Servo System Controller

MELSEC iQ-R/iQ-F Series Motion Module Basics (Simple Motion Mode)

This training course is intended for those who will construct a motion control system using the Simple Motion mode of the MELSEC iQ-R/iQ-F Series Motion modules for the first time.

Click the Forward button at the upper right corner to proceed to the next page.

Introduction Purpose of the Course

This course is designed for anyone new to the Simple Motion mode of the MELSEC iQ-R/iQ-F Series Motion modules to learn about system design, installation, wiring, setting, and programming.

This course requires the basic knowledge of the MELSEC iQ-R Series programmable controller or MELSEC iQ-F Series programmable controller in addition to AC servos and positioning control.

For beginners, we recommend the following courses.

- "MELSEC iQ-R Series Basic" Course or "MELSEC iQ-F Series Basics" Course
- "GX Works3 (Ladder)" Course
- "MELSERVO Basics (MR-J5)" Course
- "FA Equipment for Beginners (Positioning)" Course

PLCopen[®] is the registered trademark of PLCopen.

Introduction Course Structure

The contents of this course are as follows. We recommend that you start from Chapter 1.

Chapter 1 Overview of Simple Motion Mode

This chapter describes the overview of Simple Motion mode and differences from the PLCopen[®] motion control FB mode.

Chapter 2 System of Simple Motion Mode

This chapter describes the hardware configuration of the servo system used in this course.

Chapter 3 Creating a Project

This chapter describes the procedure that begins with creating a project and extends through the setting of each parameter.

Chapter 4 Positioning Control and Interpolation Control Program

This chapter describes the initial setting (all axis servo ON), JOG operation, and program for operating the positioning data.

Chapter 5 Digital Oscilloscope

This chapter describes how to check the operation of the sample program by using a digital oscilloscope.

Final Test

5 sections in total (19 questions) Passing grade: 60% or higher

Introduction How to Use This e-Learning Tool

Go to the next page	>	Go to the next page.
Back to the previous page	<	Back to the previous page.
Move to the desired page	тос	"Table of Contents" will be displayed, enabling you to navigate to the desired page.
Exit the learning	x	Exit the learning. Window such as "Contents" screen and the learning will be closed.

■Safety precautions

When you learn based on using actual products, please carefully read the safety precautions in the corresponding manuals and handle the product properly while taking all precautions for safety.

■Precautions in this course

The screen images shown in the course may differ from your actual software depending on the version. The following software versions are used in the course. For the latest version of each software, check the Mitsubishi Electric FA Website.

MELSOFT GX Works3Ver.1.082LSimple Motion Module SettingVer.1.172EMELSOFT MR Configurator2Ver.1.130L

The content of this course involves restrictions on the firmware version of each module.

- The firmware version of the iQ-R PLC CPU must be 44 or later (12 or later for R00/01/02CPU).
- The firmware version of the RD78G Motion module must be 16 or later.
- The firmware version of the iQ-F PLC CPU must be 1.230 or later.
- The firmware version of the FX5-DSSC-G Motion module must be 1.001 or later.

For how to update the firmware version, refer to the Mitsubishi Electric FA Website or the module configuration manual.

The book D icon indicates the reference manual.

The contents of the manuals described in this course are those of the following versions. If the versions differ, the location of description and contents may be slightly different. For the latest version of each manual, refer to the Mitsubishi Electric FA Website.

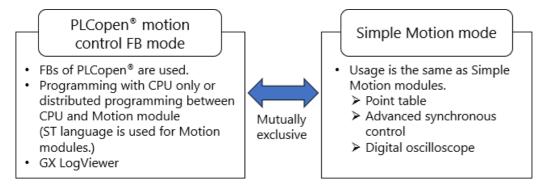
Manual name	Manual No.	Version
MELSEC iQ-R Motion Module User's Manual (Startup)	IB-0300406	F
MELSEC iQ-R Motion Module User's Manual (Network)	IB-0300426	F
MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)	IB-0300572	D
MELSEC iQ-R Motion Module (Simple Motion Mode) Function Block Reference	BCN-B62005-1040	В
MELSEC iQ-F FX5 Motion Module/ Simple Motion Module User's Manual (Startup)	IB-0300251	Н
MELSEC iQ-F FX5 Motion Module/ Simple Motion Module User's Manual (Application)	IB-0300253	J
MELSEC iQ-F FX5 Motion Module User's Manual (CC-Link IE TSN)	IB-0300568	С
MELSEC iQ-F FX5 Motion Module/ Simple Motion Module Function Block Reference	BCN-B62005-719	С

Chapter 1 Overview of Simple Motion Mode

The RD78G Motion module has two different modes: "PLCopen[®] motion control FB mode" and "Simple Motion mode". This chapter describes the overview of Simple Motion mode and differences from the PLCopen[®] motion control FB mode.

1.1 What is Simple Motion mode?

Simple Motion mode is an operation mode compatible with RD77MS/GF, QD77MS/GF, and FX5-DSC-S Simple Motion modules. The programming method and parameter settings are almost the same as the Simple Motion modules. It cannot be used with PLCopen[®] motion control FB mode. Therefore, they cannot be used in the same module.



PLC series	Both Simple Motion mode and PLCopen [®] motion control FB mode	PLCopen [®] motion control FB mode only	Simple Motion mode only
iQ-R series	RD78G4 RD78G8 RD78G16 (Note)	RD78G32 RD78G64 RD78GHV, RD78GHW	-
iQ-F series	-	-	FX5-40SSC-G FX5-80SSC-G

The following table lists the modules that can use Simple Motion mode.

(Note) For RD78G4, 8, and 16, the firmware version 16 or later supports Simple Motion mode.

1.2

Item	Simple Motion mode	PLCopen [®] motion control FB mode
Programming method	Programming with PLC CPU	Programming with PLC CPU only or distributed programming between PLC CPU and Motion module
Positioning	Point table method	Executed by Motion control FB
Synchronous control	Configured with the synchronous control parameter to start synchronous control for each axis	Executed by Motion control FB
Engineering tool	GX Works3, Simple Motion Module Setting Function	GX Works3, Motion Control Setting Function
Logging	Digital oscilloscope	Logging setting function and GX LogViewer

The following table lists the differences from PLCopen[®] motion control FB mode.

Item	Simple Motion mode of Motion modules	Simpl	le Motion module
Model	RD78G4/8/16 FX5-□SSC-G	RD77MS, QD77MS, LD77MS, FX5-□SSC-S	RD77GF, QD77GF
Supported network	CC-Link IE TSN	SSCNET III/H	CC-Link IE Field
Home position return setting	Configured with servo amplifier parameters (Note 1)	Configured with axis parameters	Configured with servo amplifier parameters (Note 1)
External signal (manual pulser) input	No (Note 2)	Yes	RD77GF: No (Note 2) QD77GF: Yes

The following table lists differences from iQ-R/iQ-F series Simple Motion modules.

- (Note 1) Only the home position address as well as speed and acceleration/deceleration time for high-speed home position return should be configured with the axis parameters of the Simple Motion module.
- (Note 2) When using a manual pulser with a module that has no external signal input, use the high-speed counter module, built- in counter function in CPU (only for iQ-F series), or the high-speed counter module of the network device (only for CC-Link IE Field) to connect it.

1.4

In this chapter, you have learned:

- What is Simple Motion mode?
- Modules that can use Simple Motion mode
- Differences from PLCopen[®] motion control FB mode
- Differences from Simple Motion modules

Point

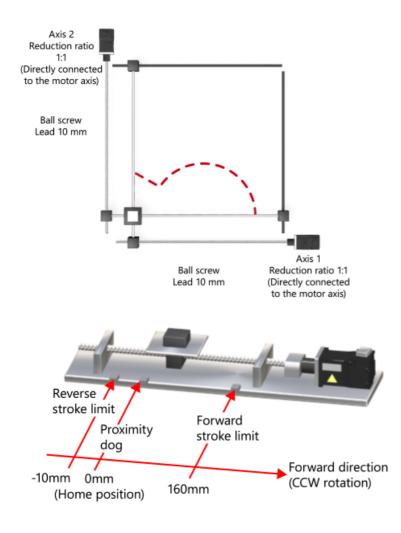
What is Simple Motion mode?	 Simple Motion mode of Motion modules is an operation mode compatible with Simple Motion modules. It cannot be used with PLCopen[®] motion control FB mode.
Modules that can use Simple Motion mode	The following modules can use Simple Motion mode. RD78G4/8/16 FX5-□SSC-G
Differences from PLCopen [®] motion control FB mode	 In Simple Motion mode, only the PLC CPU side is programmed. The point table method is used for positioning. Synchronous control is performed by setting the synchronous control parameter and turning on the synchronous control start for each axis.
Differences from Simple Motion modules	 The type of supported network and whether the external input (manual pulser input) is provided differ from Simple Motion modules. Unlike SSCNETIII/H compatible Simple motion modules, parameters related to home position return are set on the servo amplifier side.

This chapter describes the hardware configuration of the servo system used in this course.



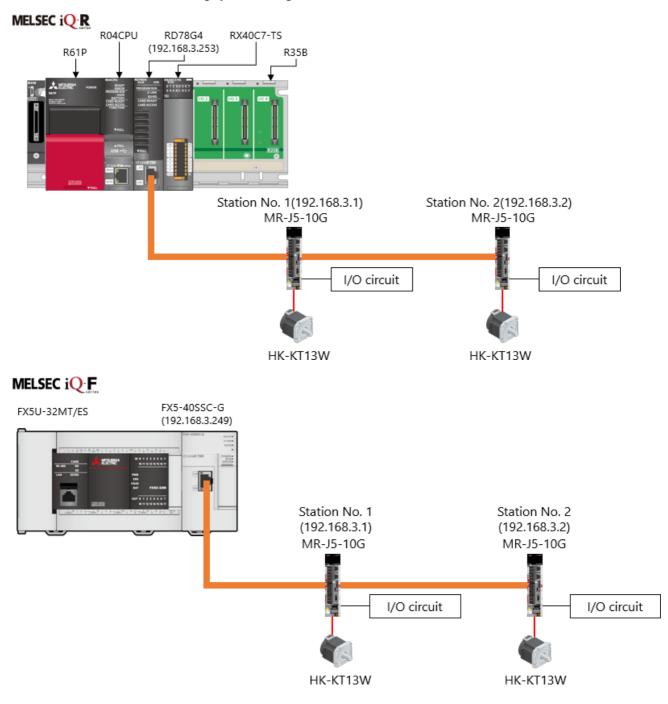
In this course, we use the machine configuration of the XY table shown below.

X-axis is represented as axis 1 and Y-axis is represented as axis 2. The location of the limit switch is assumed to be the same for X-axis and Y-axis.





In this course, we use the following system configuration.

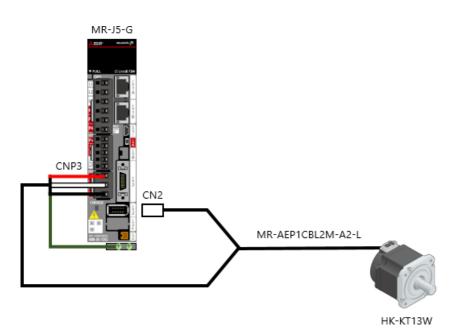


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This section describes external wiring such as wiring of the power supply for the programmable controller and servo amplifier, and the connection method of the servo motor.



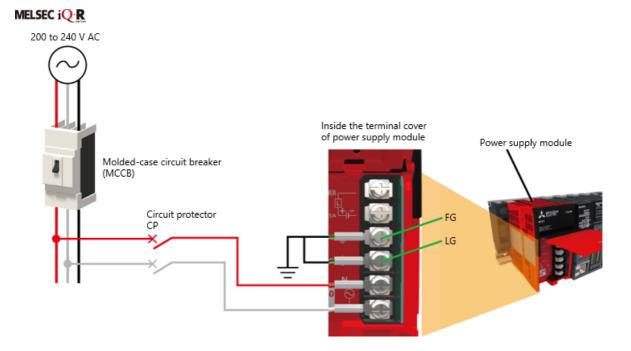
A single cable type option MR-AEP1CBL2M-A2-L is used for the power cable and encoder cable of the servo motor.



2.3.2 Wiring of power supply and network cables

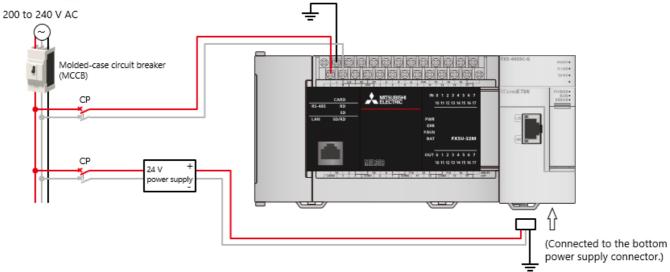
(1) Power supply wiring to the programmable controller

Wire the power supply to the programmable controller. Connect the input AC power supply with the power input signal contacts (L and N). The FG and LG contacts must be grounded with a ground resistance of 100 Ω or less.



ltem	Applicable cable size	Tightening torque
Power cable	18 to 14 AWG	1.02 to 1.38 N·m
Ground cable	18 to 14 AWG	1.02 to 1.38 N·m

MELSEC iQ F



ltem	Terminal block size	Tightening torque
Power cable	M3	0.5 to 0.8N⋅m
Ground cable	M3 (Use the cable with thickness of 14 AWG or higher.)	0.5 to 0.8N·m

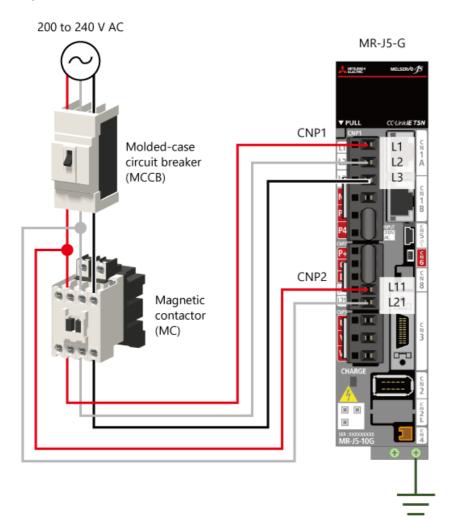
(2) Power supply wiring to the servo amplifier

Wire the power supply to the main circuit power supply (L1, L2, L3) and control circuit power supply (L11, L21) of the servo amplifier.

The following shows a schematic diagram. The actual wiring and applicable cable size differ depending on the capacity. For details, refer to the user's manual (hardware) of the servo amplifier.

Use a molded-case circuit breaker (MCCB) with the input cables of the main circuit power supply.

Always connect a magnetic contactor (MC) between the main circuit power supply and the L1/L2/L3 contacts of the servo amplifier.



2.3.2 Wiring of power supply and network cables

(3) Wiring of network cables

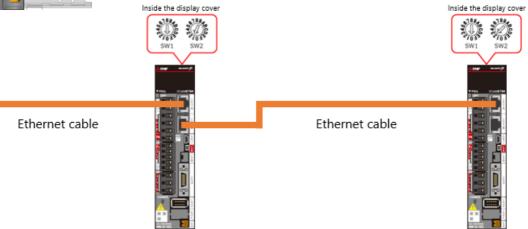
Wire the network cables (Ethernet cables).

Use the Ethernet cables that meet the following standards.

Communication speed	Ethernet cable	Connector	Standard
1Gbps	Category 5e or higher, (double shielded/STP) straight cable	RJ45 connector	Cable that meets the following standards. • IEEE802.3(1000BASE-T) • ANSI/TIA/EIA-568-B (Category5e)



Set the IP address of the servo amplifier with the rotary switch.



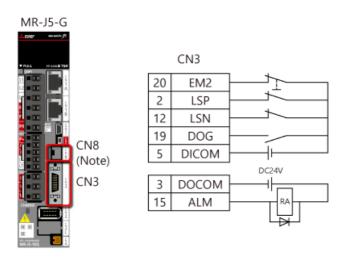
2.3.3 Wiring of peripheral circuits

(1) I/O circuit of the amplifier

Wire the I/O circuit of the servo amplifier as shown below for both axis 1 and axis 2.

Wire the proximity dog, forward/reverse rotation limits, and forced stop.

In addition, configure the circuit so that the magnetic contactor is turned off by the ALM output.

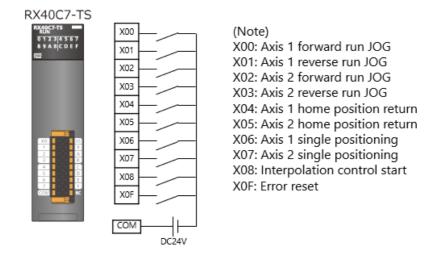


(Note) Since the STO function is not used in this course, do not remove the CN8 short-circuit connector attached with the servo amplifier.

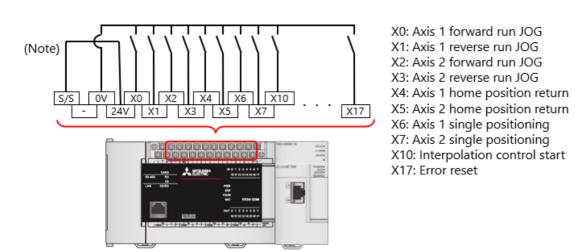
(2) External circuit of the input module

The following shows the external circuit wiring of the input module. Use momentary switches for all the switches.

MELSEC iQ R



(Note) Since the I/O No. of RX40C7-TS is 0020H, X20 to X28 and X2F are used in the program.



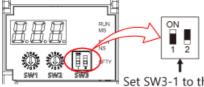
MELSEC iQ F

(Note) The service 24 V DC power supply for the programmable controller is used for the external input circuit.

Test operation 2.4

After wiring, perform test operation with the servo amplifier alone to check the motion such as rotation direction. Follow the steps below to perform test operation.

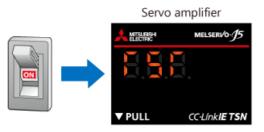
- (1) Turn off the power of the servo amplifier and programmable controller.
- (2) Turn on (up) the DIP switch (SW3-1) of the servo amplifier.



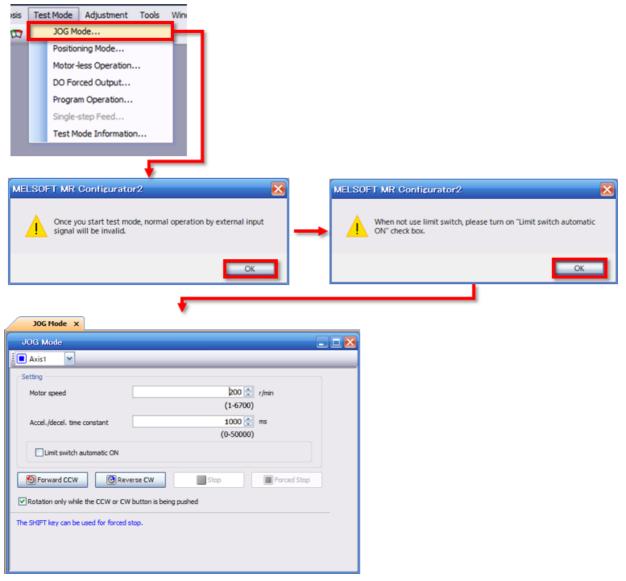


Set SW3-1 to the "ON" state.

- (3) Connect the servo amplifier and personal computer with a USB cable or an Ethernet cable. (Note)
- (4) Turn on the power supply of the servo amplifier. "TST" is displayed in the monitor.



(5) Start MR Configurator2 and perform test operation (JOG operation).



(6) Check the rotation direction and motion of the machine.

(7) When test operation is finished, turn off the power of the servo amplifier and turn off the DIP switch (SW3-1).

(Note) When using an Ethernet cable, change the MR Configurator2 project to a multi-axis project.

Tips

When multiple servo amplifiers are used, Ethernet connection is convenient because there is no need to change cables. For details, refer to MR Configurator2 Help.

In this chapter, you have learned:

- Machine configuration
- System configuration
- Wiring
- Test operation

Point

2.5

Machine configuration	• The target system uses two ball screws to make an X-Y table.
System configuration	 For the iQ-R series, connect two MR-J5-G servo amplifiers to the Motion module RD78G4. For the iQ-F series, connect two MR-J5-G servo amplifiers to the Motion module FX5-40SSC-G.
Wiring	 A servo motor uses single cable type option cables. Set the fourth octet of the IP address with the rotary switch on the servo amplifier. Connect the proximity dog signal, limit switch, and forced stop switch to the servo amplifier.
Test operation	 Change the DIP switch position on the servo amplifier and connect the personal computer. Check the rotation direction of the servo motor with the test operation function of MR Configurator2.

Chapter 3 Creating a Project

This chapter describes the procedure that begins with creating a project and extends through the setting of each parameter. Note that screenshots of the iQ-R series are shown in the following pages. When using the iQ-F series, please replace them accordingly.

The project files to be created in this course can be downloaded from the links below.

RD78G_SimpleMode_Basics_Sample.zip (1.90MB) FX5-SSC-G_SimpleMode_Basics_Sample.zip (1.17MB) (1) Select [Project] \rightarrow [New] in GX Works3.

In the following window, select the model of the PLC CPU to be used and the programming language to be used in the PLC CPU.

After selecting them, click the [OK] button.

New	×
<u>S</u> eries	🐗 RCPU 🗸 🗸
<u>Т</u> уре	12 R04 ~
<u>M</u> ode	~
Program Language	ы Ladder 🗸 🗸
	OK Cancel

(2) When the following window appears, set whether to use the module label and sample comment. In this course, set both items to "Use".

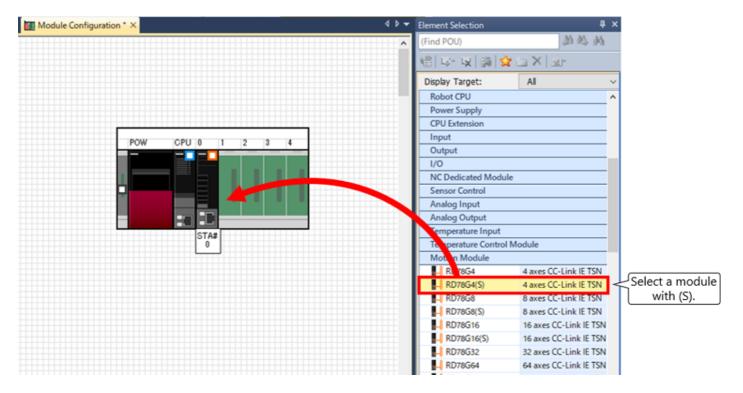
If either of them is set to "Not use", click the [Setting Change] button and change the setting. Click the [OK] button to open the project.

MELSOFT GX Works3	Options X
Add a module. [Module Name] R04CPU [Start I/O No.] 3E00 Module Setting Setting Change Module Label:Not use Sample Comment:Use	Sive Red Sample Comment Device Comment Red Sample Comment Device Comment Yes Reference Relaction Target No Add New Module No Navigation Strow the cohormation message in aboling incodure Program Editor
Do Not Show this Dialog Again OK	Imm Find/Replace Use Module Label Select whether to add the module label in adding module. Imm Caution
	Online Please set other than module labels as refresh destination for module parameter to use the label of direct access in program. If module labels are selected as refresh destination, the value which has been set to label of direct access is overwritten in refreshing with the value of label for Auto-refresh. Simulation
	Back to Default Set as User Default Driver Default Driver Default

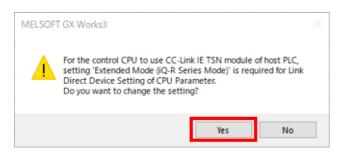
(3) Double-click [Module Configuration] in the project tree.When the following dialog box appears, click the [OK] button.



When the module configuration diagram opens, drag and drop the module from the Element Selection window on the right side, and create a module configuration diagram in the same way as that for the system configuration diagram (Section 2.2). For the Motion module, drag and drop a module with (S) at the end of the model.



When the module configuration diagram is complete, right-click the display and select [Parameter] \rightarrow [Fix]. For the iQ-R series, the following message appears. Click the [Yes] button.



When the following dialog box appears, check that the sample comment and module label are set to "Use". If either of them is set to "Not use", click the [Setting Change] button and change the setting.

Click the [OK] button to complete the setting.

MELSOFT GX Works3	
Add a module. [Module Name] RD78G4(S) [Start I/O No.] 0000)
Module Setting	Setting Change
Module Label:Use Sample Comment:Use	^
	~
Do Not Show this Dialog Again	ОК

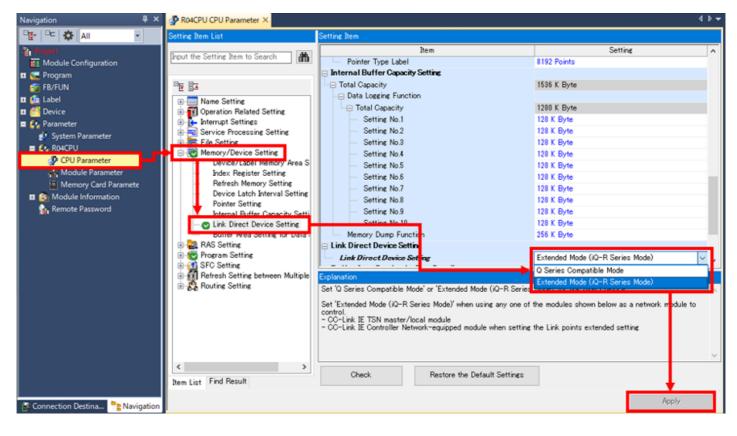
PLC CPU setting

In the case of iQ-R series, select [Parameter] \rightarrow [R04CPU] in the project tree and double-click [CPU Parameter]. Click [Link Direct Device Setting] from the setting item list.

Check that the link direct device setting is set to "Extended Mode (iQ-R Series Mode)".

If it is set to "Q Series Compatible Mode", change it to "Extended Mode (iQ-R Series Mode)".

When the setting is complete, click the [Apply] button in the lower right corner.



Motion module setting

3.3.1 Module parameter (motion)

In the project tree, select [Parameter] \rightarrow [Module Information] \rightarrow [0000:RD78G4(S)] and double-click [Module Parameter (Motion)].

Configure the refresh setting to transfer the values in the buffer memory of the Motion module to devices or module labels in the CPU module.

Use the initial values in this course. (The values in the buffer memory will be transferred to the module labels.)

Navigation 🛛 🕹 🗙	🚯 0000:RD78G4(S) Module Parame ×					4 Þ	• •
°∰• °⊏ 🔅 All 🔹	Setting Item List	Setting Item					
EI Module Configuration	[Input the Setting Item to Search]	Target Module Label ~					
FB/FUN		Item	Axis 1	Axis2	Axis3	Axis4 /	^
I di Label		Refresh at the set timing					
🖬 🚰 Device	- Refresh at the set timing	- Transfer to the CPU (Axis monitor 1)					
= 🚱 Parameter	- 🛅 Refresh Timine	 Feed current value 	Enable	Enable	Enable	Enable	
System Parameter	- Refresh Timing (I/O)	 Machine feed value 	Enable	Enable	Enable	Enable	
E C ROACPU		- Feedrate	Enable	Enable	Enable	Enable	
B Module Information		 Axis error No. 	Enable	Enable	Enable	Enable	
■ 🔂 0000:RD78G4(S)		Axis warning No.	Enable	Enable	Enable	Enable	
Module Parameter (Motion)		Valid M code	Enable	Enable	Enable	Enable	
Module Parameter (Network)		 Axis operation status 	Enable	Enable	Enable	Enable	
Simple Motion Module Setting		Current speed	Enable	Enable			
			Enable	Enable	Enable	Enable	
Senote Password		 Speed-position switching control positioning movement am External inset simple 	Enable	Enable	Enable	Enable	
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		Status Target value	Enable	Enable	Enable		~ I
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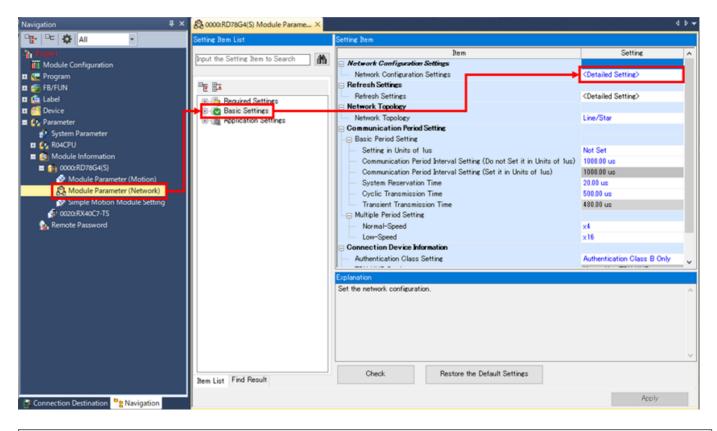
3.3

In the project tree, select [Parameter] \rightarrow [Module Information] \rightarrow [0000:RD78G4(S)] and double-click [Module Parameter (Network)].

In this section, set the device to be connected to the network and configure the link refresh.

(1) Network configuration setting

Select [Basic Settings] from the setting item list and double-click <Detailed Setting> in the Network Configuration Settings item.



[Point]

In [Required Settings], configure the settings such as the station type, IP address, and network number of the controller. Description of the settings is omitted here because the initial values are used in this course.

