

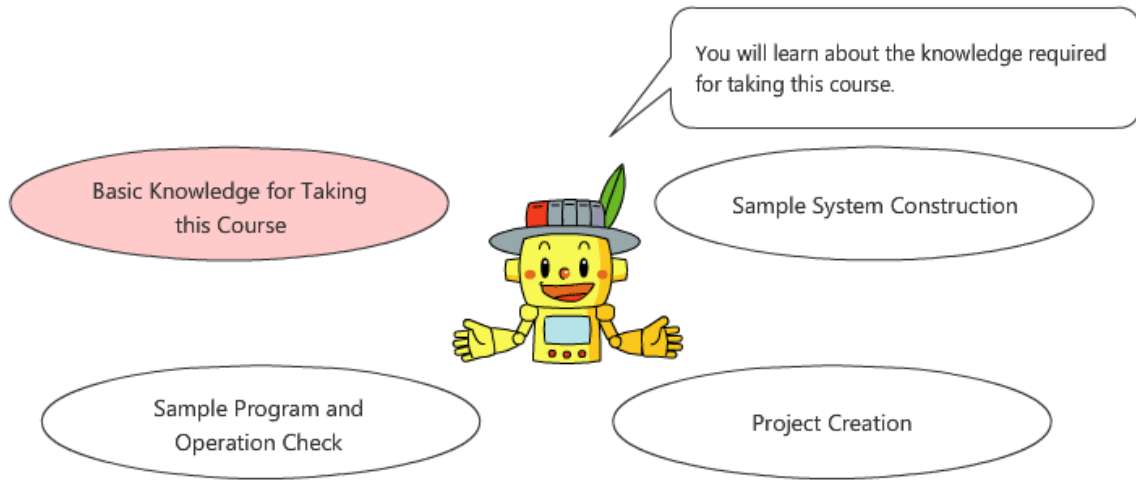
Servo System Controller

MELSEC iQ-R Series Motion Module Basics (RD78G(H)/Startup)

This course is for participants who will establish a motion control system using the MELSEC iQ-R series motion module for the first time.

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

This course is intended for those who will establish a motion control system using the MELSEC iQ-R series motion module for the first time and provides basic knowledge from system design to installation, wiring, setting, and programming.



This course requires the basic knowledge of MELSEC iQ-R series PLCs, AC servos, and the positioning

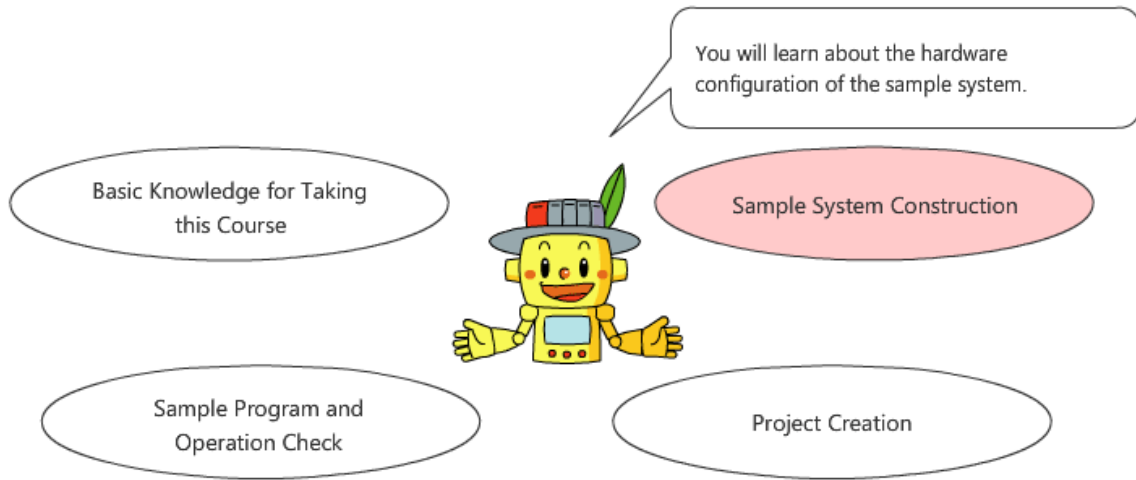
control. For beginners, taking the following courses is recommended.

- "MELSEC iQ-R Series Basic" course
- "GX Works3 (Ladder)" course
- "Programming Basics (Structured Text)" course
- "FA Equipment for Beginners (Positioning)" course

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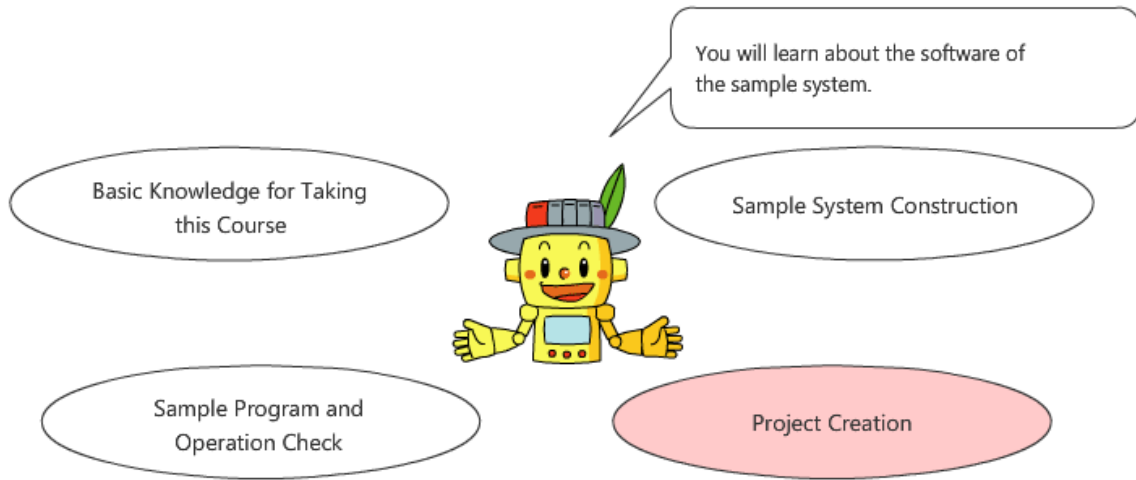
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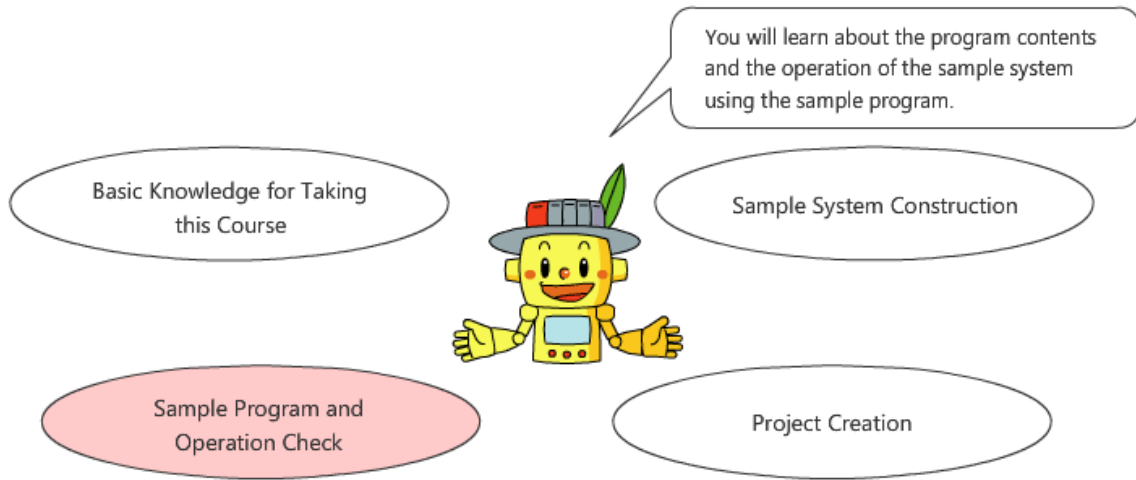
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The contents of this course are as follows.
We recommend that you start from Chapter 1.

Chapter 1 - Basic Knowledge for Taking this Course

This chapter describes the knowledge required for taking this course.

Chapter 2 - Sample System Construction

This chapter describes the hardware configuration of the sample system.

Chapter 3 - Project Creation

This chapter describes the software of the sample system.





Chapter 4 - Sample Program and Operation Check

This chapter describes the program contents and the operation of the sample system using the sample program.

Final Test

5 sections in total (7 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		"Table of Contents" will be displayed, enabling you to navigate to the desired page.
Exit the learning		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.

■Precautions in this course

The displayed screens of the software version that you use may differ from those in this course. This course is for the following software versions.


For the latest version of each software, check the Mitsubishi Electric FA Website.

MELSOFT GX Works3	Ver.1.072A	Motion Control Setting	Ver.1.015R
MELSOFT MR Configurator2	Ver.1.115V		

The firmware version of the PLC CPU must be 44 or later (46 or later for RD78GH).

The firmware version of the motion module must be 14 or later.

For how to update the firmware version, refer to module configuration manual.

The  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.

