QD70 FB Library Reference Manual

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Reference Manual Revision History

Reference Manual Number	Date	Description
FBM-M044-A	2011/02/18	First edition



1.M+QD70_SetPARAM (Parameter setting)

FB Name

M+QD70_SetPARAM

Item	Description					
Function overview	Sets parameters (QD70P: Pr1 to Pr10/QD70D: Pr1 to Pr12).					
Symbol		M+QD70_SetPARAM				
	Execution co	mmand ——B:FB_EN	FB_ENO : B Execution status			
	Module start XY	address	FB_OK : B —— Parameter setting complete			
	Tarı	get axis	FB_ERROR : B Error flag			
	Pr1: Software stroke limit upper lim	it value —— D : i_SSLimitUpper	ERROR_ID : W Error code			
	Pr2: Software stroke limit lower lim	it value —— D : i_SSLimitLower				
	Pr3: Software stroke limit valid/invalid	setting W: i_SSLimitSetting				
	Pr4: Current feed value during speed	control				
	Pr5: Speed lim	it value —— D : i_SpeedLimit				
	Pr6: Bias speed	at start —— D : i_BiasSpeed				
	Pr7: Positioning complete signal outp	ut time —— W : i_PosiCmpSignal				
	Pr8: Deviation counter clear signal outp	ut timeW : i_DevCntClr				
	Pr9: PULSE/SIGN method selection setup/ho					
	stop mode during path					
	Pr11:Acceleration/deceleration system se					
	Pr12: Pulse Output Method (Stop Signal E	nabled) — W : i_PlsOutptMethod				
Applicable hardware	Compatible hardware: QD70	P(4/8), QD70D(4/8)				
and software	Hardware details					
	Q series	Basic model				
		High performance me	odel			
		Universal model				
	*Not applicable for QCPU (A	mode)				
	Compatible software: GX Wo	<u> </u>				
Programming	Ladder					
language						
Number of steps	For universal model CPU: 29	5*				
(maximum value)			m, and is therefore stated as a			
(maximum value)						
		Telel to the GA WOIKSZ	Version1 Operation Manual (Simple			
	Project).					



Item	Description					
Function description	By turning ON FB_EN (Execution command), the set parameter is written to the buffer memory.					
	2) FB operation is one-shot only, triggered by the FB_EN signal.					
	3) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.					
	4) Parameters are validated when the PLC ready signal (Y signal) turns from OFF to ON.					
	5) When the target axis setting value is out of range, the FB_ERROR output turns ON,					
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).					
	Refer to the error code explanation section for details.					
Compiling method	Macro type					
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery					
precautions	processing separately in accordance with the required system operation.					
	2) The FB cannot be used in an interrupt program.					
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program.					
	Do not use this FB in programs that are only executed once such as a subroutine,					
	FOR-NEXT loop, etc. because it is impossible to turn OFF.					
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition					
	of the target axis.					
	5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an					
	interrupt program. 6) Every input must be provided with a value for proper EP eneration					
	6) Every input must be provided with a value for proper FB operation.					
	7) If the parameters are set using GX Configurator-PT or the configuration function of GX					
	Works 2, using this FB is unnecessary.					
	8) Parameters such as the pulse output mode and external I/O signal logic must be					
ED an austicus to use	properly configured to match devices and systems connected to the QD70.					
FB operation type	Pulsed execution (1 scan execution type)					
Application example	Refer to Appendix 1 - Application examples.					
Timing chart	[When operation completes without error] [When an error occurs]					
	FB_EN(Execution command) FB_EN(Execution command)					
	FB_EN(Execution status)					
	Parameters write processing No processing Writing No processin Parameters write processing No proces					
	FB_OK(Parameters setting complete)					
	setting complete) FB_ERROR(Error flag) FB_ERROR(Error flag)					
	ERROR_ID(Error code) 0 ERROR_ID(Error code) 0 Error code					
Delevent	MELOSO O T. ODZO D. W M					
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual MELSEC-Q Type QD70 Positioning Module User's Manual					
	MELSEC-Q Type QD70D Positioning Module User's Manual					



■ Error code list

Error codes	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting.

Labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN B	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.
Pr1: Software stroke	i_SSLimitUpper	D	-2,147,483,648~	Set the upper limit for the
limit upper limit value			2,147,483,647 (pulse)	machine's movement
				range.
Pr2: Software stroke	i_SSLimitLower	D		Set the lower limit for the
limit lower limit value				machine's movement
				range.
Pr3: Software stroke	i_SSLimitSetting	W	0: Valid	Set whether to validate the
limit valid/invalid			1: Invalid	software stroke limit.
setting				
Pr4: Current feed	i_SpeedCntValue	W	0: No update	Specify whether to enable
value during speed			1: Update	or disable the update of the
control			2: Clear to 0 and no update	current feed value while
				operations are performed
				under the speed control of
				the speed-position
				switching control.



Name	Variable name	Data type	Setting range	Description
Pr5: Speed limit	i_SpeedLimit	D	QD70P:	Set the maximum speed
value	I_SpeedLilliit		1~200,000 (pulse/s)	during OPR control,
value			QD70D:	positioning control and
			1~4,000,000 (pulse/s)	JOG operation.
DrC: Disc speed at	i DiagCanad	<u> </u>	,	
Pr6: Bias speed at	i_BiasSpeed	D	QD70P:	Set the minimum speed
start			0~200,000 (pulse/s)	upon starting OPR control,
			QD70D:	positioning control and
			0~4,000,000 (pulse/s)	JOG operation.
Pr7: Positioning	i_PosiCmpSignal	W	0~65,535 (ms) *1	Set the output time of the
complete signal				positioning complete
output time				signal.
				*1: Setting method
				•0~32,767: Set in decimal.
				•32,768~65,535: Set after
				converted into
				hexadecimal.
Pr8: Deviation	i_DevCntClr	W	1~32 (ms)	Set the duration of the
counter clear signal				deviation counter clear
output time				signal output during a
				machine OPR control using
				any of the following
				methods: the near-point
				dog method, stopper 1 to 3,
				and count 1.
Pr9: PULSE/SIGN	i_SetupHoldTime	W	0: 10 μs	Set the setup/hold time
method selection			1: 100 μs	when PULSE/SIGN is
setup/hold time			2: 1 ms	selected in the pulse output
			3: 2 ms	mode to output inverted
				pulses.



Name	Variable name	Data	Setting range	Description
		type		
Pr10: Deceleration	i_StopMethod	W	0: Position match stop	QD70P: Stop mode during
stop method/stop			1: Deceleration stop	path control
mode during path				Set how to stop the
control				operation by an axis stop
				signal input when
				"Continuous path control"
				is selected for the
				"Operation pattern" of
				positioning control.
				QD70D: Deceleration stop
				method
				Set how to stop the
				operation when an axis
				stop signal is input during
				position control including
				the one in the
				speed-position switching
				control.
Pr11:Acceleration/d-	i_AccDecProcess	W	0: Trapezoidal	Set whether to use
eceleration system			acceleration/deceleration	trapezoidal
selection			1: S-curve	acceleration/deceleration
			acceleration/deceleration	or S-curve
			*2	acceleration/deceleration
				for the
				acceleration/deceleration
				process.
				*2: Set 0 for QD70P as this
				is not supported by
				QD70P.



Name	Variable name	Data	Setting range	Description
		type		
Pr12: Pulse Output	i_PlsOutptMethod	W	0: Fixed pulse output	Select whether to continue
Method (Stop Signal			1: Fixed deceleration time	or stop outputting the
Enabled)			*3	current pulse at the time
				the specified deceleration
				stop time is elapsed for the
				case where an axis is
				stopped due to a stop
				factor.
				*3: Set 0 for QD70P as this
				is not supported by
				QD70P.

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Parameter setting	FB_OK	В	OFF	When ON, it indicates that the parameter
complete				setting is completed.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_SetPARAM function block.

