code corresponding to the warning is stored.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ConnectSyncEncoder

Fun	ction	ove	rview

Item	Description		
Function overview	Connects a synchronous encoder via CPU.		
Symbol			
		M+RD77_ConnectSyncEncoc	er
	Execution commandB : i_bE	N	o_bENO : B Execution status
	Module labelDUT : i_	stModule	o_bOK : B Completed without error
	Synchronous UW : i_u encoder axis No.	SyncEncAxis	o_bErr : B Error flag
			o_uErrld : UW Error code
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD77MS	I, RD77MS2
software	Applicable CPU	MELSEC iQ-R series	
	Applicable engineering software	GX Works3	
Programming language	Ladder		
Number of steps (maximum)	176 steps		
Function description	<ul> <li>By turning ON i_bEN (Execution command), the synchronous encoder of the synchronous encoder axis No. is connected via CPU.</li> <li>When the setting value of the synchronous encoder axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the synchronous encoder axis for which the synchronous encoder axis enabled flag is OFF, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 301 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>		
Compiling method	Macro type		
FB operation type	Pulsed execution (multiple scan execution type)		

Item	Description	
Timing chart	When operation completes without an error	1
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Connection command of synchronous encoder via CPU	No processing 1: Connect synchronous encoder via CPU
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	1
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Connection command of synchronous encoder via CPU	No processing
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery proceed the required system operation.</li> <li>The FB cannot be used in an interrupt progra</li> <li>When this FB is used twice or more, precauti</li> <li>Every input must be provided with a value for</li> </ul>	I essing. Program the error recovery processing separately in accordance with am. ion must be taken to avoid repetition of the synchronous encoder axis No. r proper FB operation.

# Error codes

Error code	Description	Action
100 (Hexadecimal)	The synchronous encoder axis No. is not within the setting range.	Please try again after confirming the setting.
301 (Hexadecimal)	The synchronous encoder axis enabled flag of the synchronous encoder axis No. is OFF.	Execute the FB again after turning ON the synchronous encoder axis setting enabled flag.
# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Synchronous encoder axis No.	i_uSyncEncAxis	Word [unsigned]	1 to 4	Set the synchronous encoder axis number for which the connection command of the synchronous encoder via CPU is executed.

## ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the connecting valid flag of the synchronous encoder axis status has been turned ON.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErr_ld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_MoveCamReferencePosition