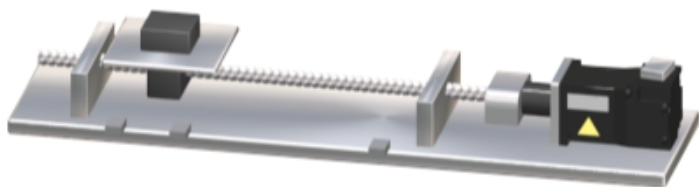
Manual name	Manual No.	Version
MELSEC iQ-R Motion Module User's Manual (Startup)	IB-0300406	C
MELSEC iQ-R Motion Module User's Manual (Application)	IB-0300411	C
MELSEC iQ-R Motion Module User's Manual (Network)	IB-0300426	C
MELSEC iQ-R Programming Manual (Motion Module Instructions, Standard Functions/Function Blocks)	IB-0300431	C
MELSEC iQ-R Programming Manual (Motion Control Function Blocks)	IB-030533	A
MELSEC iQ-R Structured Text (ST) Programming Guide Book	SH-081483	E
MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)	SH-081266	W
MELSEC iQ-R CPU Module User's Manual (Application)	SH-081264	AF

Chapter 1 Basic Knowledge for Taking this Course

1.1 Subject of this Course

In this course, you will learn how to control the mechanism of a one-axis ball screw by using the motion module RD78G and AC servo of the MELSERVO-J5 series.

The following PTP operation is the subject of this course.



The following shows a flow of this course.

Chapter 1 Basic Knowledge for Taking this Course

This chapter describes the knowledge required for taking this course.



Chapter 2 Sample System Construction

This chapter describes the hardware configuration of the sample system. This chapter describes the settings of the system configuration and procedures for test operations of the servo motor.



Chapter 3 Project Creation

This chapter describes the software of the sample system. This chapter describes the procedures for creating new projects, parameter settings, network settings, and others.



Chapter 4 Sample Program and Operation Check

This chapter describes the program contents and the operation of the sample system using the sample program.

PLCopen[®] is a third-party organization, aiming at improving the development efficiency of PLC applications, promoting the international standard IEC 61131-3 for PLC programming, and creating and certifying the standard function block (FB) specifications that are independent of the vendor.

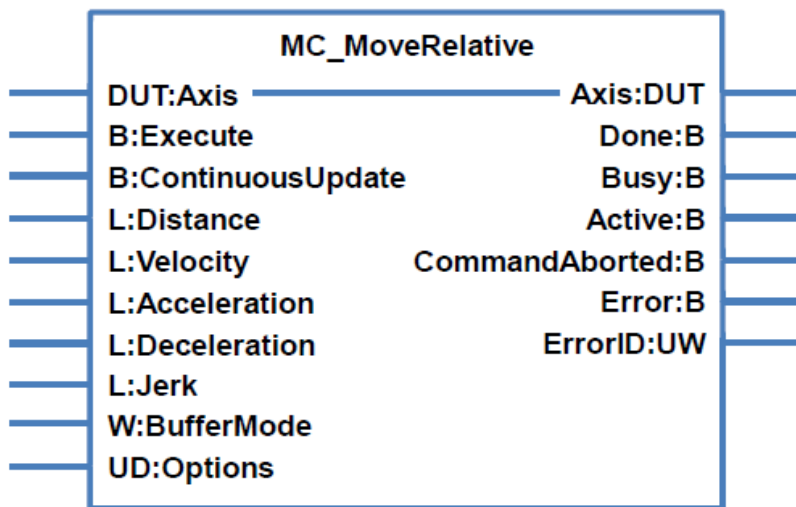
Using the FB specified by PLCopen[®] enables the programming independent of PLC manufacturers since the I/O and operation specifications of the FB are standardized.

This makes the program structured and improves the reusability, resulting in the reduction of engineering cost.

The motion control is defined as Motion Control FB.

The motion module is compatible with this Motion Control FB (hereafter, referred to as MCFB) and uses this FB for programming. (For details, refer to Chapter 4.)

Example) MC_MoveRelative (Relative value positioning control)




This section describes how to create ST programs and provides explanations of the structure of the ST.

(1) Reference manual


For the details of programming using the ST, refer to the following manuals.

Note that the commands that can be used differ between the PLC CPU module and the motion module.

Format of the ST

 MELSEC iQ-R Structured Text (ST) Programming Guide Book

Commands that can be used in the ST


 MELSEC iQ-R Programming Manual (CPU Module Instructions, Standard Functions/Function Blocks)

 MELSEC iQ-R Programming Manual (Motion Module Instructions, Standard Functions/Function Blocks)

Labels and structures

 MELSEC iQ-R CPU Module User's Manual (Application)

Program example

 MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

(2) Basic rules of the ST (extract)

The following shows a part of the sample program.

```

22 //-----Jog Operation-----
23 bJogEnable := (Axis0001.Md.AxisStatus=4) & (G_bHomeBusy=FALSE) & (G_bPositioningReq=FALSE);
24
25 1) MCV_Jog_1(
26     Axis           := Axis0001.AxisRef ,
27     JogForward    := NZ2GN2S1_32D_001_RX1 & (NZ2GN2S1_32D_001_RX2=FALSE) & bJogEnable //Remote Input A1
28     JogBackward   := (NZ2GN2S1_32D_001_RX1=FALSE) & NZ2GN2S1_32D_001_RX2 & bJogEnable //Remote Input A1
29     Velocity      := G_leJogVelocity,
30     2) Acceleration:= G_leJogAcc ,
31     Deceleration:= G_leJogDec ,
32     Jerk          := G_leJogJerk ,
33     Options      := H0,//0:mcAccDec
34     //Done       => ?BOOL? ,
35     Busy         => G_bJogBusy //,
36     //Active     => ?BOOL? ,
37     3) //CommandAborted=> ?BOOL? ,
38     //Error      => ?BOOL? ,
39     //ErrorID    => ?WORD?
40 );
41

```

Comment

All the statements after // or statements between /* and */ or (* and *) are comments.

Add a ";" (semicolon) at the end of all the statements.

The format of "`<variable> := <expression>;`" is an assignment statement. Store the result of the formula on the right to the variable on the left.

Function block

Start the function block.

1) FB name

2) Indicated by input variables ":=".

3) Indicated by output variables "=>".

(1) Label, arrangement, and structure

In programs of a motion module, labels are used instead of devices and buffer memory numbers.

A label is a variable consisting of a specified string used in I/O data or internal processing.

Using labels in programming enables creation of programs without being aware of devices and buffer memory sizes. For this reason, a program using labels can be reused easily even in a system having a different module configuration. Arrangement is a data type representing a collection of labels with the same data type using one name.

Structure is a data type representing a collection of labels with different formats using one name.

(2) Label type

- Local label ··· A local label is a label that can be used only in each POU. Local labels outside the POU cannot be used.
The settings of a local label include a label name, class, and data type.
- Global label ··· A global label is a label that provides the same data within a single project. It can be used in all programs in the project. (However, when using global labels of the motion module as those of the PLC CPU, the settings of the public labels are required. (NOTE))
A global label can be used in program blocks and function blocks.
The settings of a global label include a label name, class, and data type.
In the CPU module, devices can be assigned to global labels.
- Module label ··· A module label is a label defined uniquely by each module. It is automatically generated by the engineering tool from the module used, and can be used as a global label.
- System label ··· A system label is a label that provides the same data in all projects compatible with iQ Works.
It can be referenced from the GOT and the CPU modules on other stations, and used for monitoring and accessing data.
(This label is not used in this course.)
- Slave label ··· For the public labels, refer to the following manual.

(NOTE) For the public labels, refer to the MELSEC iQ-R Series Motion Module Basics (RD78G(H)/Positioning Control), which is a course of an online training system, and the following manual.



MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

4.2 Motion Module Program Creation

(3) Label data type

The following table shows the main label data types.

The sample program used in this course indicates the data type with the prefix of the label.

Data type		Range	Prefix
Bit	BOOL	FALSE(0), TRUE(1)	b
Word (unsigned)/bit string (16 bits)	WORD (UINT)	0 to 65535	u
Double word (unsigned)/bit string (32 bits)	DWORD (UDINT)	0 to 4294967295	ud
Word (signed)	INT	-32468 to 32767	w
Double word (signed)	DINT	-2147483648 to 2147483647	d
Single-precision real number	REAL	-2^{128} to -2^{-126} , 0, 2^{-126} to 2^{128}	e
Double-precision real number	LREAL	-2^{1024} to -2^{-1022} , 0, 2^{-1022} to 2^{1024}	le
Time	TIME	T#-24d20h31m23s648ms to T#24d20h31m23s647ms	tm
Timer	TIMER	TIMER is the structure. S (contact): BOOL C (coil): BOOL N (current value): WORD	td

In addition, for global labels, "G_" is added to the beginning of the label name.

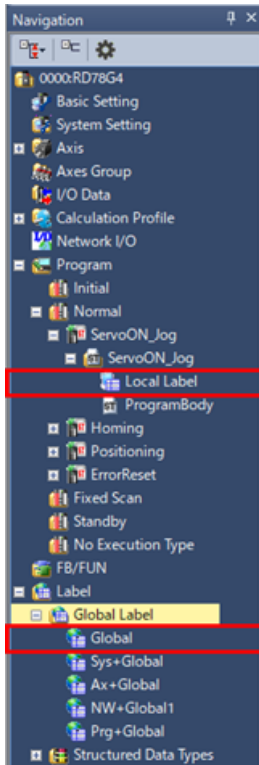
(4) Label registration method

• Local label

[Local Label] is provided for each program under [Program] in the project tree. Double-click here to open the local label editor.

• Global label

Double-click [Label] → [Global Label] → [Global] in the project tree to open the global label editor.