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



2.M+QD70_SetZData (OPR data setting)

FB Name

M+QD70_SetZData

Item	Description						
Function overview	Sets OPR data (QD70P: OPR.1 to OPR.9/QD70D: OPR.1 to OPR.10).						
Symbol		M+QD70_SetZData					
	Execution command—	B : FB_EN	FB_ENO : B	Execution status			
	Module start XY address —		FB_OK : B	— OPR data setting complete			
	Target axis —	W : i_Axis	FB_ERROR : B	— Error flag			
	OPR1: OPR method	W : i_OPRMethod	ERROR_ID : W	Error code			
	OPR2: OPR direction —	W : i_OPRDirection					
	OPR3: OP address —	D:i_OPAddress					
	OPR4: OPR speed	D:i_OPRSpeed					
	OPR5: Creep speed	D:i_CreepSpeed					
	OPR6: ACC/DEC time at OPR	OPR6: ACC/DEC time at OPR——W : i_OPRAccDecTime					
	OPR7: DEC/STOP time at OPR—	W : i_OPRDecStopTime					
	OPR8: Setting for the movement amount D : i_DogOnLength						
	OPR9: OPR dwell time —	W : i_OPRDwellTime					
	OPR10: OPR retry—	W : i_OPRRetry					
Applicable hardware	Compatible hardware: QD70P(4/8), QD70D(4/8)						
and software	Hardware details						
	Q series	Basic model					
		High performance	model				
		Universal model					
	*Not applicable for QCPU (A m	ode)					
	Compatible software: GX Work	s2 Ver1.31H or later	r				
Programming	Ladder						
language							
Number of steps	For universal model CPU: 279*						
(maximum value)	*The value is the number of ste	ps in the label progr	ram, and is there	fore stated as a			
	reference value. For details, re	reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple					



Item	Description					
Function description	By turning ON FB_EN (Execution command), the set OPR data is written to the buffer memory.					
	2) FB operation is one-shot only, triggered by the FB_EN signal.					
	3) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.					
	4) Parameters are validated when the PLC ready signal (Y signal) turns from OFF to ON.					
	5) When the target axis setting value is out of range, the FB_ERROR output turns ON,					
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).					
	Refer to the error code explanation section for details.					
Compiling method	Macro type					
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery					
precautions	processing separately in accordance with the required system operation.					
	2) The FB cannot be used in an interrupt program.					
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program.					
	Do not use this FB in programs that are only executed once such as a subroutine,					
	FOR-NEXT loop, etc. because it is impossible to turn OFF.					
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition					
	of the target axis.					
	5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an					
	interrupt program.					
	6) Every input must be provided with a value for proper FB operation.					
	7) If the parameters are set using GX Configurator-PT or the configuration function of GX					
	Works 2, using this FB is unnecessary.					
	8) Parameters such as the pulse output mode and external I/O signal logic must be					
ED anaration time	properly configured to match devices and systems connected to the QD70.					
FB operation type	Pulsed execution (1 scan execution type)					
Application example	Refer to Appendix 1 - Application examples.					
Timing chart	[When operation completes without error] [When an error occurs]					
	FB_EN(Execution command) FB_EN(Execution command)					
	FB_EN(Execution status) FB_EN(Execution status)					
	Parameters write processing No processing Writing No processing Parameters write processing No processing					
	FB_OK(OPR data setting complete) FB_OK(OPR data setting complete)					
	FB_ERROR(Error flag) FB_ERROR(Error flag)					
	ERRORJD(Error code) 0 ERRORJD(Error code) 0 Error code					
Polovent manuals	MELSEC O Type OD70 Positioning Madula Haarla Manual					
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual MELSEC Q Type QD70D Positioning Module User's Manual					
	MELSEC-Q Type QD70D Positioning Module User's Manual					



■ Error code list

Error code	Description	
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.	
	Please try again after confirming the setting.	

Labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.
OPR1: OPR method	i_OPRMethod	W	0: Near-point dog method	Set the OPR method for
			1: Stopper 1	carrying out machine OPR.
			2: Stopper 2	
			3: Stopper 3	
			4: Count 1	
			5: Count 2	
OPR2: OPR	i_OPRDirection	W	0: Forward direction	Set the direction to start
direction			(Address increment	movement when starting
			direction)	machine OPR.
			1: Reverse direction	
			(Address decrement	
			direction)	
OPR3: OP address	i_OPAddress	D	-2,147,483,648~	Set the address used as
			2,147,483,647 (pulse)	the reference point for
				positioning control (ABS
				system).



Name	Variable name	Data	Setting range	Description
		type		
OPR4: OPR speed	i_OPRSpeed	D	1) QD70P:	Set the speed for OPR
			1~200,000 (pulse/s)	control.
			2) QD70D:	
			1~4,000,000 (pulse/s)	
OPR5: Creep speed	i_CreepSpeed	D	1) QD70P:	Set the creep speed after
			1~200,000 (pulse/s)	near-point dog ON.
			2) QD70D:	
			1~4,000,000 (pulse/s)	
OPR6: ACC/DEC	i_OPRAccDecTime	W	0~32,767 (ms)	Set
time at OPR				acceleration/deceleration
				time for OPR control.
OPR7: DEC/STOP	i_OPRDecStopTime	W	0~32,767 (ms)	When the count 2 is set in
time at OPR				the OPR method, set the
				time taken to make a stop
				by an axis stop factor (axis
				stop signal ON or error
				occurrence).
OPR8: Setting for	i_DogOnLength	D	0~2,147,483,647 (pulse)	When the count 1 or 2 is
the movement				set in the OPR method, set
amount after				the movement amount to
near-point dog ON				the OP after the near-point
				dog ON.
OPR9: OPR dwell	i_OPRDwellTime	W	0~65,535 (ms) *1	When stopper 1 is set in
time				the OPR method, set the
				time for the machine OPR
				to complete after the
				near-point dog signal turns
				ON.
				*1: Setting method
				•0~32,767: Set in decimal.
				•32,768~65,535: Set after
				converted into
				hexadecimal.
	<u>l</u>	I	<u> </u>	



Name	Variable name	Data	Setting range	Description
		type		
OPR10: OPR retry	i_OPRRetry	W	0: Valid	Set whether to carry out
			1: Invalid	OPR retry.
			*2	*2 Set 0 for QD70P as this
				is not supported by
				QD70P.

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
OPR data setting	FB_OK	В	OFF	When ON, it indicates that setting of the data
complete				is completed.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_SetZData function block.

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



3.M+QD70_PosiDataSet (Positioning data setting)

FB Name

M+QD70_PosiDataSet

Item	Description				
Function overview	Sets positioning data (Da.1 to Da.7).				
Symbol		QD70_PosiDataSet			
	Execution command——B:	FB_EN	FB_ENO : B	Execution status	
	Module start XY address —— W :	i_Start_IO_No	FB_OK : B	Positioning data setting complete	
	Target axis —— W :	i_Axis	FB_ERROR : B	Error flag	
	Data No. —— W :	i_DataNo	ERROR_ID: W	Error code	
	Da1: Operation pattern —— W :	i_OperatePattern			
	Da2: Control system —— W :	i_ControlSystem			
	Da3: ACC/DEC time	i_AccDecTime			
	Da4: DEC/STOP time W:	i_DecStopTime			
		i_CommandSpeed			
	Da6: Positioning address/D:	D: i_PosiAddr W: i_DwellTime			
	Da7: Dwell time ——W :				
		00(4/0) 00700(4/0)		1	
Applicable hardware	Compatible hardware: QD7	0P(4/8), QD70D(4/8)			
and software	Hardware details	Dania madal			
	Q series	Basic model			
		High performance	e model		
		Universal model			
	*Not applicable for QCPU (A mode)			
	Compatible software: GX V	orks2 Ver1.31H or lat	ter		
Programming	Ladder				
language					
Number of steps	For universal model CPU: 301*				
(maximum value)	*The value is the number o	f steps in the label pro	gram, and is	s therefore stated as a	
	reference value. For detai	s, refer to the GX Wor	rks2 Version	1 Operation Manual (Simple	
	Project).				



Item	Description						
Function description	1) By turning ON FB_EN (Execution command), the set positioning data is written to the						
	buffer memory.						
	2) FB operation is one-shot only, triggered by the FB_EN signal.						
	3) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.						
	4) When the target axis setting value is out of range, the FB_ERROR output turns ON,						
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).						
	Refer to the error code explanation section for details.						
Compiling method	Macro type						
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery						
precautions	processing separately in accordance with the required system operation.						
	2) The FB cannot be used in an interrupt program.						
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do						
	not use this FB in programs that are only executed once such as a subroutine,						
	FOR-NEXT loop, etc. because it is impossible to turn OFF.						
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition of						
	the target axis.						
	5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an						
	interrupt program.						
	6) Every input must be provided with a value for proper FB operation.						
	7) Parameters such as the pulse output mode and external I/O signal logic must be						
	properly configured to match devices and systems connected to the QD70.						
FB operation type	Pulsed execution (1 scan execution type)						
Application example	Refer to Appendix 1 - Application examples.						
Timing chart	[When operation completes without error] [When an error occurs]						
	FB_EN(Execution command) FB_EN(Execution command)						
	FB_EN(Execution status)						
	Parameters write processing No processing Writing No processi Parameters write processing No processing						
	FB_OK(Positioning data setting complete)						
	data setting complete)						
	FRROR INVError code) O Fror code						
	ERROR_ID(Error code) 0						
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual						
	•MELSEC-Q Type QD70D Positioning Module User's Manual						



■ Error code list

Error code	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting.

Labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated. OFF: The FB is not
				activated.
Module start XY address (For QD70D, the start address of the intelligent function module)	i_Start_IO_No	W	Depends on the I/O point range. For details, refer to the CPU user's manual.	Specify the starting XY address (in hexadecimal) where the QD70 module is mounted. (For example, enter H10 for X10.)
Target axis	i_Axis	W	1~8	Specify the axis number.
Data No.	i_DataNo	W	1~10	Designate the positioning data No.
Da1: Operation pattern	i_OperatePattern	W	O: Positioning termination 1: Continuous positioning control 2: Continuous path control	Designate whether positioning control of a certain data No. is to be ended with just that data, or whether the positioning control for the next data No. is to be carried out in succession.