	Connects	ed/Disconnected Module Del	tection	Detailed Display								Module List	
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-					11/10-	Station	Points	Points	Points	Points			CC-Link IE TSN Module	
80	0	Host Station	0	Master Station				-	_		_		Master/Local Module Motion Module	
													E GOT2000 Series	
													General-Purpose AC 3	Servo
													General purpose Inver	rter
													DG Input	
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۲													 I/O Combined Analog Input Analog Output 	nk IE T

	Connecte	d/Disconnected Module Dete	ection	Detailed Display							Module List	
Mod	e Setting:	Online (U	nicast Mode)	~ As	ignment Method:			¥.			CC-Link IE TSN Sele	ection Find Module
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	No.	Model Name	STA#	Station Type	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Parameter Automatic Setting		Link IE TSN Modu
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n	Master St A#:0											
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Cyck: Transission Time (Mn.): 14.0 us Communication Period Interval (Mn.): 250.0 us No. Model Name STA# Station Type Motion Control Station O Master Station 0 Host Station O Master Station Drag and drop [MR-J5-G] twice. C-0. Link E TSN Module B General OC-Link E TSN Module B Master Control Station C-0. Link E TSN Module B Master Control Station Drag and drop [MR-J5-G] twice. C-0. BAckie 2-Acie Mr-SC-0. BAckie 2-Acie Drag and drop [MR-J5-G] twice. T-0. BAckie 2-Acie Mr-SC-0. BACkie 2-Acie Mr		Connecte	ed/Disconnected Module Det	tection	Detailed Display							Module List
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No. Model Name STAte Station Points Points Points Points	Cycle	ic Transmi	ssion Time (Min.):	4.00 us	Con	munication Period Int	terval (Min.):	250.00 us	5			
Station Points		No	Model Name	STAR	Station Tune		RX Setting	RY Setting	RWr Setting	RWw Setting	Parameter Automatic Setting	
Morion Module Botton Botton MR-5-G State MR-5-G State MR-5-G State MR-5-G State Botton MR-5-G State MR-5-State State Botton MR-5-State M	_					Station	Points	Points	Points	Points		
GOT2000 Series General-Purpose AC Serve Mar-5-G State Mar-5-State M		0	Host Station	<u>0</u> M	laster Station							
AP Matter St Staten AP Matter St Staten Staten												
AP - 50G Strate A Drag and drop [MR-J5-G] twice. Drag and drop [MR-J5-G] the drag and												General-Purpose AC Servo
Subon Station												MR-J5-G Single A
T-G Single J Drag and drop [MR-J5-G] twice. D2-G B Aris W2-G B Aris D2-G B Aris MR-J503-G BO Aris D2-G B Aris MR-J503-G BO Aris D2-G B Aris MR-J503-G BO Aris D2-Aris												MR-J5-G-Re Single A
Drag and drop [MR-J5-G] twice. D2-G 2-Axis W2-G 2-Axis W2-G 2-Axis W2-G 2-Axis 2-Axis W2-G W2-G 2-Axis 2-Axis 2-Axis W4-St02-G 3-Axis 3-Axis 2-Axis M4-St02-G 3-Axis 3-Axis 3-Axis M4-St02-G 3-Axis 3-Axis 3-Axis Station 3-Axis 3-Axis 3-Axis Station 3-Axis 3-Axis 3-Axis M4-St02-G 3-Axis 3-Axis 3-Axis									ſ			STO STORES
Station Transitor Durag and drop [MR-J5-G] twice. D2-0,B,Axis 2-Axis W2-G 2-Ax										-		
Analog Output										Drag a	nd drop [MR-J:	G twice. D2-G B Axis 2-Axis
AEO Master St. on Bi STAreio												W2-G 2-Axis
APU Master St on f STAFD									L. L.			He WRY 05W2-G B Axis 2-Axis I
A#0 Master St on Stabon A#0 Master St On												MR-J5D3-G 3-Axis U
Ario Master St. on Afd Master St. on al STArio												
General purpose Inverter D C Input D Combined Transistor Output D Combined Analog Input D Analog Output D Analog Output D Bridge module(CC-Link IE T)												MR-J5D3-G_BC_Axis 3-Axis U
C Input D Input Transistor Output D Inout D Input D I												MR-J5D3-G_BC_Axis 3-Axis MR-J5W3-G 3-Axis
C Image: Transistor Output Image: Transistor Output Image: Transistor Output	l											MR~J5D3~G_BC_Axis 3~Axis MR~J5W3~G 3~Axis MR~J5W3~G_BC_Axis 3~Axis
Image: Comparison of the second se	l											MR-J503-G,BC,Axis 3-Axis MR-J5W3-G 3-Axis MR-J5W3-G,BC,Axis 3-Axis B General purpose Inverter
Station A#0 Master St on of USTAR=0	<											MR-J503-G_BC_Axis 3-Axis MR-J5W3-G 3-Axis Concerning and the second second General purpose Inverter D C Input
Bridge module(CC-Link IE T	۲											MR-J503-G,BC,Axis 3-Axis MR-J5W3-G 3-Axis MR-J5W3-G,BC,Axis 3-Axis E General purpose Inverter E DC Input Transistor Output
Station A#0 Master St ion tad STA#0	٢											MR-J503-G.BC.Axis 3-Axis U MR-J5W3-G.BC.Axis 3-Axis U MR-J5W3-G.BC.Axis 3-Axis U General purpose Inverter DO Input Transistor Output U/O Combined Analog Input
A#0 Master St on tal STA#:0	۲											MR-J503-G,BC,Axis 3-Axis U MR-J5W3-G 3-Axis U MR-J5W3-G,BC,Axis 3-Axis U General purpose Inverter D D Input Transistor Output D I/O Combined Analog Input Analog Input
on tal STA#:0												MR-v503-G,BO,Axis 3-Axis MR-v5W3-G 3-Axis MR-v5W3-G,BC,Axis 3-Axis General purpose Inverter DO Input Transistor Output DI /O Combined Analog Input Analog Input
on bal STA#:0												MR-v503-G_BO_Axis 3-Axis MR-v503-G_BO_Axis 3-Axis MR-v503-G_BO_Axis 3-Axis General purpose Inverter DO Input Transistor Output DI Transistor Output Analog Input Analog Input
tal STA#:0												MR-v503-G,BC,Axis 3-Axis MR-v5W3-G 3-Axis MR-v5W3-G,BC,Axis 3-Axis General purpose Inverter DO Input Transistor Output DI /O Combined Analog Input Analog Input
	Statio	yn										MR-J503-G,BC,Axis 3-Axis U MR-J5W3-G 3-Axis U MR-J5W3-GBC,Axis 3-Axis U General purpose Inverter D DC Input Transistor Output U/O Combined Analog Input
	Statio	m Master St										MR-J503-G,BC,Axis 3-Axis U MR-J5W3-G 3-Axis U MR-J5W3-G,BC,Axis 3-Axis U General purpose Inverter D D Input Transistor Output D I/O Combined Analog Input Analog Input

Mode Setting: Cyclic Transmission Tim No. 0 Host Stz 1 MR-15-C	Model Name			gnment Method:								
Cyclic Transmission Tim No. 0 Host Sta	Model Name	us					V.				CC-Link IE TSN Selection Fi	d Module ₫
No. 0 Host Sta	Model Name	STAR		munication Period Inte	rval (Min.):	250.00 us					R 24 1 82 ★ 19 >	
0 Host Stz	1	STAR		Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Darama	ter Automatic Setting	General CC-Link IE T	
		JIME	Station Type	Station	Points	Points	Points	Points	r ar an c	to Paramate actury	CC-Link IE TSN Modu	
	shop	0 M	laster Station		Pointa	Poenda	Points	POEIG			Master/Local Modu	
1 MR-J34			emote Station				24	20		<detail setting=""></detail>	Motion Module	
2 MR-J5-0			emote Station				24			<detail setting=""></detail>	GOT2000 Series	
II.a. 2 MR-J5-0	ف	2 18	emote station	<u> </u>			24	20		<detai setting=""></detai>	General-Purpose A	C Servo
											MR-J5-G	Single A
											MR-J5-G-RJ	Single A
											MR-J5D1-G	Single A
											MR-JET-G	Single A
											MR-J5D2-G	2-Axis
											MR-J5D2-G_B_Axis	2-Axis
											MR-J5W2-G	2-Axis
											MR-J5W2-G_B_Axis	2-Axis
											MR-J5D3-G	3-Axis
											👢 MR-J5D3-G,BC,Ax	is 3-Axis I
	MR.	15-G	is registere	d to the							🕵 MR-J5W3-G	3-Axis
											MR-J5W3-G_BC_A	is 3-Axis I
	stat	on N	lo. 1 and sta	tion No. 2							General purpose Inv	erter
											DC Input	
<										>	Transistor Output	
											I/O Combined	
											Analog Input	
STA	#1 STA#2											
STA	#1 STA#2										Analog Output Bridge module(CC-I	

Cyck: Transmission Time (Mn.): 20.00 us No. Model Name STA# Station Points		Module List							ay	Detailed Displ	etection	ed/Disconnected Module Del	Connects	
Cyck: Transmission Time (Mn.): 20.00 us No. Model Name STA# Station Points	on Find Module	CC-Link IE TSN Selection Fi				v.			Assignment Method:	(e) ~	(Unicast Mod	Online	de Settina:	M
No. Model Name STA# Station Type Motion Control Station RW Setting Parameter Automatic Setting 0 Host Station 0 Master Station 24 20 Octoal Setting> 1 1 Remote Station 24 20 Octoal Setting> 2 MR-35-G 2 Remote Station 24 20 Octoal Setting> 0 Host Station 24 20 Octoal Setting> 0 Goreral OC-Link IE TS 1 2 MR-35-G 2 Remote Station 24 20 Octoal Setting> 1 2 MR-35-G 2 Remote Station 24 20 Octoal Setting> 1 2 MR-35-G 2 Remote Station 24 20 Octoal Setting> 1 3 0 Check that the "Motion Control Station" MR-35-G MR-35-G 1 MR-35-G MR-35-G MR-35-G MR-35-G MR-35-G 1 MR-35-G MR-35-G MR-35-G MR-35-G 1 MR-35-G MR-35-G MR-35-G MR-3							250.00 us	Interval (Min.):						
No. Model Name STA# Station Type Points Points </td <td></td> <td></td> <td>too to descent of California</td> <td>December</td> <td>Dillio Colling</td> <td>Ditte Collins</td> <td>DV Califica</td> <td></td> <td></td> <td>-</td> <td>1</td> <td>and the family for the family of the</td> <td></td> <td>-</td>			too to descent of California	December	Dillio Colling	Ditte Collins	DV Califica			-	1	and the family for the family of the		-
Image: Station Image: Stat			ter Automatic Setting	Paramete	-	-	-	-		Station Type	STA#	Model Name	No.	
Image: Station Image		Master/Local Modu			Points	Points	Points	Points		Marchan Charling		Mark Charles		ь
Image: Network Station Image: Network Station Image: Network Stati		Moster / Local Module						-			-		-	Н
Check that the "Motion Control Station" Checkbox is selected.		GOT2000 Series	-											
Check that the "Motion Control Station" checkbox is selected. MR-J5-02 MR-J50		General-Purpose A	<detail setting=""></detail>		20	24				Remote Station	2	MR-JS-G	a 2	1
Check that the "Motion Control Station" checkbox is selected.	Single A													
Check that the "Motion Control Station" checkbox is selected.		MR-J5-G-RJ												
checkbox is selected.		MR-J5D1-G		ation"	ntrol St	otion Co	the "Mc	eck that	Che					
Checkbox is selected.		MR-JET-G												
STAR1 STAR2						ed.	selecte	eckbox is	che					
STA#1 STA#2		MR-J5D2-G.B.Axis												
STA#1 STA#2		MR-J5W2-G												
STAR1 STAR2		MR-J5W2-G.B.Axis												
STAR1 STAR2		MR-J5D8-G												
STAR1 STAR2		MR-J503-G.BC.Ax												
STA#1 STA#2														
C General pur D C Input Transistor STA#1 STA#2 STA#1 STA#2 STA#1 STA#2		MR-J5W3-G_BC_A												
STAP1 STAP2		E General purpose Inv												
STA#1 STA#2														
STA#1 STA#2	se inverter												_	
STA#1 STA#2		DC Input												
I Analog Outs	tput	DC Input Transistor Output	>									_		1
	tput		>								1		_	1
E bridge mod	tput	DC Input Transistor Output I/O Combined Analog Input	>								1	STA#1 STA#2		
A#0 Master St. III [Outline]	tput		>								1	STA#1 STA#2		
	tput t (CC-Link IE TS	DC Input Transistor Output D' Transistor Output D' Combined Analog Input Analog Output Dridge module(CC-1 [Outline] Servo Amplifier(MELSERVO- Single Axis	3			_	_					- 1	Master St	Sta A#C

Co	nect	ted/Disconnected Module Detec	tion	Detailed Display								Module List	;
ode Se	tting	Conline (Uni	cast Mod	ie) - Assig	mment Method:			×				CC-Link IE TSN Selection Find	d Module 4
yclic Tr	ansn	nission Time (Min.): 20.0	0 us	Com	munication Period Inte	erval (Min.):	250.00 us						
		Model Name		Challen Tama	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Param	eter Automatic Setting	General CC-Link IE TS	
	No.	Prodel hame	STA#	Station Type	Station	Points	Points	Points	Points			CC-Link IE TSN Module	e (Mitsub
	0	Host Station	0	Master Station								Master/Local Module	•
	1	MR-15-G	1	Remote Station				24	20		<detail setting=""></detail>	Motion Module	
I.	2	MR-JS-G	2	Remote Station				24	20		<detail setting=""></detail>	GOT2000 Series	
												General-Purpose AC	
												MR-J5-G	Single A
												MR-J5-G-RJ	Single A
												MR-J5D1-G	Single A
												MR-JET-G	Single A 2-Axis I
												MR-J5D2-G	
												MR-J5W2-G	2-Axis
												MR-J5W2-G_B_Axis	2-Axis
												MR-J5W2-G_B_Axis	2-Axis 3-Axis
												MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis	2-Axis 0 3-Axis 0 3-Axis 0
												MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis MR-J5W3-G	2-Axis 3-Axis 3-Axis 3-Axis
												MR-J5W2-G,B,Axis MR-J5D3-G MR-J5D3-G,BC,Axis MR-J5W3-G MR-J5W3-G,BC,Axis	2-Axis I 3-Axis I 3-Axis I 3-Axis I 5 3-Axis I
												MR-J5W2-G_B_Axis MR-J5DG-G_BC_Axis MR-J5DG-G_BC_Axis MR-J5W3-G_BC_Axis MR-J5W3-G_BC_Axis E General purpose Inve	2-Axis 3-Axis 3-Axis 3-Axis 3-Axis 3-Axis
~												MR-J5W2-G_B_Axis MR-J5DG-G_BC_Axis MR-J5DG-G_BC_Axis MR-J5W3-G MR-J5W3-G_BC_Axis General purpose Invo B_DC_Input	2-Axis I 3-Axis I 3-Axis I 3-Axis I 5 3-Axis I
۲.											ر	MR-J5W2-G_B_Axis MR-J5DG-G_BC_Axis MR-J5DG-G_BC_Axis MR-J5W3-G MR-J5W3-G_BC_Axis General purpose Invo B_DC_Input	2-Axis I 3-Axis I 3-Axis I 3-Axis I 5 3-Axis I
<		STAR1 STAR2				2					,	MR-J5W2-G B Axis MR-J5DG-G MR-J5DG-G BC Axis MR-J5W3-G BC Axis General purpose Inve E DC Input Transistor Output	2-Axis I 3-Axis I 3-Axis I 3-Axis I 5 3-Axis I
<		STA#1 STA#2		<u></u>		1					,	MR-J5W2-G B Axis MR-J5DG-G B MR-J5DG-G BO Axis MR-J5W3-G BO Axis General purpose Inve D C Input Transistor Output II //O Combined	2-Axis I 3-Axis I 3-Axis I 3-Axis I 5 3-Axis I
< aton		STA#1 STA#2		Scroll to t	the right.]					¢	MR-J5W2-G B Axis MR-J5DG-G MR-J5DG-G BC Axis MR-J5W3-G BC Axis General purpose Inve D C Input Transistor Output U/O Combined Analog Input	2-Axis 3-Axis 3-Axis 3-Axis 3-Axis arter

		ed/Disconnected Module Detec	tion	Detailed Displ	ay					Module List	,
	Setting	Online (Un	icast Mode)		Assignment Me	thod:				CC-Link IE TSN Selection F	nd Module 4
Cyclic			00 us		Communication		val (Min.): 250.00 us				
-			RY Setting	RWr Setting	RWw Setting		ameter Automatic Setting				
	No.	Model Name	Points	Points	Points	10	uncer Patomote Second	PDO Mapping Setting	IP Address ion tas		
	0	Host Station	P DE LO	Pointa	Purita				192.168.3.253	Master/Local Modu	
	-	MR-J5-G		24	20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.1	Motion Module	
He He	_	MR-JS-G		24			<detail setting=""></detail>		192.168.3.1	GOT2000 Series	
lla	4	MK-JO-G	-	29	20		<pre><pre>cuetal setting></pre></pre>	<detail setting=""></detail>	192.100.3.2	General-Purpose A	C Servo
					1					MR-J5-G	Single Ax
						Char	le the a ID is defined	- 6 + 1	- 1: <i>6</i> :	MR-J5-G-RJ	Single Av
						Chec	ik the IP address	of the servo am	plifier.	MR-J5D1-G	Single Ax
						Thore	e is no change ii	this course		MR-JET-G	Single Ax
						men	e is no change i	r this course.		MR-J5D2-G	2-Axis Ur
					L L					MR-J5D2-G.B.Axi	2-Axis U
										MR-J5W2-G	2-Axis U
										MR-J5W2-G B Axi	
										MR-J5D3-G	3-Axis Ur
										MR-J5D3-G BC A	
										MR-J5W3-G	3-Axis Ur
										MR-J5W3-G_BC_A	
										General purpose In	verter
										DC Input	
<									>		
	_		1							I/O Combined	
		STA#1 STA#2								Analog Input	
										Analog Output	
										Bridge module(CC−	Link IE TSN
										[Outline]	
A#0 M on tal STA e/Star	#:2	40 40 MR-35-G								Servo Amplifier(MELSERVO- Single Axis [Specification]	-J5 Series)

(1) Network configuration setting (continued)

Adde Setting: Cyclic Transmission Time No. 0 Host Stat 0 1 MR-JS-G 0 2 MR-JS-G	Model Name	cast Mode) 0 us RY Setting Points			riod Interval Param	(Min.): 250.00 us exter Automatic Setting <detail setting=""> <detail setting=""></detail></detail>	PDO Mapping Setting <detail setting=""> <detail setting=""></detail></detail>	IP Address b 192.168.3.253 192.168.3.1 192.168.3.2		k E TSN Module Module (Mitsubi Module
No. Image: No. Image: No. 0 Host Stat Image: No. 1 MR-JS-G	Model Name	RY Setting	RWr Setting Points 24	RWw Setting Points 20 20	Param	<pre>ceter Automatic Setting</pre>	<detail setting=""></detail>	192.168.3.253 192.168.3.1	m ⊞ General CC-Lin	k IE TSN Module Module (Mitsubi Module e
0 Host Stat	tion	-	Points 24	Points 20 20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.253 192.168.3.1	m ⊞ General CC-Lin	k IE TSN Module Module (Mitsub Module e
0 Host Stat	tion	-	Points 24	Points 20 20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.253 192.168.3.1	S CC-Link IE TSN Master/Local Motion Module	Module (Mitsub Module e
1 MR-J5-G		1010	24	20				192.168.3.1	⊞ Master/Local ⊞ Motion Module	Module
1 MR-J5-G				20				192.168.3.1	Motion Module	e
				20						
<u>II. 2</u> Mik-Jo-G			24			<detail setting=""></detail>	<pre></pre>	192.168.3.2		ies
				When 9					General-Purp	ose AC Servo
				When 9					MR-J5-G	Single A
				When S					MR-J5-G-R	J Single A
				www.com.com.com	simple	e Motion mode	e is used,		MR-J5D1-G	Single A
						g is not requir			MR-JET-G	Single A
									MR-J5D2-G	2-Axis U
				(PDO m	nappir	ng cannot be c	(hanged)		MR-J5D2-G	B_Axis 2-Axis U
				(10011	appn	ig cannot be e	inangea.)		MR-J5W2-G	a 2-Axis
									MR-J5W2-G	B Axis 2-Axis U
									MR-J5D3-G	
										BC Axis 3-Axis I
									MR-J5W3-G	
										BC Axis 3-Axis
									General purpo	
									E DC Input	
<	_				_			,	> I Transistor Ou	tout
	_								I/O Combined	
STA4	#1 STA#2								I Analog Input	
	Since								Analog Output	
									Bridge module	

(1) Network configuration setting (continued)

	Connec	cted/Disconnected Module	Detection	Detailed Displa	ay						Module List	
Mod	e Setting	a: Onli	e (Unicast Mode)		Assignment Met	nod:				1	CC-Link IE TSN Selection Find	d Module 4
		mission Time (Min.):	20.00 us		Communication P	eriod Inter	val (Min.): 250.00 us			- 1		
			RY Setting	RWr Setting	RWw Setting		rameter Automatic Setting				General CC-Link IE TS	
	No.	Model Name	Points	Points	Points	ra	aneter Automatic Seturity	PDO Mapping Setting	IP Address		CC-Link IE TSN Module	
		Host Station	Points	Ponts	Ponts				102 102 2 202		Master/Local Module	
1	_						and a second		192.168.3.253	-	H Motion Module	
-		MR-J5-G		24			<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.1	- L	E GOT2000 Series	
B.	2	MR-JS-G		24	20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.2		General-Purpose AC	Servo
											MR-J5-G	Single Av
											MR-J5-G-RJ	Single A
											MR-J5D1-G	Single A
											MR-JET-G	Single A
			_								MR-J5D2-G	2-Axis U
											MR-J5D2-G.B.Axis	2-Axis U
				Nevt co	nfigure	the n	aramatar catting	an of the conce on	a mlifi an		MR-J5W2-G	
							arameter setting	ns or the servo ar	nouner			12-AXIS U
				vent, co	inigure			gs of the servo ar	npimer.		MR-J5W2-G B Axis	
				VEAL, CO	inigure				npimer.			2-Axis U
l				vext, co	ingule		Go to the next p		npillier.		MR-J5W2-G_B_Axis MR-J5D3-G	2-Axis U 3-Axis U
l				vext, co	inigure				npillier.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis	2-Axis U 3-Axis U 3-Axis U
l				vext, co	ingure				npimer.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis MR-J5W3-G	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U
l				vext, co	ingure				npiller.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis MR-J5W3-G MR-J5W3-G_BC_Axis	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 3-Axis U
l				VENI, CO	ingure				npimer.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axis MR-J5W3-G	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 3-Axis U
4				VEX., CO	ingure				npiller.	,	MR-J5W2-G_B_Axis MR-J503-G_BC_Axis MR-J503-G_BC_Axis MR-J5W3-G_BC_Axis MR-J5W3-G_BC_Axis E_General purpose Inve	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 3-Axis U
۲				VEX., CO	ingure				npiller.	>	MR-J5W2-G_B_Axis MR-J5DG-G MR-J5DG-G_BC_Axis MR-J5W3-G_BC_Axis General purpose Inve DC Input	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 3-Axis U
٢		STAF1 STA		VEX., CO	ingure	•			npinier.	>	MR-J5W2-G.B.Axis MR-J5U3-G MR-J5D3-G MR-J5W3-G MR-J5W3-G.BC.Axis General purpose Inve D C Input Transistor Output	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 3-Axis U
¢		STA#1 STA			ingure	•			npinier.	>	MR-J5W2-G_B_Axis MR-J5DG-G_BO_Axis MR-J5DG-G_BO_Axis MR-J5W3-G_BO_Axis General purpose Inve D C Input Transistor Output D I/O Combined	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5-Axis U
< Statio		STA#1 STA		NEX1, CO	ingure	•			npinier.	>	MR-J5W2-G.B.Axis MR-J5W2-G.B.Axis MR-J5W3-G.B.C.Axis MR-J5W3-G.B.C.Axis General purpose Inve D C Input Transistor Output I //O Combined Analog Input	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U srter
Statio	Master S A#:2		2 2 b		ingure	•			npinier.	_	MR-J5W2-G.B.Axis MR-J503-G MR-J503-G.BC.Axis MR-J5W3-G.BC.Axis MR-J5W3-G.BC.Axis General purpose Inve DC Input Transistor Output Mrabox Input Analog Output Bridge module(CC-Li Bridge module(CC-Li Servo Amplifier(MELSERVO-J Single Axis	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U arter
Statio A#0 1 on tal ST	Master S A#:2	st and a state of the state of	2 2 b		ingure	•			npinier.		MR-J5W2-G.B.Axis MR-J5W2-G.B.Axis MR-J5UG-G.B.C.Axis MR-J5W3-G.B.C.Axis General purpose Inve DC Input Transistor Output D'O combined Analog Output Analog Output Bridge module(CC-Li Dridge module(CC-Li Servo Amplifier(MELSERVO-J Single Axis (Specification)	3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U arter
Statio A#0 1 on tal ST	Master S A#:2	st and a state of the state of	2 2 b		ingure	•			npinier.	_	MR-J5W2-G.B.Axis MR-J503-G MR-J503-G.BC.Axis MR-J5W3-G.BC.Axis MR-J5W3-G.BC.Axis General purpose Inve DC Input Transistor Output Mrabox Input Analog Output Bridge module(CC-Li Bridge module(CC-Li Servo Amplifier(MELSERVO-J Single Axis	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 5 Series)

(2) Parameter settings of the servo amplifier

When using Simple Motion mode, always set the parameters of the MR-J5-G servo amplifier as shown in the table below. How to set the parameters of the servo amplifier is described on the next page.

Change the values shown in yellow from the initial values.

Writing values other than the setting values shown in the table below will cause "Servo parameter invalid".

In such a case, the servo parameters are automatically rewritten from the controller to the values in the table below when the power is turned on again.

	Parameter	lnitial value	Setting value
Basic	PA06 (Electronic gear numerator) (Note 1)	1	 When the servo motor resolution is 26 bits: 16 (Rotary servo motor HK series, etc.) When the servo motor resolution is not 26 bits: 1
	PA07 (Electronic gear denominator) (Note 1)	1	1
Extension	PC79.0 (DI status read selection) (Note 1)	0h	Eh bit1: Returns the on/off state of DI1 pin. bit2: Returns the on/off state of DI2 pin. bit3: Returns the on/off state of DI3 pin.
	PD41.2 (Limit switch enabled status selection) (Note 1)	0h	1h : Enabled only for homing mode
	PD41.3 (Sensor input method selection) (Note 1)	0h	1h: Input from controller (FLS/RLS/DOG) (Note 3)
1/0	PD60.0 (DI pin polarity selection) (Note 1)	0h	0h bit0: DI pin polarity selection 1 (turned on at 24 V input) bit1: DI pin polarity selection 2 (turned on at 24 V input) bit2: DI pin polarity selection 3 (turned on at 24 V input)
	PT01.1 (Speed/acceleration/deceleration unit selection) (Note 2)	0h	0h
Positioning	PT08 (Homing position data) (Note 1)	0	0
control	PT15 (Software position limit +)	0	0
	PT17 (Software position limit -)	0	0
	PT29.0 (Device input polarity 1) (Note 1)	0h	1h: Dog detection with on

(Note)

1. The parameter is enabled after the Motion module or MR-J5-G is restarted.

2. The parameter is enabled after MR-J5-G is restarted.

3. Set "Input from controller" even when connecting the external signal to CN3 of the servo amplifier.

In addition, change the homing method from the initial value in this course. Set the value as shown in the table below.