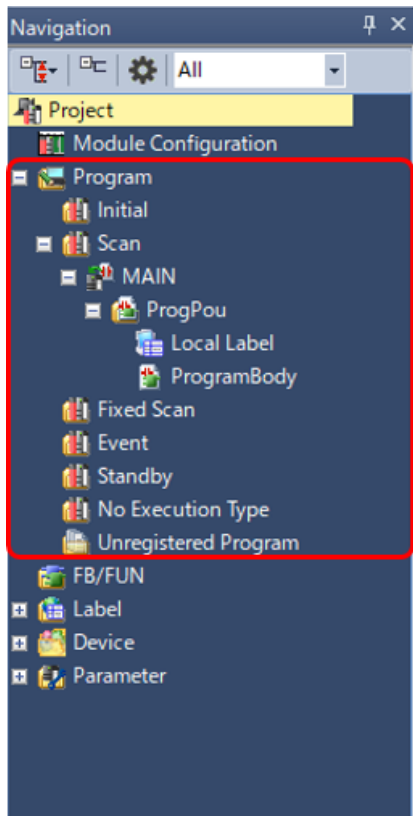
	Label Name	Data Type	Class	Initial Value	Constant	Comment
1	MC_Power_1	MC_Power	VAR			
2	bPowerStatus	Bit	VAR			Servo ON/OFF status
3	bReadyStatus	Bit	VAR			Ready ON/OFF status
4	bPowerBusy	Bit	VAR			MC_Power Busy
5	bPowerError	Bit	VAR			MC_Power Error
6	uPowerErrorID	Word (Unsigned)/Bit String (16-bit)	VAR			MC_Power Error ID
7	bJogEnable	Bit	VAR			Jog Operation Enable
8	MCv_Jog_1	MCv_Jog	VAR			
9						

Example of the local label editor

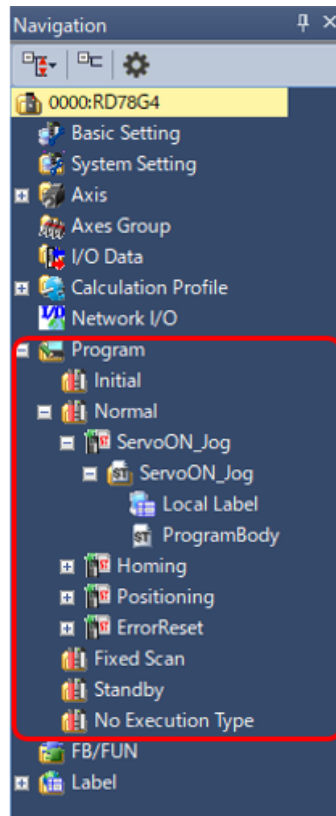
	Label Name	Data Type	Class	Initial Value	Constant	Comment
1	G_LeJogVelocity	FLOAT [Double Precision]	VAR_GLOBAL			JOG Velocity
2	G_LeJogAcc	FLOAT [Double Precision]	VAR_GLOBAL			JOG Acceleration
3	G_LeJogDec	FLOAT [Double Precision]	VAR_GLOBAL			JOG Deceleration
4	G_LeJogJerk	FLOAT [Double Precision]	VAR_GLOBAL			JOG Jerk
5	G_bJogBusy	Bit	VAR_GLOBAL			MC_Jog Busy
6	G_bPositioningReq	Bit	VAR_GLOBAL			Positioning Request
7	G_LePoint0Address	FLOAT [Double Precision]	VAR_GLOBAL			Home Position Address
8	G_LePoint1Address	FLOAT [Double Precision]	VAR_GLOBAL			Positioning Address
9	G_bHomeBusy	Bit	VAR_GLOBAL			MC_Home Busy
10						

Example of the global label editor

Programs of both PLC CPU and motion module are classified into the following program types.



<Project tree of GX Works3>



<Project tree of the motion control setting function>

Initial execution type program

This program type is executed only once when the CPU module powers ON or changes from the STOP status to the RUN status.

Scan execution type program (PLC CPU)/ normal execution type program (Motion module)

This program type is executed only once per scan from the scan following the scan where an initial execution type program was executed.

Fixed scan execution type program

An interrupt program which is executed at a specified time interval. Different from the normal interrupt program, this type of program does not require interrupt pointer (I) and IRET instruction to be written. Execution is performed by program file basis.

Event execution type program (PLC CPU)

This type of program starts execution when triggered by a specified event. The program is executed at the execution turn specified in program setting of the CPU parameters, and if execution conditions of specified trigger are met when the execution turn of the event execution type program comes, the program is executed.

Standby type program

This program is executed only when there is an execution request.

No execution type, unregistered program

This program type is not executed on the CPU module. Programs with no execution type specified (if selected) are written to the CPU. Unregistered programs are not written.

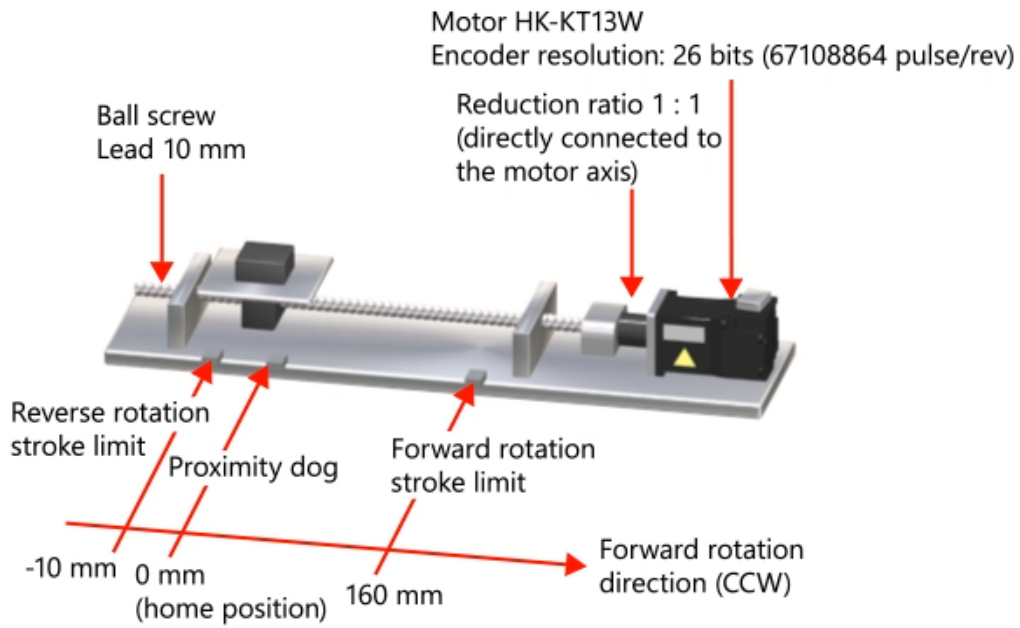
In this chapter, you have learned:

- PLCopen[®] Motion Control FB
- Programming Using ST
- Label, arrangement, and structure
- Program Type

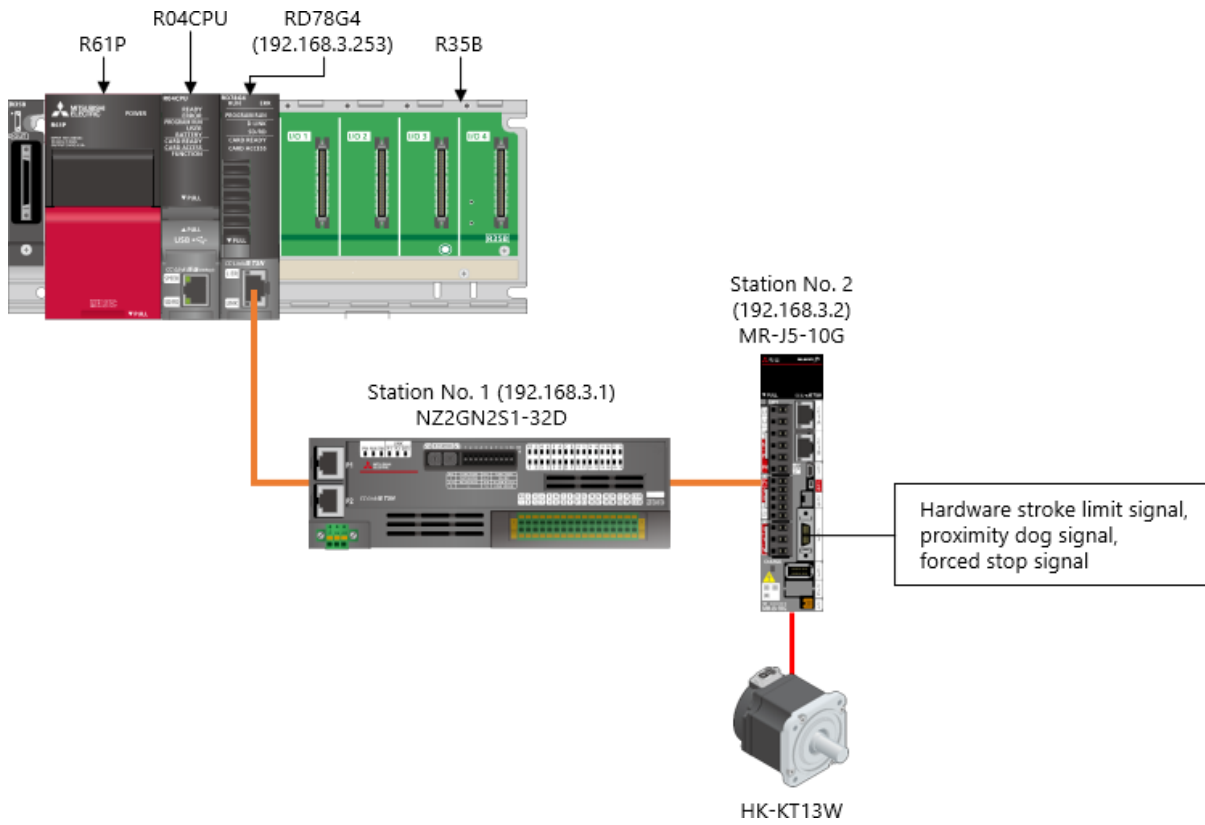
Important points

PLCopen [®] Motion Control FB	<ul style="list-style-type: none"> • PLCopen[®], a third-party organization, develops the standard FB specifications that are independent of the vendor. • The motion control is defined as Motion Control FB.
Programming Using ST	<ul style="list-style-type: none"> • All statements end with ";"(semicolon). • The assignment statement is represented by <variable> := <expression>;. • The input variable of the FB is indicated by ":=",and the output variable is indicated by "=>"
Label, Arrangement, and Structure	<ul style="list-style-type: none"> • The label types include the local label, global label, module label, system label, and slave label. • Arrangement is a collection of labels with the same variable type. • Structure is a collection of labels with different variable types.
Program Type	<ul style="list-style-type: none"> • The program execution types include the initial execution type, scan execution type/normal execution type, fixed scan execution type, event execution type, standby execution type, and no execution type/unregistered program.