Name	Variable name	Data type	Setting range	Description
Da2: Control system	i_ControlSystem	W	o: No control method 1: 1-axis linear control (ABS) 2: 1-axis linear control (INC) 3: Speed-position control (Forward) 4: Speed-position control (Reverse)	Set the "control system" for carrying out positioning control.
Da3: ACC/DEC time	i_AccDecTime	W	0~32767 (ms)	Set the acceleration/deceleration time for positioning control.
Da4: DEC/STOP time	i_DecStopTime	W	0~32767 (ms)	Set the time taken to make a stop after axis stop factor occurrence (axis stop signal ON or error occurrence).
Da5: Command speed	i_CommandSpeed	D	1) QD70P: 0~200,000 (pulse/s) 2) QD70D: 0~4,000,000 (pulse/s)	Set the command speed for positioning control.
Da6: Positioning address/movement amount	i_PosiAddr	D	Da2: Control system =1,2 -2,147,483,648~ 2,147,483,647 (pulse) Da2: Control system =3,4 0~2,147,483,647 (pulse)	Set the target value or movement amount for position control, or the movement amount or new current value for position control of speed-position switching control. The setting value differs in the setting range depending on "control system".



Name	Variable name	Data	Setting range	Description
		type		
Da7: Dwell time	i_DwellTime	W	0~65,535 (ms) *1	*1: Setting method
				●0~32,767: Set in decimal.
				•32,768~65,535: Set after
				converted into
				hexadecimal.

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Positioning data	FB_OK	В	OFF	When ON, it indicates that the positioning
setting complete				data setting is completed.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_PosiDataSet function block.

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



4.M+QD70_CPUReady (PLC ready signal ON)

FB Name

M+QD70_CPUReady

Item	Description				
Function overview	Outputs PLC ready signal.				
Symbol		M+QD70_CPUReady			
	Execution command —— B : F	FB_ENO : B Execution status			
	Module start XY address — W : i	i_Start_IO_No FB_OK : B Signal ON complete			
		FB_ERROR : B Error flag			
		ERROR_ID : W Error code			
Applicable hardware	Compatible hardware: QD70P	P(4/8), QD70D(4/8)			
and software	Hardware details				
	Q series	Basic model			
		High performance model			
	Universal model				
	*Not applicable for QCPU (A mode)				
	Compatible software: GX Works2 Ver1.31H or later				
Programming	Ladder				
language					
Number of steps	For universal model CPU: 258*				
(maximum value)	*The value is the number of steps in the label program, and is therefore stated as a				
	reference value. For details, r	refer to the GX Works2 Version1 Operation Manual (Simple			
	Project).				
Function description	1) By turning ON FB_EN (Execution command), the PLC ready signal (Y signal) is turned				
	ON.	ON.			
	2) After FB_EN (Execution command) is turned ON, the FB is completed by one scan.				
Compiling method	Macro type				



Item	Description		
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery		
precautions	processing separately in accordance with the required system operation.		
	2) The FB cannot be used in an interrupt program.		
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do		
	not use this FB in programs that are only executed once such as a subroutine,		
	FOR-NEXT loop, etc. because it is impossible to turn OFF.		
	4) This FB uses index registers Z9. Please do not use this index register in an interrupt program.		
	5) Every input must be provided with a value for proper FB operation.		
	6) When FB_EN (Execution command) is turned ON from OFF, the OFF time should be set		
	to 100 ms or longer.		
	7) Parameters such as the pulse output mode and external I/O signal logic must be properly		
	configured to match devices and systems connected to the QD70.		
FB operation type	Real-time execution		
Application example	Refer to Appendix 1 - Application examples.		
Timing chart	FB_EN(Execution command)		
	FB_EN(Execution status)		
	PLC READY (Y signal)		
	FB_OK(Signal ON complete)		
	FB_ERROR(Error flag)		
	ERROR_ID(Error code) 0		
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual		
	MELSEC-Q Type QD70D Positioning Module User's Manual		

■ Error code list

Error code	Description
None	None



Labels

■Input labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				

■Output labels

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Signal ON complete	FB_OK	В	OFF	When ON, it indicates that the PLC ready
				signal ON is completed.
Error flag	FB_ERROR	В	OFF	Always OFF
Error code	ERROR_ID	W	0	Always 0

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_CPUReady function block.

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



5.M+QD70_StartPosi (Positioning start)

FB Name

M+QD70_StartPosi

Item	Description				
Function overview	Starts positioning.				
Symbol		M+QD70_StartPosi			
	Execution command	B : FB_EN	FB_ENO : B	Execution status	
	Module start XY address	W:i_Start_IO_No	FB_OK : B	— Execution complete	
	Target axis ——	W : i_Axis	FB_ERROR : B	— Error flag	
	Cd3: Start method	W:i_StartNo	ERROR_ID : W	— Error code	
Applicable hardware	Compatible hardware: QD70P(4/8), QD70D(4/8)				
and software	Hardware details				
	Q series	Basic model			
		High performance r	nodel		
		Universal model			
	*Not applicable for QCPU (A mode)				
	Compatible software: GX Wo	orks2 Ver1.31H or later			
Programming	Ladder				
language					
Number of steps	For universal model CPU: 332*				
(maximum value)	*The value is the number of steps in the label program, and is therefore stated as a				
	reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple				
	Project).				



Item	Description	
Function description	By turning ON FB_EN (Execution command), the control required for i_StartNo (Cd3: Start method) is started.	
	2) The FB is started when the positioning start signal (Y signal) is turned ON.	
	3) When FB_EN (Execution command) is turned ON, the following conditions must be satisfied to turn ON the positioning start signal (Y signal).	
	When these conditions are not satisfied, the positioning start signal (Y signal) is not	
	turned ON, but FB_OK (Execution complete) is turned ON. (In this case, warnings at	
	start will not occur.)	
	[Conditions]	
	Module ready signal (X signal): ON, Positioning start signal (Y signal): OFF, Start complete signal (X signal): OFF, BUSY signal (X signal): OFF	
	4) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.	
	5) When the start complete signal (X signal) is ON or FB_EN (Execution command) is OFF,	
	the positioning start signal (Y signal) is turned OFF.	
	6) When the target axis setting value is out of range, the FB_ERROR output turns ON,	
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).	
	Refer to the error code explanation section for details.	
Compiling method	Macro type	
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery	
precautions	processing separately in accordance with the required system operation.	
	2) The FB cannot be used in an interrupt program.	
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program.	
	Do not use this FB in programs that are only executed once such as a subroutine,	
	FOR-NEXT loop, etc. because it is impossible to turn OFF.	
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target axis.	
	5) This FB uses index registers Z9, Z8, Z7 and Z6. Please do not use these index registers in an interrupt program.	
	6) When this FB is used in two or more places, a duplicated coil warning may occur during	
	compile operation due to the Y signal being operated by index modification. However	
	this is not a problem and the FB will operate without error.	
	7) The data is not set at start in the FB. Data necessary for each control of start No. must	
	be set in the parameters and buffer memory beforehand.	
	8) Every input must be provided with a value for proper FB operation.	
	9) Parameters such as the pulse output mode and external I/O signal logic must be	
	properly configured to match devices and systems connected to the QD70.	
FB operation type	Pulsed execution (multiple scan execution type)	



Item	Description
Application example	Refer to Appendix 1 - Application examples.
Timing chart	[When operation completes without error] [When an error occurs] FB_EN(Execution command) FB_EN(Execution status) Cd3: Start method Positioning start signal (Y signal) Start complete signal (X signal) FB_OK(Execution complete) FB_ERROR(Error flag) ERROR_ID(Error code) [When an error occurs] FB_EN(Execution command) FB_EN(Execution status) Cd3: Start method Positioning start signal (Y signal) Start complete signal (X signal) FB_OK(Execution complete) FB_ERROR(Error flag) ERROR_ID(Error code) 0 I = -1 - F 0
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual
	MELSEC-Q Type QD70D Positioning Module User's Manual

■Error code list

Error code	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting.

Labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in
(For QD70D, the			the CPU user's manual.	hexadecimal) where the
start address of the				QD70 module is
intelligent function				mounted. (For example,
module)				enter H10 for X10.)
Target axis	i_Axis	W	1~8	Specify the axis number.



Name	Variable name	Data	Setting range	Description
		type		
Cd3: Start method	i_StartNo	W	QD70P:	Set the "positioning start
			0: Positioning control	number" for "Cd. 3 Start
			(Starts from No.1)	method" according to the
			9000: Machine OPR control	control to be started.
			9001: Fast OPR control	
			QD70D:	
			0~10: Data No. for	
			positioning (Starts	
			from No.1 when 0 is	
			set)	
			9000: Machine OPR control	
			9001: Fast OPR control	

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Execution complete	FB_OK	В	OFF	When ON, it indicates that the execution is
				completed. However, it is not turned ON if a
				module error has occurred at start.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_StartPosi function block.