Para	ameter	Initial value	Setting value
Positioning	PT45 (Homing	37 (method 37: Data set	-33 (Dog type rear end detection - CW direction with
control	method)	type)	reference to Z-phase)

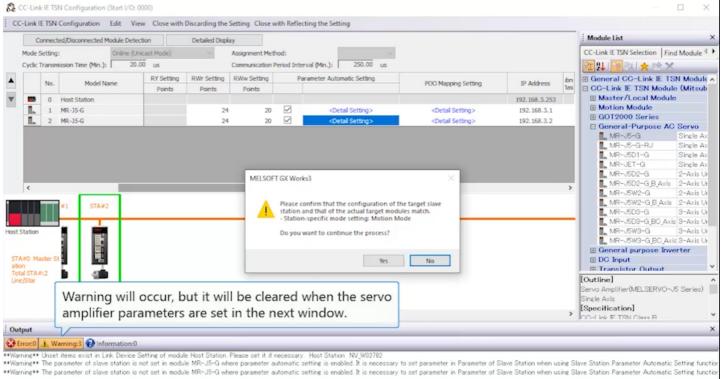
C	onnecte	ed/Disconnected Module Dete	ction	Detailed Displa	iy.					-	Module List	
Mode :	Setting:	Online (U	nicast Mode)		Assignment Met	hod:	×.			- F	CC-Link IE TSN Selection Fin	nd Module 4
Cyclic	Transmi	ission Time (Min.): 20	.00 us		Communication F	Period Interv	val (Min.): 250.00 us					e
			RY Setting	RWr Setting	RWw Setting	Par	ameter Automatic Setting				General CC-Link IE T:	
	No.	Model Name	Points	Points	Points			PDO Mapping Setting	IP Address		CC-Link IE TSN Modul	
100	0	Host Station							192.168.3.253		I Master/Local Modul	le
E.		MR-J5-G		24	20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.1		Motion Module	
	_	MR-JS-G		24	20		<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.2		⊞ GOT2000 Series	
1116	-									-	General-Purpose AC	
											MR-J5-G	Single A:
											MR-J5-G-RJ	Single A
											MR-J5D1-G	Single A:
											MR-JET-G	Single A
											🕵 MR-J5D2-G	2-Axis U
											🕵 MR-J5D2-G_B_Axis	
											MR-J5W2-G	2-Axis U
				CU: 1				1 6 6 1 1			B. MR-03W2-G	2-AXIS U
				Click	the pla	ay but	tton at the lower	r left of the winde	ow.		MR-J5W2-G_B_Axis	
				Click	c the pla	ay but	tton at the lowe	r left of the wind	ow.			2-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the wind	ow.		MR-J5W2-G_B_Axis MR-J5D3-G	2-Axis U 3-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the wind	ow.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axi	2-Axis U 3-Axis U is 3-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the wind	ow.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axi MR-J5W3-G	2-Axis U 3-Axis U is 3-Axis U 3-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR~J5W2~G_B_Axis MR~J5D3~G MR~J5D3~G_BC_Axi MR~J5W3~G MR~J5W3~G_BC_Axi	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR-J5W2-G_B_Axis MR-J503-G_B_C_Axis MR-J503-G_B_C_Axis MR-J5W3-G_B_C_Axis MR-J5W3-G_B_C_Axis MR-J5W3-G_B_C_Axis	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U
				Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G, BC,Axi MR-J5W3-G,BC,Axi MR-J5W3-G,BC,Axi General purpose Inv DC Input	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U
£				Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.	,	MR-J5W2-G_B_Axis MR-J5U3-G MR-J5D3-G_BO_Axi MR-J5W3-G_BO_Axi MR-J5W3-G_BO_Axi General purpose Inv E DC Input Transistor Output	2-Axis U 3-Axis U is 3-Axis U 3-Axis U is 3-Axis U
¢			1	Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.	>	MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axi MR-J5W3-G_BC_Axi MR-J5W3-G_BC_Axi Ceneral purpose Inv E DC Input Transistor Output E I/O Combined	2-Axis U 3-Axis U is 3-Axis U 3-Axis U is 3-Axis U
£		STA#1 STA#2	1	Click	the pla	ay but	tton at the lowe	r left of the winde	ow.	>	MR-J5W2-G_B_Axis MR-J5C3-G_B_Axis MR-J5C3-G_B_Axis MR-J5W3-G_B_Axis B_General purpose Inv B_DC Input B_Transistor Output B_I/O Combined H_Analog_Input	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U
< C		STA#1 STA#2]	Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.	•	MR-J5W2-G_B_Axis MR-J5D9-G_BD_Axis MR-J5D9-G_BD_Axis MR-J5W3-G_BD_Axis MR-J5W3-G_BD_Axis Ceneral purpose Inv E DC Input Transistor Output E I/O Combined	2-Axis U 3-Axis U 3-Axis U 3-Axis U 3-Axis U erter
tation	aster St			Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR-J5W2-G_B_Axis MR-J5D3-G MR-J5D3-G_BC_Axi MR-J5W3-G_BC_Axi MR-J5W3-G_BC_Axi B_C_Input DC_Input Transistor Output U/O Combined Analog Input Analog Output	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U is 3-Axis U erter
#0 Ma	aster St	Ē		Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR-J5W2-G_B_Axis MR-J5W2-G_B_Axis MR-J5W3-G_B_C_Axi MR-J5W3-G_B_C_Axi MR-J5W3-G_B_C_Axi DC Input DC Input Transistor Output DC Input MR-J5W2-G_B_C_Axis DC Input DC I	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U is 3-Axis U erter
#0 Ma	aster St			Click	c the pla	ay but	tton at the lowe	r left of the winde	ow.		MR-J5W2-G_B_Axis MR-J5W2-G_B_Axis MR-J5W3-G_B_C_AX MR-J5W3-G_B_C_AX BGEneral purpose Inv B_C_Input B_Transistor Output B_Transistor Output B_Analog_Input B_Analog_Input B_Analog_Output B_Bridge_module(CC-L Outline] Servo Amplifier(MELSERVO-	2-Axis U 3-Axis U is 3-Axis U 3-Axis U 3-Axis U is 3-Axis U erter

(Connects	ed/Disconnected Module Deteo	tion	Detailed Disp	lay					Module List	
Mode	Setting:	Online (Un	icast Mode)		Assignment Meth	od:	~			CC-Link IE TSN Selection	Find Module
Cyclic	Transmi	ission Time (Min.): 20.0	00 us		Communication P	eriod Interva	l (Min.): 250.00 us				×
	No.	Model Name	RY Setting	RWr Setting	RWw Setting	Paran	neter Automatic Setting	PDO Mapping Setting	IP Address	n 🗄 General CC-Link I	TSN Modul
			Points	Points	Points			roo niqqiing acting	lat	L'OU LINK IL TOIT IN	
	-	Host Station				-			192.168.3.253	Master/Local Mo Motion Module	dule
Π.	-	MR-J5-G		24		- X	<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.1	GOT2000 Series	
	2	MR-J5-G		24	4 20	(Ag	<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.2	General-Purpose	AC Servo
						N				MR-J5-G	Single /
											ingle A
								eters of the serve			er, insle /
						sele	ct the [Paramet	er Automatic Set	ting] checkb	OX.	-Axis
									5.		Axis
										MR-J5W2-G	2-Axis
										MR-J5W2-G_B	Axis 2-Axis
										MR-J5D3-G	3-Axis
										MR-J5D3-G,BC	
										MR-J5W3-G	3-Axis
										MR-J5W3-G_BC	
										General purpose	Inverter
						_				DC Input Transistor Output	
<									>	I/O Combined	n.
		STA#1 STA#2								I Analog Input	
		21012								Analog Output	
										⊞ Bridge module(C	C-Link IE T
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tation											
#0 M	laster St									[Outline]	
#0 M	laster St									[Outline] Servo Amplifier(MELSER)	/0-J5 Series
#0 M	laster St	4									/0~J5 Series
#0 M	laster St	MR-J5-G								Servo Amplifier(MELSER) Single Axis [Specification]	/0-J5 Series
#0 M	laster St	4								Servo Amplifier(MELSER) Single Axis	

C	onnec	ted/Disconnected Module Detec	tion	Detailed Displ	lay						Module List
Mode	Setting	0nline (Uni	cast Mode)		Assignment Method	l:	×.				CC-Link IE TSN Selection Find Module
Cyclic	Transr	mission Time (Min.): 20.0	0 us		Communication Perio	iod Interval (Min.):	250.00 us				
	No.	Model Name	RY Setting	RWr Setting	RWw Setting	Parameter Automa	atic Setting	PDO Mapping Setting	IP Address	ibn	General CC-Link IE TSN Module
			Points	Points	Points					las	CC-Link IE TSN Module (Mitsub
-	0	Host Station							192.168.3.253		Master/Local Module Motion Module
I.	1	MR-J5-G		24			I Setting>	<detail setting=""></detail>	192.168.3.1		GOT2000 Series
I.	2	MR-J5-G		24	4 20	Zeta	I Setting>	<detail setting=""></detail>	192.168.3.2		General-Purpose AC Servo
							N				MR-J5-G Single Av
						ſ					MR-J5-G-RJ Single A
							Double	lick <detailed s<="" td=""><td>ottings</td><td></td><td>MR-J5D1-G Single A</td></detailed>	ottings		MR-J5D1-G Single A
							Double-0	lick < Detailed 5	etting>.		MR-JET-G Single A
											MR-J5D2-G 2-Axis U
											MR-J5D2-G.B.Axis 2-Axis
											MR-J5W2-G 2-Axis U
											MR-J5W2-G_B_Axis 2-Axis U
											🛄 MR-J5D3-G 3-Axis U
											🕵 MR-J5D3-G_BC_Axis 3-Axis U
											MR-J5W3-G 3-Axis U
											MR-J5W3-G BC Axis 3-Axis U
											General purpose Inverter
											General purpose Inverter DC Input
K										>	General purpose Inverter DC Input Transistor Output
٢										>	General purpose Inverter DC Input Transistor Output I/O Combined
٢		#1 STA#2								>	DC Input Transistor Output I/O Combined Analog Input
<		#1 STA#2								>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output
		#1 STA#2								>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output
		#1 STA#2								>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output
		#1 STA#2								>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output
tation										>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output
tation #0 Ma	aster S									>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output Bridge module(CC-Link IE TS
tation #0 Ma	aster S									>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output Bridge module(CC-Link IE TS [Outline]
#0 Ma	aster S									>	General purpose Inverter DC Input Transistor Output Transistor Output Analog Input Analog Input Bridge module(CC-Link IE TS [Outline] Servo Amplifier(MELSERVO~J5 Series)
#0 M	aster S									>	General purpose Inverter DC Input Transistor Output Transistor Output Analog Input Analog Output Bridge module(CC-Link IE T: [Outline] Servo Amplifier(MELSERVO~J5 Series. Single Axis
tation #0 Ma	aster S									>	General purpose Inverter DC Input Transistor Output I/O Combined Analog Input Analog Output Bridge module(OC-Link IE TS [Outline] Servo Amplifier(MELSERVO~,5 Series) Single Axis [Specification]
#0 Ma	aster S									>	General purpose Inverter DC Input Transistor Output Analog Input Analog Output Bridge module(CC-Link IE TS [Outline] Servo Amplifier(MELSERVO-J5 Series) Single Axis

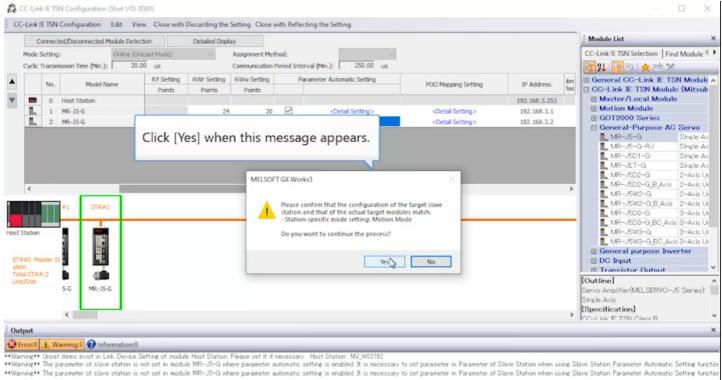
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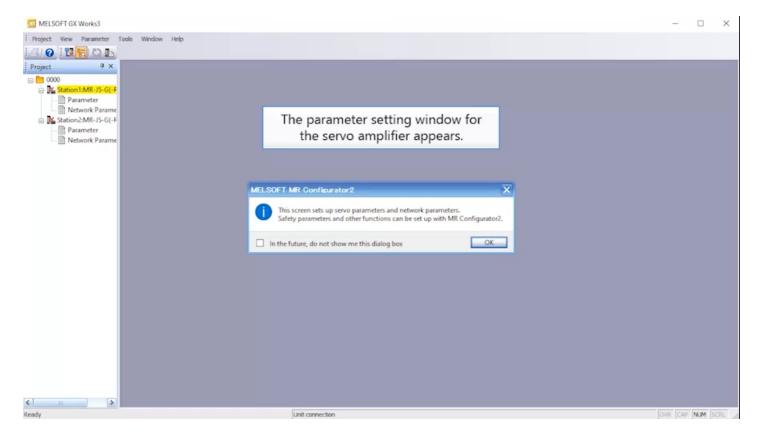
(2) Parameter settings of the servo amplifier (continued)

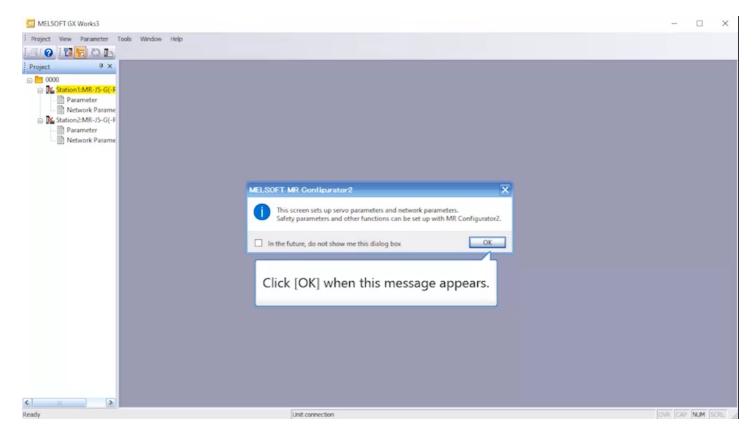


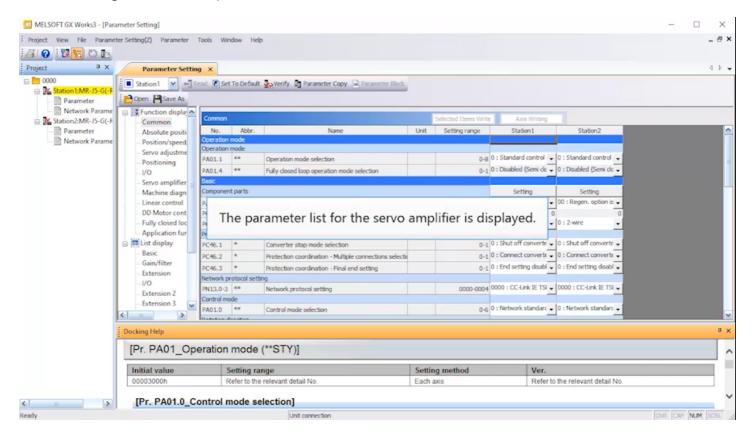
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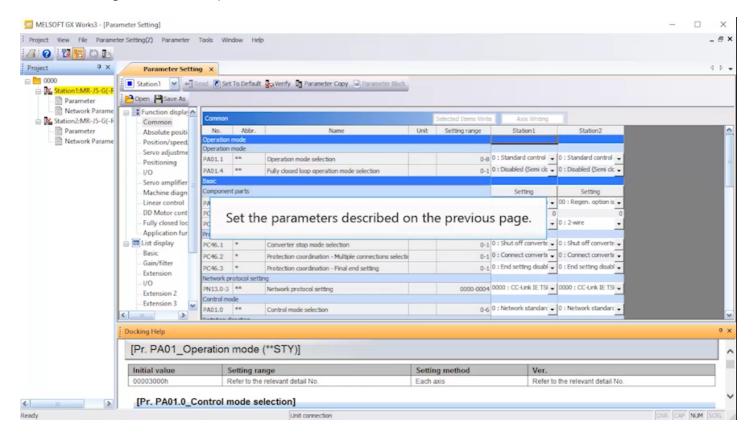
(2) Parameter settings of the servo amplifier (continued)

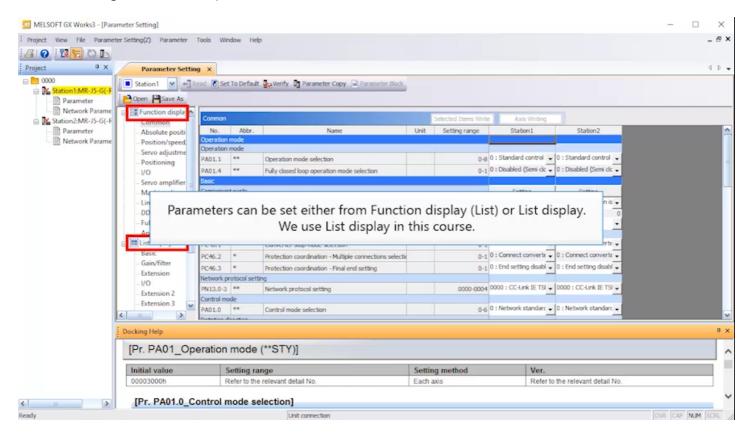




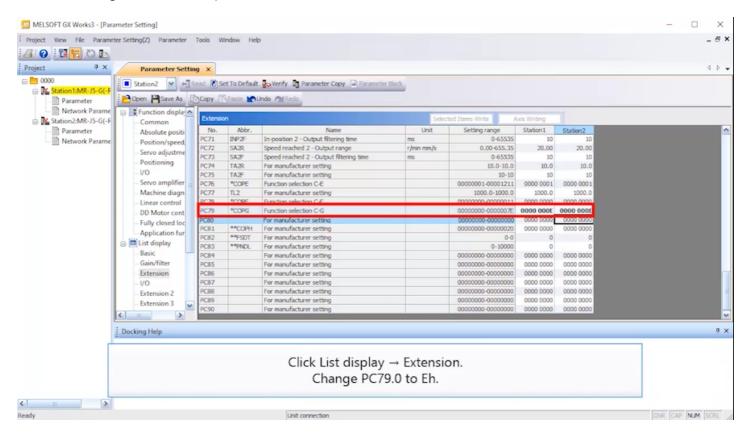


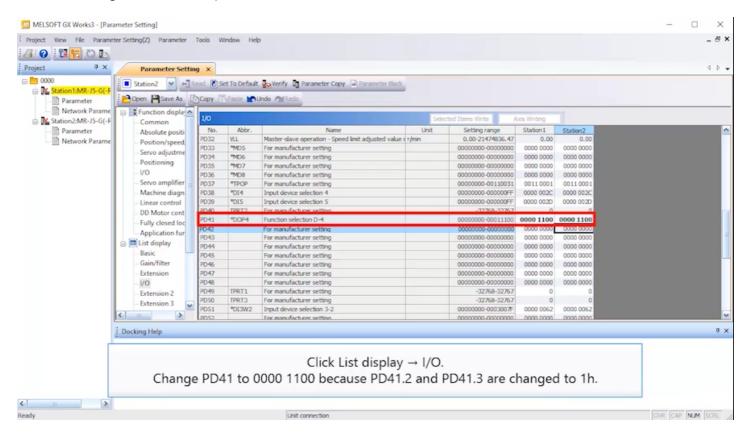


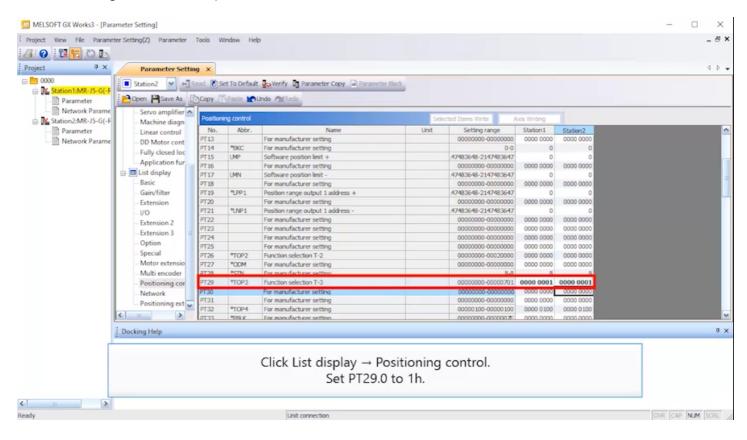




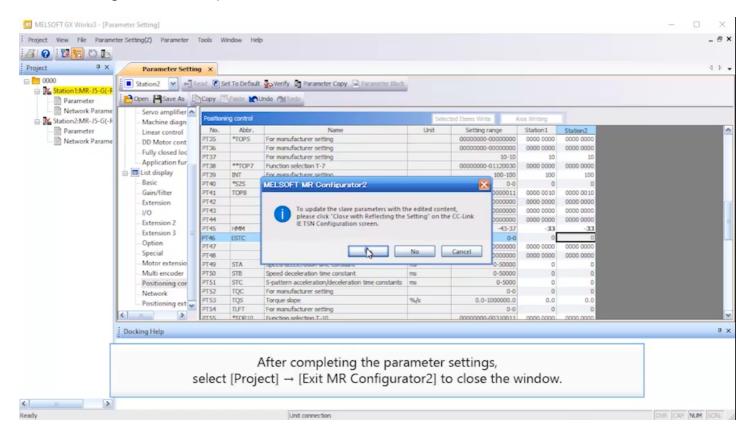
	ter Setting(Z) Parameter	1005 1	noow ne	10 10					- 8
Project P X									4.6
	Parameter Settin								N P
0000 Station1:MR-J5-G(-F Parameter	Station2 ↔ R ↔	0		it 🚱 Verify 🗓 Parameter Copy 🖃 Paramet	er Block				
- Retwork Parame	E Function displa								
E Kation2:MR-J5-G(-F	- Common	Basic			Sele		xis Writing	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
- Parameter	- Absolute positi	No.	Abbr.	Name	Unit	Setting range	Station1	Station2	
Network Parame	- Position/speed	PA01	**STY	Operation mode		00003000-10013086	0000 3000	0000 3000	
	- Servo adjustme	PA02	**REG	Regenerative option		00000000-001100FF	0000 0000	0000 0000	
	- Positioning	PA03	*ABS	Absolute position detection system		00000000-00000111	0000 0000	0000 0000	
	-1/0	PA04 PA05	*AOP1 *EBD	Function selection A-1 For manufacturer setting		00000000-00002100	0000 2000	0000 2000	
	- Servo amplifier -	PA06	*CMX	Electronic gear - Numerator		1-2147483647	16	16	
	- Machine diagn	PA07	*CDV	Electronic gear - Denominator		1-2147483647	10	10	
	- Linear control	PA08	ATU	Auto tuning mode		00000000-01110006	0000 0001	0000 0001	
	- DD Motor cont	PA09	RSP	Auto tuning response		1-40	16	16	
	- Fully closed loc	PA 10	INP	In-position range		0-16777215	25600	25600	
	- Application fur	PA11	TLP	Forward rotation torque limit	%	0.0-1000.0	1000.0	1000.0	
		PA12	TLN	Reverse rotation torque limit	%	0.0-1000.0	1000.0	1000.0	
	😑 🎹 List display	PA13	*PLSS	For manufacturer setting		00000000-00000000	0000 0000	0000 0000	
	Basic	PA14	*POL	Travel direction selection		0-1	0	0	
	- Gain/filter	PA15	*ENR	Encoder output pulses	pulse/rev	1-67108864	4000	4000	
	Extension	PA16	*ENR2	Encoder output pulses 2		1-67108864	1	1	
	- 1/0	PA17	**MSR	Servo motor series setting		00000000-0000FFFF	0000 0000	0000 0000	
	- Extension 2	PA18	**MTY	Servo motor type setting		00000000-FFFFFFFF	0000 0000	0000 0000	
	- Extension 3 🔽	PA19 PA20	*BLK *TDS	Parameter writing prohibited Tough drive setting		00000000-0000FFFF 00000000-00001120	0000 00AB	8A00 0000	
	<	PA20 PA21	*4093	Function selection A.3		0000000-00001125	0000 0000	0000.0001	
		LCm/1		THERE HERE SHOW HERE ALS					
	Docking Help								
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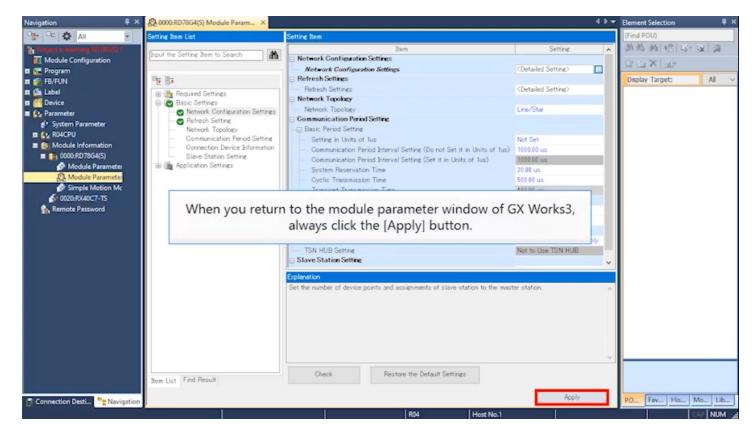


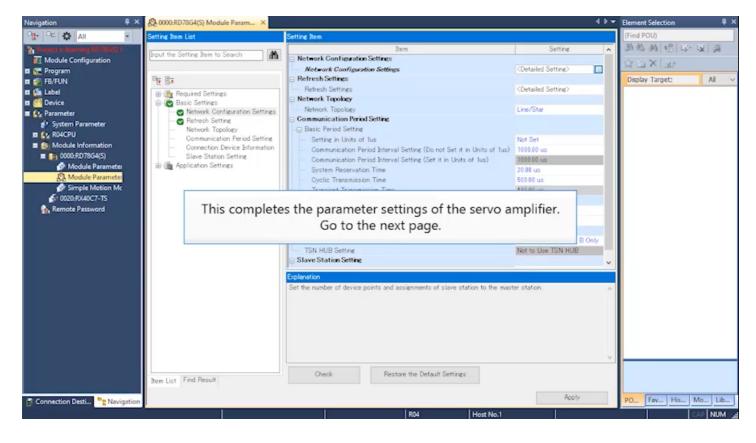
a 0 3 5 5	ter Setting(Z) Parameter											
ect 9 ×	Parameter Setting	g ×										
0000 Station1:MR-J5-G(-F Parameter	Dpen 🂾 Save As [: 🏪 Verify 🖣 Parameter Copy 📄 Parameter Block								
Network Parame Station2:MR-J5-G(-F	- Servo amplifier	Position	ing control		Sele	cted Items Write	wis Writing					
- Parameter	- Linear control	No.	Abbr.	Name	Unit	Setting range	Station1	Station2				
Network Parame	- DD Motor cont	PT35	*TOP5	For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
- I receiver Parame		PT36		For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
	- Fully closed loc	PT37		For manufacturer setting		10-10	10	10				
	- Application fur	PT38	**TOP7	Function selection T-7		00000000-01120030	0000 0000	0000 0000				
	😑 🎟 List display	PT39	INT	For manufacturer setting		100-100	100	100				
	Basic	PT40	*SZS	For manufacturer setting		0-0	0	0				
	- Gain/filter	PT41	TOP8	Function selection T-8		00000010-00000011	0000 00 10	0000 0010				
	- Extension	PT42		For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
	-1/0	PT43		For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
	Extension 2	PT44		For manufacturer setting		00000000-00000000	0000.0000	0000,0000				
	- Extension 2	- Extension 2	- Extension 2 - Extension 3		PT45	HMM	Homing method		-43-37	-33	-33	
	- Option	PT46	ESTC	For manufacturer setting		0-0	0	0				
		PT47		For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
	- Special	PT-48		For manufacturer setting		00000000-00000000	0000 0000	0000 0000				
	- Motor extensio	PT-49	STA	Speed acceleration time constant	ms	0-50000	0	0				
	- Multi encoder	PT50	STB	Speed deceleration time constant	ms	0-50000	0	0				
	 Positioning cor 	PT51	STC	S-pattern acceleration/deceleration time constants	ms	0-5000	0	0				
	- Network	PT52	TQC	For manufacturer setting		0-0	0	0				
	- Positioning ext 🗸	PT53	TQS	Torque slope	%/s	0.0-1000000.0	0.0	0.0				
		PT54 PT55	TLFT *TOP 10	For manufacturer setting Euroction selection T=10		0-0	0	0000.0000				
	Docking Help	19155	-110-11	Leurchon Selection L-30			0000.0000					
	S marging reads											
				Set PT45 to	33.							



(2) Parameter settings of the servo amplifier (continued)

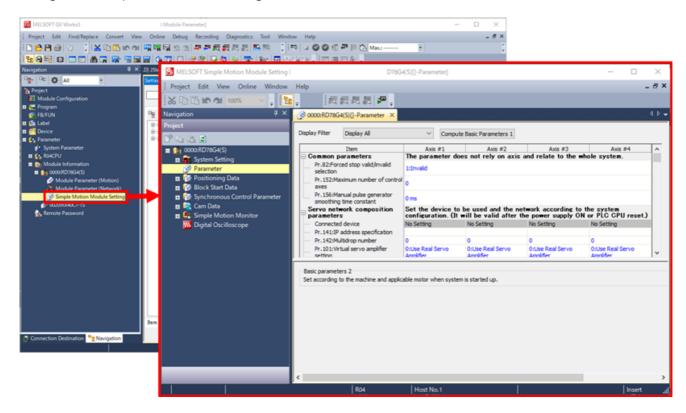
Co	nnect	ed/Disconnected Module Detec	tion	Detailed Displ	ay						Module List
ode S	etting	Online (Un	icast Mode)		Assignment Meth	nod:					CC-Link IE TSN Selection Find Modu
yclic T	ransm	ission Time (Min.): 20.0	00 us		Communication P	Period In	terval (Min.): 250.00 us				国際 (100 年間) * (100 × 100
	No.	Model Name	RY Setting Points	RWr Setting Points	RWw Setting Points	1	Parameter Automatic Setting	PDO Mapping Setting	IP Address	ibn 1as	General CC-Link IE TSN Mod CC-Link IE TSN Module (Mits
	0	Host Station							192.168.3.253		Master/Local Module
	1	MR-15-G		24	20	\checkmark	<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.1		Motion Module
	2	MR-J5-G		24	20	\checkmark	<detail setting=""></detail>	<detail setting=""></detail>	192.168.3.2	_	GOT2000 Series General-Purpose AC Serve
											MR-J5-G Single
											MR-J5-G-RJ Single
											MR-J5D1-G Single
											MR-JET-G Single
											MR-J5D2-G 2-Axi
	-	_									MR-J5D2-G.B.Axis 2-Axi
¢.							1			,	MR-J5W2-G 2-Ax
		#1 STA#2									MR-J5W2-G_B_Axis 2-Axi
		er sines									MR-J5D3-G 3-Ax
	_									_	MR-J5D3-G_BC_Axis 3-Ax
tion											MR-J5W3-G 3-Ax
											MR-J5W3-G_BC_Axis 3-Ax
											General purpose Inverter
0 Ma	ster S										DC Input
TA	:2	h ah									I Transistor Output
tar		5-G MR-J5-G									[Outline]
		546 MK-3546									Servo Amplifier(MELSERVO-J5 Serie Single Axis
											[Specification]
		<								>	CO-Link E TSN Class B
						_					
at .											
on:0	1 W	arning:3 😨	V	Vhen vo	u return	to	the CC-Link IE TSI	N Configuration	window		
10**	Unset	items exist		inch yo					initia o in,		
		arameter of			click	Clo	se with Reflecting	the Settinal			eter Automatic Setting





In the project tree, select [Parameter] \rightarrow [Module Information] \rightarrow [0000:RD78G4(S)] and double-click [Simple Motion Module Setting (Module Extended Parameter)].

The Simple Motion Module Setting Function window opens. Configure the Simple Motion mode settings in this window.



Simple Motion mode setting

Configure the settings in the order of the project tree in the Simple Motion Module Setting Function window. This section describes each setting from System Setting to Positioning Data in order.