Use the mechanism of a one-axis ball screw. The machine specifications are as follows.



The system configuration of the sample system is as follows.



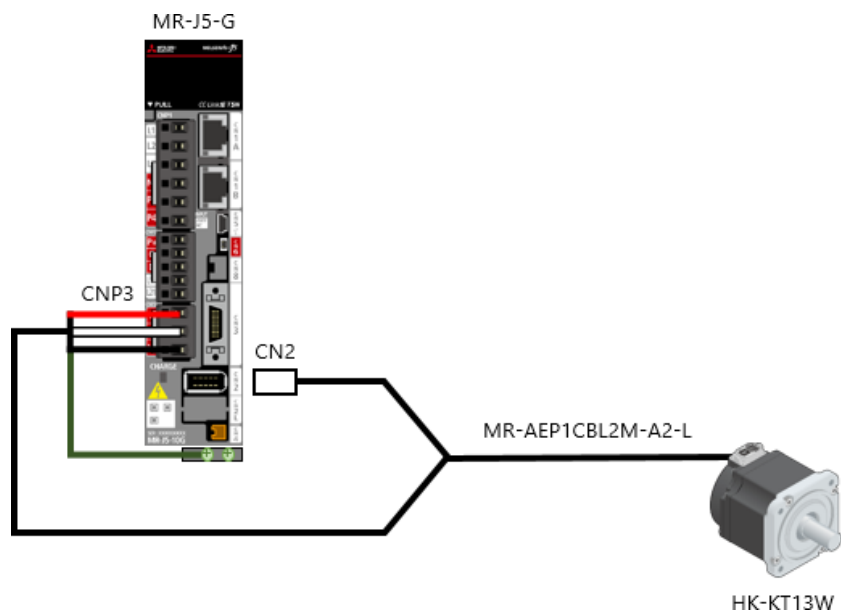
2.3

Wiring

2.3.1

Connecting a servo motor and a servo amplifier

For the servo motor power cable and encoder cable, use the 1-cable type option MR-AEP1CBL2M-A2-L.



2.3.2

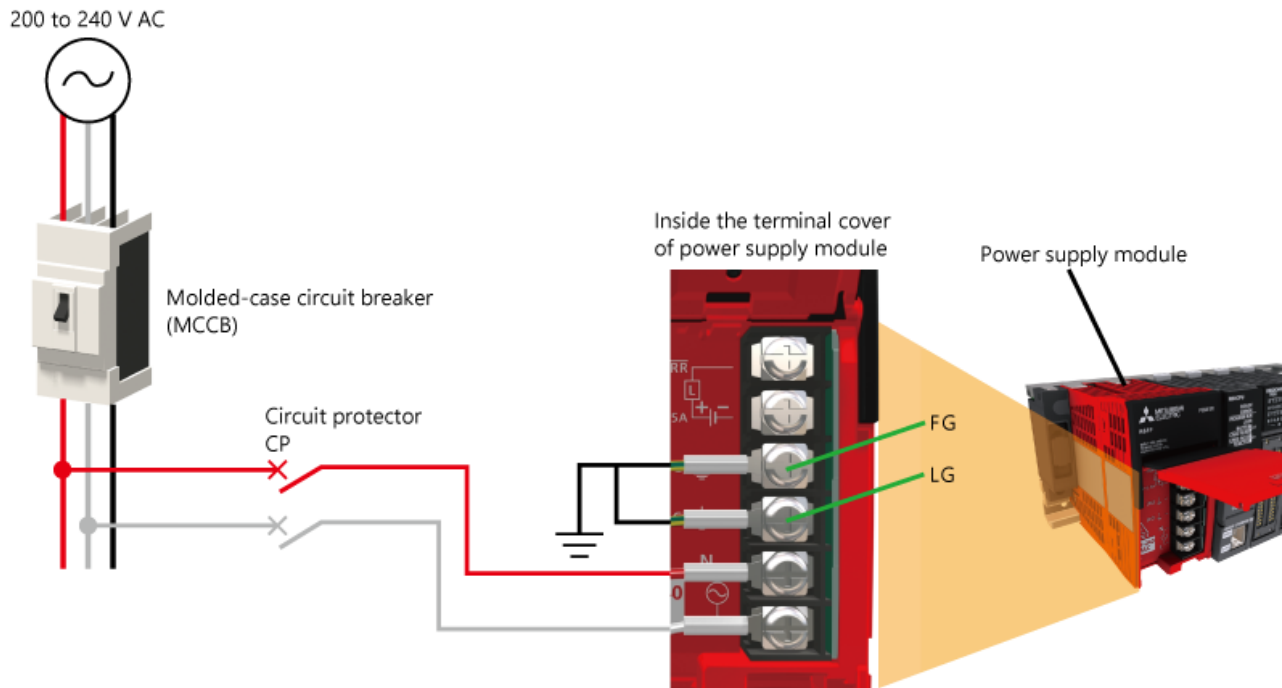
Wiring a power supply and network cables

(1) Wiring the PLC power supply

Wire the power supply to the power supply module of the PLC.

The following describes the wiring of the power supply module.

- Before wiring, open the terminal cover on the front of the power supply module.
- Connect the AC power supply to be input to the power supply input terminals (L and N).
- Always ground the FG and LG terminals with a ground resistance of 100 Ω or less.



Item	Applicable cable size	Tightening torque
Power supply cable	18 to 14 AWG	1.02 to 1.38 N·m
Grounding cable	18 to 14 AWG	1.02 to 1.38 N·m

2.3.2

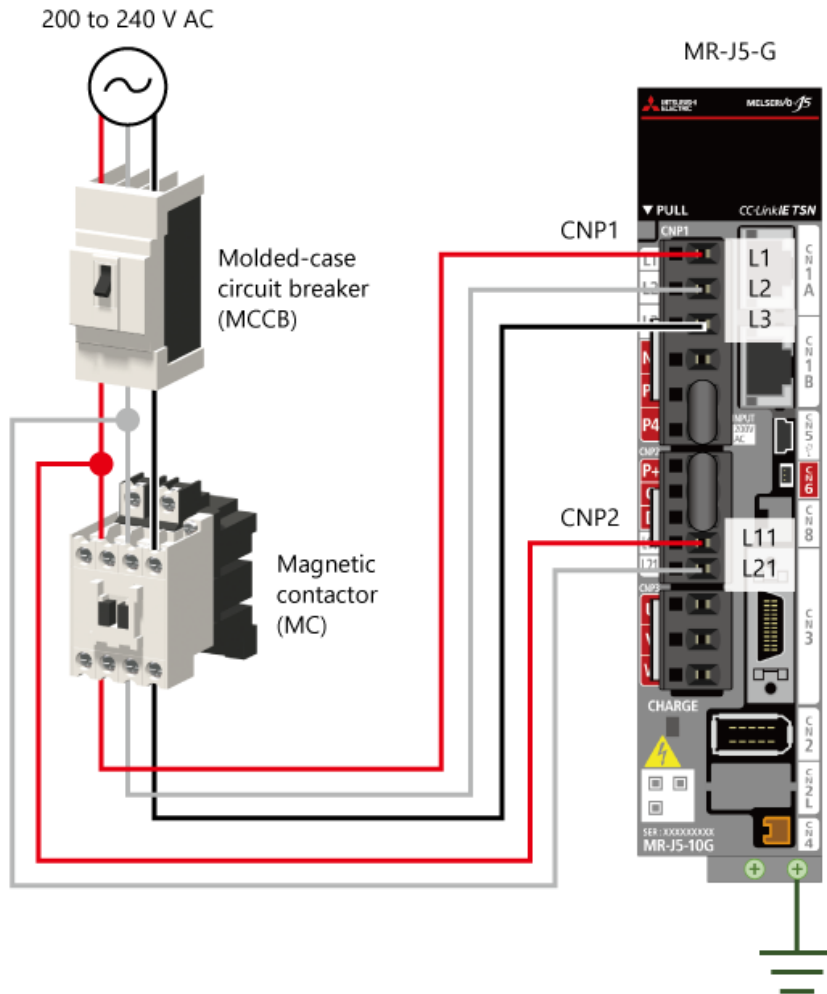
Wiring a power supply and network cables

(2) Wiring the power supply of the servo amplifier

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

The following shows the schematic diagram. The actual wiring and applicable cable sizes differ depending on the capacity. For details, refer to the Servo Amplifier User's Manual (Hardware).

- Always use the molded-case circuit breaker (MCCB) for the input cable of the power supply.
- Always connect a magnetic contactor (MC) between the main circuit power supply and the L1, L2, and L3 terminals of the servo amplifier.



2.3.2

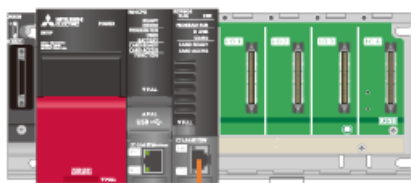
Wiring a power supply and network cables

(3) Wiring network cables

Wire the network cables (Ethernet cables).