N					
Description					
Adds the movement amount set in the synchronous control change value to the cam reference position to move the cam reference position.					
M+RD77_MoveCamReferencePosition					
Execution command ——	B : i_bE	EN	o_bENO : B —	— Execution status	
Module label ——	−DUT : i_stModule −UW : i_uOutputAxis		o_bOK : B —	— Completed without error	
Output axis No. ——			o_bErr : B	— Error flag	
Cd.408: Synchronous —— control change value	-D : i_dSyncCtrlChangeValue		o_uErrld : UW —	— Error code	
Cd.409: Synchronous —— control reflection time	UW : i_	uSyncCtrlReflectionTime			
Applicable module		RD77MS16, RD77MS8, RD77MS	64, RD77MS2		
Applicable CPU		MELSEC iQ-R series			
Applicable engineering software		GX Works3			
Ladder					
355 steps					
<ul> <li>By turning ON i_bEN (Execution command), the cam reference position of the output axis No. is moved.</li> <li>If i_bEN (Execution command) is turned OFF during movement of the cam reference position, the operation stops during the movement and o_bOK (Completed without error) does not turn ON.</li> <li>When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the output axis No. with which synchronous control is not executed, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>					
Macro type					
Pulsed execution (multiple scan	executi	on type)			
	V         Description         Adds the movement amount set reference position.         Execution command —         Module label —         Module label —         Output axis No. —         Cd.408: Synchronous —         control change value         Cd.409: Synchronous —         control reflection time         Applicable module         Applicable CPU         Applicable engineering software         Ladder         355 steps         • By turning ON i_bEN (Executi)         • If i_bEN (Execution command movement and o_bOK (Comp)         • When the setting value of the interrupted, and the error code         • When this FB is executed for ON, the FB processing is inter         Macro type         Pulsed execution (multiple scan	V         Description         Adds the movement amount set in the streference position.         Execution command       B: i_bE         Module label       DUT : i_         Module label       DUT : i_         Output axis No.       UW : i_         Cd.408: Synchronous       D : i_dS         control change value       D : i_dS         cd.409: Synchronous       UW : i_         control reflection time       UW : i_         Applicable module       Applicable CPU         Applicable engineering software       Ladder         355 steps       By turning ON i_bEN (Execution command) is turn movement and o_bOK (Completed w         When the setting value of the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, and the error code 100 (F         When this FB is executed for the output a interrupted, is interr	V         Description         Adds the movement amount set in the synchronous control change value to reference position.         Image: Control change value is in the synchronous control change value to reference position.         Image: Control change value is in the synchronous control change value is index with which synchronous control reflection time is index with which synchronous control reflection time is index with which synchronous is turned OFF during movement of the car movement and o_bOK (Completed without error) does not turn ON.         Applicable engine of the output axis No. is out of the range, o_bErr interrupted, and the error code 100 (Hexadeciral) is stored in o_uErrId (is When this FB is executed for the output axis No. with which synchronous ON, the FB processing is interrupted, and the error code 300 (Hexadeciral Macro type         Pulsed execution (multiple scan execution type)	V         Description         Adds the movement amount set in the synchronous control change value to the cam reference position reference position.         Execution command       B : i_bEN         B : i_bEN       o_bENO : B         Module label       DUT : i_stModule       o_bOK : B         Output axis No.       UW : i_uOutputAxis       o_bERO : B         Cd.408: Synchronous       D : i_dSyncCtrlChangeValue       o_uErrld : UW         Cd.409: Synchronous       D : i_dSyncCtrlReflectionTime       Output axis No.         Applicable module       RD77MS16, RD77MS8, RD77MS4, RD77MS2         Applicable cPU       MELSEC IQ-R series         Applicable engineering software       GX Works3         Ladder       355 steps         • By turning ON i_bEN (Execution command), the cam reference position of the output axis No. is more movement and o_bOK (Completed without error) does not turn ON.         • When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the F interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).         • When this FB is executed for the output axis No. with which synchronous control is not executed, o ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrld (Error code).	

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change No processing 0: Cam reference position movement	
	Synchronous control change request	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code) 0	
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change No processing	
	Synchronous control change request	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code) 0 Error code 0	
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the output axis No.</li> <li>If this FB is used together with other synchronous control change FBs that have the same output axis No., secure one operation cycle or more after o_bOK (Completed without error) of this FB turns ON and before the FBs are executed.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>	

Error code	Description	Action					
100 (Hexadecimal)	The output axis No. is not within the setting range.	Please try again after confirming the setting.					
300 (Hexadecimal)	The FB is executed for the output axis No. with which synchronous control is not executed.	Please try again after confirming the setting.					

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Set the axis number whose cam reference position is to be moved. The setting range differs depending on the module used.
Cd.408: Synchronous control change value	i_dSyncCtrlChangeValue	Double word [signed]	-2147483648 to 2147483647	Set the amount of the cam reference position movement.
Cd.409: Synchronous control reflection time	i_uSyncCtrlReflectionTime	Word [unsigned]	0 to 65535 (ms) (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the reflection time for the synchronous control change.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that moving the cam reference position has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErr_ld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_ChangeCamPositionPerCycle

unction overview						
Item	Description					
Function overview	Changes the cam axis current value per cycle to a synchronous control change value.					
Symbol						
		M+RD77_ChangeCamPositionPerCycle				
	Execution command ———	B : i_bEN	J	o_bENO : B —	— Execution status	
	Module label ——	DUT : i_stModule o		o_bOK : B —	Completed without     error	
	Output axis No.			o_bErr : B —	— Error flag	
	Cd.408: Synchronous control change value			o_uErrld : UW —	— Error code	
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD7	7MS4, RD77MS2		
software	Applicable CPU		MELSEC iQ-R series			
	Applicable engineering software		GX Works3			
Programming language	Ladder					
Number of steps (maximum)	213 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the cam axis current value per cycle of the output axis No. is changed.</li> <li>When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrId (Error code).</li> <li>When this FB is executed for the output axis No. with which synchronous control is not executed, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrId (Error code).</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple sca	an executi	on type)			

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change Nc	processing 1: Change cam axis current value per cycle
	Synchronous control change request	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change	No processing
	Synchronous control change request	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery proce the required system operation.</li> <li>The FB cannot be used in an interrupt progra</li> <li>When this FB is used twice or more, precaution</li> <li>If this FB is used together with other synchror operation cycle or more after o_bOK (Comple</li> <li>Every input must be provided with a value for</li> </ul>	ssing. Program the error recovery processing separately in accordance with m. on must be taken to avoid repetition of the output axis No. ious control change FBs that have the same output axis No., secure one ted without error) of this FB turns ON and before the FBs are executed. proper FB operation.