😣 MELSOFT Simple Motion Module Setting Fu	unction (Untitled Project) - [0000:RD78G4	(S)[]-Parameter]			- 0	\times			
Project Edit View Online Window	Help				-	. a ×			
😹 🖻 🛅 📾 📬 100% 🛛 💡 🔡	。 同意思思 严,								
Navigation 🛛 📮 🗙	😚 0000:RD78G4(S)[]-Parameter 🛛 ×					4 ▷ 🗸			
Project	Display Filter Display All	Compute Basic Parameters 1							
= 🔂 0000:RD78G4(S)	Item	Axis #1	Axis #2	Axis #3	Axis #4	^			
System Setting	 Common parameters Pr.82:Forced stop valid/invalid 	The parameter do	es not rely on axis	s and relate to the w	hole system.				
Parameter	selection	1:Invalid							
🖬 🔯 Positioning Data 🖬 🔯 Block Start Data	Pr.152:Maximum number of control axes	0							
🖬 👼 Synchronous Control Parameter	Pr. 156:Manual pulse generator smoothing time constant	0 ms							
🖬 🚉 Cam Data 🖬 🚇 Simple Motion Monitor	Servo network composition	Set the device to be used and the network according to the system configuration. (It will be valid after the power supply ON or PLC CPU reset							
🐺 Digital Oscilloscope		No Setting	No Setting	No Setting	No Setting				
	 Pr. 141:IP address specification Pr. 142:Multidrop number 	0	0	0	0	-			
		0:Use Real Servo Amolifier	0:Use Real Servo Amplifier	0:Use Real Servo Amplifier	0:Use Real Servo Amplifier	~			
	Basic parameters 2 Set according to the machine and applica	able motor when system	n is started up.						
	<					>			
	R04	Host No.1			Insert	.4			

Buffer memory of Simple Motion mode

The following pages contain the description of the buffer memory of Simple Motion mode. The following provides the basic information on buffer memory such as symbols and setting methods.

(1) Type of buffer memory

3.4

There are four main types of buffer memory in Simple Motion mode.

Туре	Symbol	Detail
Parameter	[Pr.XX]	Network-related parameters, axis-independent parameters related to the entire system, parameters to be set according to the machine, etc. They are mainly set by the Simple Motion Module Setting Function.
Positioning data	[Da.XX]	Data to be used for positioning control, such as the target position and target speed. They are mainly set by the Simple Motion Module Setting Function.
Control data		Data to be manipulated when any kind of control is performed. "System control data" controls the entire system and "Axis control data" controls each axis.
Monitor data	[Md.XX]	Memory to be used when the operating status of control is monitored. "System monitor data" is used for monitoring of the entire system and "Axis monitor data" is used for monitoring of each axis.

(2) How to access buffer memory

There are two ways to access buffer memory.

One is to specify the buffer memory address directly in the program (U_{\Box} \Gxxxx) and the other is to use module labels. This course uses module labels. The details are described in Chapter 4.

The buffer memory address is described in the following manuals.

MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode) 12.2 List of Buffer Memory Addresses

MELSEC iQ-F FX5 Motion Module/ Simple Motion Module User's Manual (Application) 11.2 List of Buffer Memory Addresses

3.4.1 System setting

Set [System Setting] in the project tree when using the mark detection function. In this course, use the initial values because the mark detection function is not used.

Project Edit View Online Window	Help 。 詞詞問题 P 。					_ 8 ×
Navigation 4 ×	# 0000:RD78G4(S)[]-Mark Detec ×					4 ۵ -
Project	Item	Setting 1	Setting 2	Setting 3	Setting 4	Setting 5
1° 🔓 🛍 🔹	Mark detection setting					
0000:RD78G4(S)	Pr.800:Mark detection signal setting	0	0	0	0	0
System Setting Mark Detection	Pr.811:Mark detection signal detection direction setting	0:Rising detection				
🔗 Parameter 🖬 🔞 Positioning Data	Pr.801:Mark detection signal compensation time	0 µs				
n 😵 Block Start Data		a freed or much	0:Feed Current	a fred former	a Fred Connet	a find format
🖬 🔞 Synchronous Control Parameter	Pr.802:Type Pr.803:Axis No.	0:Feed Current	0:Heed Current	0:Feed Current	0:Feed Current	0:Feed Current
🗉 🙀 Cam Data	Pr.804:Buffer memory No.	0	0	0	0	0
Simple Motion Monitor Digital Oscilloscope	Pr.805:Latch data range upper limit value	0	0	0	0	0
	Pr.806:Latch data range lower limit value	0	0	0	0	0
	Mark detection mode setting					
	 Pr.807:Mark detection mode Pr.807:Number of detections 	Continuous Dete				
	٢					>
	R04	Host No.1				1

Common parameters

Set the parameters related to the entire system. The parameters in the red frame are described below.

	Item	Axis #1	Axis #2
•	Common parameters	The parameter does not rely on axis and re	elate to the whole system.
	Pr.82:Forced stop valid/invalid selection	1:Invalid	
	Pr. 152:Maximum number of control axes	0	
I	Pr.156:Manual pulse generator smoothing time constant	0 ms	

[Pr.82:Forced stop valid/invalid selection]

Set this parameter to "2: Valid (Buffer Memory)" to execute an emergency stop of all axes at once in the program. In this case, an emergency stop is executed when the buffer memory of [Cd.158: Forced stop input] is set to "0". In the sample program, it is set to "1:Invalid" since the emergency stop from the controller is not used.

[Pr.152:Maximum number of control axes]

This parameter is used to keep the operation cycle small when the number of control axes to be used is less than the maximum number of control axes for each model.

Servo network composition parameters

Set the parameters related to the network. The parameters in the red frame are described below.

	Item	Axis #1	Axis #2
₽:	Servo network composition parameters	Set the device to be used and the network	according to the system configuratio
	Connected device	MR-35-G	MR-J5-G
	Pr. 141:IP address specification	192.168.3.1	192.168.3.2
	Pr. 142:Multidrop number	0	0
	Pr. 101:Virtual servo amplifier setting	0:Use Real Servo Amplifier	0:Use Real Servo Amplifier
	Pr. 140:Driver command discard detection setting	1:Detection Valid	1:Detection Valid

[Pr.141:IP address specification], [Pr.142:Multidrop number]

Set the IP address of the servo amplifier.

For the multi-axis servo amplifier, specify the A-/B-/C-axis with the multidrop number.

[Point]

Clicking the [...] button in the [Pr.141:IP address specification] or [Pr.142:Multidrop number] field displays the list of servo amplifiers registered in the network configuration setting.

You can select the servo amplifier to be assigned to the axis from the displayed list.

Servo network composition parameters Connected device <i>Pr.141:IP address specification</i> Pr.142:Multidrop number Pr.101:Virtual servo amplifier setting Pr.140:Driver command discard detection setting	Set the device to be used and the network MR-J5-G 192.168.3.1 0 0:Use Real Servo Amplifier 1:Detection Valid
Station Address Setting IP Address Model Alas 192.168.3.2 MR-35-G 192.168.3.2 193.168	X OK Cancel

[Pr.101:Virtual servo amplifier setting]

When using the servo amplifier as a virtual servo amplifier, set it to "1:Use as Virtual Servo Amplifier".

The virtual servo amplifier is a function to allow an axis (virtual servo amplifier axis) to generate only commands virtually without connecting a servo amplifier.

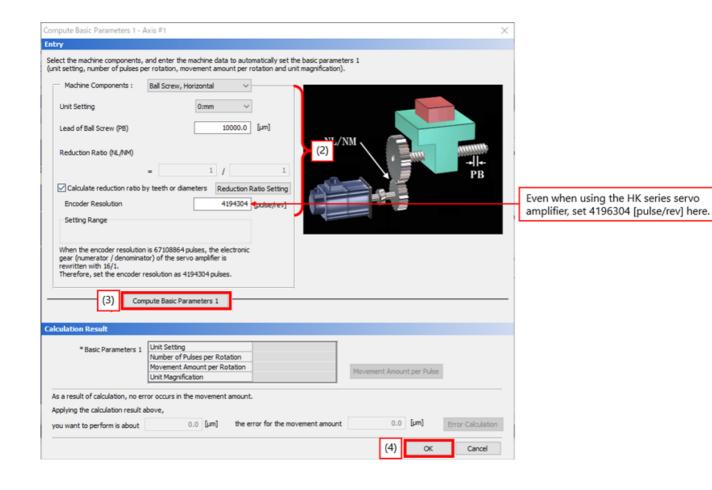
Operation can be performed without amplifiers during debugging.

Basic parameters 1

Set the machine specifications.

- (1) By clicking [Compute Basic parameters 1], the setup assistance window pops up.
- (2) Input the machine specifications.
- (3) By clicking the [Compute Basic parameters 1] button, basic parameters 1 are calculated.
- (4) By clicking [OK], the window is closed and the settings are applied.

Display Filter Display All (1)	Compute Basic Parameters 1	
Item	Axis #1	Axis #2
😑 Basic parameters 1	Set according to the machine and applicab	le motor when system is started up (It w
Pr. 1:Unit setting	0:mm	0:mm
Pr.2:Number of pulses per rotation	4194304 pulse	4194304 pulse
Pr.3:Movement amount per rotation	10000.0 µm	10000.0 µm
Pr.4:Unit magnification	1:x1 Times	1:x1 Times
Pr. 7:Bias speed at start	0.00 mm/min	0.00 mm/min



Basic parameters 2

Set the speed limit value and acceleration/deceleration time.

Item	Axis #1	Axis #2				
😑 Basic parameters 2	Set according to the machine and applicable motor when system is started up.					
Pr.8:Speed limit value	10000.00 mm/min	10000.00 mm/min				
Pr.9:Acceleration time 0	1500 ms	1500 ms				
Pr. 10:Deceleration time 0	1500 ms	1500 ms				

[Pr.8:Speed limit value]

Set the maximum speed for positioning control, homing control, and speed/torque control.

[Pr.9:Acceleration time 0], [Pr.10:Deceleration time 0]

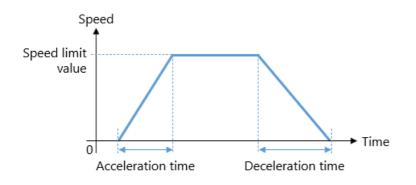
Acceleration time 0 is used to set the time required to reach [Pr.8:Speed limit value] (or [Pr.31:JOG speed limit value] in the case of JOG operation control) from speed 0.

Deceleration time 0 is used to set the time required to reach speed 0 from [Pr.8:Speed limit value] (or [Pr.31:JOG speed limit value] in the case of JOG operation control).

([Pr.31:JOG speed limit value] is set in detailed parameters 2.)

In detailed parameters 2, acceleration time 1 to 3 and deceleration time 1 to 3 can be set.

In Positioning Data (point table) setting, select acceleration/deceleration time 0 to 3.



Detailed parameters 1

These parameters are set for each axis. The parameters in the red frames are described below.

Item	Axis #1	Axis #2	
Detailed parameters 1	Set according to the system configuration	when the system is started up.(It will be	
Pr. 11:Backlash compensation amount	0.0 um	0.0 um	
Pr. 12:Software stroke limit upper limit value	155000.0 µm	15500.0 µm	
Pr. 13:Software stroke limit lower limit value	-5000.0 µm	-500.0 µm	
Pr. 14:Software stroke limit selection	0:Apply Software Stroke Limit on Feed Current Value	0:Apply Software Stroke Limit on Feed Current Value	
Pr. 15:Software stroke limit valid/invalid setting	0:Valid	0:Valid	
Pr. 16:Command in-position width	10.0 µm	10.0 µm	
Pr. 17:Torque limit setting value	300.0 %	300.0 %	·
Pr. 18:M-code ON signal output timing	0:WITH Mode	0:WITH Mode	(Note) They are described
Pr. 19:Speed switching mode	0:Standard Speed Switching Mode	0:Standard Speed Switching Mode	in 3.4.3 Positioning
Pr. 20:Interpolation speed designation method	0:Vector Speed	0:Vector Speed	Data (Point table).
Pr.21:Feed current value during speed control	0:Not Update of Feed Current Value	0:Not Update of Feed Current Value	
Pr.22:Input signal logic selection : Lower limit	0:Negative Logic	0:Negative Logic	
Pr.22:Input signal logic selection : Upper limit	0:Negative Logic	0:Negative Logic	
Pr.22:Input signal logic selection : Stop signal	0:Negative Logic	0:Negative Logic	
Pr.22:Input signal logic selection : External c	0:Negative Logic	0:Negative Logic	
Pr.22:Input signal logic selection : Proximity	0:Negative Logic	0:Negative Logic	
Pr.81:Speed-position function selection	0:Speed-position Switching Control (INC Mode)	0:Speed-position Switching Control (INC Mode)	
Pr. 116:FLS signal selection : Input type	1:Servo Amplifier	1:Servo Amplifier	
Pr. 117:RLS signal selection : Input type	1:Servo Amplifier	1:Servo Amplifier	
Pr. 118:DOG signal selection : Input type	1:Servo Amplifier	1:Servo Amplifier	
Pr. 119:STOP signal selection : Input type	2:Buffer Memory	2:Buffer Memory	

[Pr.12:Software stroke limit upper limit value], [Pr.13:Software stroke limit lower limit value] Set the upper and lower limits of the machine motion range during positioning control.

[Pr.14:Software stroke limit selection]

Set whether to apply the software stroke limit to "Feed Current Value" or "Machine Feed Value".

[Pr.15:Software stroke limit valid/invalid setting]

Whether to enable or disable the software stroke limit during JOG operation, inching operation, and manual pulser operation. To disable the software stroke limit at all times, set the same value for the upper and lower limits.

[Pr.22:Input signal logic selection] (Lower limit, Upper limit, and Proximity dog signal)

Switch the logic of the external input signals (upper/lower limit signal (FLS/RLS) and Proximity dog signal (DOG)) from the servo amplifier or buffer memory.

[Point] Positive Logic and Negative L	ogic are as shown below.	
	Negative Logic	Positive Logic
No current flows through the input signal contact.	FLS, RLS: Limit signal ON DOG: Invalid (outside DOG)	FLS, RLS: Limit signal OFF DOG: Valid (inside DOG)
Current flows through the input signal contact.	FLS, RLS: Limit signal OFF DOG: Valid (inside DOG)	FLS, RLS: Limit signal ON DOG: Invalid (outside DOG)

[Pr.116:FLS signal selection : Input type], [Pr.117:RLS signal selection : Input type], [Pr.118:DOG signal selection : Input type] Select whether to connect each external input signal to the servo amplifier, use the buffer memory of [Cd.44:External input signal operation device], or disable them.

Detailed parameters 2

These parameters are set for each axis. The parameters in the red frame are described below.

Item	Axis #1	Axis #2	
🗆 Detailed parameters 2	Set according to the system configuration	when the system is started up(Set as re	
Pr.25:Acceleration time 1	1000 ms	1000 ms	
Pr.26:Acceleration time 2	1000 ms	1000 ms	
Pr.27:Acceleration time 3	1000 ms	1000 ms	
Pr.28:Deceleration time 1	1000 ms	1000 ms	
Pr.29:Deceleration time 2	1000 ms	1000 ms	
Pr.30:Deceleration time 3	1000 ms	1000 ms	
Pr.31:JOG speed limit value	2000.00 mm/min	2000.00 mm/min	
Pr.32:JOG operation acceleration time select	1:1000	1:1000	
Pr.33:JOG operation deceleration time selec	1:1000	1:1000	
Pr.34:Acceleration/deceleration process sele	0:Trapezoidal Acceleration/Deceleration Process	0:Trapezoidal Acceleration/Deceleration Process	
Pr.35:S-curve ratio	100 %	100 %	
Pr.36:Rapid stop deceleration time	1000 ms	1000 ms	
Pr.37:Stop group 1 rapid stop selection	0:Normal Deceleration Stop	0:Normal Deceleration Stop	
Pr.38:Stop group 2 rapid stop selection	0:Normal Deceleration Stop	0:Normal Deceleration Stop	
Pr.39:Stop group 3 rapid stop selection	0:Normal Deceleration Stop	0:Normal Deceleration Stop	
Pr.40:Positioning complete signal output time	300 ms	300 ms	
Pr.41:Allowable circular interpolation error w	10.0 µm	10.0 µm	
Pr.42:External command function selection	0:External Positioning Start	0:External Positioning Start	
Pr.83:Speed control 10x multiplier setting fo	0:Invalid	0:Invalid	
Pr.84:Restart allowable range when servo O	0 pulse	0 pulse	
Pr.90:Operation setting for SPD-TRQ Cont	0:Command Torque	0:Command Torque	
Pr.90:Operation setting for SPD-TRQ Cont	0:Command Speed	0:Command Speed	
Pr.90:Operation setting for SPD-TRQ Cont	0:Check the Switching Conditions in Simple Motion	0:Check the Switching Conditions in Simple Motion	
Pr.127:Speed limit value input selection at c	0:Input Enable	0:Input Enable	
Pr.95:External command signal selection	0:Not Used	0:Not Used	
Pr.112:Servo OFF command valid/invalid set	0:Servo OFF Command Invalid	0:Servo OFF Command Invalid	
Pr. 122: Manual pulse generator speed limit m	0:Do Not Execute Speed Limit	0:Do Not Execute Speed Limit	Only for the iQ-R serie Motion module
Pr. 123:Manual pulse generator speed limit v	200.00 mm/min	200.00 mm/min	Motion module

[Pr.25 to Pr.27:Acceleration time 1 to 3] and [Pr.28 to Pr.30:Deceleration time 1 to 3]

Set the acceleration time and deceleration time in the same way as [Pr.9:Acceleration time 0] and [Pr.10:Deceleration time 0]. For details, refer to the items of Basic parameters 2.

In Positioning Data (point table) setting, select acceleration/deceleration time 0 to 3.

[Pr.31:JOG speed limit value]

Set the upper speed limit for JOG operation.

[Pr.32:JOG operation acceleration time selection]

Select the acceleration time for JOG operation from acceleration time 0 to 3.

[Pr.33:JOG operation deceleration time selection]

Select the deceleration time for JOG operation from deceleration time 0 to 3.

Home position return parameters

Set the parameters related to home position return. The parameters in the red frame are described below.

Item	Axis #1	Axis #2				
📮 HPR parameters	Set the parameters required for HPR, which are not set on the driver (servo amplif					
Pr. 44:HPR direction	0:Forward Direction (Address Increase Direction)	0:Forward Direction (Address Increase Direction)				
Pr.45:HP address	0.0 µm	0.0 µm				
Pr. 46:HPR speed	0.01 mm/min	0.01 mm/min				
Pr.51:HPR acceleration time selection	0:1500	0:1500				
Pr.52:HPR deceleration time selection	0:1500	0:1500				
Pr.55:Operation setting for incompletion of	0:Positioning Control is Not Executed	0:Positioning Control is Not Executed				

[Pr.45:Home position address]

When the machine home position return is finished, the address of the stop position is changed to the address set here. At the same time, it is stored in [Md.20: Feed current value] and [Md.21: Machine feed value].

[Pr.46:Home position return speed]

Set the travel speed when high-speed home position return (positioning number 9002) is executed.

[Pr.51:Home position return acceleration time selection], [Pr.52:Home position return deceleration time selection] Select the acceleration/deceleration time when high-speed home position return (positioning number 9002) is executed from acceleration time 0 to 3 and deceleration time 0 to 3.

[Point]

Use the parameters of the servo amplifier to set the homing method and direction. [Pr.46], [Pr.51], and [Pr.52] are valid only for high-speed home position return.

Extended parameters

Configure the settings related to the desired data monitor function. Description of the settings is omitted in this course.

Set the positioning data (point table) of each axis.

e con	View Online Tools \	Window Help							- 8 ×				
🔁 in 1	100% 🗸 🚦	. R.	(長長) 🛩 🚬										
n .	ů ×	@ 0000.RD78G4()	S)[]-Axis #1 Posi ×						4 🖢 🚽	1			
2 2		Depay Piter	Display All		a Setting Assistant		Automat	ic Command Speed C	alc. Autom				
000.RD78G4 System S		No. Operation	on pattern Contr	ol method		eleration Deceleration me No. time No.	Positioning address	Arc address	Command sp				
	k Detection	1	ning Comment>										
Paramete	ter		ning comment>										
 Positioni 	ning Data #1 Positioning Data	2 «Posito	ning Comment>										
	+ 2 Positioning Uata	3 Posito	ning Comment>										
🔗 Axis	#3 Positioning Data	4	ning Comment>										
Axis Block Sta	#4 Positioning Data												
	onous Control Parameter	< Positio	ning Comment>										
Cam Dat		6 <posito< td=""><td>ning Comment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></posito<>	ning Comment>										
	Motion Monitor Oscilloscope	< 7											
- Ungran O	UN INVALIA	<							>				
2		Operation patter											
Display F	Filter Display Al	Operation patter	Data Setting Ass Axis to be	Acceleration D	Offine Simulation	Automatic Co	mmand Speed Caic.	Automatic Su Command speed	b Arc Calc. Dwell time	M-code	M-code ON signal	A85 direction in degrees	Interpolation sp
No.	Operation pattern	 Control method 	Data Setting Ass	Acceleration D	Acaleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No.		 Control method 	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No.	Operation pattern	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No.	Operation pattern operation ing Comment> operationing Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation methy
No. 1 2 3	Operation pattern <positioning comment=""></positioning>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spendesignation methy
No. 1 2	Operation pattern operation ing Comment> operationing Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3	Operation pattern	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3 4 5	Operation pattern	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spec designation meth
No. 1 2 3 4	Operation pattern	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code CN signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3 4 5	Operation pattern Positioning Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3 4 5 6	Operation pattern Positioning Comment> Positioning Comment> Positioning Comment> Positioning Comment> Positioning Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3 4 5 6	Operation pattern Positioning Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spe designation meth
No. 1 2 3 4 5 6	Operation pattern Positioning Comment> Positioning Comment>	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation spec designation meth
No. 1 2 3 4 5 6 7 8	Operation pattern	Control method	Data Setting Ass Axis to be	Acceleration D	Deceleration					M-code	M-code CN signal output timing	ABS direction in degrees	Interpolation spe designation meth

3.4.3 Positioning Data (Point table)

	(1)												
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comment=""></positioning>												
2	<positioning comment=""></positioning>												

(1) Operation pattern

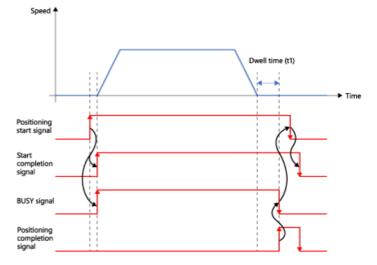
Select the operation pattern from 0: END / 1: CONT / 3: LOCATION.

The following shows the difference of each setting when Positioning Data No. 1 is executed.

0: END

Only Positioning Data No. 1 is executed. Processing stops at the target position.

No	Operation pattern	Control method	•••	Dwell time
1	0: END	01: ABS Linear 1		(t1)



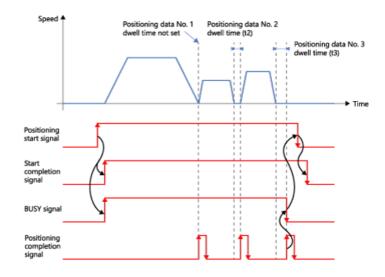
1: CONT

Positioning Data No. 1 is executed and when the machine stops at the target position, Positioning Data No. 2 is immediately executed.

Processing is repeatedly executed until the positioning data where the operation pattern is [0: END].

Processing stops at the target position.

No.	Operation pattern	Control method	•	Dwell time
1	1: CONT	01: ABS Linear 1		0
2	1: CONT	01: ABS Linear 1		(t2)
3	0: END	01: ABS Linear 1		(t3)

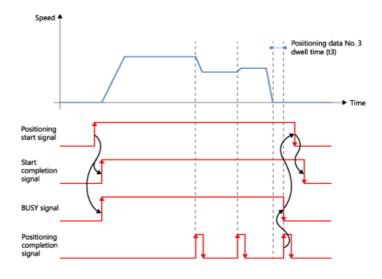


3: LOCATION

Speed is changed between the Positioning Data No. in operation and the next Positioning Data No. without deceleration stop.

Speed change is not performed when the speed is the same. Dwell time setting in the middle of the processing is ignored. Processing is repeatedly executed until the positioning data where the operation pattern is [0: END].

No.	Operation pattern	Control method	•••	Dwell time
1	3: LOCATION	01: ABS Linear 1		(t1)
2	3: LOCATION	01: ABS Linear 1		(t2)
3	0: END	01: ABS Linear 1		(t3)



3.4.3 Positioning Data (Point table)

		(2)											
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning com<="" th=""><th>ent></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></positioning>	ent>											
2	<positioning com<="" td=""><td>ent></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ent>											

(2) Control method and axis to be interpolated

Select the control method from the following items. For the axis to be interpolated, set another axis number to be used for interpolation control.

Control method	Description
01h: ABS Linear 1	1-axis linear control (ABS)
02h: INC Linear 1	1-axis linear control (INC)
03h: Feed 1	1-axis fixed-feed control
04h: FWD V1	1-axis speed control (forward)
05h: RVS V1	1-axis speed control (reverse)
06h: FWD V/P	Speed-position switching control (forward)
07h: RVS V/P	Speed-position switching control (reverse)
08h: FWD P/V	Position-speed switching control (forward)
09h: RVS P/V	Position-speed switching control (reverse)
0Ah: ABS Linear 2	2-axis linear interpolation control (ABS)
0Bh: INC Linear 2	2-axis linear interpolation control (INC)
0Ch: Feed 2	2-axis fixed-feed control
0Dh: ABS ArcMP	Circular interpolation control with sub point designation (ABS)
0Eh: INC ArcMP	Circular interpolation control with sub point designation (INC)
0Fh: ABS ArcRGT	Circular interpolation control with center point designation (ABS, CW)
10h: ABS ArcLFT	Circular interpolation control with center point designation (ABS, CCW)
11h: INC ArcRGT	Circular interpolation control with center point designation (INC, CW)
12h: INC ArcLFT	Circular interpolation control with center point designation (ABS, CCW)
13h: FWD V2	2-axis speed control (forward)
14h: RVS V2	2-axis speed control (reverse)
15h: ABS Linear 3	3-axis linear interpolation control (ABS)
16h: INC Linear 3	3-axis linear interpolation control (INC)
17h: Feed 3	3-axis fixed-feed control
18h: FWD V3	3-axis speed control (forward)
19h: RVS V3	3-axis speed control (reverse)

1Ah: ABS Linear 4	4-axis linear interpolation control (ABS)	
1Bh: INC Linear 4	4-axis linear interpolation control (INC)	
1Ch: Feed 4	4-axis fixed-feed control	
1Dh: FWD V4	4-axis speed control (forward)	
1Eh: RVS V4	4-axis speed control (reverse)	
20h: ABS HIdMP	Helical interpolation control with sub point designation (ABS)	ן
21h: INC HIdMP	Helical interpolation control with sub point designation (INC)	
22h: ABS HIdRGT	Helical interpolation control with center point designation (ABS, CW)	Helical interpolation is available only for
23h: ABS HIdLFT	Helical interpolation control with center point designation (ABS, CCW)	the iQ-R series Motion module.
24h: INC HIdRGT	Helical interpolation control with center point designation (INC, CW)	
25h: INC HIdRGT	Helical interpolation control with center point designation (ABS, CCW)	J
80h: NOP	NOP instruction	
81h: Address CHG	Current value change	
82h: JUMP	JUMP instruction	
83h: LOOP	Start of LOOP to LEND	
84h:LEND	End of LOOP to LEND	

[Point]

The interpolation control uses a set of the same number of positioning data for the reference axis and interpolation axis.

Setting examples are shown in 3.4.4.

3.4.3 Positioning Data (Point table)

				(3	3)	(4)							
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comme<="" td=""><td>nD</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	nD											
2	<positioning comme<="" td=""><td>nt></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	nt>											

- (3) Acceleration time No. and deceleration time No. Select the acceleration time and deceleration time from Acceleration time No. 0 to 3 and deceleration time No. 0 to 3 set with the axis parameters (refer to 3.4.2).
- (4) Positioning address

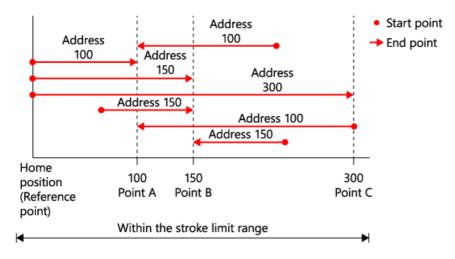
Set the coordinates of the target position.

The values change depending on the absolute position specification (ABS, absolute system) and relative position specification (INC, incremental system).

Refer to the following figures.

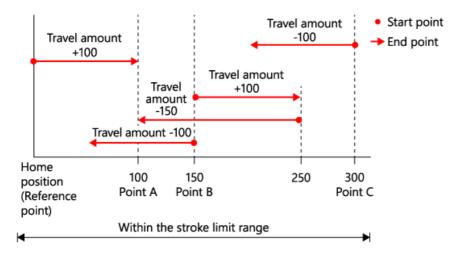
Absolute method

Positioning is carried out to a designated position (absolute address) with reference to the home position. This address is regarded as the positioning address. (The start point can be anywhere.)



Incremental system

The position where the machine is currently stopped is regarded as the start point, and positioning is carried out for a designated movement amount in a designated movement direction.



3.4.3 Positioning Data (Point table)

							(5)		(6)		(7)				
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Co	mmand spee	d	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comm<="" th=""><th>ent></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></positioning>	ent>													
2	<positioning comm<="" th=""><th>ent></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></positioning>	ent>													

(5) Arc address

The values to be input change depending on the circular interpolation method. ArcMP Input the coordinates of the sub point. ArcRGT/ArcLFT ... Input the coordinates of the center point. Setting examples are shown in 3.4.4.

(6) Command speed

Set the command speed for positioning control. Input a value less than or equal to the speed limit.

(7) Dwell time

Set the dwell time (time from completion of positioning until the positioning completion signal is turned on) in milliseconds.

										(8)	(9)		
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	ode ON signal utput timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comm<="" th=""><th>ent></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></positioning>	ent>											
2	<positioning comm<="" td=""><td>ent></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ent>											

(8) M code

M code is a code number between 0 to 65535 that can be set for each positioning control.

It is used to command auxiliary operation such as clamping, drill rotation, and tool change related to the positioning data being executed.

M codes are read from the CPU module and used to command auxiliary operation.

(9) M code ON signal output timing (only for the iQ-R series Motion module) The output (storage) timing of M codes can be set.