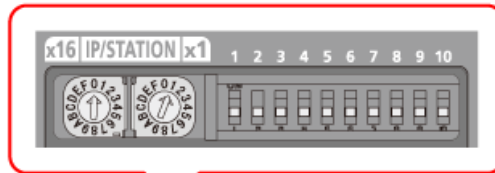
Wire the Ethernet cables that satisfy the following standards.

Communication speed	Ethernet cable	Connector	Standard
1Gbps	Category 5e or higher, straight cable (double shielded, STP)	RJ45 connector	Cables that satisfy the following standards <ul style="list-style-type: none"> • IEEE802.3(1000BASE-T) • ANSI/TIA/EIA-568-B(Category 5e)



Set the fourth octet of the IP addresses of the remote input module and servo amplifier with the rotary switches.

* Turn off all the DIP

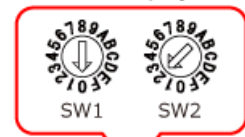


Ethernet cable



IP address : 192.168.3.1

Inside the display cover



Ethernet cable

IP address : 192.168.3.2

2.3.3

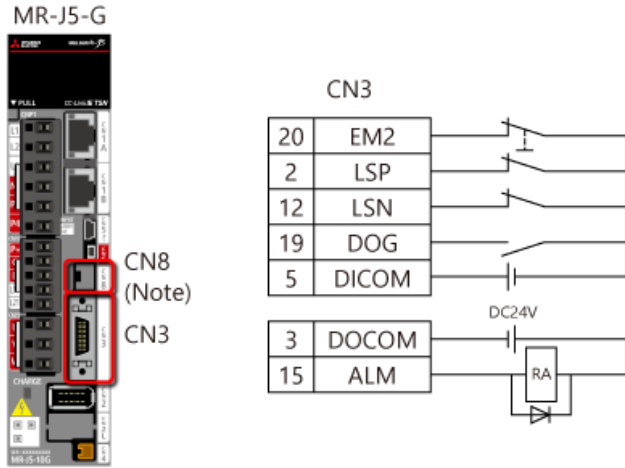
Wiring peripheral circuits

(1) I/O circuit of the amplifier

Wire the I/O circuit of the servo amplifier as follows.

Wire the proximity dog signal, forward/reverse rotation stroke limit switches, and forced stop switch.

In addition, configure the circuit in which the magnetic contactor (MC) is turned off by ALM output.



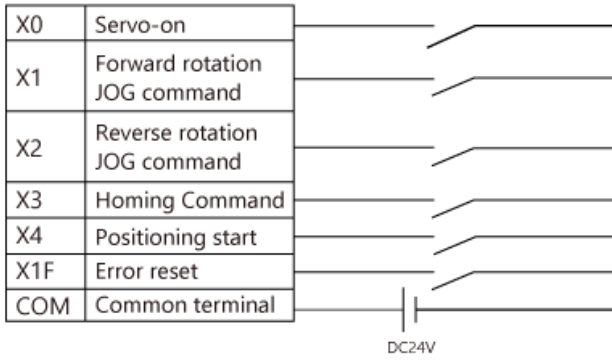
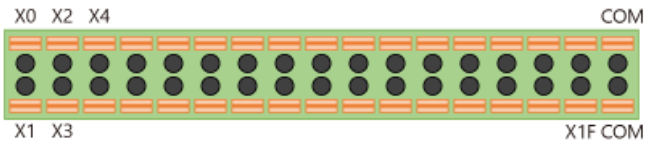
(Note) In this course, the STO function is not used. Thus, do not disconnect the short-circuit connector supplied with the servo amplifier from CN8.

2.3.3

Wiring peripheral circuits

(2) External circuit of the remote input module

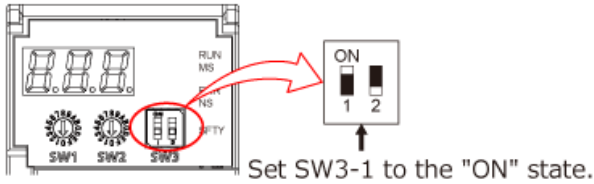
Wire the external input circuit of the remote input module as follows.



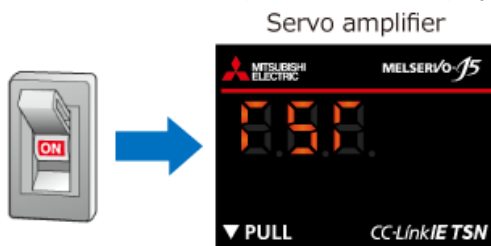
Use the alternate operation switch only for Servo-on (X0), and use the momentary operation switch for other signals.

After the wiring is completed, perform a test operation with a single servo amplifier to check the rotation direction and others. Follow the procedures below to perform the test operation.

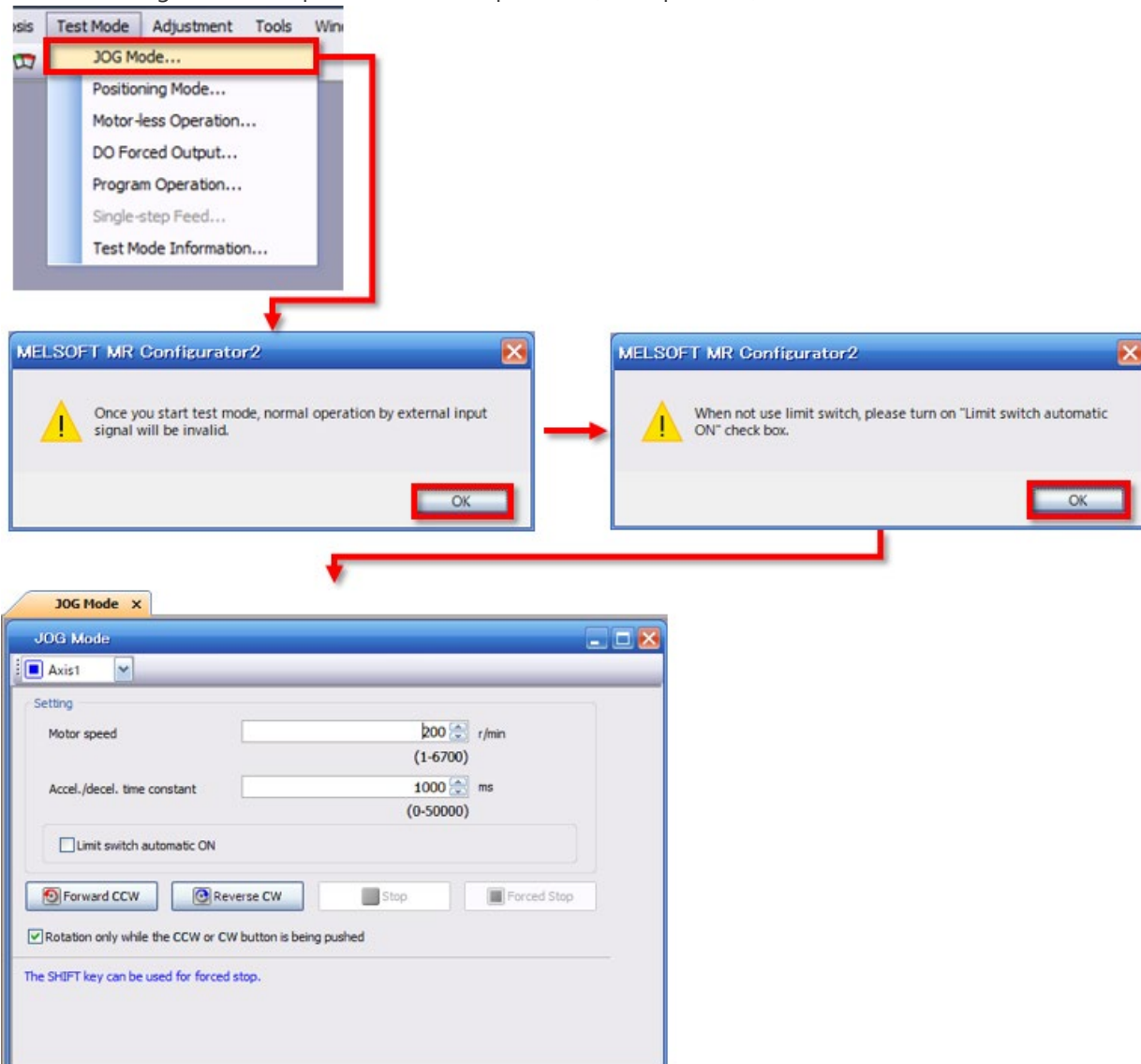
- (1) Turn off the servo amplifier and PLC.
- (2) Turn on the DIP switch (SW3-1) of the servo amplifier.



- (3) Connect the servo amplifier and a personal computer with a USB cable or Ethernet cable. (Note)
- (4) Turn on the servo amplifier. "TST" is displayed on the display.



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



- (6) Check the rotation direction and machine operation.

(7) After the test operation is completed, turn off the servo amplifier, and turn off the DIP switch (SW3-1).

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

Tips
When using multiple servo amplifiers, the connection with Ethernet can eliminate the necessity of replacing cables.

In this chapter, you have learned:

- Device Configuration
- System Configuration
- Wiring
- Test Operation

Important points

Device Configuration	<ul style="list-style-type: none"> • Use a one-axis ball screw in the sample system.
System Configuration	<ul style="list-style-type: none"> • Connect the remote input module NZ2GN2S1-32D and servo amplifier MR-J5-G to the motion module RD78G4.
Wiring	<ul style="list-style-type: none"> • Use a one-cable type option cable for the servo motor. • Set the fourth octet of the IP addresses of the remote input module and servo amplifier with the rotary switches. • Connect the proximity dog signal, limit switches, and forced stop switch to the servo amplifier. • Connect operation command switches to the remote input module.
Test Operation	<ul style="list-style-type: none"> • Change the DIP switch of the servo amplifier, and connect it to a personal computer. • Check the rotation direction of the motor and machine operation using the test operation function of MR Configurator2.