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



6.M+QD70_JOG (JOG operation)

FB Name

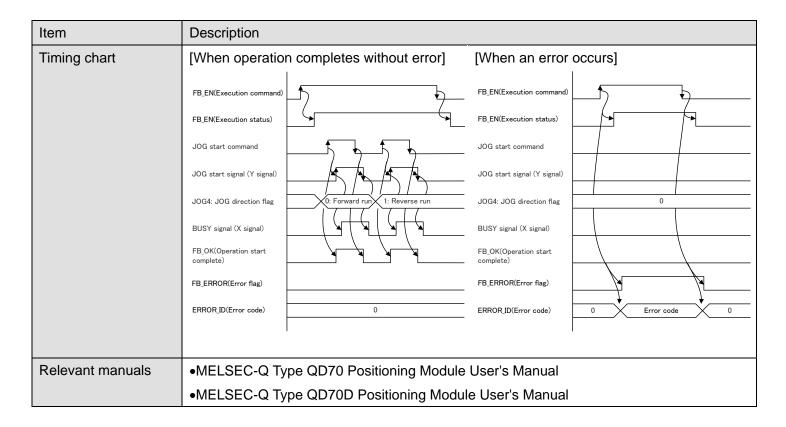
M+QD70_JOG

Item	Description				
Function overview	Carries out JOG operation.				
Symbol	M+QD70_JOG				
	Execution command B	: FB_EN	FB_ENO : B	Execution status	
	Module start XY address ———W	: i_Start_IO_No	FB_OK : B	Operation start complete	
	Target axis ——W	: i_Axis	FB_ERROR : B	Error flag	
	JOG start command——B	: i_StartJOG	ERROR_ID : W	Error code	
	JOG1: JOG speed D	: i_JogSpeed			
	JOG2: JOG ACC time ——W	: i_JogAccTime			
	JOG3: JOG DEC time ——W	W : i_JogDecTime			
	JOG4: JOG direction flag	- W : i_JogDirection			
A Li Li	C	2/4/0) ODZOD/4/0)			
Applicable hardware	Compatible hardware: QD70	P(4/8), QD70D(4/8)			
and software	Hardware details	1			
	Q series	Basic model			
		High performance n	nodel		
		Universal model			
	*Not applicable for QCPU (A	mode)			
	Compatible software: GX Wo	rks2 Ver1.31H or later			
Programming	Ladder				
language					
Number of steps	For universal model CPU: 342*				
(maximum value)	*The value is the number of s	teps in the label progra	am, and is the	erefore stated as a	
	reference value. For details,	refer to the GX Works	2 Version1 O	peration Manual (Simple	
	Project).		•		



Item	Description
Function description	After FB_EN (Execution command) is turned ON, JOG operation is carried out according
i unction description	, , , , , , , , , , , , , , , , , , , ,
	to the setting of JOG1 to JOG4 by turning ON i_StartJOG (JOG start command).
	2) After FB_EN (Execution command) is turned ON, the FB is always executed.
	3) After FB_EN (Execution command) is turned ON and operation is performed with
	i_StartJOG (JOG start command), if FB_EN (Execution command) is turned OFF, the
	operation stops.
	4) When the target axis setting value is out of range, the FB_ERROR output turns ON,
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).
	Refer to the error code explanation section for details.
Compiling method	Macro type
Restrictions and	The FB does not include error recovery processing. Program the error recovery
precautions	processing separately in accordance with the required system operation.
	2) The FB cannot be used in an interrupt program.
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do
	not use this FB in programs that are only executed once such as a subroutine,
	FOR-NEXT loop, etc. because it is impossible to turn OFF.
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition
	of the target axis.
	5) This FB uses index registers Z9, Z8, Z7, and Z6. Please do not use these index registers
	in an interrupt program.
	6) It is dangerous to set the JOG speed to a large value from the beginning. For safety, first
	set to a smaller value and check the movement. Then, gradually increase the value to
	an optimum speed for control.
	7) When this FB is used in two or more places, a duplicated coil warning may occur during
	compile operation due to the Y signal being operated by index modification. However
	this is not a problem and the FB will operate without error.
	8) Every input must be provided with a value for proper FB operation.
	9) Parameters such as the pulse output mode and external I/O signal logic must be
	properly configured to match devices and systems connected to the QD70.
FB operation type	Real-time execution
Application example	Refer to Appendix 1 - Application examples.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	





■ Error code list

Error code	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting. (After the JOG start command is turned OFF
	and FB_EN is turned ON from OFF, turn ON the JOG start command again.)

Labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.



Name	Variable name	Data	Setting range	Description
		type		
JOG start command	i_StartJOG	В	ON, OFF	Turn ON to perform the
				JOG operation.
JOG1: JOG speed	i_JogSpeed	D	QD70P:	Set the speed for JOG
			1~200,000 (pulse/s)	operation.
			QD70D:	
			1~4,000,000 (pulse/s)	
JOG2: JOG ACC	i_JogAccTime	W	0~32,767 (ms)	Set the time taken to reach
time				"JOG speed" from "Bias
				speed at start" at a JOG
				operation start.
JOG3: JOG DEC	i_JogDecTime	W	0~32,767 (ms)	Set the time taken to make
time				a stop after reaching "Bias
				speed at start" from "JOG
				speed" at a JOG operation
				stop.
JOG4:JOG direction	i_JogDirection	W	0: Forward run JOG	Set the forward/reverse
flag			1: Reverse run JOG	direction for JOG
				operation.

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Operation start	FB_OK	В	OFF	ON: JOG command is ON.
complete				OFF: JOG command is OFF.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition



Note

This chapter includes information related to the M+QD70_JOG function block.

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



7.M+QD70_ChgSpeed (Speed change)

FB Name

M+QD70_ChgSpeed

Item	Description				
Function overview	Executes speed change.				
Symbol	M+QD70_ChgSpeed				
	Execution command —	B : FB_EN	FB_ENO : B Execution status		
	Module start XY address —		FB_OK : B —— Speed change request complete		
	Target axis —	W : i_Axis	FB_ERROR : B —— Error flag		
	Cd7: New speed value —	D : i_SpeedChgValue	ERROR_ID:W Error code		
	Cd8: ACC/DEC time at speed change —	W : i_NewAccDecTime			
	Cd9: DEC/STOP time at speed change —	W:i_NewDecStopTime			
Applicable hardware	Compatible hardware: QD70P(4/8), QD70D(4/8)			
and software	Hardware details	<u> </u>			
	Q series	Basic model			
		High performance r	model		
		Universal model			
	*Not applicable for QCPU (A mode) Compatible software: GX Works2 Ver1.31H or later				
Programming language	Ladder				
Number of steps	For universal model CPU: 292*				
(maximum value)	*The value is the number of steps in the label program, and is therefore stated as a				
	reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple Project).				
Function description	1) By turning ON FB_EN (Execution command), the speed during control,				
	acceleration/deceleration time at speed change, and deceleration/stop time at speed				
	change are changed. 2) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans.				
	3) When the target axis setting	value is out of range	e, the FB_ERROR output turns ON,		
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).				
	Refer to the error code expla	anation section for de	etails.		
Compiling method	Macro type				



Item	Description				
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery				
precautions	processing separately in accordance with the required system operation.				
	2) The FB cannot be used in an interrupt program.				
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do				
	not use this FB in programs that are only executed once such as a subroutine,				
	FOR-NEXT loop, etc. because it is impossible to turn OFF.				
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition of				
	the target axis.				
	5) This FB uses index registers Z9, Z8 and Z7. Please do not use these index registers in an interrupt program.				
	6) Every input must be provided with a value for proper FB operation.				
	7) If FB_EN (Execution command) is turned ON while the BUSY signal (X signal) is OFF, the				
	request will be ignored. In this case, FB_OK (Speed change request complete) is not				
	turned ON.				
	8) Parameters such as the pulse output mode and external I/O signal logic must be properly				
	configured to match devices and systems connected to the QD70.				
FB operation type	Pulsed execution (multiple scan execution type)				
Application example	Refer to Appendix 1 - Application examples.				
Timing chart	[When operation completes without error] [When an error occurs]				
	FB_EN(Execution command) FB_EN(Execution command)				
	FB_EN(Execution status) FB_EN(Execution status)				
	Cd7: New speed value				
	Cd8: ACC/DEC time at speed change Current Value speed change Current Value speed change				
	Cd9: DEC/STOP time at speed change Current Value New value Cd9: DEC/STOP time at speed change Cd9: DEC/STOP time at speed change				
	Cd6: Speed change request 0 1 0 Cd6: Speed change request 0				
	FB_OK(Speed change request complete)				
	request complete) FB_ERROR(Error flag) FB_ERROR(Error flag)				
	ERROR_ID(Error code) 0 ERROR_ID(Error code) 0 Error code 0				
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual				
	MELSEC-Q Type QD70D Positioning Module User's Manual				



■ Error code list

Error code	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting.

Labels

■Input labels

Name	Variable name	Data type	Setting range	Description
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.
Cd7: New speed	i_SpeedChgValue	D	1) QD70P:	Set the new speed.
value			0~200,000 (pulse/s)	
			2) QD70D:	
			0~4,000,000 (pulse/s)	
Cd8: ACC/DEC time	i_NewAccDecTime	W	0~32,767 (ms)	Set the acceleration/
at speed change				deceleration time after a
				speed change.
Cd9: DEC/STOP	i_NewDecStopTime	W	0~32,767 (ms)	Set the deceleration stop
time at speed				time after a speed change.
change				

■Output labels

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.