Setting value	Description	Timing chart
0: Uses the setting value of M code ON signal output timing	Follows the setting value of the axis parameter [Pr.18].	[Pr.18] is 0: WITH Mode (Initial value). [Pr.18] is 1: AFTER Mode.
1: WITH Mode	Turns on the M code ON signal at the start of positioning and stores the M code in the buffer memory.	Positioning start signal OFF BUSY start signal OFF M code OFF signal Valid M code OFF signal Valid M code OFF signal Valid M code OFF signal Valid M code OFF signal Valid M code OFF Speed Operation pattern O1: CONT O2: END
2: AFTER Mode	Turns on the M code ON signal at the end of positioning and stores the M code in the buffer memory.	Positioning start signal OFF M code OFF signal Valid M code OFF signal Valid M code OFF signal Valid M code OFF signal OFF ON 0 0 0 0 0 0 0 0 0 0 0 0 0

*1 m1 and m2 are M codes set in the positioning data.

												(10)	
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comm<="" td=""><td>ent></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ent>											
2	<positioning comm<="" td=""><td>ent></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ent>											

(10) ABS direction in degrees (only for the iQ-R series Motion module)Set the operation of ABS positioning when the control unit is degree and the software stroke limit is disabled.

Setting value	Description	Operation image
0: Uses the setting value of ABS direction in degrees	Uses the setting of [Cd.40].	[Cd.40] is 0: Shortcut. (Initial value) [Cd.40] is 1: ABS Clockwise. [Cd.40] is 2: ABS Counterclockwise.
1: ABS Clockwise	Always travels clockwise.	315° to 45° 315° 45° to 315° 315° 45° 315° 45°
2: ABS Counterclockwise	Always travels counterclockwise.	315° to 45° 315° 45° 315° 45° 315° 45° 315° 45°
3: Shortcut (Direction setting invalid)	Travels in the closest direction to the specified address.	315° to 45° 315° 45° 315° 45° 315° 45° 315° 45°

													(11)
No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
1	<positioning comm<="" th=""><th>ent></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></positioning>	ent>											
2	<positioning comm<="" td=""><td>ent></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ent>											

(11) Interpolation speed designation method (only for the iQ-R series Motion module)
 Select whether to set the command speed to vector speed or reference axis (major axis) speed during interpolation control.

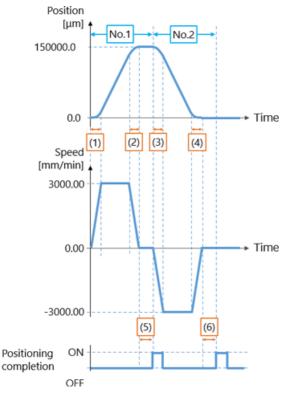
Setting value	Description	Operation image
0: Uses the setting value of Interpolation speed designation method	Follows the setting value of the axis parameter [Pr.20].	[Pr.20] is 0: Vector speed. (Initial value) [Pr.20] is 1: Reference-axis speed.
1: Vector speed	The movement speed for the control target is designated, and the speed for each axis is calculated by the Motion module.	Interpolation axis Vector speed Reference axis The speed of each axis is calculated by the Motion module.
2: Reference-axis speed	The axis speed set for the reference axis is designated, and the speed for the other axis carrying out interpolation is calculated by the Motion module.	Interpolation axis Reference-axis speed The speed of the interpolation axis is calculated by the Motion module.

3.4.4 Setting examples of positioning data

This section provides setting examples of positioning data.

(1) Single axis positioning

The following shows the setting examples for the operation pattern shown below.

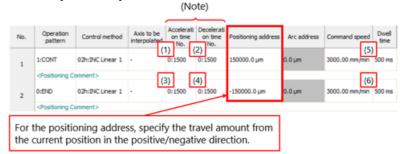


Absolute position specification

For both axis 1 and axis 2, data is registered in positioning data No. 1 and 2 of the sample program.



Relative position specification



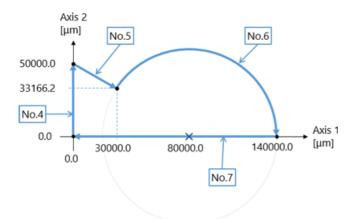
(Note) Acceleration time and deceleration time set here are the time required to reach the axis parameter [Pr.8:Speed limit value] from speed 0.

When the command speed is less than the speed limit, the actual acceleration time and deceleration time are shorter than the time set here. (Refer to 3.4.2 Axis parameters - Basic parameters 2.)

(2) Interpolation control

The following shows the setting examples for the operation pattern shown below.

The interpolation control uses a set of the same number of positioning data for the reference axis and interpolation axis. When the interpolation control command is input to the control method for the point table of the reference axis, some fields of the same number in the point table of the interpolation axis are automatically displayed in yellow and reserved.

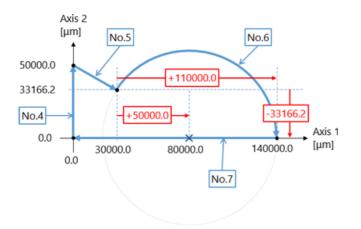


Absolute position specification

The positioning address (coordinates of the target point) and arc address (coordinates of the center point) of the circular interpolation area are as follows.

Positioning address (14000.0, 0.0), center point address (80000.0, 0.0)

	5					1				T		spe	ed cha		the command ling on the setti Pr.20].	ng
[Axis 1]	No.	Operation pattern	Control method	Axis to be interpolated	Accelerati on time No.	Decelerati on time No.	Positioning a	address	Arc	ddress	Command spee	d Dwel	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
	4	3:LOCATION	0Ah:ABS Linear 2	#2	0:1500	0:1500	0.0 µm		0.0 µr		3000.00 mm/mir	n 0 ms	0	0:Use the setting value of M-code ON signal output timing	of ABS direction at	0:Use the setting value of Interpolation speed designation method
		<positioning c<="" td=""><td>omment></td><td></td><td></td><td></td><td></td><td></td><td colspan="2"></td><td></td><td colspan="2"></td><td></td><td></td><td></td></positioning>	omment>													
	5	3:LOCATION	0Ah:ABS Linear 2	#2	0:1500	0:1500	30000.0 µn		0.0 µr		3000.00 mm/mir	n 0ms	0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning c<="" td=""><td>omment></td><td></td><td></td><td></td><td>t</td><td></td><td>1</td><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	omment>				t		1	7						
	6	3:LOCATION	0Fh:ABS ArcRGT	#2	0:1500	0:1500	140000.0 µr	m	80000	.0 µm	3000.00 mm/mir	n 0ms	0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning c<="" td=""><td colspan="3">ositioning Comment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	ositioning Comment>													
	7	0:END	0Ah:ABS Linear 2	#2	0:1500	0:1500	0.0 µm		0.0 µm	ı	3000.00 mm/mir	n 500 m	s 0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning c<="" td=""><td>omment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></positioning>	omment>													-
							_									
[Axis 2]	No.	Operation pattern	Control method	Axis to be interpolated	Accelerati on time No.	on time No.	Positioning address	,	Arc a d	ress	Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
	4						50000.0 µm	0.	.0 µm	0	.00 mm/min)			
	1	<positioning c<="" td=""><td>iomment></td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	iomment>						_							
	5	<positioning c<="" td=""><td>amman ka</td><td></td><td></td><td></td><td>33166.2 µm</td><td>0.</td><td>.0 µm</td><td></td><td>.00 mm/min</td><td></td><td>)</td><td></td><td></td><td></td></positioning>	amman ka				33166.2 µm	0.	.0 µm		.00 mm/min)			
		<pre>cPosiboring C</pre>	omment>			- F	0.0 µm	0	.0 µm		.00 mm/min	1	1			
	6	<positioning c<="" td=""><td>omment></td><td></td><td></td><td></td><td>oro pin</td><td></td><td>v pm</td><td></td><td></td><td></td><td>,</td><td></td><td></td><td></td></positioning>	omment>				oro pin		v pm				,			
	7						0.0 µm	0.	.0 µm	0	.00 mm/min))			
		<positioning c<="" td=""><td>iomment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	iomment>													



Relative position specification

Data is registered in positioning data No. 4 to 7 of the sample program.

The positioning address (coordinates of the target point) and arc address (coordinates of the center point) of the circular interpolation area are as follows.

The coordinates of the center point are also set relative to the start point.

Positioning address (11000.0, -33166.2), arc address (50000.0, -33166.2)

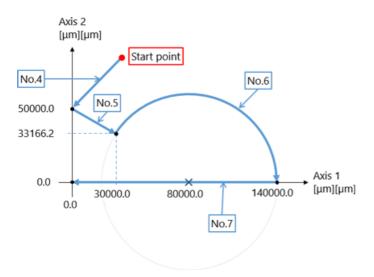
			\top		-				1	sp	eed ch		, the command ling on the setti Pr.20].	ng
[Axis 1]	No.	Operation pattern	Control method	Axis to be interpolated	Accelerati on time No.	Decelerati on time No.	Positioning addre	ss Arcaddress	s Command speed	Dwell time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
	4	3:LOCATION	08h:INC Linear 2	#2	0:1500	0:1500	0.0 µm	0.0 µr	3000.00 mm/min	0 ms	0	0:Use the setting value of M-code ON signal output timing	of ABS direction at	0:Use the setting value of Interpolation speed designation method
		<positioning co<="" td=""><td>mment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	mment>											
	5	3:LOCATION	08h:INC Linear 2	#2	0:1500	0:1500	30000.0 µh	0.0 µr	3000.00 mm/min	0 ms	0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning co<="" td=""><td>mment></td><td></td><td></td><td></td><td>+</td><td>+</td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	mment>				+	+						
	6	3:LOCATION	11h:INC ArcRGT	#2	0:1500	0:1500	110000.0 µm	50000.0 µm	3000.00 mm/min	0 ms	0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning co<="" td=""><td>mment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	mment>											
	7	0:END	08h:INC Linear 2	#2	0:1500	0:1500	-140000.0 µm	0.0 µm	3000.00 mm/min	500 ms	0	0:Use the setting value of M-code ON signal output timing	0:Use the setting value of ABS direction at degree	0:Use the setting value of Interpolation speed designation method
		<positioning co<="" td=""><td>omment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	omment>											
[Axis 2]	No.	Operation pattern	Control method		Accelerati I on time No.	Oecelerati on time No.	Positioning adviress	Arc address)well time	M-code	M-code ON signal output timing	ABS direction in degrees	Interpolation speed designation method
	4					5	0000.0 µm	0.0 µr	0.00 mm/min	0				
	1.1	<positioning co<="" td=""><td>omment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	omment>											
	5	<positioning co<="" td=""><td>and the second se</td><td></td><td></td><td>-</td><td>16833. µm</td><td>0.0 µr</td><td>0.00 mm/min</td><td>0</td><td></td><td></td><td></td><td></td></positioning>	and the second se			-	16833. µm	0.0 µr	0.00 mm/min	0				
		< Positioning Co	mment>				33166.2 um	-33166.2 µm	0.00 mm/min	0				
	6	<positioning co<="" td=""><td>omment></td><td></td><td></td><td></td><td>of a court part</td><td>-oo too to pin</td><td>oroo minymar</td><td></td><td></td><td></td><td></td><td></td></positioning>	omment>				of a court part	-oo too to pin	oroo minymar					
	7					0	.0 µm	0.0 µm	0.00 mm/min	0				
	1	<positioning co<="" td=""><td>mment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></positioning>	mment>											

(3) Notes on interpolation control

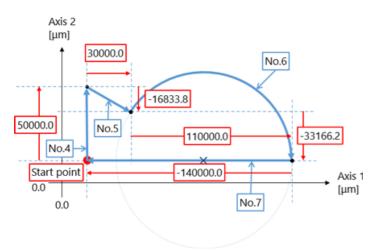
When positioning data for interpolation control is created based on the absolute position specification, the point positioned to the specified coordinates regardless of the operation start point.

Therefore, for example, when interpolation control based on the absolute position specification set on the previous page is started from a point other than the home position (0.0, 0.0), the axis is always moved to the point (0.0, 50000.0) by the first positioning (No. 4).

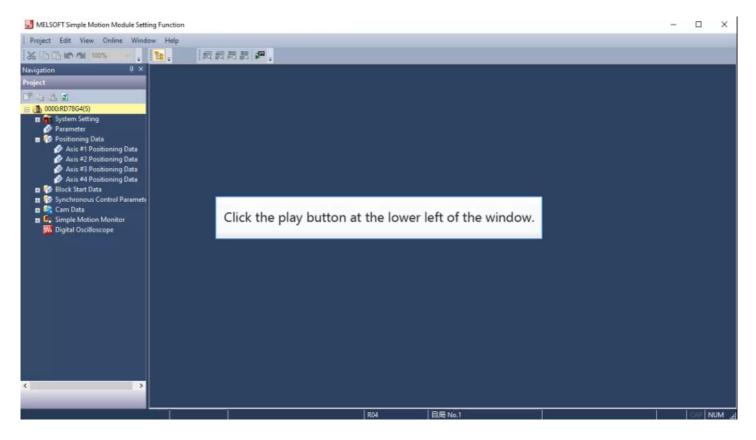
In this case, the path is as follows.



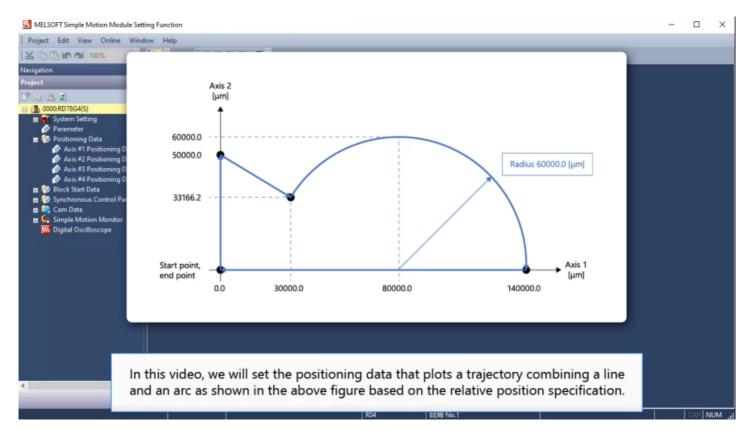
To plot the same path regardless of the coordinates of the start point, create positioning data based on the relative position specification.



3.4.5 Data Setting Assistant



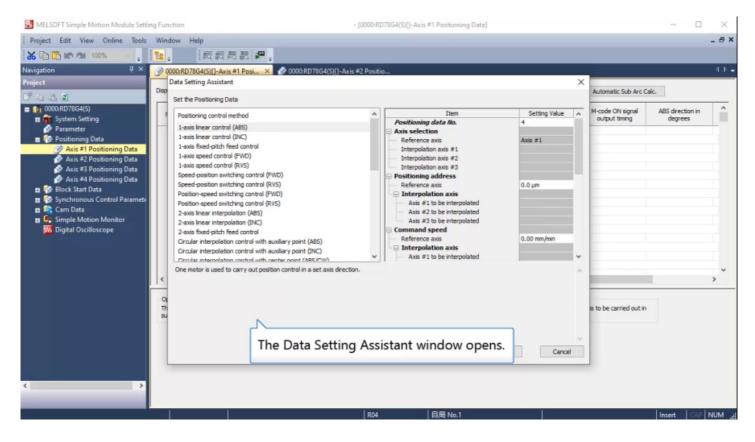
Data Setting Assistant 3.4.5



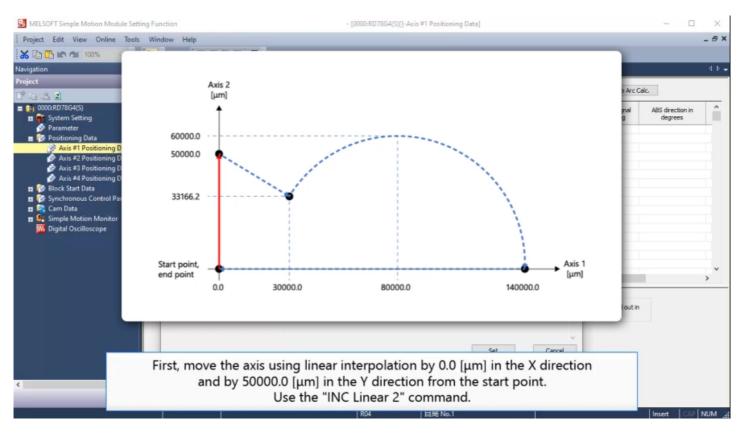
-	ing Function			- [0000:RI	078G4(S)[]-Axis #1 P	ositioning Da	ita]			- 0	\times
Project Edit View Online Tools	Window He	elp									- 8 3
🔏 🕼 🕼 🖄 100% 🚽 🚦	12.		-								
lavigation 🏻 🔍 🗙		G4(S)[]-Axis #1 Posi >									⊴ Þ
roject	Display Filter	Display All	~	Data Setting Assistant	Offine Sim	ulation	Automatic Comm	and Speed Calc.	Automatic Sub Arc C	Calc.	
0000:RD78G4(S)		peration pattern Control meth	d Axis to be interpolate		Positioning address	Arc address	Command speed	Dwell M-cod	e M-code ON signal output timing	ABS direction in degrees	^
Positioning Data Axis #1 Positioning Data Axis #2 Positioning Data	2	sitioning Comment>									
Axis #4 Positioning Uata	3	sitioning Comment>									
🥦 Digital Öscilloscope	7 <po:< td=""><td>sitioning Comment> sitioning Comment> sitioning Comment></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>~</td></po:<>	sitioning Comment> sitioning Comment> sitioning Comment>									~
•	Operation pa The operation succession.	ittern n pattern designates whet	ter positioning of	Fa certain data No. is to b	e ended with just that	data, or whet	her the positioning	for the next data	No. Is to be carried out in		

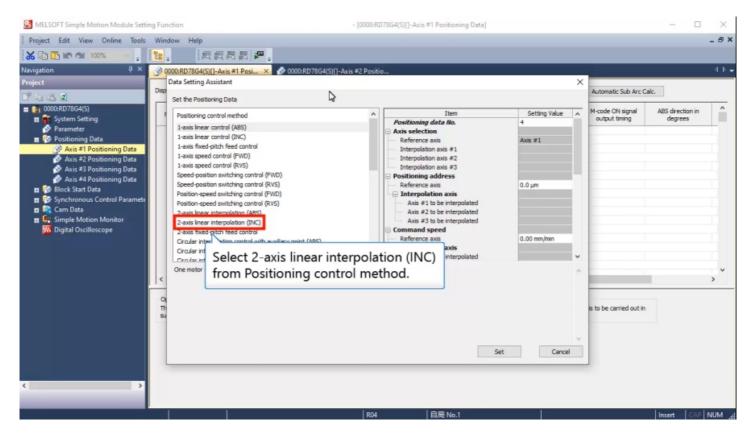
MELSOFT Simple Motion Module Se									sta]				-	o ×
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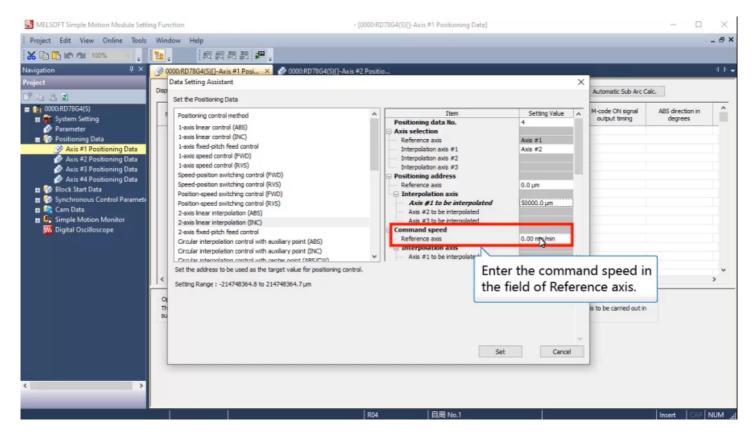






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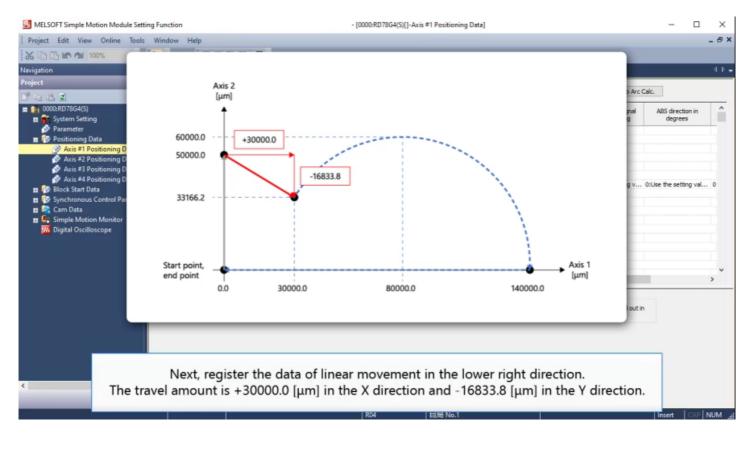
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3.4.5 Data Setting Assistant

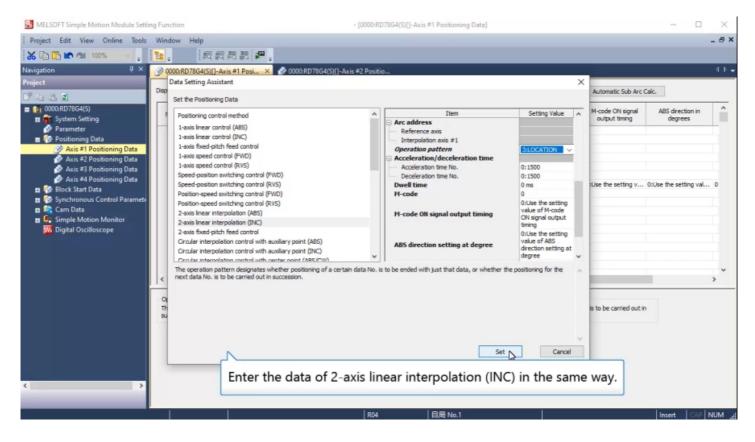
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Data Setting Assistant 3.4.5

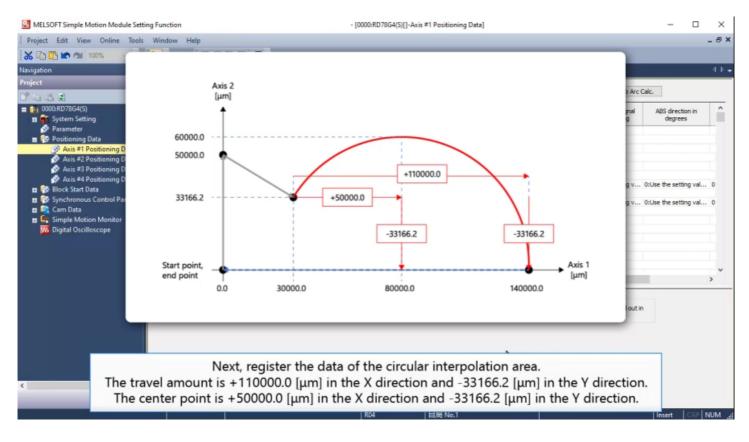


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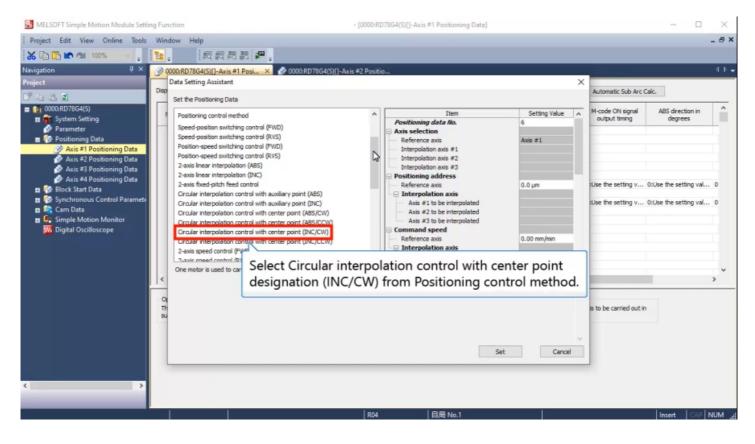


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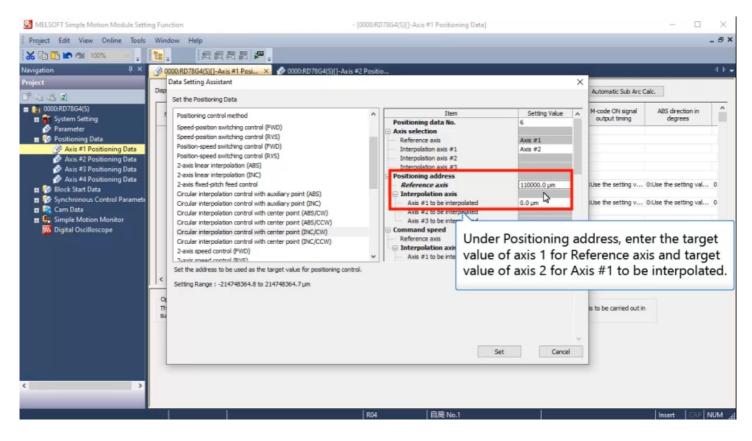
3.4.5 Data Setting Assistant

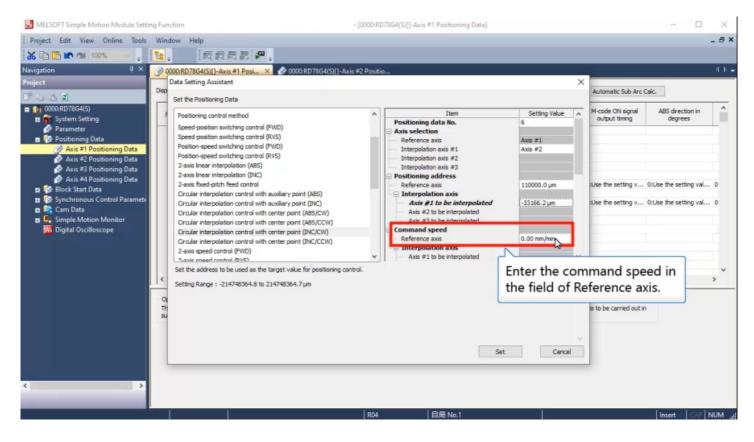


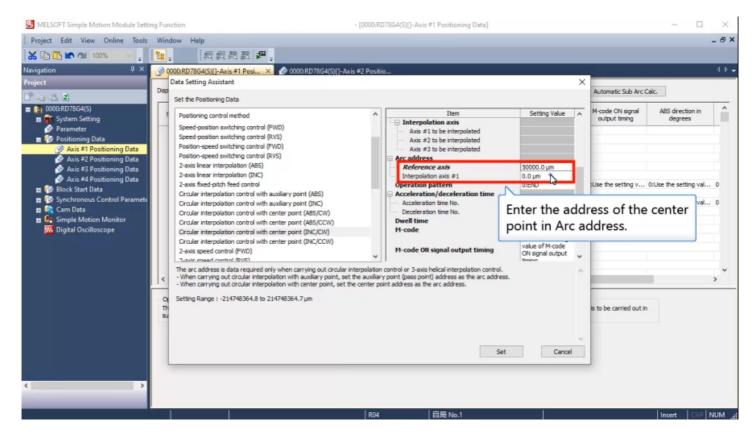
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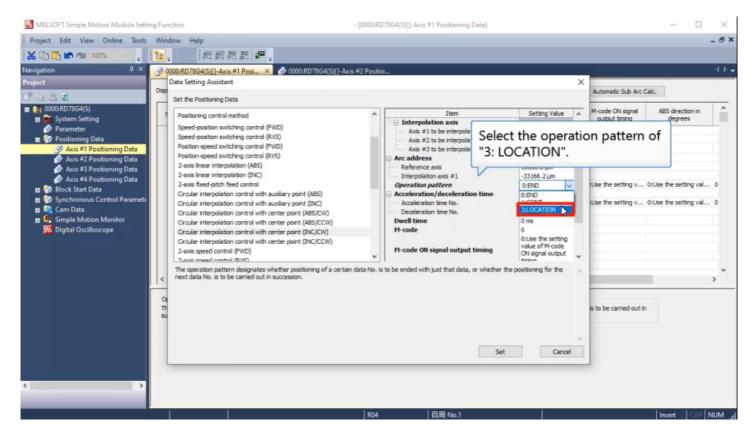


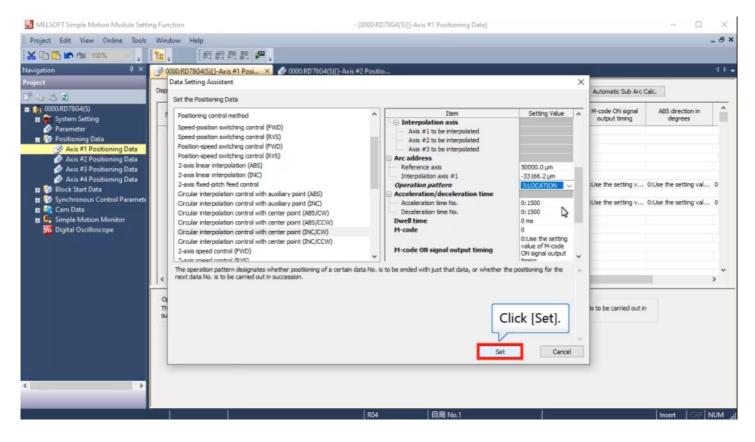
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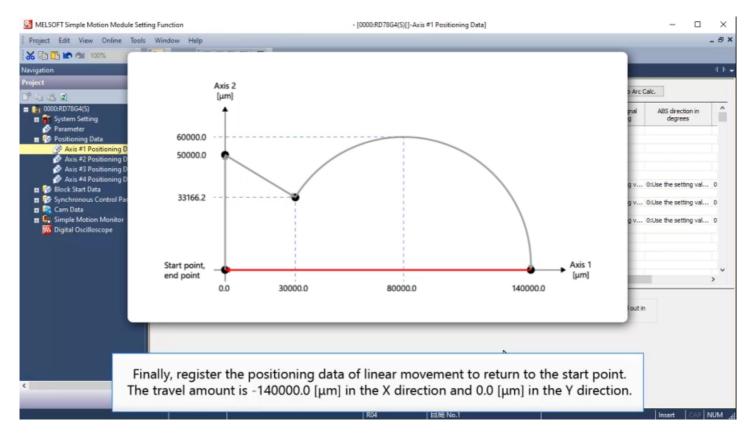




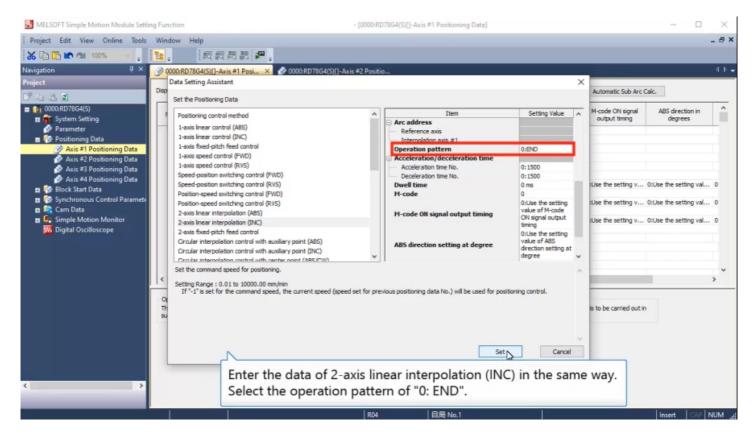


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3.4.5 Data Setting Assistant

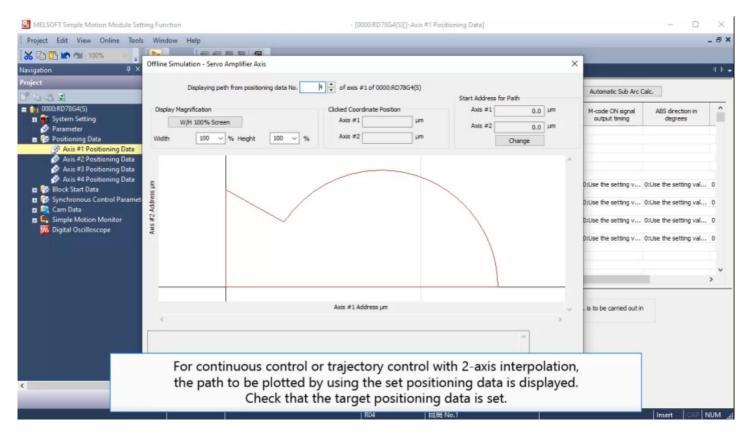


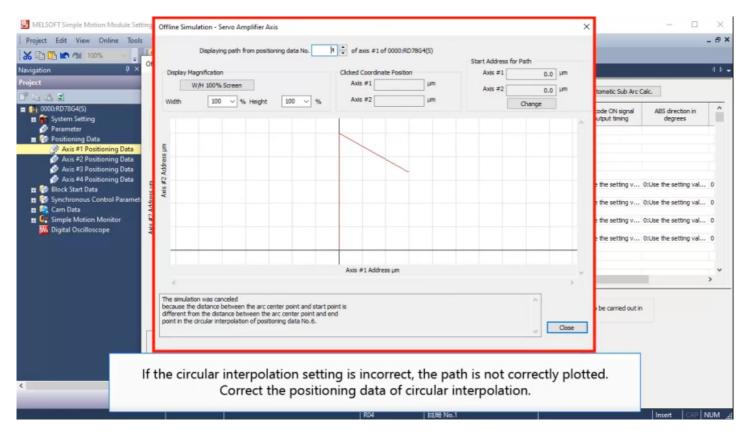
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In this chapter, you have learned:

- Creating a new project
- PLC CPU setting
- Motion module setting
- Simple Motion mode setting

Point

3.5

Creating a new project	• Create a new GX Works3 project and module configuration diagram. Simple Motion mode is available by registering the Motion module with (S) in the module configuration diagram.
PLC CPU setting	• Only for the iQ-R series, change Link Direct Device Setting to Extended Mode (iQ-R Series Mode).
Motion module setting	 Open the network configuration window from the module parameter (network) window. In the network configuration window, register the servo amplifier to be connected to the Internet and set the IP address. PDO mapping is not performed in Simple Motion mode. To write the parameters of the servo amplifier from the controller, select the [Parameter Automatic Setting] checkbox of the remote station. Some servo parameters must be set in Simple Motion mode. Incorrect setting values will cause "Servo parameter invalid" and write correct parameters automatically when the power is turned on again.
Simple Motion mode setting	 Set the motion-related parameters in the Simple Motion Module Setting Function window. Set the operation pattern in the point table. Data Setting Assistant helps you register operation patterns of interpolation control using multiple axes.