In this chapter, you will learn how to create projects required for operating the motion module by using the sample program. Start GX Works3 and operate it according to the screen.

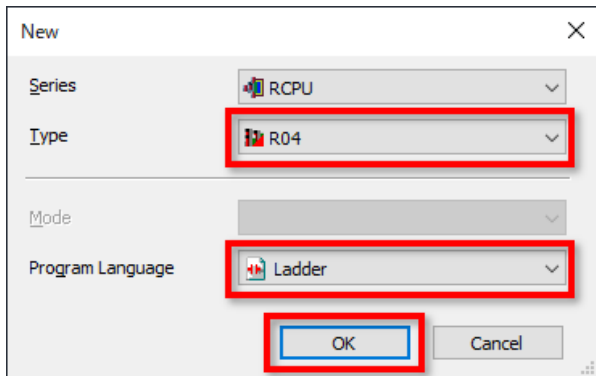
Or, download the following sample program and check the settings.

★[Sample_RD78GBasic_en.zip\(1.21MB\)](#) GX Works3 Ver.1.072A or later is required.

- (1) Select [Project] → [New] in GX Works3.

Select the model of a PLC CPU to be used and a program language to be used in the PLC CPU on the following window. In the sample program, the model is set to R04CPU, and the program language is set to Ladder.

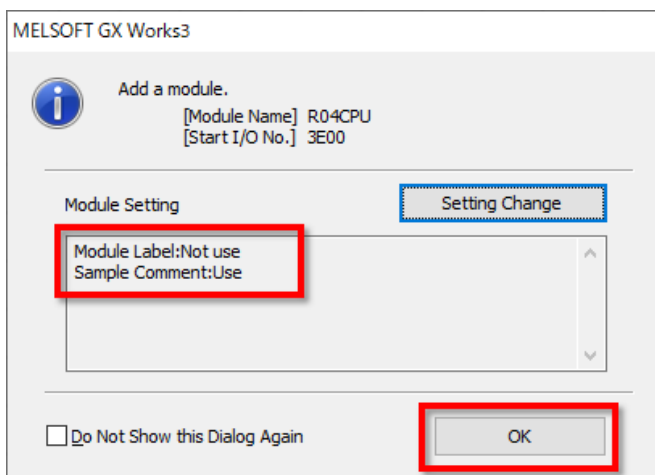
After the selection is completed, click the [OK] button.



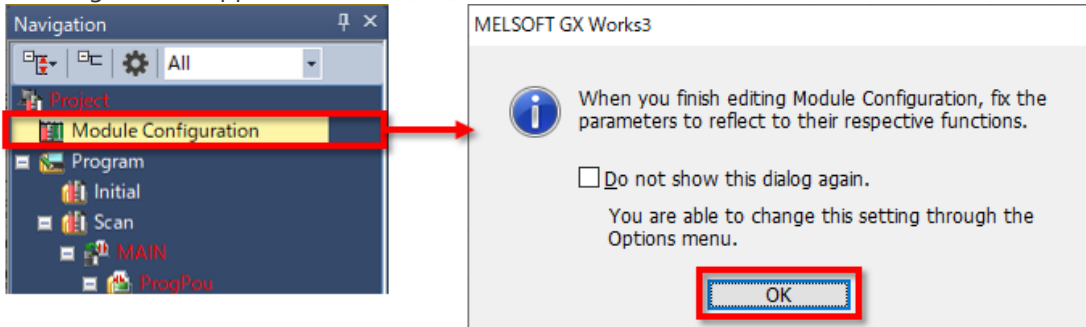
- (2) When the following window appears, set whether to use the module label and sample comment.

To change the setting, click the [Setting Change] button.

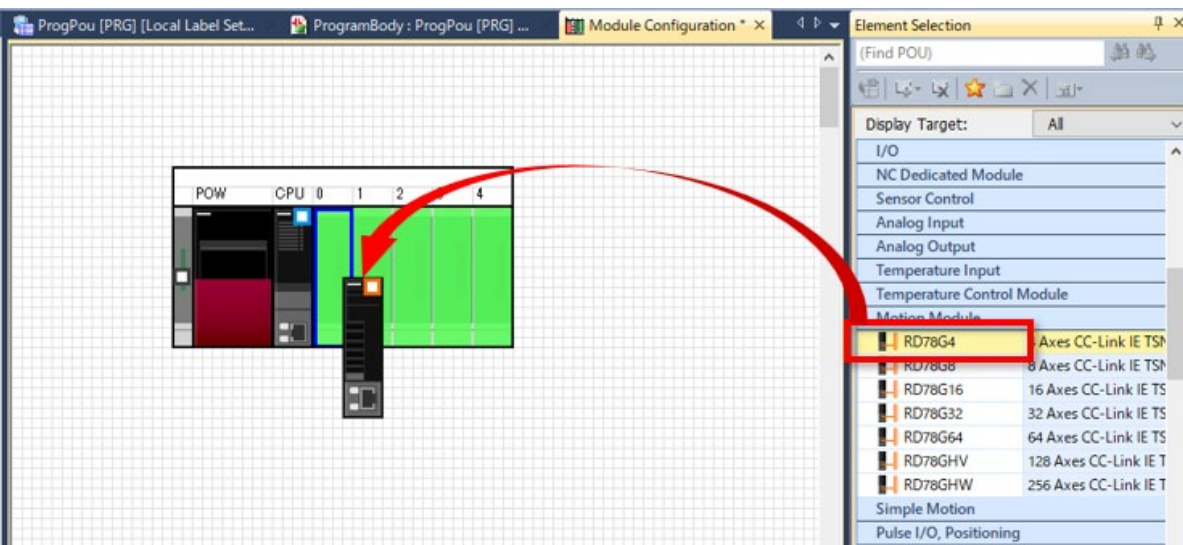
Click the [OK] button to open the project.



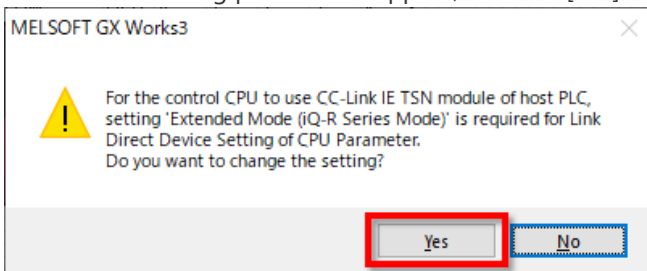
- (3) Double-click [Module Configuration] in the project tree. When the following window appears, click the [OK] button.



When the Module Configuration screen is opened, drag and drop a module to be used (base module, power supply module, and motion module) from the [Element Selection] window displayed on the right, and create a module configuration diagram as the one shown in Section 2.2.



After creating the module configuration diagram, right-click the screen, and select [Parameter] → [Fix]. When the following precautions appear, click the [Yes] button.



When the following window appears, check that the sample comment is set to [Use]. When [Not use] is set, click the [Setting Change] button, and change the setting on the displayed window. Click the [OK] button to complete.



Add a module.

[Module Name] RD78G4
[Start I/O No.] 0000

Module Setting

Setting Change

Sample Comment:Use

Do Not Show this Dialog Again

OK

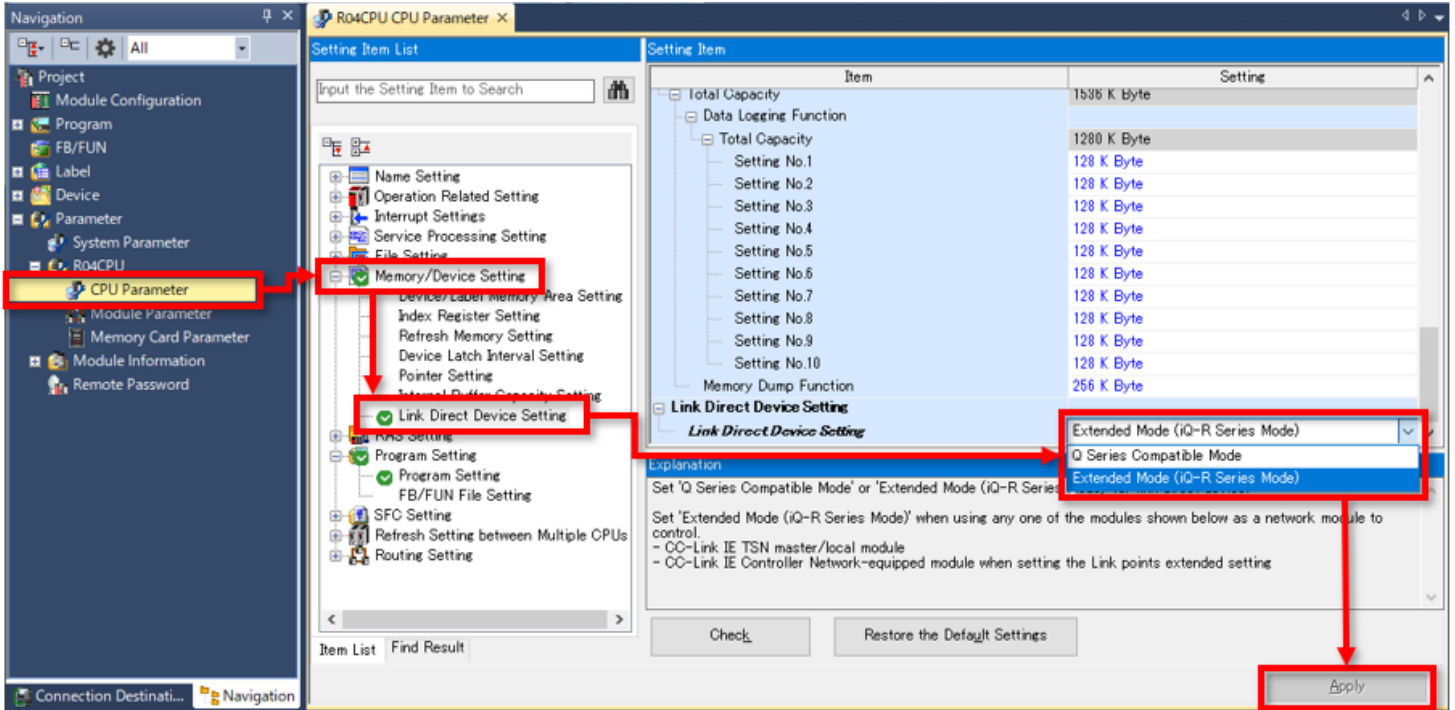
Double-click [Parameter] → [R04CPU] → [CPU Parameter] in the project tree.