Name	Variable name	Data	Initial	Description
		type	value	
Speed change	FB_OK	В	OFF	When ON, it indicates that the speed change
request complete				request is completed.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_ChgSpeed function block.

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



8.M+QD70_ChgPosi (Target position change)

FB Name

M+QD70_ChgPosi

Item	Description			
Function overview	Changes the target position.			
Symbol	M+QD70_ChgPosi			
	Execution command ———[B : FB_EN	FB_ENO:B Execution status	
	Module start XY address ——\	W:i_Start_IO_No	FB_OK : B Target position change complete	
	Target axis ——\	W:i_Axis	FB_ERROR : B Error flag	
	Cd11: Target poistion change value ——[D:i_PosiChgAddr	ERROR_ID : W Error code	
Applicable hardware	Compatible hardware: QD70D(4/8)		
and software	Hardware details			
	Q series	Basic model		
		High performance	model	
		Universal model		
	*Not applicable for QCPU (A mode)			
	Compatible software: GX Works2 Ver1.31H or later			
Programming	Ladder			
language				
Number of steps	For universal model CPU: 323*			
(maximum value)	*The value is the number of steps in the label program, and is therefore stated as a			
	reference value. For details, refer to the GX Works2 Version1 Operation Manual (Simple			
	Project).			
Function description	1) By turning ON FB_EN (Execution command), the target position under position control is			
	changed to the value set for i_PosiChgAddr (Cd11: Target position change value). 2) After FB_EN (Execution command) is turned ON, the FB is completed in multiple scans. 3) When the target axis setting value is out of range, the FB_ERROR output turns ON,			
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).			
	Refer to the error code explanation section for details.			
Compiling method	Macro type			



Item	Description			
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery			
precautions	processing separately in accordance with the required system operation.			
	2) The FB cannot be used in an interrupt program.			
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do			
	not use this FB in programs that are only executed once such as a subroutine,			
	FOR-NEXT loop, etc. because it is impossible to turn OFF.			
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition of the target axis.			
	5) This FB uses index registers Z9, Z8 and Z7. Please do not use these index registers in an interrupt program.			
	6) Every input must be provided with a value for proper FB operation.			
	7) If FB_EN (Execution command) is turned ON while the BUSY signal (X signal) is OFF, the			
	request will be ignored. In this case, FB_OK (Target position change complete) is not			
	turned ON.			
	8) Parameters such as the pulse output mode and external I/O signal logic must be properly			
	configured to match devices and systems connected to the QD70.			
FB operation type	Pulsed execution (multiple scan execution type)			
Application example	Refer to Appendix 1 - Application examples.			
Timing chart	[When operation completes without error] [When an error occurs]			
	FB_EN(Execution command) FB_EN(Execution command)			
	FB_EN(Execution status) FB_EN(Execution status)			
	Cd11: Target position change value Current value Current value Current value Cd11: Target position change value Current value			
	Cd10: Target position change request 0 1 0 Cd10: Target position change request			
	FB_OK(Target position change complete) FB_OK(Target position change complete)			
	FB_ERROR(Error flag) FB_ERROR(Error flag)			
	ERROR_ID(Error code) 0 ERROR_ID(Error code) 0 Error code 0			
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual			
	MELSEC-Q Type QD70D Positioning Module User's Manual			



Error codes

■Error code list

Error code	Description	
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.	
	Please try again after confirming the setting.	

Labels

■Input labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.
Cd11: Target	i_PosiChgAddr	D	-2,147,483,648~	Set a value to change the
position change			2,147,483,647 (pulse)	positioning address or
value				movement amount during
				position control when
				"Positioning termination" is
				set for "Operation pattern".

■Output labels

Name	Variable name	Data	Initial	Description	
		type	value		
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.	
				OFF: Execution command is OFF.	
Target position	FB_OK	В	OFF	When ON, it indicates that a request of target	
change complete				position change request flag has been	
				accepted by the module.	
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has	
				occurred.	



Name	Variable name	Data type	Initial value	Description
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_ChgPosi function block.

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

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



9.M+QD70_Restart (Restart)

FB Name

M+QD70_Restart

Function Overview

Item	Description					
Function overview	Performs restart.					
Symbol		M+QD70_Restart				
	Execution command——B	: FB_EN	FB_ENO : B Execution status			
	Module start XY address —— W	: i_Start_IO_No	FB_OK : B Restart acceptance complete			
	Target axis ——W	: i_Axis	FB_ERROR : B Error flag			
			ERROR_ID : W Error code			
Applicable hardware	Compatible hardware: QD70	DP(4/8), QD70D(4	4/8)			
and software	Hardware details					
	Q series	Basic model				
		High perform	nance model			
		Universal mo	odel			
	*Not applicable for QCPU (A	mode)				
	Compatible software: GX Works2 Ver1.31H or later					
Programming	Ladder					
language						
Number of steps	For universal model CPU: 298*					
(maximum value)	*The value is the number of	steps in the labe	I program, and is therefore stated as a			
	reference value. For details	, refer to the GX	Works2 Version1 Operation Manual (Simple			
	Project).					
Function description	1) By turning ON FB_EN (Ex	cecution commar	nd), positioning operation that stopped when a			
	stop factor has occurred i	estarts.				
	2) After FB_EN (Execution of	ommand) is turn	ed ON, the FB is completed in multiple scans.			
	3) When the target axis setti	ng value is out o	f range, the FB_ERROR output turns ON,			
	processing is interrupted,	and the error co	de is stored in ERROR_ID (Error code).			
	Refer to the error code explanation section for details.					
Compiling method	Macro type					



Item	Description					
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery					
precautions	processing separately in accordance with the required system operation.					
	2) The FB cannot be used in an interrupt program.					
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program. Do					
	not use this FB in programs that are only executed once such as a subroutine,					
	FOR-NEXT loop, etc. because it is impossible to turn OFF.					
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition of					
	the target axis.					
	5) This FB uses index registers Z9, Z8 and Z7. Please do not use these index registers in an					
	interrupt program.					
	6) Every input must be provided with a value for proper FB operation.					
	7) If FB_EN (Execution command) is turned ON while the axis operation status is set to					
	other than "Stopped", the request will be ignored. In this case, FB_OK (Restart					
	acceptance complete) is not turned ON.					
	8) Parameters such as the pulse output mode and external I/O signal logic must be properly					
	configured to match devices and systems connected to the QD70.					
FB operation type	Pulsed execution (multiple scan execution type)					
Application example	Refer to Appendix 1 - Application examples.					
Timing chart	[When operation completes without error] [When an error occurs]					
	FB.EN(Execution command)					
	FB_EN(Execution command) FB_EN(Execution command) FB_EN(Execution status)					
	Cd4: Restart request 0 1 0 Cd4: Restart request 0					
	Cd4: Restart request 0 1 0 Cd4: Restart request 0 FB OK(Restart FB_OK(Restart FB_OK)Restart FB_OK(Restart FB_OK)R					
	acceptance complete) FB_ERROR(Error flag) FB_ERROR(Error flag)					
	ERROR_ID(Error code) 0 ERROR_ID(Error code) 0 Error code					
Relevant manuals	MELSEC-Q Type QD70 Positioning Module User's Manual					
	●MELSEC-Q Type QD70D Positioning Module User's Manual					

Error codes

■Error code list

Error code	Description
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.
	Please try again after confirming the setting.



Labels

■Input labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.

■Output labels

Name	Variable name	Data	Initial	Description
		type	value	
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Restart acceptance	FB_OK	В	OFF	When ON, it is indicates that the restart
complete				command has been accepted by the module.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.

FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_Restart function block.