Chapter 4 Positioning Control and Interpolation Control Program

This chapter describes the program for operating the initial setting (all axis servo ON), JOG operation, and the positioning data set in the previous chapters.

4.1 Module label and module FB

The sample program in this course uses module labels and module FBs.

From the menu, select [View] \rightarrow [Docking Window] \rightarrow [Element Selection] to display the Element Selection window. Select [Module] in the Element Selection window to display the module labels and module FBs.

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Module labels are not displayed if Module Label is set to "Not use" when the project is created (refer to 3.1 (2)) and module configuration diagram is created (refer to 3.1 (3)). (The + mark is not displayed.)

In this case, right-click a module label folder and select [Add Module Label] to add a module label.

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To wrap the label name as shown in the video, select [View] \rightarrow [Change Display Format of Device/Label Name] from the menu bar and select [Wrapping Ladder Display].

In the program display in this course, Comment Display, Statement Display, Note Display, and Display Device are enabled for explanatory purposes.

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To wrap the label name as shown in the video, select [View] \rightarrow [Change Display Format of Device/Label Name] from the menu bar and select [Wrapping Ladder Display].

In the program display in this course, Comment Display, Statement Display, Note Display, and Display Device are enabled for explanatory purposes.

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This video explains how to add module labels and module FBs.

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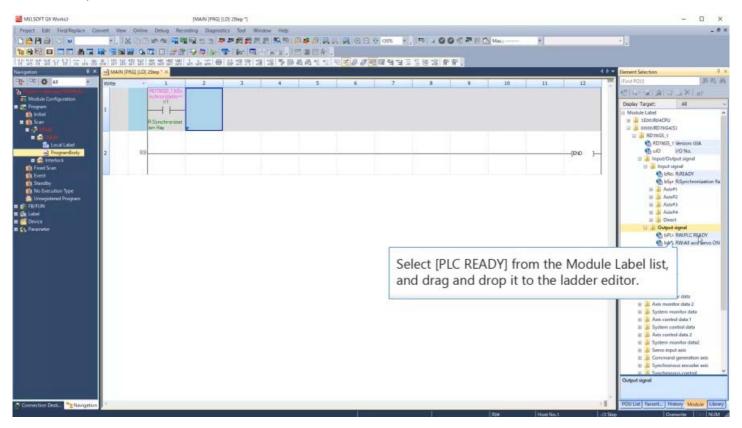
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This video explains how to add module labels and module FBs.



[Point]

To wrap the label name as shown in the video, select [View] \rightarrow [Change Display Format of Device/Label Name] from the menu bar and select [Wrapping Ladder Display].

In the program display in this course, Comment Display, Statement Display, Note Display, and Display Device are enabled for explanatory purposes.

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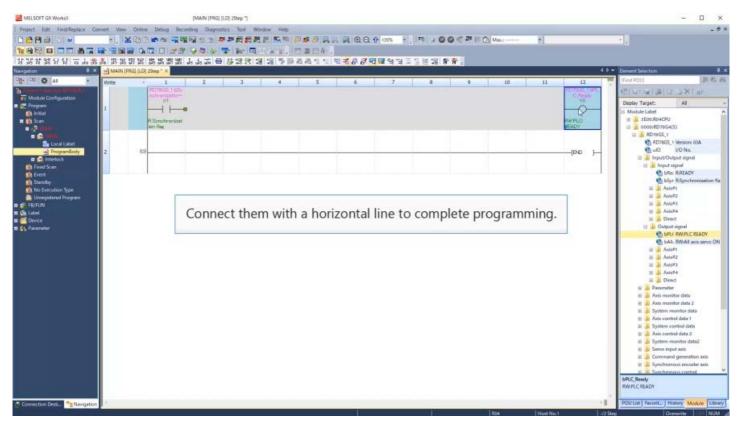
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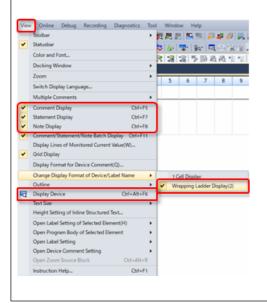
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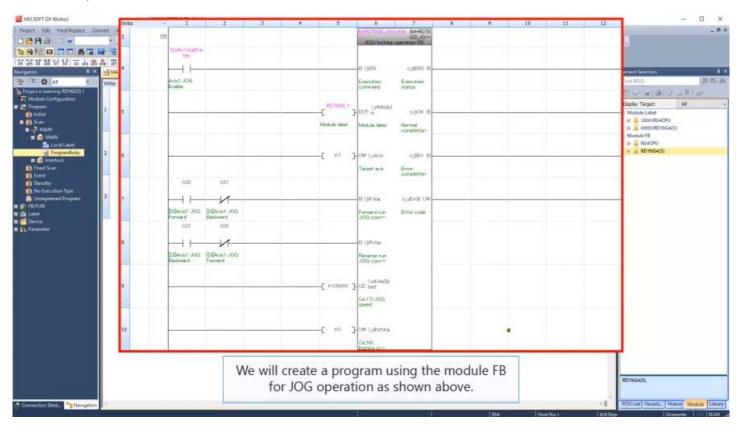
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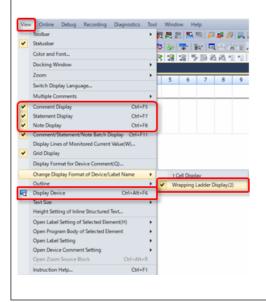
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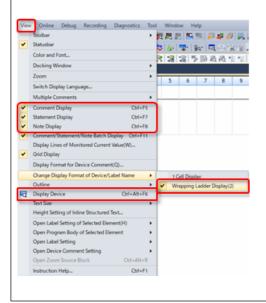


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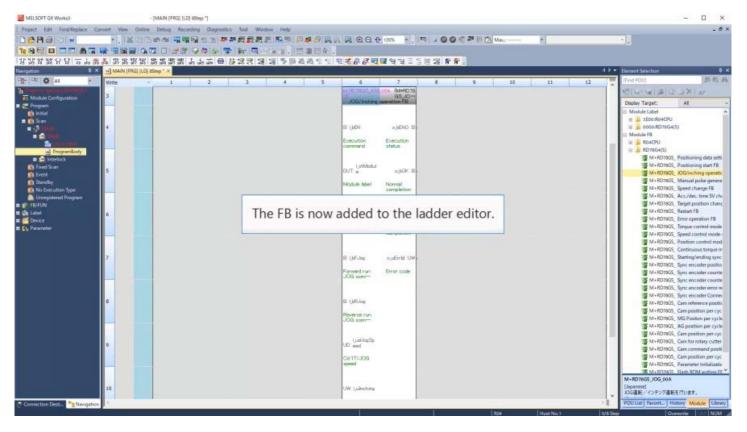
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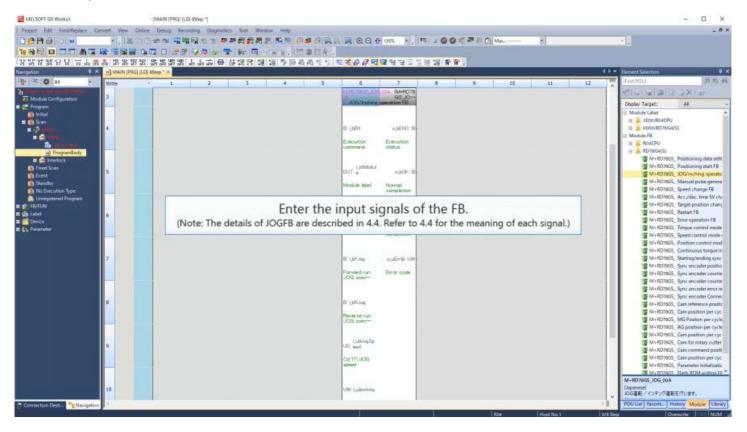


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This video explains how to add module labels and module FBs.

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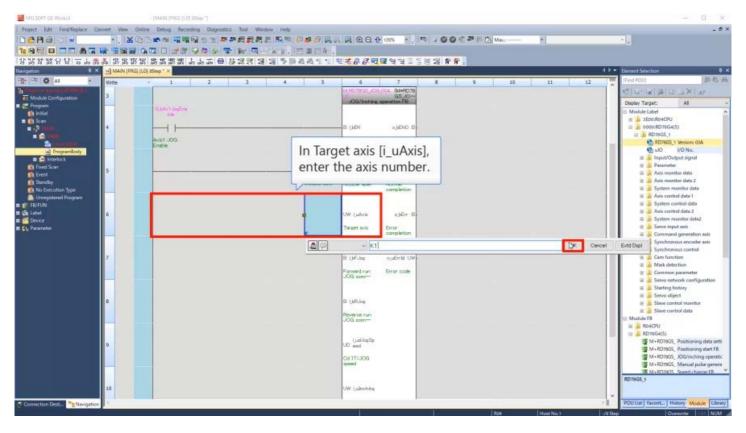
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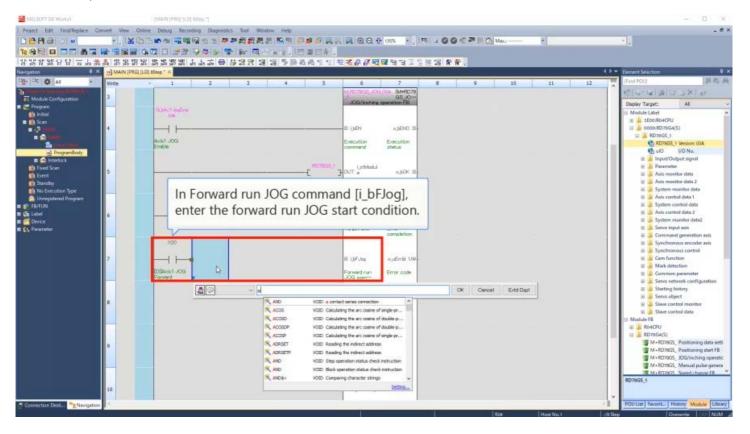


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This video explains how to add module labels and module FBs.

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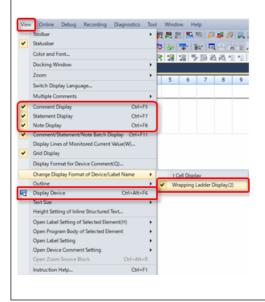
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This video explains how to add module labels and module FBs.

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From the initial setting to all axis servo ON

To use Simple Motion mode of the Motion module, always create a program as shown below.

After the programmable controller enters the RUN state, [Synchronization flag] turns ON when the buffer memory becomes accessible.

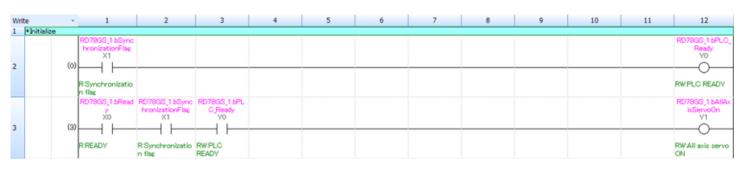
Turn ON [PLC READY].

↓ [READY] turns ON.

Ļ

Turn ON [All axis servo ON].

[Program example]

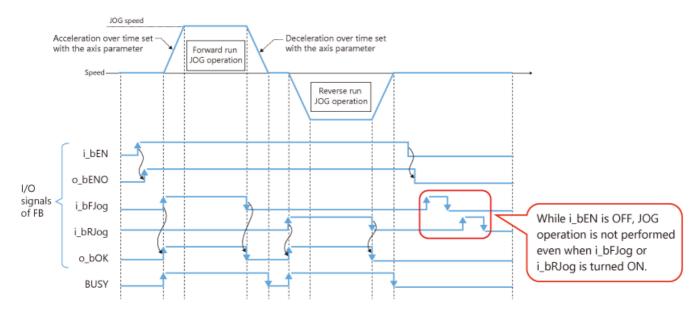


[Point] The module label of each signal is located as shown below. (iQ-R) (iQ-F) Al Display Target: Display Target: All Module Label Module Label 3E00:R04CPU FX5UCPU 0000:RD78G4(S)
 0000:RD78G4(S) 😑 퉬 1[U1]:FX5-40SSC-G(S) E 📗 RD78GS_1 😑 🍶 FX5SSC_1 RD78GS_1 Version: 03A EX5SSC_1 Version: 03A 🕤 ulO I/O No. 🚹 ulO I/O No. Input/Outr 🗉 📗 Parameter 🖂 퉲 Input signal the bReady R:READY 표 퉬 Axis monitor data ation flag 💼 bSynch R:Synchr 🗉 퉬 Axis monitor data 2 🗉 퉬 System monitor data 🗉 퉬 Axis control data 1 🗉 鷆 Axis#3 🖃 퉬 System control data Axis#4 Đ e uWriteFlashRom_D RW:Flash ROM write request(Direct) Direct nitializeParameter_D RW:Parameter initialization request(Direct) 퉬 Output signal hPLC_Ready RW:PLC READY uDecelerationFlagValid_D RW:Deceleration start flag valid(Direct) hAllAxisServoOn RW:All axis servo ON uDecelerationStopMode_D RW:Stop command processing for deceleration sto @uExternalInputOperationDevice1_D RW:External input signal operation device (Axis 1 t) ⊕ Axis#2 http://www.com/com/topics/action/com/topics/acti RW:PLC READY(Direct) 🕀 🏊 Axis#3 hAllAxisServoOn_D RW:All axis servo ON(Direct) 🗉 퉬 Axis#4 uForcedStopIn_D RW:Forced stop input(Direct) 🗉 퉬 Direct 💼 dInputValueForManualPulseGenerati RW:Input value for Manual pulse generator via CPL 🕀 🏊 Parameter Axis control data 2 🗉 🎥 Axis monitor data 🖃 퉬 System monitor data2 6 bReady_D 6 bSynchronizationFlag_D R:READY(Direct) R:Synchronization flag(Direct) 💼 uBusy_D R:BUSY(Axis 1 to 4)(Direct) 🗉 퉬 Axis#1 🗉 퉲 Axis#2 🗉 퉲 Axis#3 🕀 퉲 Axis#4

The sample program in this course uses the module FB "(Model)_JOG_(Version)" (hereafter referred to as JOGFB) for JOG operation.

JOGFB is enabled while the input signal i_bEN is ON.

By turning ON the input signal i_bFJog or i_bRJog, commands are output from the Motion module to the servo amplifier and the workpiece is moved in the specified direction while the signal is ON.



Pay attention to the following when using JOGFB.

- Since [Cd.181:Forward run JOG start] and [Cd.182:Reverse run JOG start] are turned ON/OFF by JOGFB, do not turn ON/OFF [Cd.181:Forward run JOG start] or [Cd.182:Reverse run JOG start] outside the FB while the FB is running.
- When using multiple JOGFBs, be careful not to use the same target axis.

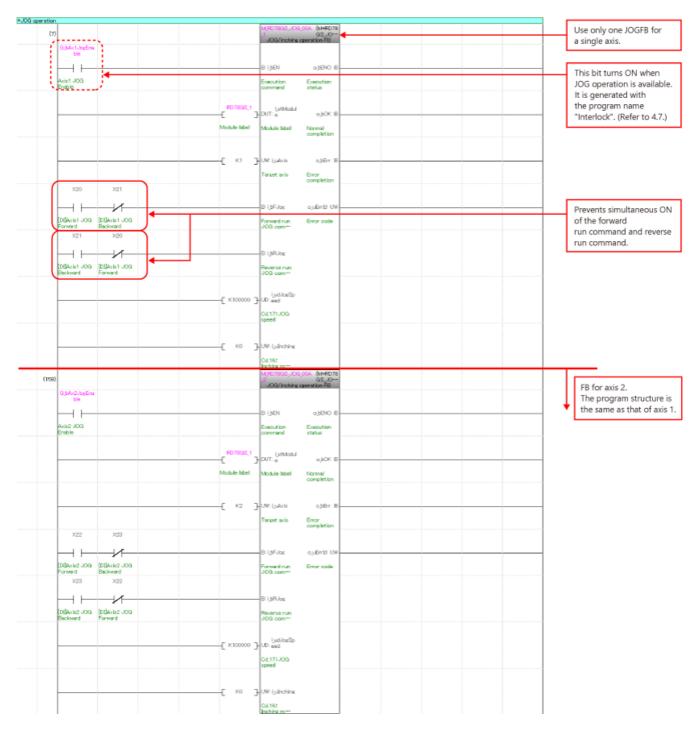
For other precautions, refer to the following manuals.

MELSEC iQ-R Motion Module (Simple Motion Mode) Function Block Reference
 Motion Module FB
 MELSEC iQ-R Simple Motion Module Function Block Reference
 Simple Motion Module FB/Motion Module FB
 M+FX5SSC_JOG

[Point]
Inching operation is performed when a value other than "0" is input to the FB input i_ulnching.
For inching operation, refer to the following manuals.
MELSEC iQ-R Motion Module User's Manual (Application for Simple Motion Mode)
5 MANUAL CONTROL
5.3 Inching Operation
MELSEC iQ-F FX5 Motion Module/ Simple Motion Module User's Manual (Application)
5 MANUAL CONTROL
5.3 Inching Operation
MANUAL CONTROL
5.3 Inching Operation
Solution Module/ Simple Motion Module User's Manual (Application)
5 MANUAL CONTROL
5.3 Inching Operation

JOG operation

[Program example]



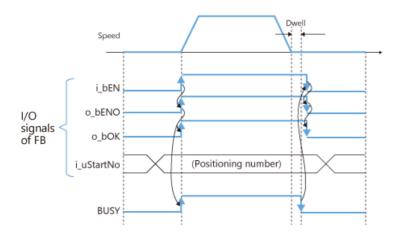
Home position return, single positioning, and interpolation control

The sample program in this course uses the module FB "(Model)_StartPositioning_(Version)"

(hereafter referred to as StartPositioningFB) to execute home position return and positioning start.

To execute home position return, enter "9001" as the positioning number and execute the FB.

To start positioning, enter the number of the positioning data (point table) as the positioning number and execute the FB. In the case of interpolation control, execute positioning of the reference axis.



Pay attention to the following when using StartPositioningFB.

- Since the positioning start signals (Y10 to Y1F) are turned ON/OFF by StartPositioningFB, do not turn ON/OFF them outside the FB while StartPositioningFB is running.
- When using multiple StartPositioningFBs or when using an FB that operates the same Y signals as those operated by StartPositioningFB together, provide an interlock to prevent the FBs from being executed at the same time.
- When using multiple StartPositioningFBs, be careful not to use the same target axis.

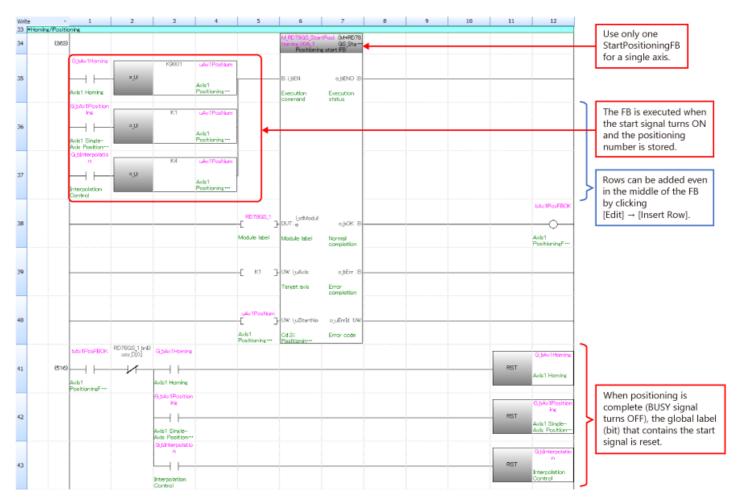
For other precautions, refer to the following manuals.

 MELSEC iQ-R Motion Module (Simple Motion Mode) Function Block Reference 2 Motion Module FB 2.2 M+RD78GS_StartPositioning
 MELSEC iQ-R Simple Motion Module Function Block Reference 2 Simple Motion Module FB/Motion Module FB

2.2 M+FX5SSC_StartPositioning

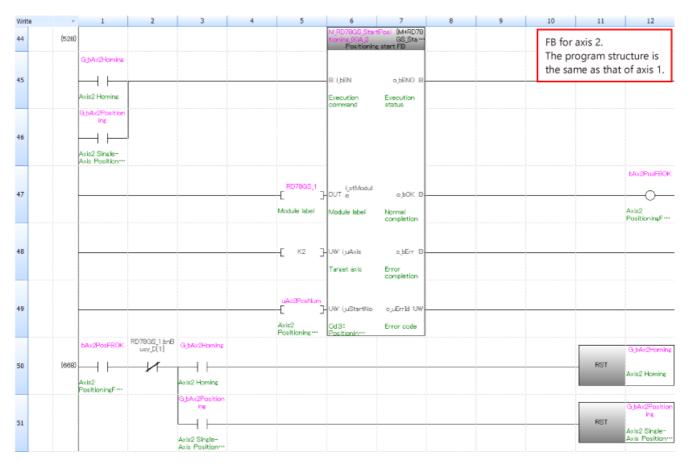
[Program example (1/3)]

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	(30.6)		0210			(Re	efer to	4.7.)	_			SET			
		[DI]Axis1 Homine	R-BUSY(Acis#I-	Axis1 In J03		_							Axis1 Homine		The global label (bit), which
		>25	#16)(Direct) RD19G5_1bnBusy	Operation G_bAc2JogOperation	1										the start signal of the FB,
			DX11	ting								SET	G_bAx2Homing		holds the information that
	(315)			И		_			 	_		361	Axis2 Homing	ΙL	each external input signal h
		(DI)Axis2 Homing	#16)(Direct)	Axis2 In JOG Operation										ſ	been turned ON. Provide an interlock so tha
		×25	RD19GS_1bnBusy D[0] DX10	G_bActUbeOpera ting									G_bAx (Positionin		the start signal does not
	(321)	<u> </u>		<u> </u>		_						SET	Axis1 Single-		turn ON during execution
		[DI]Axis1 Single-	R BUSY(Axis#1-	Akis1 In J0G									Axis Positioning		other programs or
		exis Position in a X27	#16X Direct) RD 7935_1 bnBuoy	Operation 0.bAx2.JoeOperation											JOG operation.
	10.018		DX11	tine								SET	G_bAx2Positionin e		
	(827)			И								361	Axis2 Single- Axis Positioning		
		EDEAxis2 Single- axis Positioning	RBUSY(Axis#1- #16XDirect)	Axis2 In JOG Operation									Posts 1 domaining		
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Set Pr	(342)	Control Aunber GubAr Homing Axis1 Homing GubAr SHoming Axis2 Homing	i#16(Direct)	RBUSY(Acce#1- #10(Direct)	Acial In JOG Operation	Axis 2 In Operation	103						Control uAx1Pos Num Axis1 Positioning Number uAx2Pos Num		number to the local label
Set Pi	(342)	Control Capter GbActHoming Axis1 Homing GbAc2Homing	i#16(Direct)	RBUSY(Acce#1- #10)(Direct)	Acial In JOG Operation	Axis2 In . Operation	J0G						Control uAx1Pos Num Axis 1 Positioning Number uAx2Pos Num Axis 2 Positioning		number to
Set Pr	(342)	Control Aniber G.b.Ac Homine Axis 1 Homine G.b.Ac Shomine Axis 2 Homine G.b.Ac Positionine	i#16(Direct)	RBUSY(Accedited)	Aciel In JOG Operation	Axis2 In . Operation	JOG					K5001	Control uAx 1Pos Num Axis 1 Position ing Number uAx 2Pos Num Axis 2 Position ing Number uAx 1Pos Num		number to the local label
iet Pr	(342)	Cartrel Australer G., DAx (Homing Axis 1 Homing G., DAx2Homing Axis 2 Homing O., DAx1 Positioning O., DAx1 Positioning	1215(Clines)	RBUSY(Acception	Acist 1x JOG Operation	Axis? In . Operator	J0G				MOVP	K5001	Control uRx1Position ing Number uRx2Position ing Number		number to the local label
Set Pr	(342)	Control Aniber G, DAx Homing Axis 1 Homing G, DAx 2Homing Axis 2 Homing G, DAx 1 Positioning	1215(Cline()	RBUSY(AccePi- *10(Direct)	Aciel b. JCG Operation	Axis? In Operator	JOB				MOVP	K3001	Control URA: TPos Num Acis 1 Position ing Number URA: 2Position ing Number URA: 1Position ing Number		number to the local label
igt Pr	(342) (347) (351)	Cantrol Vanteer O,DAx Homine O,DAx Homine O,DAx Homine O,DAx Homine O,DAx Homine O,DAx Homine O,DAx Positionine	1215(Cline()	REUSY(AccePi- #10(Direct)	Aciel In JOG Operation	Asis 2 In. Operator	J06				MOVP	K5001	Control uAx TPos Num Avis 1 Position Int Number uAx 2Pos Num Avis 2 Position Int uAx TPos Num uAx TPos Num Avis 1 Position Int		number to the local label
ist Pr	(342)	Cantrol Vanteer O, DAv Homing O, DAv Homing O, DAv Homing O, DAv Homing Axis 2 Homing Axis 2 Homing Axis 1 Simple Axis 1 Simple Axis 1 Simple	1215(Closel)	PEUSY(Acce#I- #IO(Direct)	Aciel In JOG Operation	Asis 2 In Operator	J06				MOVP	K3001	Control ark: TPoc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 2 Poction Ing Number uAv:2Poc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 2 Poction Ing Number	>	number to the local label (unsigned word).
ut Pi	(342) (347) (351)	Cantrol Vanteer OLDAN Homine OLDAN Homine	1215(Closel)	PEUSY(AccePi-	Aciel h JOG Operation	Axis? In. Operation					MOVP	K3001	Control UAx TPos Num Axis 1 Position In Number UAx 2Pos Num Axis 2 Position In Number UAx 2Pos Num Axis 1 Position In Number UAx 2Pos Num	>	number to the local label (unsigned word).
et Pr	(342) (347) (351)	Control Number O,DAx Homine O,DAx Homine O,DAx2Homine O,DAx2Homine O,DAx2Homine O,DAx2Homine O,DAx2Positionine O,DAx2Positionine	1215(Closel)	PEUSY(AccePI-	Acial h JOG Operation	Axis? In. Operation					MOVP	K3001	Control ark: TPoc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 2 Poction Ing Number uAv:2Poc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 1 Poction Ing Number uAv:2Poc Num Acis 2 Poction Ing Number	>	number to the local label (unsigned word).
Sut Pi	(342) (347) (351)	Control Number O,DAx Homing Axia 1 Homing O,DAx2Homing O,DAx2Homing O,DAx2Homing O,DAx2Homing O,DAx2Positioning O,DAx2Positioning O,DAx2Positioning O,DAx2Positioning O,DAx2Positioning	1215(Closel)	PEUSY(AccePi-	Aciel h JOG Operation	Axis? In. Operation					MOVP	K3011 K1 K1	Control Contro		number to the local label



[Program example (2/3)]





[Program example (3/3)]

[Point] The module label	of the BUSY signal (dire	ect in	put) for each ax	is is locat	ted as shown below.	
(iQ-R) Display Target:	AI	~	(iQ-F) Display Target:	All		~
Module Label M	Version: 03A VO No. signal I R:READY onizationFla R:Synchronization flag Ry R:Axis1 BUSY Busy_D R:Axis1 BUSY(Direct)		Module Label KSUCPU KIU1:FXS-40SS IU1:FXS-40SS KSSC_1 FXSSSC_1 FXSSSC_1 FXSSSC_1 Full Axis monit Axis monit Axis monit Axis contro Axi	C-G(S) or data or data 2 unitor data ol data 1 utrol data ol data 2 unitor data2 _D onizationFlag_D)	Version: 03A I/O No. R:READY(Direct) R:Synchronization flag(Direct) R:BUSY(Axis 1 to 4)(Direct) R:Axis1 BUSY(Direct)	

[Operation patterns in the sample program]

Operation	Start signal	Operation pattern
Axis 1 single positioning	For iQ-R: X26 For iQ-F: X6	Position [µm] ♠
		150000.0 0.0 Time
		Speed [mm/min]
Axis 2 single positioning	For iQ-R: X27 For iQ-F: X7	3000.00
		0.00 Time
Interpolation	For iQ-R: X28	Axis 2 [µm]
control	For iQ-F: X10	50000.0 33166.2 0.0 0.0 30000.0 80000.0 140000.0 140000.0 140000.0

Errors and warnings can be monitored and errors can be reset by using the module FB "(Model)_OperateError_(Version)" (hereafter referred to as ErrorFB).