Click [Link Direct Device Setting] in the setting item list.

Operate the drop-down list, and check that the link direct device setting is set to [Extended Mode (iQ-R Series Mode)].

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

After the setting is completed, click the [Apply] button on the lower right.



3.3

Motion Module Setting

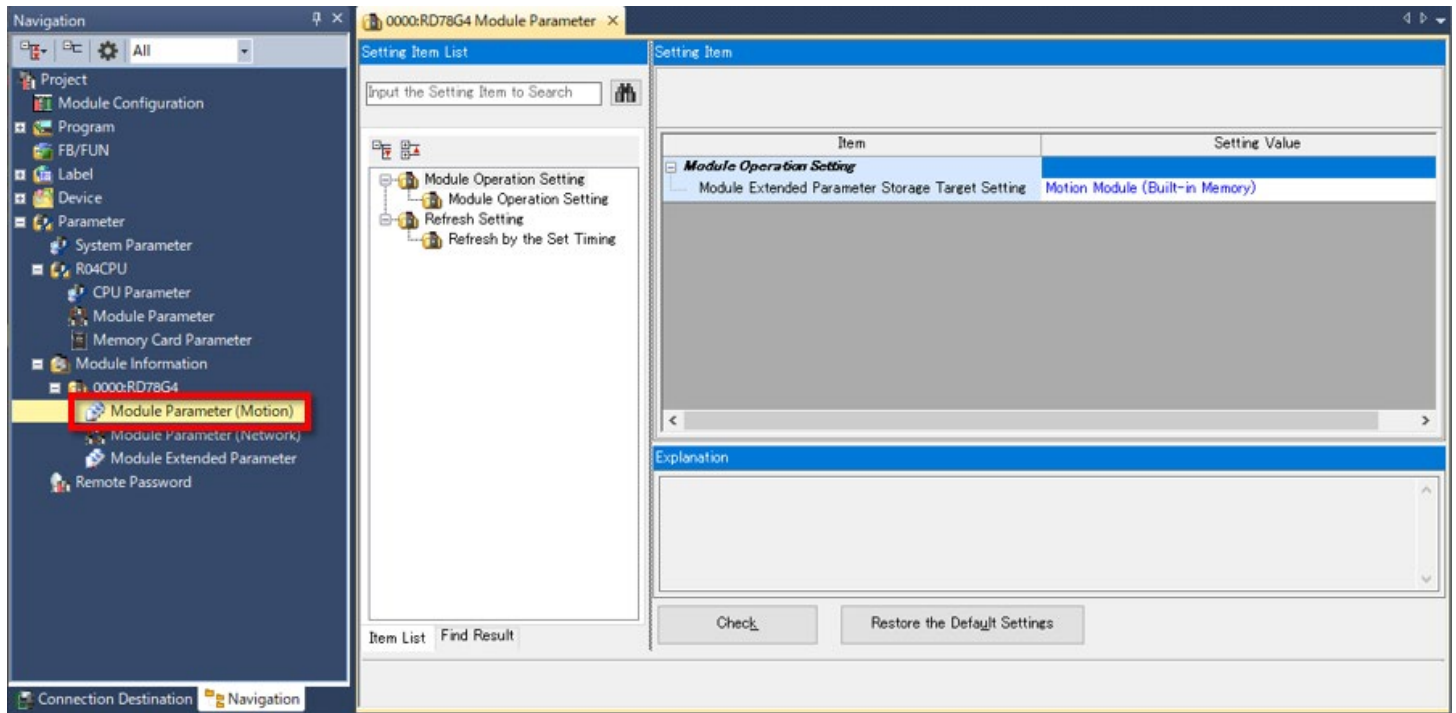
3.3.1

Module parameter (Motion)

Double-click [Parameter] → [Module Information] → [0000:RD78G4] → [Module Parameter (Motion)] in the project tree. In the module operation setting, the storage destination of the module expansion parameters can be selected from a built-in memory or SD card (refer to 3.3.3 and 3.4).

In the refresh setting, set the timing to refresh the devices.

In this course, keep the default settings for both.



Double-click [Parameter] → [Module Information] → [0000:RD78G4] → [Module Parameter (Network)] in the project tree. In this section, configure the settings for devices to be connected to the network and a link refresh.

(1) Network configuration setting

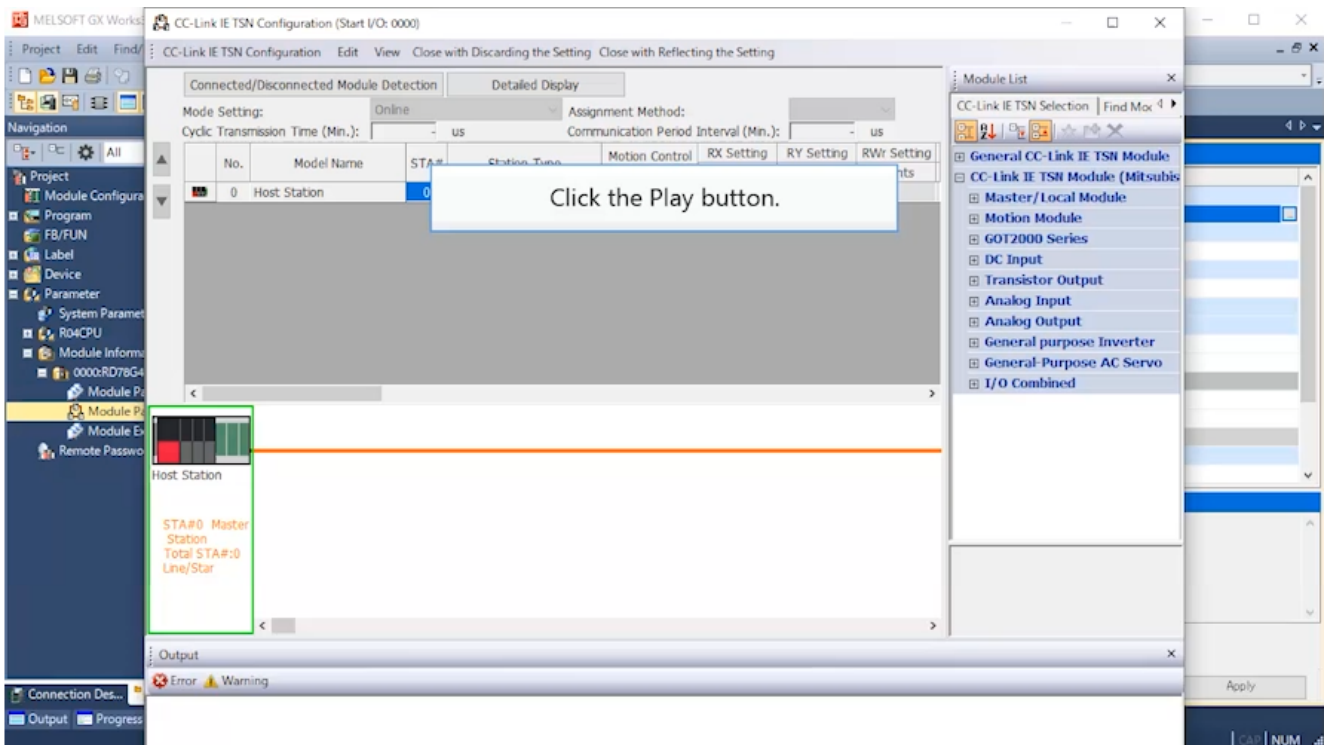
Select [Basic Settings] in the setting item list, and double-click <Detailed Setting> in Network Configuration Settings.

The screenshot shows the '0000:RD78G4 Module Parameter' configuration window. The left sidebar contains a navigation tree with 'Module Parameter (Network)' selected. The 'Setting Item List' pane shows a tree structure where 'Network Configuration Settings' is highlighted. The 'Setting Item' pane displays a table of settings for 'Network Configuration Settings'.