Error code	Description	Action					
100 (Hexadecimal)	The output axis No. is not within the setting range.	Please try again after confirming the setting.					
300 (Hexadecimal)	The FB is executed for the output axis No. with which synchronous control is not executed.	Please try again after confirming the setting.					

# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Set the axis number whose cam axis current value per cycle is to be changed. The setting range differs depending on the module used.
Cd.408: Synchronous control change value	i_dSyncCtrlChange Value	Double word [signed]	-2147483648 to 2147483647	Set the cam axis current value per cycle to be changed. The setting value is converted within the range from 0 to (Cam axis length per cycle - 1).

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing the cam axis current value per cycle has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErr_ld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

M+RD77\_ChangeMainShaftGearPositionPerCycle

Function overviev	N				
Item	Description				
Function overview	Changes the current value per	cycle afte	er main shaft gear to a synchronous co	ontrol change value.	
Symbol					
	Γ	M+F	RD77_ChangeMainShaftGearPosition	PerCycle	
	Execution command ——B	3 : i_bEN		o_bENO : B	<ul> <li>Execution status</li> </ul>
	Module label —— D	OUT : i_st	Module	o_bOK : B	<ul> <li>Completed without error</li> </ul>
	Output axis No. ——U	JW : i_uO	DutputAxis	o_bErr : B	— Error flag
	Cd.408: Synchronous — D control change value	) : i_dSyn	ncCtrlChangeValue	o_uErrld : UW ——	— Error code
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77MS4,	RD77MS2	
software	Applicable CPU		MELSEC iQ-R series		
	Applicable engineering software		GX Works3		
Programming language	Ladder		-		
Number of steps (maximum)	213 steps				
Function description	<ul> <li>By turning ON i_bEN (Execution command), the current value per cycle after main shaft gear of the output axis No. is changed.</li> <li>When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the output axis No. with which synchronous control is not executed, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (multiple scan execution type)				

Item	Description	
Timing chart	When operation completes without an error	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change N command	p processing 2: Change current value per cycle after main shaft gear
	Synchronous control change	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0
	When an error occurs	
	i_bEN (Execution command)	
	o_bENO (Execution status)	
	Synchronous control change command	No processing
	Synchronous control change request	
	o_bOK (Completed without error)	
	o_bErr (Error flag)	
	o_uErrld (Error code)	0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery protection.</li> <li>The FB cannot be used in an interrupt program.</li> <li>When this FB is used twice or more, precation.</li> <li>If this FB is used together with other synch operation cycle or more after o_bOK (Com</li> <li>Every input must be provided with a value</li> </ul>	accessing. Program the error recovery processing separately in accordance with gram. ution must be taken to avoid repetition of the output axis No. ronous control change FBs that have the same output axis No., secure one pleted without error) of this FB turns ON and before the FBs are executed. for proper FB operation.

Error code	Description	Action				
100 (Hexadecimal)	The output axis No. is not within the setting range.	Please try again after confirming the setting.				
300 (Hexadecimal)	The FB is executed for the output axis No. with which synchronous control is not executed.	Please try again after confirming the setting.				

## ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Set the axis whose current value per cycle after main shaft gear is to be changed. The setting range differs depending on the module used.
Cd.408: Synchronous control change value	i_dSyncCtrlChangeValue	Double word [signed]	-2147483648 to 2147483647	Set the current value per cycle after main shaft gear to be changed. The setting value is converted within the range from 0 to (Cam axis length per cycle - 1).

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing the current value per cycle after main shaft gear has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErr_ld	Word [unsigned]	0	The error code generated in the FB is stored.