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

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



10.M+QD70_ErrorOperation (Error operation)

FB Name

M+QD70_ErrorOperation

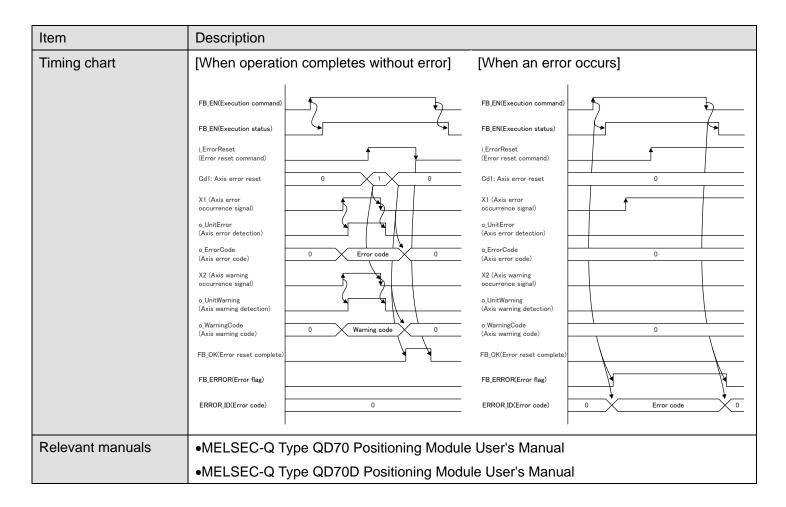
Function Overview

Item	Description	Description					
Function overview	Monitors errors and wa	Monitors errors and warnings, and performs error reset.					
Symbol		M+QD70_ErrorOperation					
	Execution command —	B : FB_EN		FB_ENO : B	Execution status		
	Module start XY address —	─W:i_Star	t_IO_No	FB_OK : B	— Error reset processing complete		
	Target axis —	─W : i_Axis		o_UnitError : B	— Axis error detection		
	Error reset command —	B : i_Erro	rReset	o_ErrorCode: W	— Axis error code		
				o_UnitWarning : B	— Axis warning detection		
				o_WarningCode:W	— Axis warning code		
				FB_ERROR : B	— Error flag		
				ERROR_ID : W	Error code		
Applicable hardware	Compatible hardware:	QD70P(4/8), QD70	DD(4/8)			
and software	Hardware details						
	Q series		Basic mo	del			
			High perf	ormance model			
			Universal	model			
	*Not applicable for QC	PU (A m	ode)				
	Compatible software: 0	GX Work	s2 Ver1.31	H or later			
Programming	Ladder						
language							
Number of steps	For universal model CI	For universal model CPU: 326*					
(maximum value)	*The value is the numb	er of ste	ps in the la	abel program, and is	therefore stated as a		
	reference value. For o	details, re	efer to the	GX Works2 Version	1 Operation Manual (Simple		
	Project).						



Item	Description	
Function description	1) When FB_EN (Execution command) is turned ON, an error in the target axis is	
	monitored.	
	2) An error code is stored in o_ErrorCode (Axis error code) when a module error occurs.	
	3) After FB_EN (Execution command) is turned ON, an error is reset when i_ErrorReset	
	(Error reset command) is turned ON during error occurrence.	
	4) A warning can be reset by turning ON i_ErrorReset (Error reset command) even when a	
	module warning is occurring.	
	5) When the target axis setting value is out of range, the FB_ERROR output turns ON,	
	processing is interrupted, and the error code is stored in ERROR_ID (Error code).	
	Refer to the error code explanation section for details.	
Compiling method	Macro type	
Restrictions and	1) The FB does not include error recovery processing. Program the error recovery	
precautions	processing separately in accordance with the required system operation.	
	2) The FB cannot be used in an interrupt program.	
	3) Please ensure that the FB_EN signal is capable of being turned OFF by the program.	
	Do not use this FB in programs that are only executed once such as a subroutine,	
	FOR-NEXT loop, etc. because it is impossible to turn OFF.	
	4) When two or more of these FBs are used, precaution must be taken to avoid repetition	
	of the target axis.	
	5) This FB uses index registers Z9 and Z8. Please do not use these index registers in an interrupt program.	
	6) Do not change i_Axis (Target axis) while FB_EN (Execution command) is turned ON.	
	7) Every input must be provided with a value for proper FB operation.	
	8) Parameters such as the pulse output mode and external I/O signal logic must be	
	properly configured to match devices and systems connected to the QD70.	
FB operation type	Real-time execution	
Application example	Refer to Appendix 1 - Application examples.	





Error codes

■ Error code list

Error code	Description	
10 (Decimal)	The specified target axis is not valid. The target axis is not within the range of 1 to 8.	
	Please try again after confirming the setting.	



Labels

■Input labels

Name	Variable name	Data	Setting range	Description
		type		
Execution command	FB_EN	В	ON, OFF	ON: The FB is activated.
				OFF: The FB is not
				activated.
Module start XY	i_Start_IO_No	W	Depends on the I/O point	Specify the starting XY
address			range. For details, refer to	address (in hexadecimal)
(For QD70D, the			the CPU user's manual.	where the QD70 module is
start address of the				mounted. (For example,
intelligent function				enter H10 for X10.)
module)				
Target axis	i_Axis	W	1~8	Specify the axis number.
Error reset	i_ErrorReset	В	ON, OFF	ON: An error is reset.
command				OFF: An error is not reset.

■Output labels

Name	Variable name	Data type	Initial value	Description
Execution status	FB_ENO	В	OFF	ON: Execution command is ON.
				OFF: Execution command is OFF.
Error reset	FB_OK	В	OFF	When ON, it indicates that an error reset is
processing complete				completed.
Axis error detection	o_UnitError	В	OFF	When ON, it indicates that a target axis error
				has occurred.
Axis error code	o_ErrorCode	W	0	Return a code for a target axis error occurred
				in the module.
Axis warning	o_UnitWarning	В	OFF	When ON, it indicates that a target axis
detection				warning has occurred.
Axis warning code	o_WarningCode	W	0	Return a code for a target axis warning
				occurred in the module.
Error flag	FB_ERROR	В	OFF	When ON, it indicates that an error has
				occurred.
Error code	ERROR_ID	W	0	FB error code output.



FB Version Upgrade History

Version	Date	Description
1.00A	2011/02/18	First edition

Note

This chapter includes information related to the M+QD70_ErrorOperation function block.

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

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



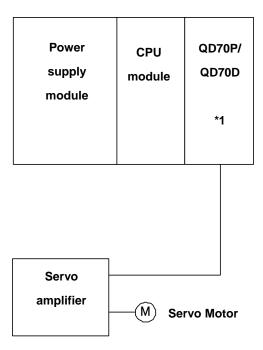
Appendix 1 - Application examples

The following shows the QD70 FB application examples.

System configuration

I/O signals are allocated as shown in the figure below.

(1) System configuration for Q series



*1: I/O allocation

- For QD70P, (X00~X1F)(Y00~Y1F)
- For QD70D, (X00~X2F)(Y00~Y2F) or

(X00~X1F)(Y00~Y1F) depending on the setting.

Reminder

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



Device list

Input (commands)

u <u>t (comman</u>	(ds)	
Device	FB function name	Application (ON details)
М0	Parameter setting	Parameter setting request
M10	OPR data setting	OPR data setting request
M20	Positioning data setting	Positioning data setting request
M30	DI C ready simple ON	PLC ready signal ON condition judgment
M31	PLC ready signal ON	PLC ready signal ON request
M40	Positioning start	Positioning start request
M50	JOG operation	JOG operation start request
M51	30 d operation	JOG start
M60	Speed change	Speed change request
M70	Target position change	Target position change command
M80	Restart	Restart command
M90	Europ on operation	Error operation FB start
M91 Error operation		Error reset request

Data register

a register		
Device	FB function name	Application (ON details)
D0	Parameter setting	Parameter setting FB error code
D10	OPR data setting	OPR data setting FB error code
D20	Positioning data setting	Positioning data setting FB error code
D40	Positioning start	Positioning start FB error code
D50	JOG operation	JOG operation FB error code
D60	Speed change	Speed change FB error code
D70	Target position change	Target position change FB error code
D80	Restart	Restart FB error code
D90		Error code occurred in designated axis
D91	Error operation	Warning code occurred in designated axis
D92		Error operation FB error code

Output (Checks)