For details of ErrorFB, refer to the following manual.

MELSEC iQ-R Motion Module (Simple Motion Mode) Function Block Reference

2 Motion Module FB

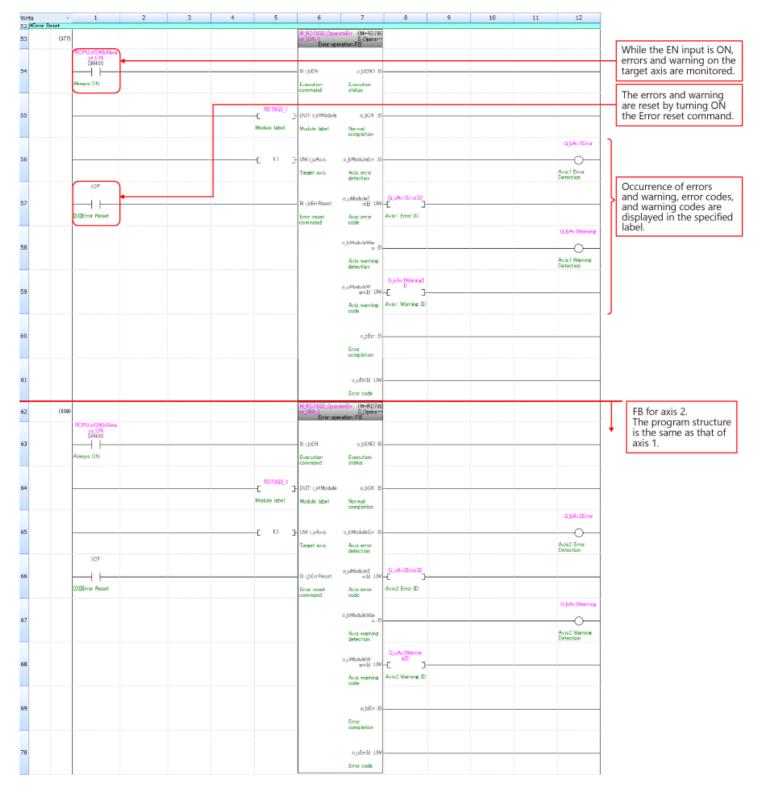
2.9 M+RD78GS_OperateError

MELSEC iQ-R Simple Motion Module Function Block Reference

2 Simple Motion Module FB/Motion Module FB

2.9 M+FX5SSC_OperateError

[Program example]



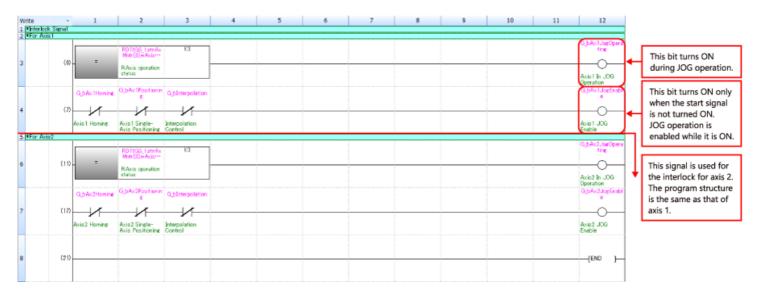
4.7 Interlock

In the sample program, an interlock is provided to ensure the following:

- JOG operation is not performed during positioning operation.
- A positioning start signal is not turned ON during JOG operation or positioning operation.

This interlock condition is an example. Change the condition to suit your system when using the sample program.

[Program example (In the sample program, the program name is Interlock)]



[Point]

The module label [Md.26:Axis operation status] of each axis is located as shown below.

Display Target:	Al		~	Display Target:	AI		~
Module Label			^	Module Label			^
1 3E00:R04CPI	J			🗉 퉬 FXSUCPU			
B 0000:RD78G	4(5)			😑 🅌 1[U1]:FX5-40	SSC-G(S)		
B RD78GS_1				E 🎍 FX5SSC_1			
RD78G5	1	Version: 03A		FX5SSC		Version: 03A	
🔂 ulO	-	I/O No.		💁 ulO		I/O No.	
🗉 🍶 Input/0	utput signal			🕀 🎍 Paramet			
🗉 퉲 Parame	ter				onitor data		
🖂 🎴 Axis mo	nitor data			😑 🎍 Axis#			
🗉 🎴 Axist	1					R:Current feed value(Direct)	
😭 di	CommandPosition	R:Current feed value				R:Machine feed value (Direct)	
🚯 di	MachineCommandPositi	R:Machine feed value				R:Feedrate(Direct)	-
🚮 us	CommandSpeed	R:Feedrate	-			R:Axis error No.(Direct)	
👘 ul	kxisErrorNo	R:Axis error No.				R:Axis warning No.(Direct)	
🔂 ul	kxisWarningNo	R:Axis warning No.				R:Valid M code(Direct)	
n an	A_Code	R:Valid M code		6	wAxisOperationStatus_D	R:Axis operation status(Direct)	1
😭 w	AxisOperationStatus	R:Axis operation status			udCurrentSpeed_D	RiCurrent speed(Direct)	·
tin us	CurrentSpeed	RCurrent speed		6	udAxisCommandSpeed_I	R:Axis feedrate(Direct)	
🐔 u	AxisCommandSpeed	R:Axis feedrate				R:Speed-position switching control position	n
n 🔂	P_MovementAmount	R:Speed-position switching control position				R:External input signal(Direct)	
n 🔂 ul	xternalInputSignal	R:External input signal				R:Status(Direct)	
🔂 uš	tatus	R:Status				R:Target value(Direct)	
🔂 d1	argetPosition	R:Target value				R:Target speed(Direct)	
-	-	-				R:Manual pulse generator operation carry-o	
				1 th	uForwardTorqueLimit_D	R:Torque limit stored value/forward torque I	6

Write the sample program to the programmable controller and check the operation.

4.8.1 Writing a program

For how to connect a personal computer and programmable controller and how to set the connection destination, check the e-learning course for each programmable controller.

After the rebuild all process of the program, follow the steps below to write the program to the programmable controller.

(1) From the GX Works3 menu bar, select [Online] \rightarrow [Write to PLC] to display the Online Data Operation window. (2) Click [Select All].

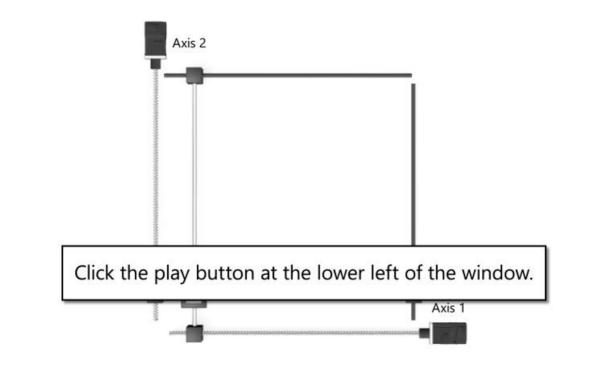
- (3) All checkboxes are selected.
- (4) Click [Execute] to start writing.
- (5) As the writing process proceeds, a message appears to confirm flash ROM writing. Click [Yes].
- (6) After writing the program, click [OK] to close the window.
- (7) Back to the Online Data Operation window and click [Close] to close the window.

This completes writing the program. Cycle the power of the programmable controller.

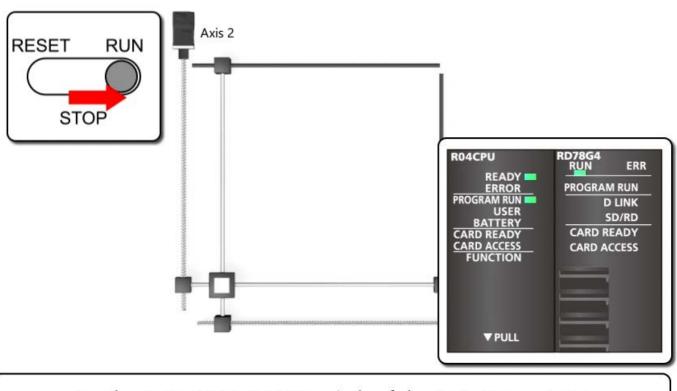
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FB Fla(M_FBLIB): Writing Completed	Completed.

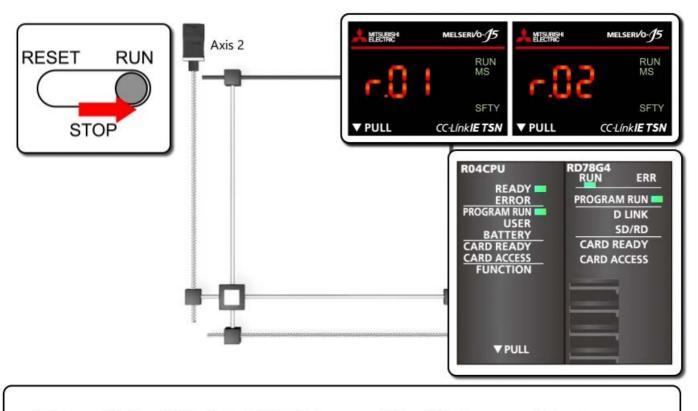
Yes No



Check the sample program operation. Before starting operation, make sure that the program is written to the PLC CPU.

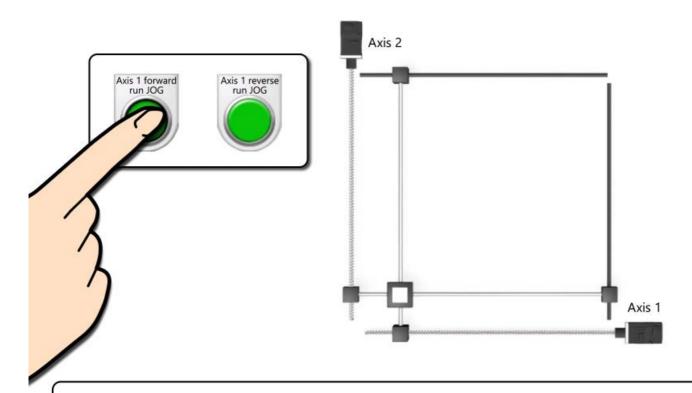


Set the RUN/STOP/RESET switch of the PLC CPU to RUN. READY lamp and PROGRAM RUN lamp of the programmable controller turn on. RUN lamp of the Motion module turns on.



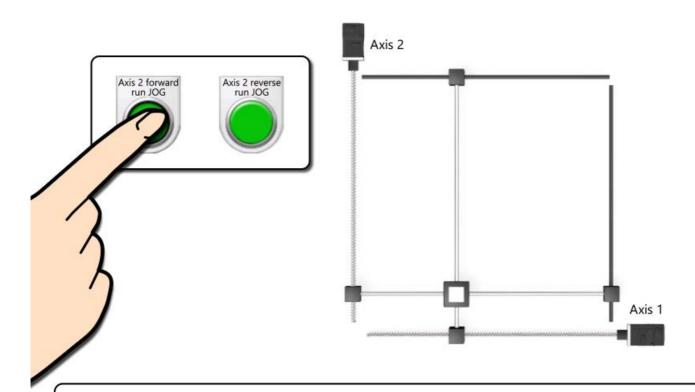
Wait until the PROGRAM RUN lamp of the Motion module turns on. "r.01" and "r.02" are displayed on the servo amplifier. (The dots are lit.) The servo motor enters the servo ON state.





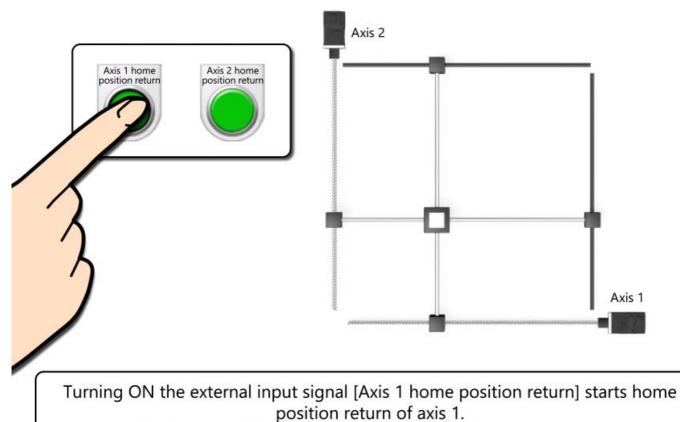
Turning ON the external input signal [Axis 1 forward run JOG] moves the axis in the direction of increasing address, and tuning OFF the signal stops the axis. Turning ON the external input signal [Axis 1 reverse run JOG] moves the axis in the direction of decreasing address, and tuning OFF the signal stops the axis.





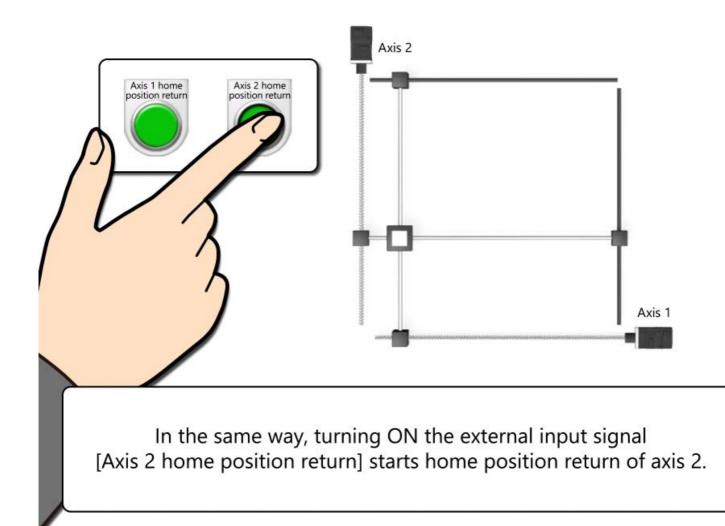
Turning ON the external input signal [Axis 2 forward run JOG] moves the axis in the direction of increasing address, and tuning OFF the signal stops the axis. Turning ON the external input signal [Axis 2 reverse run JOG] moves the axis in the direction of decreasing address, and tuning OFF the signal stops the axis.

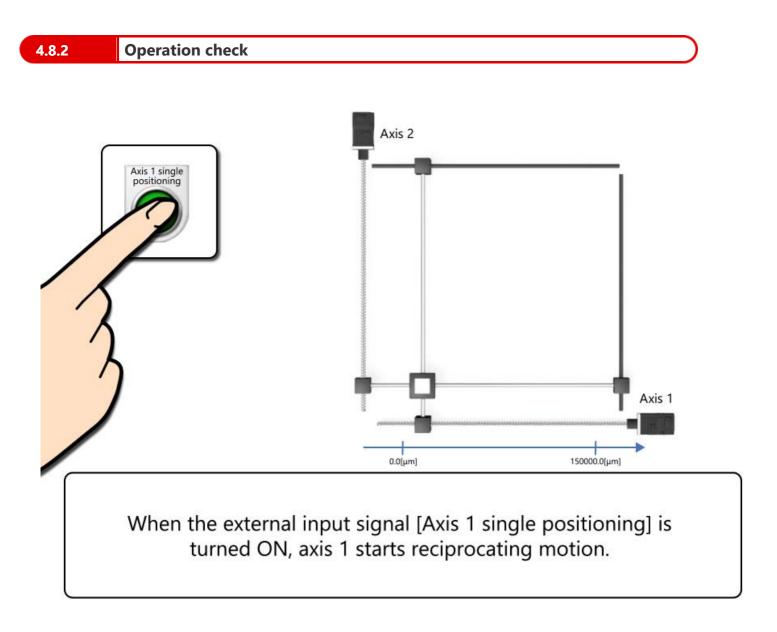


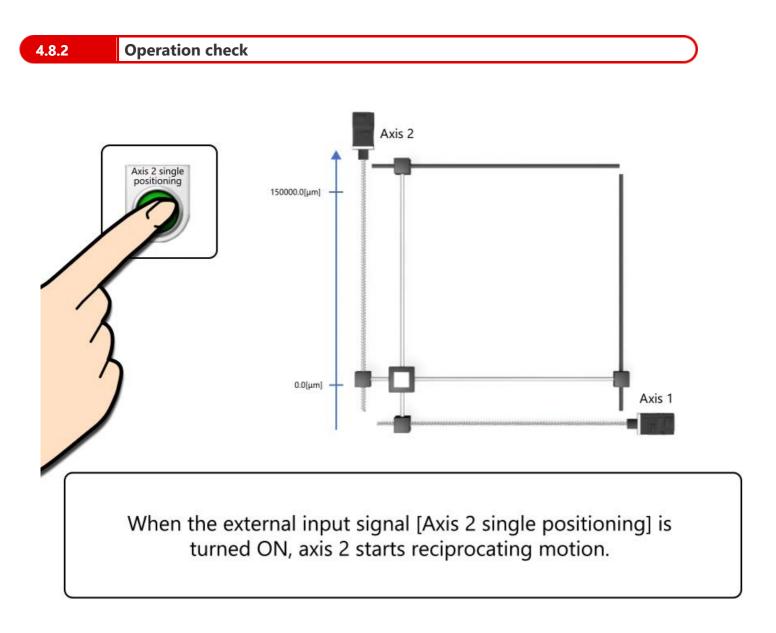


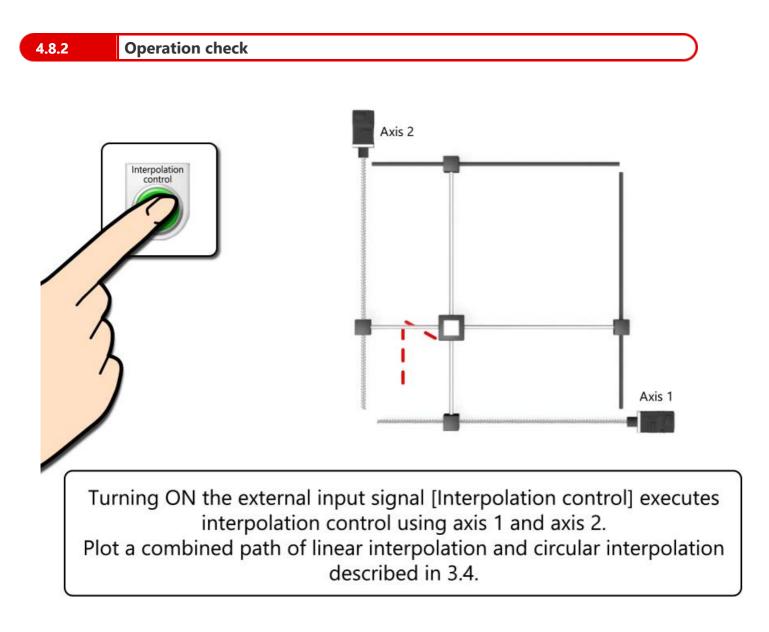
Execute the home position return of the proximity dog type (Pr.PT45 = -33). The axis stops at the point where the Z-phase of the encoder is first detected after passing through the dog, and that point is regarded as the home position.

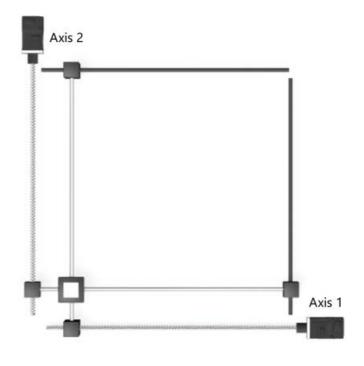












This completes the operation check. Go to the next page. In this chapter, you have learned:

- Module label and module FB
- How to add module labels and module FBs
- From the initial setting to all axis servo ON
- JOG operation
- Home position return, single positioning, and interpolation control
- Error reset
- Interlock
- Operation check

Point

Module label and module FB	The sample program uses module labels and module FBs.
How to add module labels and module FBs	• Input a module label or module FB by dragging and dropping it from the Element Selection window to the program editor.
From the initial setting to all axis servo ON	• When using Simple Motion mode, always turn ON [PLC READY] and then turn ON [All axis servo ON].
JOG operation	 The sample program uses a module FB to execute JOG operation. If the EN input of the FB is OFF, JOG operation is not performed even when the forward/reverse run JOG start is turned ON.
Home position return, single positioning, and interpolation control	 The sample program uses a module FB to execute positioning start and home position return. Home position return is executed by entering 9001 as a positioning number. When a point table number is entered as a positioning number, positioning is performed according to the positioning pattern set in the corresponding point table. In the case of interpolation control, positioning is performed only for the reference axis.
Error reset	• The sample program uses a module FB to monitor alarms and warnings and execute error reset.
Interlock	• The interlock condition of the sample program is an example. Provide an appropriate interlock for your system.
Operation check	You have checked the operation of the sample program in the video.

Chapter 5	Digital Oscilloscope
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This chapter describes how to check the operation of the sample program by using a digital oscilloscope.

5.1 Digital oscilloscope

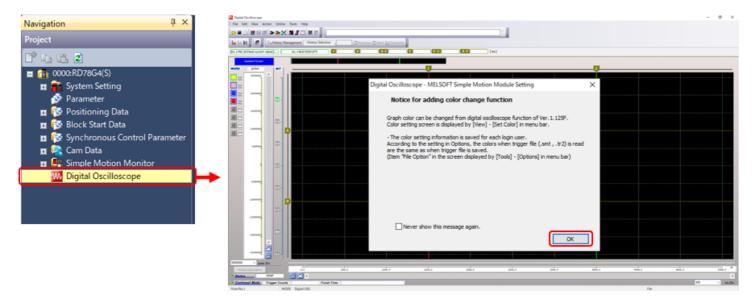
A digital oscilloscope has a function to measure and record the I/O signals (X and Y) of the Motion module (Simple Motion mode) and buffer memory values.

The following data (number of channels) can be measured at the same time.

- Word data: 16 channels
- Bit data: 16 channels

Note that the maximum number of channels that can be simultaneously displayed as waveform is 8 for both word data and bit data.

[Digital Oscilloscope] is located at the bottom of the project tree in the Simple Motion setup tool. Double-click it to open the Digital Oscilloscope window.



When "Notice for adding color change function" appears, click [OK] to close the window.

After that, the Assistant window appears. In this course, we will configure the digital oscilloscope settings in this window. If the Assistant window does not appear, click [Assistant Screen] on the window.

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	25000800	ĵ	•••••	sample the data.	h the simple motion			The sampled data is The operation can b	displayed in the numeric be executed for the same	data. bled data.				
	20000000			1) <u>Connect</u> th motion mode	ie personal computer ile, and set Online.	with the simple			ata in two-dimensional					
	1000000			2) Select the	probe item to be sam	pled.	1	Word probe must b	data in two-dimensional be more than 2CH.)	trajectory.(<u>V</u>)				
	1.0000000	2.		3) Set the sa	mpling condition.			the sampled data.						
	Louise		Ī	4) Start the s	ampling.			rint out the samplin	ng data.					
		۵.		5) Save the s to the file as	ampling condition and a sampling data.	sampled data		to the help. Display the help for to function and its oper	the digital oscilloscope ration method.					
				- Check the previou	sly saved sampling o	lata.								
	-6000000	B -		Read the sam	pjing data saved in the	fie.								
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		۵.	T	(FDXED).	care) can be changed t	o automatic (AUTO) or fixed								
	-12000000			Display at Start-up										
	-20000000			In case that the pro Display again from th	be items are not set, ne [View] -> [Display A	display an assistant screen duri ssistant Screen] menu.	ng the start-up pr	ocess.		Close	_			
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(1) Online Setting

Assistan Select the work item. Communicate with the simple motion module and sample the data. () Connect the personal computer with the simple motion module, and set Online. 2) Select the grobe item to be sampled 3) Set the sampling condition 4) Start the samping. P Save the sampling condition and sampled data to the file as a sampling data. Online Setting Sampling method Module Buffering Method (a) Display patterns in real time Off-line Digital Oscilloscope Function ⊖ valid Invalid (b) Cancel Digital Oscilloscope - MELSOFT Simple Motion Module Setti... × Precautions for selecting "Display patterns in real time" 0 This method reads sampling data while the module is RUN and it also displays patterns in real time. According to the connection target setting and the status of the computer in current use, the sampling data read from the module may take time and missing may occur in the real time pattern display. However, the data missing will not occur in the pattern display of the sampled data which is read by the STOP operation after TRIGGER is turned ON.

Click the tion on the Assistant window to open the Online Setting window. Set as follows in this window.

No.	Description
(a)	To display real-time waveform during measurement, select "Display patterns in real time".
(b)	Set whether to continue measurement if the personal computer and Motion module is disconnected. Select "Valid" to continue measurement even if the connection is interrupted.

In this course, select "Display patterns in real time" and set Digital Oscilloscope to "Invalid".

After completing the settings, click [OK] to close the window.

When "Display patterns in real time" is selected, precautions are displayed. Check the precautions, and click [OK] to close the window.

* The Online Setting window can also be opened by selecting [Online] \rightarrow [Online Setting] from the tool bar.

When the missing occurs, it is recommended to set a higher setting value for the sampling rate or perform the operation again after other running applications are exited.

Never show this message again. (This message will appear when 'Display patterns in real time' is selected again.)

(2) Probe Selection

Select the work item.				
Communicate with the simple mot sample the data. 1) <u>Connect the personal con</u> motion module, and set Oni	puter with the simple			
2) Select the grobe item to be	sampled.			
3) Set the sampling condition. V 4) Start the sampling. V				
5) Save the samping condition a to the file as a sampling data.	and sampled data			
Assistant (Probe Selection)				×
Select the probe item to be sampl © select from specified purpose probes. Cleck of change the set probe item.	led.		rpose from the list and axis No. autor em. balance and the trigger condition that the purpose are set automatically.	
List by specified purpose ^	Probe item	Axis No.	Command Generation Axis	# ENC
Positioning settling time				
Motor current value and motor speed Control status of the torgue limit				
Control status of the torque limit Cause for the over speed servo error				
Cause for the overload servo error/wa				
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Status at the error occurrence				
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			OK	Cancel
Assista (Probe Selection)				×
Select the probe item to be sample Select free sectors areas rates Select free areas to be and these or things the set procentee.	led.	probe items.	the probe item to be set individually fit	
			×	Cancel

Click the discontinue of the Assistant window to open the Probe Selection window.

Set the data to be measured in this window.

The Probe Selection window can also be opened by selecting $[Edit] \rightarrow [Probe Selection]$ from the tool bar or clicking the \bowtie icon on the tool bar.

Next, select the probe setting method.

Option	Description
Select from specified purpose probes.	When the measurement purpose is selected from List by specified purpose at the bottom of the window, the required probes are automatically set.
Select from all probes.	Select this option to manually set the items to be measured.
Check or change the set probe item.	Select this option to check or change the probes that have already been set. It cannot be selected if no probe is registered.

This course explains how to manually set probes. Select "Select from all probes." and click [OK].

Assistant

(2) Probe Selection (continued)

5.3

The Probe Selection window changes. Register the items to be measured in this window.