/ersion Date		Description	
00D	2014/06/30	First edition	

# 2.26 M+RD77\_ChangeAuxiliaryShaftGearPositionPerCycl

#### Name

M+RD77\_ChangeAuxiliaryShaftGearPositionPerCycle

Function overview	N					
Item	Description					
Function overview	Changes the current value per cycle after auxiliary shaft gear to a synchronous control change value.					
Symbol	M+RD77_ChangeAuxiliaryShaftGearPositionPerCycle					
	Execution command ——	B : i_bEN		o_bENO : B	<ul> <li>Execution status</li> </ul>	
	Module label ——	DUT : i_stl	Module	o_bOK : B	<ul> <li>Completed without error</li> </ul>	
	Output axis No. ——	−UW : i_uOutputAxis		o_bErr : B	— Error flag	
	Cd.408: Synchronous control change value	D : i_dSyncCtrlChangeValue     o_uErrld :		o_uErrld : UW	— Error code	
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77MS4, RD77MS2			
software	Applicable CPU		MELSEC iQ-R series			
	Applicable engineering software		GX Works3			
Programming language	Ladder		·			
Number of steps (maximum)	213 steps					
Function description	<ul> <li>By turning ON i_bEN (Execution command), the current value per cycle after auxiliary shaft gear of the output axis No. is changed.</li> <li>When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the output axis No. with which synchronous control is not executed, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>					
Compiling method	Macro type					
FB operation type	Pulsed execution (multiple sc	Pulsed execution (multiple scan execution type)				

Item	Description
Timing chart	When operation completes without an error
	i_bEN (Execution command)
	o_bENO (Execution status)
	Synchronous control change No processing 3: Change current value per cycle after auxiliary shaft gear
	Synchronous control change request
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0
	When an error occurs
	i_bEN (Execution command)
	o_bENO (Execution status)
	Synchronous control change No processing
	Synchronous control change request
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the output axis No.</li> <li>If this FB is used together with other synchronous control change FBs that have the same output axis No., secure one operation cycle or more after o_bOK (Completed without error) of this FB turns ON and before the FBs are executed.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>

Error code Description F		Action					
100 (Hexadecimal)	The output axis No. is not within the setting range.	Please try again after confirming the setting.					
300 (Hexadecimal)	The FB is executed for the output axis No. with which synchronous control is not executed.	Please try again after confirming the setting.					

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Set the axis whose current value per cycle after auxiliary shaft gear is to be changed. The setting range differs depending on the module used.
Cd.408: Synchronous control change value	i_dSyncCtrlChange Value	Double word [signed]	-2147483648 to 2147483647	Set the current value per cycle after auxiliary shaft gear to be changed. The setting value is converted within the range from 0 to (Cam axis length per cycle - 1).

#### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that changing the current value per cycle after auxiliary shaft gear has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_MoveCamPositionPerCycle

Function overview	N				
Item	Description				
Function overview	Adds the movement amount set in the synchronous control change value to a cam axis current value per cycle to move the cam axis current value per cycle.				
Symbol	M+RD77_MoveCamPositionPerCycle				
	Execution command ——	B:i_bEN	١	o_bENO : B	—— Execution status
	Module label ——	DUT : i_s	stModule	o_bOK : B	—— Completed without error
	Output axis No. ——	UW : i_u	OutputAxis	o_bErr : B	—— Error flag
	Cd.408: SynchronousD : i_dSyncCtrlCl control change value		vncCtrlChangeValue	o_uErrld : UW	Error code
	Cd.409: Synchronous ——UW : i_uSyncCtrlReflectionTime control reflection time				
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD	77MS4, RD77MS2	
software	Applicable CPU		MELSEC iQ-R series		
	Applicable engineering software		GX Works3		
Programming language	Ladder				
Number of steps (maximum)	355 steps				
Function description	<ul> <li>By turning ON i_bEN (Execution command), the cam axis current value per cycle of the output axis No. is moved.</li> <li>If i_bEN (Execution command) is turned OFF during movement of the cam axis current value per cycle, the operation stops during the movement and o_bOK (Completed without error) does not turn ON.</li> <li>When the setting value of the output axis No. is out of the range, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 100 (Hexadecimal) is stored in o_uErrld (Error code).</li> <li>When this FB is executed for the output axis No. with which synchronous control is not executed, o_bErr (Error flag) turns ON, the FB processing is interrupted, and the error code 300 (Hexadecimal) is stored in o_uErrld (Error code).</li> </ul>				
Compiling method	Macro type				
FB operation type	Pulsed execution (multiple sca	an executi	on type)		