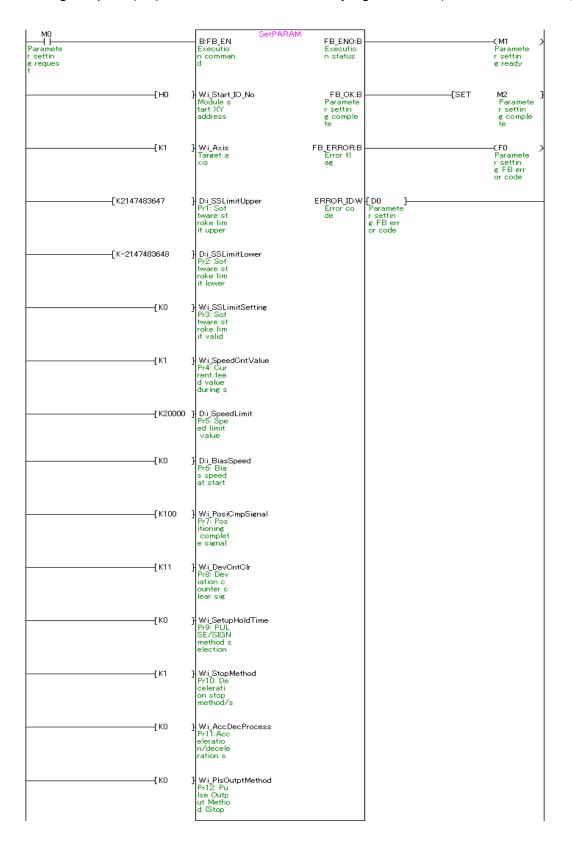
F70 Target position change FB error M81 Restart ready M82 Restart acceptance complete F80 Restart FB error M92 Error reset ready M93 Error reset complete	Device	FB function name	ready
F0 M11 M12 OPR data setting F10 M21 M22 Positioning data setting F20 M33 M41 M42 Positioning start F40 M52 M53 M61 M62 F50 M61 M62 M62 M62 M62 M62 M63 M64 M642 M64 M642 M65 M661 M662 M662 M663 M663 M663 M674 M675 M674 M675 M675 M676 M676 M677 M677 M776 M777 M777	M1		Parameter setting ready
M11 M12 OPR data setting OPR data setting ready OPR data setting ready OPR data setting FB error Positioning data setting ready Positioning data setting ready Positioning data setting ready Positioning data setting ready Positioning data setting FB error M32 M33 PLC ready signal ON M41 M42 Positioning start Positioning start ready PLC ready signal ON complete Positioning start ready Execution complete Positioning start FB error M52 M53 JOG operation F50 JOG operation ready Operation ready Operation FB error M61 M62 Speed change F60 M71 Target position change F70 M81 M82 Restart Restart Restart ready Restart ready Restart ready Restart ready Restart ready Restart ready FFFOR Restart FB error Restart ready Restart FB error Restart ready FFFOR Restart FB error	M2	Parameter setting	Parameter setting complete
M12 OPR data setting OPR data setting complete F10 OPR data setting FB error M21 Positioning data setting ready M22 Positioning data setting ready F20 Positioning data setting ready M32 PLC ready signal ON M33 PLC ready signal ON ready M41 PC ready signal ON complete M42 Positioning start F40 Positioning start FB error M52 JOG operation ready M53 JOG operation Start complete F50 JOG operation FB error M61 Speed change ready M62 Speed change ready F60 Speed change ready M71 Target position change F70 Target position change ready M81 Restart ready Restart ready Restart ready Restart ready Restart B error M92 Error reset ready M93	F0		Parameter setting FB error
F10 M21 M22 Positioning data setting F20 M33 M33 M41 M42 Positioning start F40 M52 F40 M53 M53 M61 M62 M62 Speed change F60 M71 M72 Target position change F70 M81 M82 Restart F80 M81 M82 Restart F80 M82 M83 OPR data setting FB error Positioning data setting complete Positioning data setting FB error Positioning data setting FB error Positioning data setting complete Positioning data setting FB error Positioning data setting ready Pl.C ready signal ON complete Positioning start ready Execution complete Positioning start FB error JOG operation ready Operation ready Speed change ready Speed change ready Speed change ready Target position change ready Target position change ready Target position change FB error Restart ready Restart acceptance complete F80 Restart FB error Restart TB error FR0 M81 M82 FETO Restart FB error FR0 M92 M93	M11		OPR data setting ready
M21 M22 Positioning data setting F20 M33 PLC ready signal ON M41 M42 Positioning start F40 M52 F50 M53 M41 M62 F50 M52 M53 F50 M51 M52 M53 F50 M61 M62 Speed change F60 M71 M71 M72 Target position change F70 M81 M81 M82 Restart Restart Restart ready Positioning data setting ready Positioning data setting FB error PLC ready signal ON complete Positioning start ready Execution complete Positioning start FB error JOG operation ready Operation FB error Speed change ready Speed change request complete Speed change ready Target position change rarget position change ready Restart ready Restart ready Restart ready Restart ready Restart ready FEFOR Restart Restart acceptance complete Restart FB error Restart FB error F80 M82 FFOR Restart FFOR Restart FB error FFOR FFOR FFOR FFOR FFOR FFOR FFOR	M12	OPR data setting	OPR data setting complete
M22 Positioning data setting Positioning data setting complete F20 PC Positioning data setting perior M32 PLC ready signal ON PLC ready signal ON complete M33 PLC ready signal ON complete M41 Positioning start perior M42 Positioning start ready F40 Positioning start FB error M52 JOG operation ready M53 JOG operation peration peration start complete F50 JOG operation FB error M61 Speed change ready M62 Speed change request complete F60 Speed change request complete M71 Target position change ready M72 Target position change ready Target position change ready Target position change acceptance complete Target position change FB error Restart ready Restart ready Restart acceptance complete Restart acceptance complete Fror reset ready M92 Error reset ready Error reset complete	F10		OPR data setting FB error
F20 M32 M33 PLC ready signal ON M41 Positioning start PLC ready signal ON complete M42 Positioning start FB error M52 M53 M53 JOG operation M61 M61 M62 Speed change M62 M71 Target position change F70 M81 M82 Restart Restart Restart Ready Positioning start FB error JOG operation ready Operation start complete JOG operation FB error Speed change ready Speed change request complete Target position change FB error Target position change FB error Restart ready Restart ready Restart ready Restart sceptance complete Restart FB error Restart ready Restart FB error Restart ready Restart FB error Restart FB error	M21		Positioning data setting ready
M32 PLC ready signal ON PLC ready signal ON ready M41 Positioning start Positioning start ready F40 Execution complete M52 JOG operation ready M53 JOG operation ready M61 Operation start complete M62 Speed change request complete F60 Speed change request complete M71 Target position change FB error M72 Target position change ready Target position change ready Target position change ready Target position change FB error Restart ready M81 Restart ready M82 Restart acceptance complete F80 Restart ready M92 Error reset ready M93 Error reset complete	M22	Positioning data setting	Positioning data setting complete
M33 M41 M42 Positioning start F40 M52 M53 JOG operation M61 M62 Speed change F60 M71 M72 Target position change F70 M81 M82 Restart Restart complete JOG operation start complete JOG operation FB error Speed change ready Speed change request complete Speed change request complete Target position change ready Target position change ready Target position change ready Restart ready Restart ready Restart ready Restart ready Restart ready Restart FB error Restart FB error M92 M93	F20		Positioning data setting FB error
M41 M42 Positioning start F40 M52 M53 F50 M61 M62 Speed change F60 M71 M72 Target position change F70 M81 M82 Restart complete Restart ready Speed change request complete Target position change ready Target position change FB error Restart ready Restart ready Restart ready Restart ready Restart Restar	M32	DIC was adv. signal ON	PLC ready signal ON ready
M42 Positioning start Execution complete F40 Positioning start FB error M52 JOG operation ready M53 JOG operation Start complete F50 JOG operation FB error M61 Speed change ready M62 Speed change request complete F60 Speed change FB error M71 Target position change FB error F70 Target position change ready M81 Restart ready M82 Restart acceptance complete F80 Restart ready M92 Error reset ready M93 Error reset complete	M33	PLC ready signal ON	PLC ready signal ON complete
F40	M41		Positioning start ready
M52 JOG operation ready M53 JOG operation F50 Operation start complete M61 Speed change ready M62 Speed change request complete F60 Speed change FB error M71 Target position change ready Target position change ready Target position change ready Restart ready Restart ready Restart FB error Restart FB error M92 Error reset ready M93 Error reset complete	M42	Positioning start	Execution complete
M53 JOG operation Operation start complete F50 JOG operation FB error M61 Speed change ready M62 Speed change request complete F60 Speed change FB error M71 Target position change ready Target position change ready Target position change ready Target position change acceptance completally Target position change FB error M81 Restart ready M82 Restart acceptance complete F80 Restart FB error M92 Error reset ready M93 Error reset complete	F40		Positioning start FB error
F50 M61 M62 Speed change F60 M71 M72 Target position change F70 M81 M82 Restart F80 M82 Restart F80 M92 M93 M93 Graph Application FB error Jone Change ready Speed change request complete Speed change FB error Target position change ready Target position change ready Target position change acceptance complete Target position change FB error Restart ready Restart acceptance complete Restart FB error	M52		JOG operation ready
M61 Speed change Speed change ready	M53	JOG operation	Operation start complete
M62 Speed change Speed change request complete F60 Speed change FB error M71 Target position change ready M72 Target position change acceptance complete F70 Target position change FB error M81 Restart ready M82 Restart acceptance complete F80 Restart FB error M92 Error reset ready M93 Error reset complete	F50		JOG operation FB error
M62 Speed change Speed change request complete	M61		Speed change ready
M71 Target position change Target position change ready F70 Target position change position change acceptance completed position change position position change position position position change position positio	M62	Speed change	
M72	F60		Speed change FB error
F70 Target position change FB error M81 Restart ready M82 Restart F80 Restart acceptance complete Restart FB error Restart ready M92 Error reset ready M93 Error reset complete	M71		Target position change ready
M81 Restart ready M82 Restart F80 Restart acceptance complete Restart FB error Restart FB error M92 Error reset ready M93 Error reset complete	M72	Target position change	Target position change acceptance complete
M82 Restart Restart acceptance complete F80 Restart FB error M92 Error reset ready M93 Error reset complete	F70		Target position change FB error
F80 Restart FB error M92 Error reset ready M93 Error reset complete	M81		Restart ready
M92 Error reset ready M93 Error reset complete	M82	Restart	Restart acceptance complete
M93 Error reset complete	F80		Restart FB error
	M92	Error operation	Error reset ready
	M93		Error reset complete
M94 Error operation Axis error detection	M94		Axis error detection
M95 Axis warning detection			Axis warning detection
F90 Error operation FB error	F90		



M+QD70_SetPARAM (Parameter setting)

*It is recommended to use GX Configurator-PT or the configuration function of GX Works 2 to perform module initialization such as parameter setting. In this case, using this FB is unnecessary.