Uffer menory Uffer dearent value Uffer dea	Next Conglete Cance
With Device	and departies can be even that
Md. 312-Actual current value Md. 332-Bendurent value Md. 332-Bendurent value Md. 324-Bendurent value Md. 324-Bendure et value Md. 324-Bendure	
	Address,Device W x0010* 2400 28 2404 28 2500 28 2504 28
Md. 32-bAxa emor No. Md. 32-bAxa emor No. Md. 35-Naido Recode Md. 37-Current speed Md. 37-Current speed Wd. 37-Curent speed Wd. 37-Current speed Wd. 37-Current speed Wd	
Multiple Axes Selection Image: A set of the se	x1 Complete Cancel

No.	Description
(a)	Select "I/O Signal" or "Buffer memory" from the upper drop-down box and select the category from the lower drop-down box. Then, select the item to be measured from the list under the drop-down box and add the item to the field (d). In the case of data for multiple axes (such as Feed current value), select the data of the axis to be measured from the drop-down menu under the list.
(b)	The items selected in the field (a) are added to the probe.
(c)	The data added to the probe is deleted.
(d)	A list of selected probes is displayed.

Register the following items in this course.

- BUSY signal of Ax.1
- Feed current value of Ax.1
- Feedrate of Ax.1
- Feed current value of Ax.2
- Feedrate of Ax.2

After registration, click [OK].

"Registration of probe item is completed." is displayed. Click [OK] to close the window.

(3) Sampling condition setting

Set the sampling interval or total sampling time and trigger balance.

Click the 🚔 icon on the Assistant window to open the Sampling Condition window.

Select the work item.	Set the sampling inte	rval and trigger balance in the "Input" field.
Communicate with the simple motion module and sample the data.	Option	Description
motion module, and set Online. 2) Select the probe item to be sampled. 3) Set the sampling condition. 4) Start the sampling. 5) Saye the sampling condition and sampled data to the file as a sampling data.	Set from the sampling rate.	Set the sampling rate at intervals of N times the minimum operation cycle. The default number of sampling points is 16384 for the iQ-R series and 8192 for the iQ-F series. (Note)
Assistant (Sampling Condition)	Set from the total sampling time.	Set this item to specify the sampling time.
Set the sampling condition. Set the root time and press the [Calculation] button. Calculates the sampling rate. Sumpling Rate (ms) Set from the sampling rate. Sumpling Rate (ms) Total Sampling Time (s) Trigger Balance (%) 99.39 Pressing the [OK] button reflects the calculation result. OK	Trigger Balance	Set the measurement rate before and after a trigger occurs. Change the trigger balance mainly depending on whether you want to measure the waveform before or after a trigger occurs. For example, if a start signal is a trigger, increase the number of points after the trigger and if an alarm signal is a trigger, increase the number of points before the trigger.
Assistant (Sampling Condition) Set the sampling condition. Set the sampling condition and performs the setting automatically. Spate Set from the sampling rate. Sampling Rate (ms) Source (ms) Sampling Rate (ms) Total Sampling Time (s) 9.0 0.1-655360.0) Rate of Sampling Time (show 10.000 Calc.> Rate of Sampling Time (show 10.000 Calc.> Rate of Sampling Time (show 10.000 Calc.> Rate of Sampling Time (show 10.000 Calc.> Sampling State (point) Sampling Time (ms) 9910.0 Deck all sampling conditions after the calculation	tab in the Sam page. In this course, configu	number of sampling points, use the Initial Setting pling Setting window to be opened on the next ure the settings as follows. cal sampling time. \rightarrow 9.0 [s] 99.0%
Pressing the [OK] button reflects the calculation result. OK Cancel		firm the number of sampling points and sampling

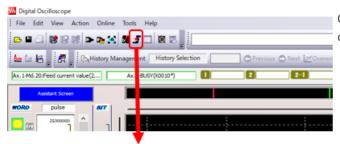
Click [OK] to close the window.

5.3

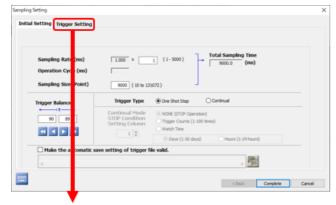
Assistant

(4) Trigger setting

The trigger setting cannot be opened from the Assistant window. Close the Assistant window.



Click the \checkmark icon on the tool bar in the Digital Oscilloscope window or click [Edit] \rightarrow [Sampling Setting].



A different Sampling Setting window from (3) will open. The items set in (3) are displayed in the [Initial Setting] tab.

Select the [Trigger Setting] tab.

Initial Setting Trigger Setting OBILAND OWING OF OBLOR Mode @NONE BIT Next s Page . PROBE ice Word Pattern Filter Ax. 1-Md. 22:Feedrate(2404 2(±) D puise/ 2(4) 2(±) (III) (10) 100 < Back Complete Cancel

In the trigger setting, select the channel to be used as a trigger from the probes that have been set.

In this course, set the rising BUSY signal of Ax.1 as a trigger.

For Trigger Mode, select "Bit OR".

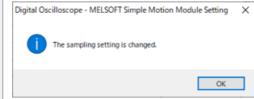
[BIT] under Trigger Mode turns blue and the BIT probe that has been set (only the BUSY signal of Ax.1 in this example) is registered in the probe list.

Click the pattern several times to set _____ (rising).

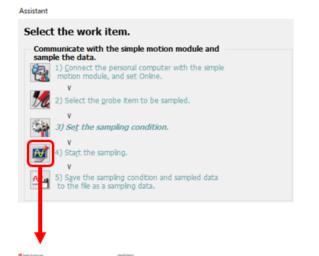
NRD BIT	NONE (® Bt OF	Ost AND O'Word OR Previous Page				
	PROBE	Previous Page	Device	Pattern	Filter	
					(x Rate)	
Ax.1-BUSY			X0010*	5	0	
				-	0	
				-	0	
				-	0	
					0	
					0	
					0	
					0	

After completing the settings, click [Complete].

When "The sampling setting is changed." is displayed, click [OK] to close the window.



After the sampling setting, probe selection, and trigger setting, operate the machine to perform measurement.



Start sampling by following one of the steps below.

- Display the Assistant window again and click the ¹/₂ icon.
- Click the eiticon on the tool bar in the Digital Oscilloscope window.
- Click [Action] \rightarrow [Run].

When the measurement starts, the program enters the trigger waiting state.

Status at the left corner of the window changes to [TRIGGER RUN].

Status TRIGGER RUN

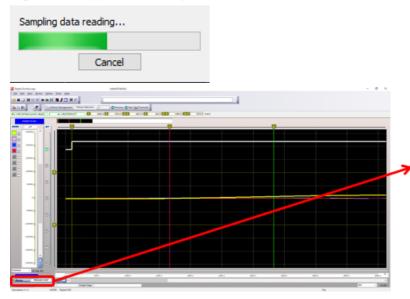


In this case, execute "Interpolation control" in the sample program.

When the trigger condition is satisfied, Status at the bottom left corner of the window changes to [TRIGGER ON].

Status TRIGGER ON

Digital Oscilloscope - MELSOFT Simple ...



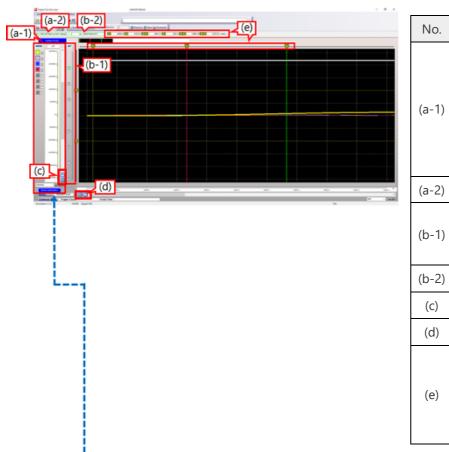
When the set measurement time (9 [s] before and after the trigger in this example) elapses, measurement is finished and sampling data is read. After the data is read, the display becomes as shown on the left.

Status at the bottom left corner of the window changes to [TRIGGER STOP].

Checking the measurement result

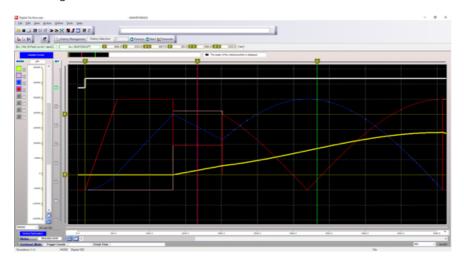
(1) Description of the window

The following describes the function of each part of the measurement result window.



No.	Description
(a-1)	The vertical axis of word data. Click a colored box on the left to make the line of the measured word data thicker. Click [Vertical Optimization] at the bottom to automatically adjust Division on the vertical axis so that the selected word waveform fits within the window.
(a-2)	The name of the selected word data is displayed.
(b-1)	The vertical axis of bit data. Click a number enclosed in a box to make the line of the measured bit data thicker.
(b-2)	The name of the selected bit data is displayed.
(c)	Zoom in/out buttons for the vertical axis.
(d)	Zoom in/out buttons for the horizontal axis.
(e)	The position (time) of the horizontal cursors and and and a trigger cursor between each cursor are displayed. The cursors and at the top can be dragged to move their positions.

Clicking [Vertical Optimization] for the word data (4ch) of the measurement result of "Interpolation control" displays the following window.



[Point]

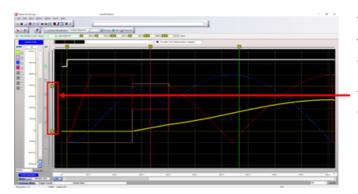
Click the $\frac{1}{2}$ icon on the tool bar or select [View] \rightarrow [Grid Mode] from the menu bar and select AUTO Grid to automatically adjust the vertical axis and horizontal axis for the measurement data at once.

5.5

- (2) How to check the values
 - 1) Checking on the graph

The values on the graph can be checked by displaying the cursor window. Select [View] \rightarrow [Cursor] from the tool bar to display the cursor window.

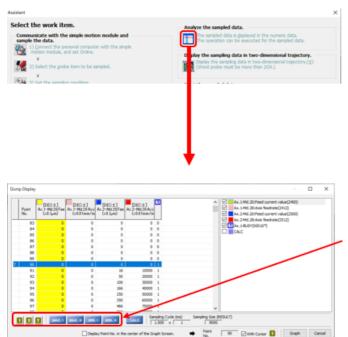
Cursor						
	Unit	Div	Α	в	A - B	1
Ax. 1-Md. 20:Feed current value(2400)	х0.1µm	5000000	1400000	600000	800000	812552
Ax. 1-Md. 28: Axis feedrate (2412)	x0.01mm/min	5000000	210000	90000	120000	299937
Ax. 2-Md. 20:Feed current value(2500)	x0.1µm	5000000	420000	180000	240000	599868
Ax. 2-Md. 28: Axis feedrate (2512)	x0.01mm/min	5000000	210000	90000	120000	6151
Ax. 1-BUSY(X0010*)						1



The values at the point where the graph intersects the vertical axis cursors A and B, the value between A and B, and the value at the point where the graph intersects the horizontal axis cursor are displayed.

The vertical axis cursors A B can be dragged to move their positions.

2) Checking on Displaying dump



Open the Displaying dump window by following one of the steps below.

- Display the Assistant window again and click the 🛄 icon.
- Click the 🛄 icon on the tool bar in the Digital Oscilloscope window.
- Click [Edit] \rightarrow [DUMP].

The values of all sampling data are displayed.

The positions of the horizontal axis cursors **12** and trigger cursor **1** can be displayed as well as the positions of the maximum value and minimum value before/after the selected point.

5.5

Checking the measurement result

(3) Two-dimensional trajectory display

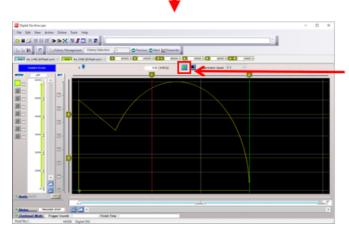
Probes can be assigned to the horizontal direction (X direction) and vertical direction (Y direction) of the graph to display a two-dimensional graph (trajectory) using the X-/Y-axes.



Open the Displaying dump window by following one of the steps below.

- Display the Assistant window again and click the 📖 icon.
- Click the 🔯 icon on the tool bar.
- Click [View] → [Two-dimensional Trajectory Display] from the menu bar.

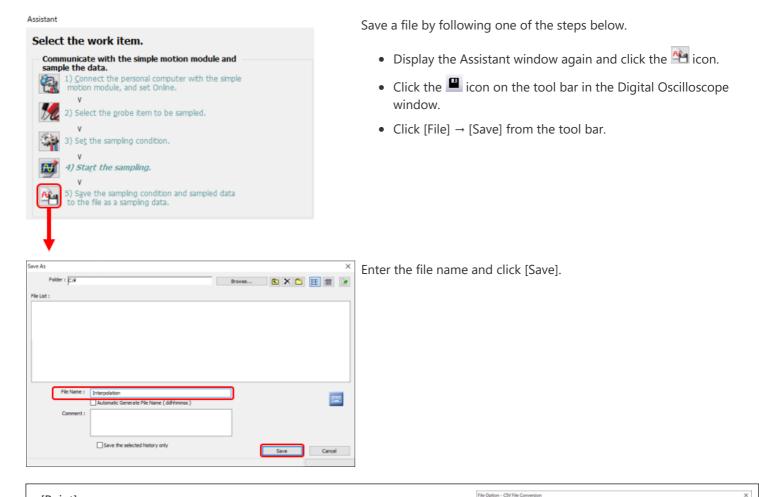
Select the data to be assigned to the X-axis and Y-axis. In this example, select Ax.1 Feed current value for the X-axis and Ax.2 Feed current value for the Y-axis.



Now you can display the trajectory of the machine moved by the interpolation control program.

Click the licon to replay the changes in the twodimensional trajectory over time.

The measurement result can be saved as a file.



[Point] The saved file (.smt) can be converted to the CSV format. Open [File] → [File Option] from the tool bar, select the saved file (.smt), and click [Conversion]. Frequencies of the select analysis of the select and the select and the select analysis of the select analysis of the select

Close

In this chapter, you have learned:

- Digital oscilloscope
- Starting a digital oscilloscope
- Digital oscilloscope settings
- Measurement method
- Checking the measurement result
- Saving the measurement result

Point

5.7

Digital oscilloscope	 A digital oscilloscope has a function to measure and record the I/O signals (X and Y) of the Motion module (Simple Motion mode) and buffer memory values. For both bit data and word data, 16 channels can be measured at the same time. The maximum number of channels that can be simultaneously displayed as waveform is 8 for both word data and bit data.
Starting a digital oscilloscope	• Double-click "Digital Oscilloscope" in the project tree in the Simple Motion setup tool to start it.
Digital oscilloscope settings	 Online Setting: Set whether to display real-time waveform and whether to enable offline data measurement. Probe Selection: Set the data to be measured. Sampling Condition Setting: Set the sampling interval or total sampling time and trigger balance. Trigger Setting: Set the trigger as the condition for measuring data.
Measurement method	 After completing the settings, operate the machine and execute [Run]. When the trigger condition has been set, data before and after the trigger occurs is measured according to the set trigger balance.
Checking the measurement result	 Waveform of each type of data can be checked by displaying a graph. The value at a specific time can be checked by operating the cursor on the graph or displaying dump. A two-dimensional trajectory can be displayed to check the X-axis travel amount and Y-axis travel amount.
Saving the measurement result	The measurement result can be saved as a file (smt).The smt file can be converted to the CSV format.

Test Final Test

Now that you have completed all of the lessons of the **MELSEC iQ-R/iQ-F Series Motion Module Basics (Simple Motion Mode)** Course, you are ready to take the final test. If you are unclear on any of the topics covered, please take this opportunity to review those topics.

There are a total of 5 questions (19 items) in this Final Test.

You can take the final test as many times as you like.

Score results

The number of correct answers, the number of questions, the percentage of correct answers, and the pass/fail result will appear on the score page.

		1	2	3	4	5	6	7	8	9	10	
Retry	Final Test 1	 Image: A second s	 Image: A second s	√	X							Total questions: 28
	Final Test 2	 Image: A second s	√	1	1							Correct answers: 23
	Final Test 3	 Image: A second s										
	Final Test 4	 Image: A second s	√									Percentage: 82 %
	Final Test 5	 Image: A second s	 Image: A second s									
Retry	Final Test 6	 Image: A second s	X	X	X							
	Final Test 7	 Image: A second s	 Image: A second s	√	√			-				
	Final Test 8	 Image: A second s	×	√	1	×						t, 60% of correct
	Final Test 9	 Image: A second s						an	swei	rs is	requ	uired.
Retry	Final Test 10	\times							_	_		

Test Final Test 1	
Select the correct sentence(s) to describe the specifications of Simple Motion mode of the Motion module.	
	•
Simple Motion mode and PLCopen [®] motion control FB mode can be used for each axis in a	
single Motion module.	
In Simple Motion mode, only the PLC CPU should be programmed.	
in omple wotion mode, only the rice er o should be programmed.	
Simple Motion mode is available in all Motion modules (RD78G(H)□ and FX5-□SSC-G).	
For positioning, Simple Motion mode uses the same point table method as the one used by	the
Simple Motion module.	
Since the Motion module has no external input (manual pulser input), prepare a high-speed	
counter module separately to use a manual pulser.	

Test	Final Test 2	
To execuCheck the	orrect word to fill in the blank () to complete the sentences below. It te test operation, change (Q1) of the servo amplifier and turn on the power supply. The rotation direction of the servo motor with the test operation function of (Q2). Q3) with the rotary switch on the servo amplifier.	*
Q1	Select the appropriate answer.	
Q2	Select the appropriate answer.	
Q3	Select the appropriate answer.	

- Q1: 1 : DIP switch 2 : Rotary switch

 - 3 : Command switch

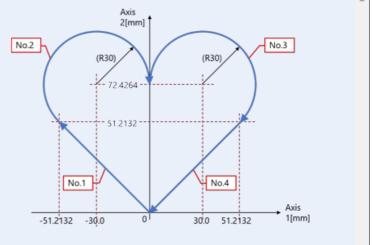
Q2: 1: GX Works3

- 2: MR Configurator2
- 3 : Motion Control Setting Function
- Q3: 1: IP address
 - 2: Station number

Test	Final Test 3
Select th	e correct sentence(s) to describe the settings of Simple Motion mode.
	Simple Motion mode is available by registering the Motion module with (S) in the module configuration diagram.
	After registering the servo amplifier in the network configuration window, perform PDO mapping.
	To configure Simple Motion mode, use the same window (Motion Control Setting Function) as the one used for the Motion module.
	Set the acceleration time to the time required to reach the speed limit from speed 0 and deceleration time to the time required to reach speed 0 from the speed limit.
	To plot the same trajectory regardless of the start point of operation during interpolation control, create positioning data based on the relative position specification.

Complete the following point tables to plot a trajectory as shown on the right figure.

Circular interpolation with center point designation is used for arcs. The addresses are specified by the absolute position specification.



[Axis 1]

No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M code
1	LOCATION	ABS Linear 2	2	0:1000	0:1000	-51213.2µm		3000.00mm/min	0 ms	0
2	CONT	(Q1)	2	0:1000	0:1000	(Q2) µm	(Q3) µm	3000.00mm/min	100 ms	0
3	LOCATION	(Q4)	2	0:1000	0:1000	(Q5) µm	(Q6) µm	3000.00mm/min	0 ms	0
4	END	ABS Linear 2	2	0:1000	0:1000	0.0 µm		3000.00mm/min	500 ms	0

[Axis 2]

No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M code
1						51213.2µm				
2						(Q7) µm	(Q8) µm			
3						(Q9) µm	(Q10) µm			
4						0.0 µm				
			1							

Q1	Select the appropriate answer.	Q2	Select the appropriate answer.	Ø
Q3	Select the appropriate answer.	Q4	Select the appropriate answer.	
Q5	Select the appropriate answer.	Q6	Select the appropriate answer.	\bigcirc
Q7	Select the appropriate answer.	Q 8	Select the appropriate answer.	
Q9	Select the appropriate answer.	Q10	Select the appropriate answer.	

- Q1: ABS ArcMP
 - ABS ArcRGT
 - ABS ArcLFT
- Q3: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4

Q5: • -51213.2

- 0.0
- 51213.2
- 72426.4
- Q7: -51213.2
 - 0.0
 - 51213.2
 - 72426.4
- Q9: -51213.2
 - 0.0
 - 51213.2
 - 72426.4

- Q2: -51213.2
 - 0.0
 - 51213.2
 - 72426.4
- Q4: ABS ArcMP
 - ABS ArcRGT
 - ABS ArcLFT
- Q6: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4
- Q8: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4
- Q10: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4

Test	Final Test 5	\supset
Select the o Q1 Online Q2 Probe S Q3 Samplir Q4 Trigger	election	•
Q1	Select the appropriate answer.	\bigcirc
Q2	Select the appropriate answer.	\bigcirc
Q3	Select the appropriate answer.	\bigcirc
Q4	Select the appropriate answer.	\bigcirc

- Q1: 1 : Set the measurement time and sampling interval. 2 : Set the conditions to start and end measurement.

 - 3 : Select whether to display waveform in real-time during measurement and whether to continue measurement if the connection with the personal computer is interrupted.
 - 4 : Set the I/O signal to be measured and buffer memory.

Q2: 1 : Set the measurement time and sampling interval.

- 2: Set the conditions to start and end measurement.
- 3 : Select whether to display waveform in real-time during measurement and whether to continue measurement if the connection with the personal computer is interrupted.
- 4 : Set the I/O signal to be measured and buffer memory.
- Q3: 1 : Set the measurement time and sampling interval.
 - 2: Set the conditions to start and end measurement.
 - 3 : Select whether to display waveform in real-time during measurement and whether to continue measurement if the connection with the personal computer is interrupted.
 - 4 : Set the I/O signal to be measured and buffer memory.
- Q4: 1 : Set the measurement time and sampling interval.
 - 2: Set the conditions to start and end measurement.
 - 3 : Select whether to display waveform in real-time during measurement and whether to continue measurement if the connection with the personal computer is interrupted.
 - 4 : Set the I/O signal to be measured and buffer memory.

Test	Final Test 1
Select the co	rrect sentence(s) to describe the specifications of Simple Motion mode of the Motion module.
	mple Motion mode and PLCopen [®] motion control FB mode can be used for each axis in a ngle Motion module.
🖸 In	Simple Motion mode, only the PLC CPU should be programmed.
SI	mple Motion mode is available in all Motion modules (RD78G(H)□ and FX5-□SSC-G).
Fc	or positioning, Simple Motion mode uses the same point table method as the one used by the
Si	mple Motion module.
	nce the Motion module has no external input (manual pulser input), prepare a high-speed punter module separately to use a manual pulser.

Test	Final Test 2	\supset	
Select the c	orrect word to fill in the blank () to complete the sentences below.		•
	ite test operation, change (Q1) of the servo amplifier and turn on the power supply.		
	The rotation direction of the servo motor with the test operation function of (Q2).		
• Set the	(Q3) with the rotary switch on the servo amplifier.		•
Q1	1: DIP switch		
Q2	2 : MR Configurator2		
Q3	1: IP address		

- Q1: 1: DIP switch
 - 2 : Rotary switch
 - 3 : Command switch

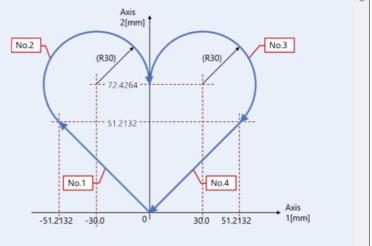
Q2: 1:GX Works3

- 2: MR Configurator2
- 3 : Motion Control Setting Function
- Q3: 1: IP address
 - 2: Station number

Test		Final Test 3	
Sele	ct the	correct sentence(s) to describe the settings of Simple Motion mode.	
			•
		Simple Motion mode is available by registering the Motion module with (S) in the module	
		configuration diagram.	
		After registering the servo amplifier in the network configuration window, perform PDO	
		mapping.	
		To configure Simple Motion mode, use the same window (Motion Control Setting Function) as the one used for the Motion module.	
		Set the acceleration time to the time required to reach the speed limit from speed 0 and	
		deceleration time to the time required to reach speed 0 from the speed limit.	
		To plat the same two statements and the start point of an antion during intermediation	
		To plot the same trajectory regardless of the start point of operation during interpolation control, create positioning data based on the relative position specification.	

Complete the following point tables to plot a trajectory as shown on the right figure.

Circular interpolation with center point designation is used for arcs. The addresses are specified by the absolute position specification.



[Axis 1]

No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M code
1	LOCATION	ABS Linear 2	2	0:1000	0:1000	-51213.2µm		3000.00mm/min	0 ms	0
2	CONT	(Q1)	2	0:1000	0:1000	(Q2) µm	(Q3) µm	3000.00mm/min	100 ms	0
3	LOCATION	(Q4)	2	0:1000	0:1000	(Q5) µm	(Q6) µm	3000.00mm/min	0 ms	0
4	END	ABS Linear 2	2	0:1000	0:1000	0.0 µm		3000.00mm/min	500 ms	0

[Axis 2]

No.	Operation pattern	Control method	Axis to be interpolated	Acceleration time No.	Deceleration time No.	Positioning address	Arc address	Command speed	Dwell time	M code
1						51213.2µm				
2						(Q7) µm	(Q8) µm			
3						(Q9) µm	(Q10) µm			
4						0.0 µm				

Q1	ABS ArcRGT	Q2	0.0	
Q3	-30000.0	Q4	ABS ArcRGT	
Q5	51213.2	Q6	30000.0	\bigcirc
Q7	72426.4	Q 8	72426.4	
Q9	51213.2	Q10	72426.4	

- Q1: ABS ArcMP
 - ABS ArcRGT
 - ABS ArcLFT
- Q3: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4
- Q5: -51213.2
 - 0.0
 - 51213.2
 - 72426.4
- Q7: -51213.2
 - 0.0
 - 51213.2
 - 72426.4
- Q9: -51213.2
 - 0.0
 - 51213.2
 - 72426.4

0.0
51213.2
72426.4
Q4: ABS ArcMP
ABS ArcRGT
ABS ArcLFT

Q6: -51213.2

-30000.0
30000.0
51213.2
72426.4

Q2: • -51213.2

- Q8: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4
- Q10: -51213.2
 - -30000.0
 - 30000.0
 - 51213.2
 - 72426.4

Test	Final Test 5	\supset
Select the co Q1 Online Se Q2 Probe Se Q3 Sampling Q4 Trigger Se	lection Setting	
Q1	Select whether to display waveform in real-time during measurement and whether to continu	\bigcirc
Q2	Set the I/O signal to be measured and buffer memory.	♥
Q3	Set the measurement time and sampling interval.	♥
Q4	Set the conditions to start and end measurement.	

- Q1: 1: GYhh Ya YUgi fYa Ybhhja Y UbX gua d`]b[]bhYfj U"
 - &: GYhh Y WebX hobg he grufh UbX YbX a Yugi fYa Ybh
 - ' : GY`YVM/k\Yh\Yf`hc`X]gd`Um/kUjYZcfa`]b`fYU!h]aY`Xif]b[`aYUgifYaYbh`UbX`k\Yh\Yf`hc`````` Wotbh]biY`aYUgifYaYbh`]Zh\Y`WotbbYVM/jcb`k]h\`h\Y`dYfgcbU`WotadihYf`]g`]bhYffidhYX'''
 - (:GYhHAY #C g][bU hc VY a YUgi fYX UbX Vi ZZYf a Ya cfm
- Q2: %: GYhih Y a YUgi fYa Ybhihja Y UbX gUa d`]b[`]bhYfj U"
 - &: GYhh Y WebX]h]cbg hc ghufh UbX YbX a YUgi fYa Ybh'
 - ': GY`YVMik \Yh\Yf`hc`X]gd`Umk Uj YZcfa `]b`fYU'! h]a Y`Xi f]b[`a YUgi fYa Ybh'UbX`k \Yh\Yf`hc`````` Webh]bi Y`a YUgi fYa Ybh`]Zh\Y`WebbYVMjcb`k]h\`h\Y`dYfgcbU`Wea di hYf`]g`]bhYffi dhYX'''
 - (: GYhih Y #C g][bU hc VY a YUgi fYX UbX Vi ZZYf a Ya cfm'
- Q3: %: GYhh\Y'a YUgi fYa Ybh'h]a Y'UbX'gUa d`]b[']bhYfj U'"
 - &: GYhih Y WebX]h]cbg hc ghufh UbX YbX a YUgi fYa Ybh'
 - ': GY`YVMrik \Yh\Yf`hc`X]gd`Umrik Uj YZcfa`]b`fYU`!h]a Y`Xi f]b[`a YUgi fYa Ybh`UbX`k \Yh\Yf`hc```` Voc'bh]bi Y`a YUgi fYa Ybh]Zh\Y`Voc'bbYVMjcb`k]h\`h\Y`dYfgcbU``Voc'a di hYf`]g`]bhYffi dhYX''
 - (:GYhHAY #C g][bU hc VY a YUgi fYX UbX Vi ZZYf a Ya cfm
- Q4: %: GYhth Y a YUgi fYa Ybhthja Y UbX gUa d`]b[]bhYfj U"
 - &: GYhih Y WebX]hjcbg hc ghufh UbX YbX a YUgi fYa Ybh'
 - : GY`YW/ik \Yh\Yf`hc`X]gd`Umik Uj YZcfa`]b`fYU`!h]a Y`Xi f]b[`a YUgi fYa Ybh`UbX`k \Yh\Yf`hc````` Webh]bi Y`a YUgi fYa Ybh`]Zh\Y`WebbYW/gcb`k]h\`h\Y`dYfgcbU``Wea di hYf`]g`]bhYffi dhYX''
 - (: GYhih Y #C g][bU hc VY a YUgi fYX UbX Vi ZYf a Ya cfm'

You have completed the Final Test. You results area as follows. To end the Final Test, proceed to the next page.

		1								1	
	1	2	3	4	5	6	7	8	9	10	T
Final Test 1	1										Total questions: 19
Final Test 2	1	1	1								Correct answers: 19
Final Test 3	1										
Final Test 4	<	<	<	<	<	<	1	<	1	<	Percentage: 100 %
Final Test 5	1	1	1	1							
											Clear

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You have completed the "MELSEC iQ-R/iQ-F Series Motion Module Basics (Simple Motion Mode)" Course.

Thank you for taking this course.

We hope you enjoyed the lessons and the information you acquired in this course is useful for configuring systems in the future.

You can review the course as many times as you want.

Review

Close