Item	Description
Timing chart	When operation completes without an error
	i_bEN (Execution command)
	o_bENO (Execution status)
	Synchronous control change command No processing 4: Cam axis current value per cycle movement
	Synchronous control change request
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0
	When an error occurs
	i_bEN (Execution command)
	o_bENO (Execution status)
	Synchronous control change No processing
	Synchronous control change request
	o_bOK (Completed without error)
	o_bErr (Error flag)
	o_uErrld (Error code) 0 Error code 0
Restrictions and precautions	<ul> <li>The FB does not include error recovery processing. Program the error recovery processing separately in accordance with the required system operation.</li> <li>The FB cannot be used in an interrupt program.</li> <li>When this FB is used twice or more, precaution must be taken to avoid repetition of the output axis No.</li> <li>If this FB is used together with other synchronous control change FBs that have the same output axis No., secure one operation cycle or more after o_bOK (Completed without error) of this FB turns ON and before the FBs are executed.</li> <li>Every input must be provided with a value for proper FB operation.</li> </ul>

Error code	Description	Action
100 (Hexadecimal)	The output axis No. is not within the setting range.	Please try again after confirming the setting.
300 (Hexadecimal)	The FB is executed for the output axis No. with which synchronous control is not executed.	Please try again after confirming the setting.

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# ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Output axis No.	i_uOutputAxis	Word [unsigned]	1 to 16	Set the axis number whose cam axis current value per cycle is to be moved. The setting range differs depending on the module used.
Cd.408: Synchronous control change value	i_dSyncCtrlChange Value	Double word [signed]	-2147483648 to 2147483647	Set the amount of the cam axis current value per cycle movement.
Cd.409: Synchronous control reflection time	i_uSyncCtrlReflecti onTime	Word [unsigned]	0 to 65535 (ms) (0 to 32767: Set by decimal number. 32768 to 65535: Convert the number to hexadecimal number and set.)	Set the reflection time for the synchronous control change.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that moving the cam axis current value per cycle has been completed.
Error flag	o_bErr	Bit	OFF	When ON, it indicates that an error has occurred in the FB.
Error code	o_uErrld	Word [unsigned]	0	The error code generated in the FB is stored.

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_MakeRotaryCutterCam

Function overviev	N				
Item	Description				
Function overview	Automatically generates the cam for a rotary cutter.				
Symbol					
	M+RD77_MakeRotaryCutterCam				
	Evenution command	- • •			
	Execution command — B . 1_be	EIN	O_DENO . B Execution status		
	Module label —— DUT : i	_stModule	o_bOK : B Completed without		
	Cd 600: Cam		error		
	auto-generation cam No.	uCamNo	o_bErr : B Error flag		
	Cd.611: Cam resolution —— UW : i	uResolution	o uErrld : U Error code		
	Cd.611: Sheet length —— UD : i_	udSheetLength			
	Cd.611:UD ; i	udSheetSvncWidth			
	Sheet synchronous width	····, · ···,			
	Synchronous axis length UD : i_	udSyncAxisLength			
	Cd.611: Synchronization UD : i_	udSyncStartPoint			
	Cd.611: Synchronous				
	section acceleration ratio	SyncSectionAccelerationRatio			
Applicable hardware and	Applicable module	RD77MS16, RD77MS8, RD77MS4, RD77	MS2		
software	Applicable CPU	MELSEC iQ-R series			
	Applicable engineering software	GX Works3			
Programming language	Ladder	1			
Number of steps (maximum)	66 steps				
Function description	By turning ON i_bEN (Execution comm	and), the cam for a rotary cutter is automatic	ally generated.		
Compiling method	Macro type				
FB operation type	Pulsed execution (multiple scan execution	on type)			
Timing chart		1			
	i bEN (Execution command)	1	1		
	o_bENO (Execution status)				
	Cam auto-generation request o_bOK (Completed without error)				
Restrictions and precautions	The FB does not include error recover the required eveter exercises	ry processing. Program the error recovery p	rocessing separately in accordance with		
	tion of this FB, o_bOK (Completed without e	error) turns ON.			
	• The FB cannot be used in an interrupt program.				
	Every input must be provided with a value for proper FB operation.				