*The parameter setting complete (M2) contact is used for PLC ready signal ON FB (M+QD70_CPUReady).

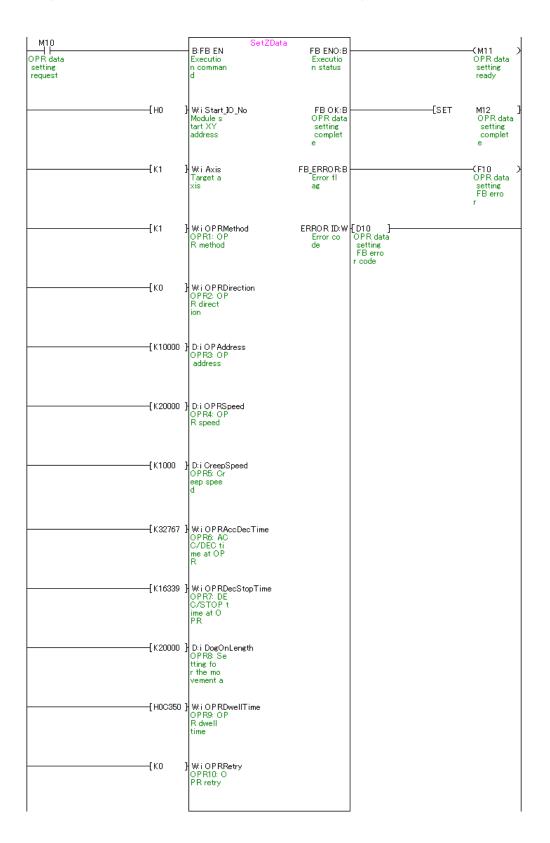




M+QD70_SetZData (OPR data setting)

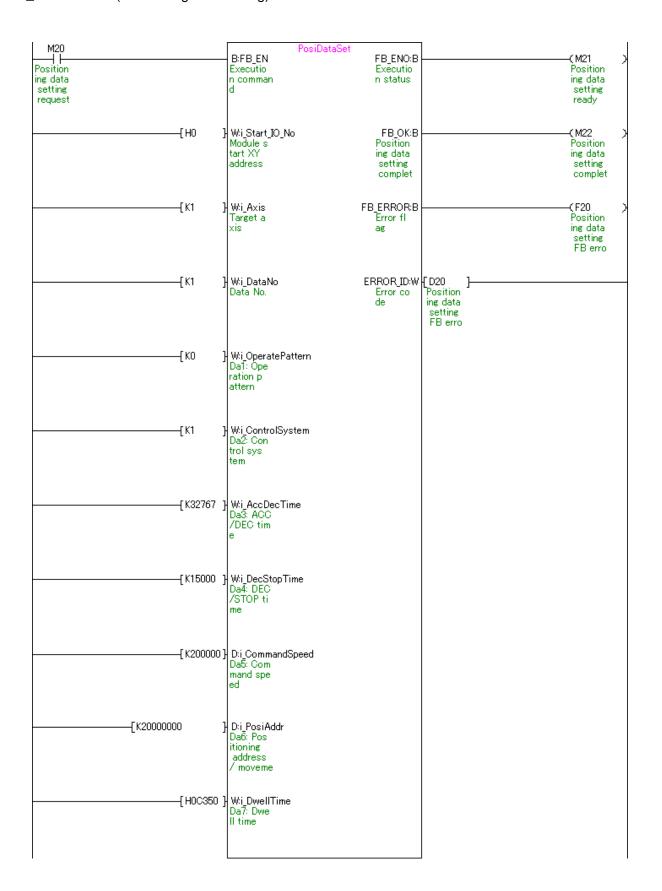
*It is recommended to use GX Configurator-PT or the configuration function of GX Works 2 to perform module initialization such as parameter setting. In this case, using this FB is unnecessary.

*The parameter setting complete (M12) contact is used for PLC ready signal ON FB (M+QD70_CPUReady).





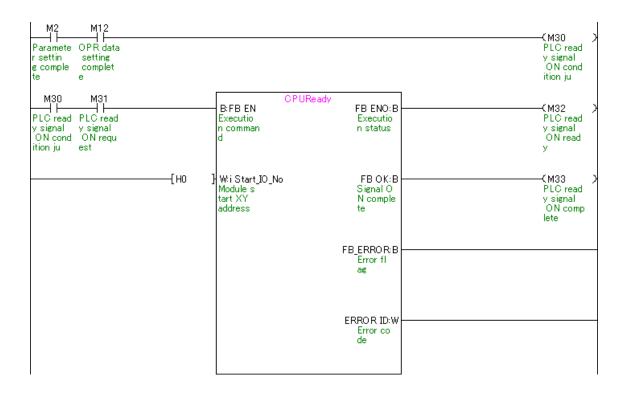
M+QD70_PosiDataSet (Positioning data setting)



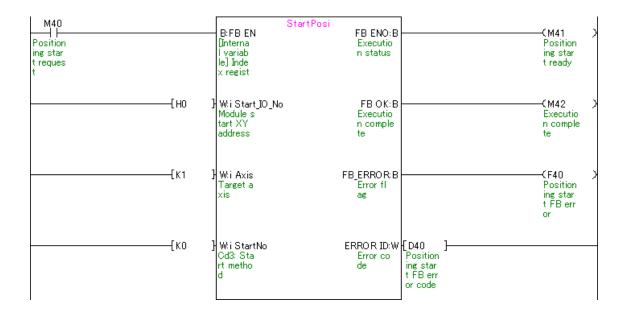


M+QD70_CPUReady (PLC ready signal ON)

*The contacts of M2 and M12 are not required if parameters and OPR data are set not with the parameter setting FB but with GX Configurator-PT or the configuration function of GX Works 2.

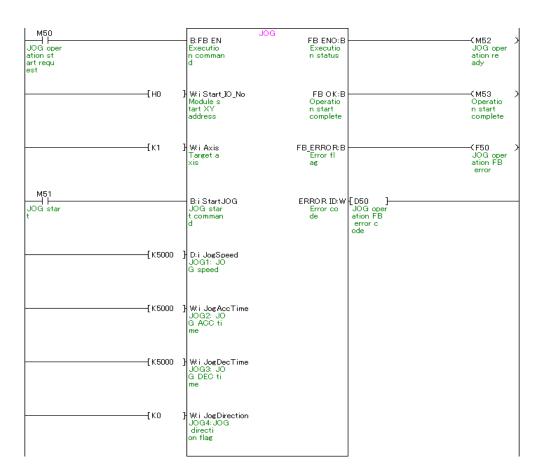


M+QD70_StartPosi (Positioning start)

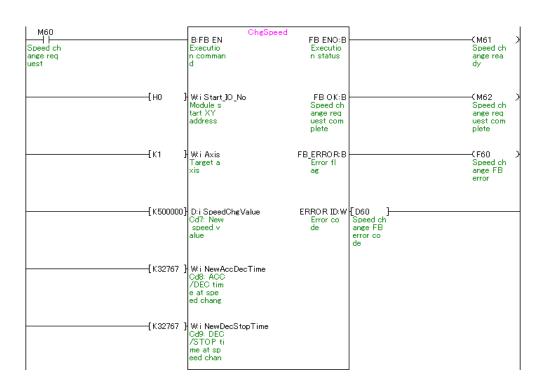




M+QD70_JOG (JOG operation)

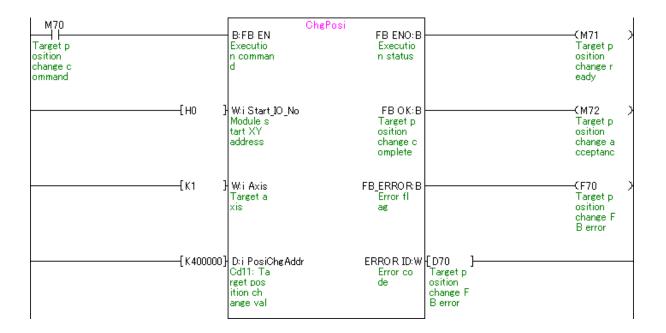


M+QD70_ChgSpeed (Speed change)

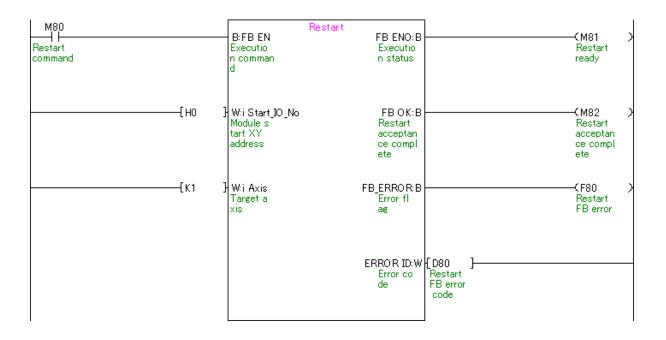




M+QD70_ChgPosi (Target position change)



M+QD70_Restart (Restart)





M+QD70_ErrorOperation (Error operation)