Error codes				
Error code	Description	Action		
None	None	None		

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Cd.609: Cam auto- generation cam No.	i_uCamNo	Word [unsigned]	1 to 256	Set the cam number to be automatically generated.
Cam resolution	i_uResolution	Word [unsigned]	256/512/1024/2048/ 4096/8192/16384/ 32768	Set the resolution of the cam to be generated.
Sheet length	i_udSheetLength	Double word [unsigned]	1 to 2147483647 [(Optional) same unit (such as 0.1 mm)]	Set the sheet length. Set this value in the cam axis length per cycle.
Sheet synchronous width	i_udSheetSyncWidth	Double word [unsigned]	1 to 2147483647 [(Optional) same unit (such as 0.1 mm)]	Set the sheet length of the synchronous section.
Synchronous axis length	i_udSyncAxisLength	Double word [unsigned]	1 to 2147483647 [(Optional) same unit (such as 0.1 mm)]	Set the cycle length of the rotary cutter shaft.
Synchronization starting point	i_udSyncStartPoint	Double word [unsigned]	1 to 2147483647 [(Optional) same unit (such as 0.1 mm)]	Set the length from the beginning of the sheet to the start of the synchronous section.
Synchronous section acceleration ratio	i_wSyncSectionAcce lerationRatio	Word [signed]	-5000 to 5000 [0.01%]	Set this label when the synchronous speed in the synchronous section needs to be adjusted. The speed is "Synchronous speed × (100% + Acceleration ratio)" in the synchronous section.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that the cam automatic generation has been completed.
Error flag	o_bErr	Bit	OFF	Always OFF
Error code	o_uErrld	Word [unsigned]	0	Always 0

Version	Date	Description				
00D	2014/06/30	First edition				

#### M+RD77\_CalcCamCommandPosition

Function overview	N					
Item	Description					
Function overview	Calculates a cam axis feed current value, and outputs the calculation result.					
Symbol						
		M+RD77_CalcCamCommandPos	sition			
	Execution command ——B : i_t	EN	o_bENO : B E	execution status		
	Module label —— DUT :	i_stModule	o_bOK : B C	Completed without		
	Cd.613: Cam No. —— UW : i	_uCamNo	o_dResult : D C c	Cam position alculation result		
	Cd.614: Stroke amount ——D : i_c	IStroke	o_bErr : B — E	Frror flag		
	Cd.615: Cam axis lengthUD : i_ per cycle	_udLengthPerCycle	o_uErrld : UW E	rror code		
	Cd.616: Cam referenceD : i_c position	ReferencePosition				
	Cd.617: Cam axis current —— UD : i value per cycle	_udCommandPositionPerCycle				
Applicable bardware and						
software		MELSEC IO-R series				
	Applicable engineering software	GX Works3				
Programming language	Ladder					
Number of steps (maximum)	58 steps					
Function description	By turning ON i_bEN (Execution comm	and), the cam axis feed current value is o	calculated.			
Compiling method	Macro type	<i>r</i> .				
FB operation type	Pulsed execution (multiple scan execution	ion type)				
Timing chart						
	i_bEN (Execution command)					
	o_bENO (Execution status)		\			
	Cam position calculation request					
	o_dResult (Cam position calculation result)	0	Calculation result	0		
	o_bOK (Completed without error			7		
Restrictions and precautions	<ul> <li>The FB does not include error recover the required system operation.</li> <li>Even if a warning occurs in the execution.</li> <li>The FB cannot be used in an interruption.</li> <li>Every input must be provided with a warning occurs.</li> </ul>	ry processing. Program the error recover ition of this FB, o_bOK (Completed without to program. value for proper FB operation.	ry processing separately in a out error) turns ON.	accordance with		

Error codes		
Error code	Description	Action
None	None	None

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Cd.613: Cam No.	i_uCamNo	Word [unsigned]	0 to 256	Set the cam number used for the calculation cam.
Cd.614: Stroke amount	i_dStroke	Double word [signed]	-2147483648 to 2147483647	Set the cam stroke amount used for the cam position calculation.
Cd.615: Cam axis length per cycle	i_udLengthPerCycle	Double word [unsigned]	1 to 2147483647	Set the cam axis length per cycle used for the cam position calculation.
Cd.616: Cam reference position	i_dReferencePosition	Double word [signed]	-2147483648 to 2147483647	Set the cam reference position used for the cam position calculation.
Cd.617: Cam axis current value per cycle	i_udCommandPosition PerCycle	Double word [unsigned]	0 to (Cam axis length per cycle)	Set the cam axis current value per cycle used for the cam position calculation.

# ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that calculating the cam axis feed current value has been completed.
Cam position calculation result	o_dResult	Double word [signed]	0	The result of the cam axis feed current value calculation is stored.
Error flag	o_bErr	Bit	OFF	Always OFF
Error code	o_uErrld	Word [unsigned]	0	Always 0

Version	Date	Description
00D	2014/06/30	First edition

#### M+RD77\_CalcCamPositionPerCycle

Function overview	N						
Item	Description						
Function overview	Calculates a cam axis current value per cycle, and outputs the calculation result.						
Symbol			M+RD77_CalcCamPositi	ionPerCycle			
	Execution command ———	B:i_t	DEN	o_bENO : B –	— Execution status		
	Module label ———	DUT :	i_stModule	o_bOK : B –	—— Completed without error		
	Cd.613: Cam No. ——	UW :	i_uCamNo	o_dResult : D –	—— Cam position calculation result		
	Cd.614: Stroke amount ——	D : i_0	lStroke	o_bErr : B –	— Error flag		
	Cd.615: Cam axis length ——— per cycle	UD : i	_udLengthPerCycle	o_uErrld : UW –	—— Error code		
	Cd.616: Cam reference ——— position	D : i_0	IReferencePosition				
Cd.617: Cam axis current — value per cycle Cd.618: Cam axis feed — current value		UD : i_udCommandPositionPerCycle					
			1				
Applicable hardware and	Applicable module		RD77MS16, RD77MS8, RD77MS4, RD77MS2				
Soliware	Applicable CPU		MELSEC iQ-R series				
	Applicable engineering software		GX Works3				
Programming language	Ladder						
Number of steps (maximum)	63 steps						
Function description	By turning ON i_bEN (Execution	comma	and), the cam axis current value p	er cycle is calculated.			
Compiling method	Macro type						
FB operation type	Pulsed execution (multiple scan e	executi	on type)				
Timing chart	i_bEN (Execution comm o_bENO (Execution stat Cam position calculation o_dResult (Cam position calculation result) o_bOK (Completed witho	and) us) reque	st 0	Calculation result	0		
Restrictions and precautions	<ul> <li>The FB does not include error the required system operation.</li> <li>Even if a warning occurs in the</li> <li>The FB cannot be used in an ir</li> <li>Every input must be provided v</li> </ul>	e execunterrup with a v	ry processing. Program the error r tion of this FB, o_bOK (Completed t program. 'alue for proper FB operation.	recovery processing separat	ely in accordance with		

Error codes		
Error code	Description	Action
None	None	None

### ■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	i_bEN	Bit	ON, OFF	ON: The FB is activated. OFF: The FB is not activated.
Module label	i_stModule	Structure	The setting range differs depending on the module label.	Specify the module label of the MELSEC iQ-R simple motion module.
Cd.613: Cam No.	i_uCamNo	Word [unsigned]	0 to 256	Set the cam number used for the calculation cam.
Cd.614: Stroke amount	i_dStroke	Double word [signed]	-2147483648 to 2147483647	Set the cam stroke amount used for the cam position calculation.
Cd.615: Cam axis length per cycle	i_udLengthPerCycle	Double word [unsigned]	1 to 2147483647	Set the cam axis length per cycle used for the cam position calculation.
Cd.616: Cam reference position	i_dReferencePosition	Double word [signed]	-2147483648 to 2147483647	Set the cam reference position used for the cam position calculation.
Cd.617: Cam axis current value per cycle	i_udCommandPosition PerCycle	Double word [unsigned]	0 to (Cam axis length per cycle)	Set the current value from which the cam search used for the cam position calculation is started.
Cd.618: Cam axis feed current value	i_dCommandPosition	Double word [signed]	-2147483648 to 2147483647	Set the cam axis feed current value used for the cam position calculation.

### ■Output labels

Name	Variable name	Data type	Default value	Description
Execution status	o_bENO	Bit	OFF	ON: The execution command is ON. OFF: The execution command is OFF.
Completed without error	o_bOK	Bit	OFF	When ON, it indicates that calculating the cam axis current value per cycle has been completed.
Cam position calculation result	o_dResult	Double word [signed]	0	The result of the cam axis current value per cycle calculation is stored.
Error flag	o_bErr	Bit	OFF	Always OFF
Error code	o_uErrld	Word [unsigned]	0	Always 0

Version	Date	Description
00D	2014/06/30	First edition

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