Item	Setting
Network Configuration Settings	<Detailed Setting>
Network Configuration Settings	<Detailed Setting>
Refresh Settings	<Detailed Setting>
Network Topology	<Detailed Setting>
Communication Period Setting	<Detailed Setting>
Basic Period Setting	<Detailed Setting>
Setting in Units of 1us	Not Set
Communication Period Interval Setting (Do not Set it in Units of 1us)	1000.00 us
Communication Period Interval Setting (Set it in Units of 1us)	1000.00 us
System Reservation Time	20.00 us
Cyclic Transmission Time	500.00 us
Transient Transmission Time	480.00 us
Multiple Period Setting	<Detailed Setting>
Normal-Speed	x4

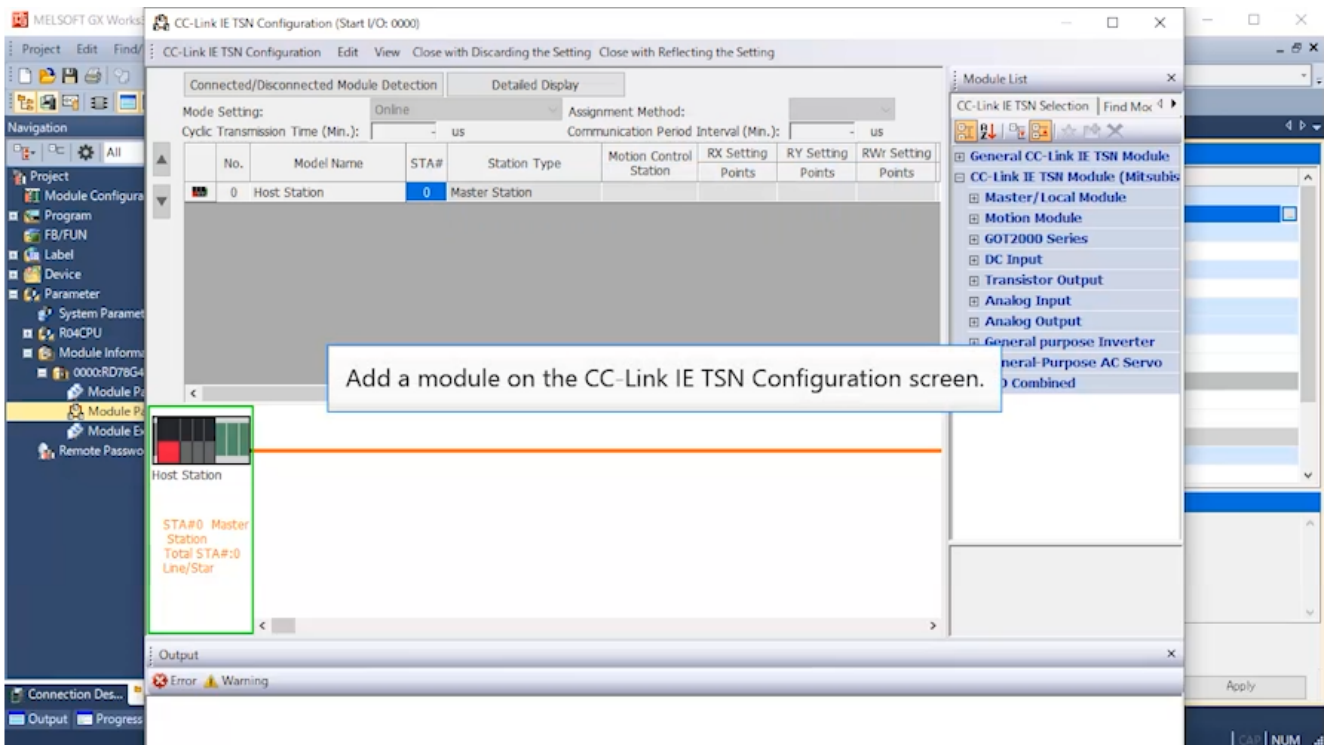
At the bottom of the window, there are buttons for 'Check', 'Restore the Default Settings', and 'Apply'.

(2) Adding a module



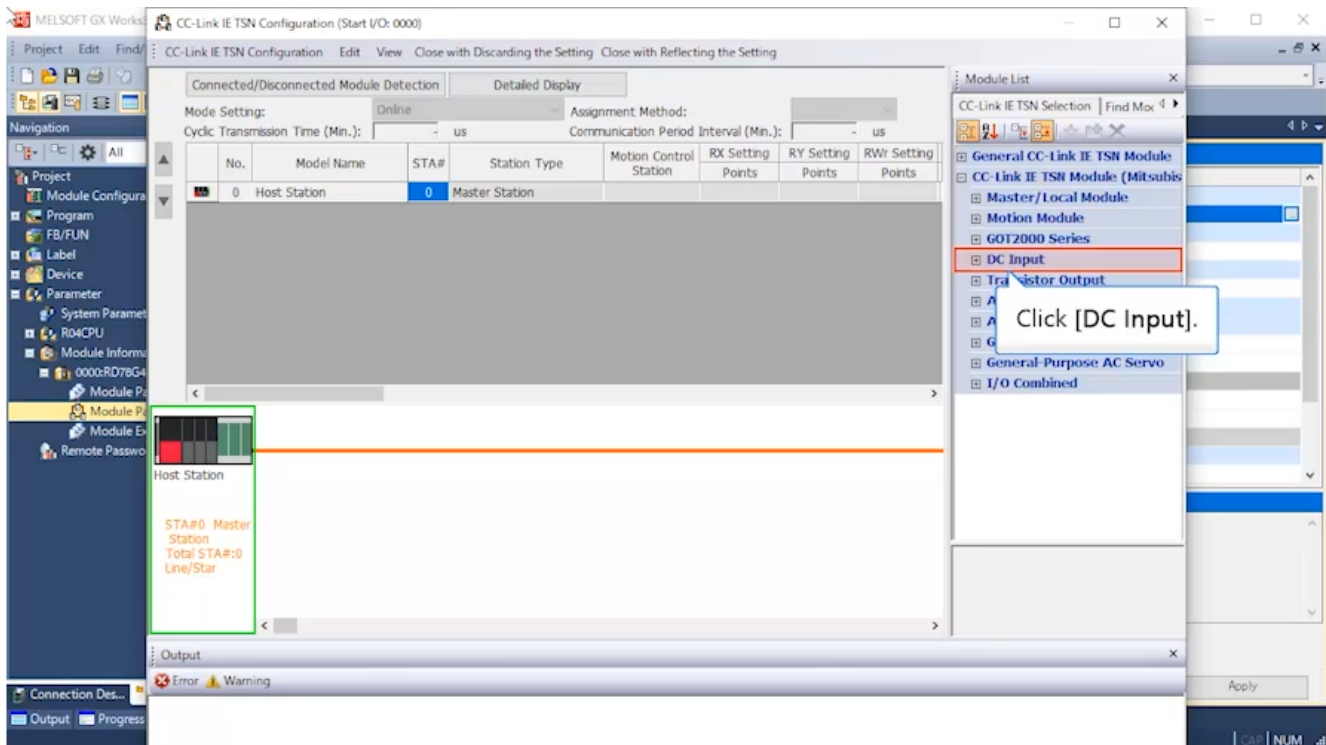
* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module



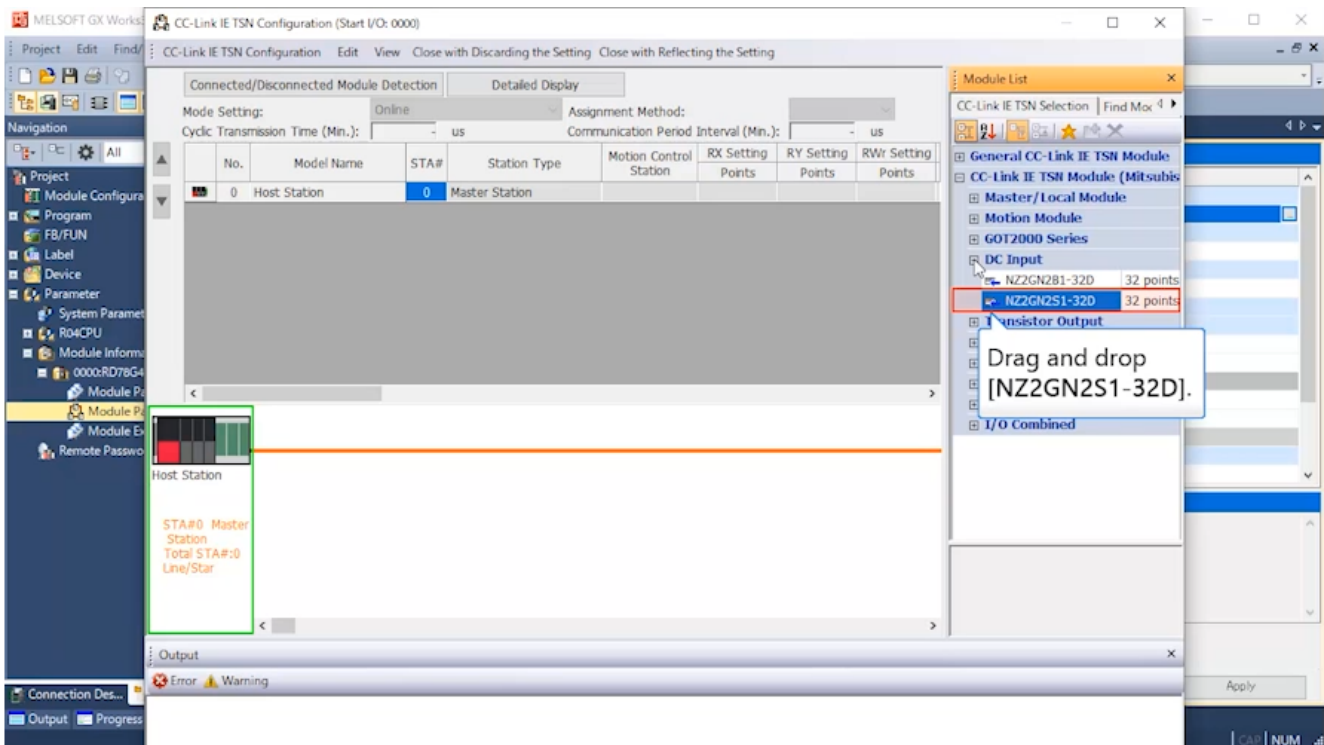
* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module



* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module



* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module

The screenshot displays the 'CC-Link IE TSN Configuration' window. The main table shows the following configuration:

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station	<input type="checkbox"/>	32	32	4

The diagram below the table shows a Host Station (STA#0) and a Remote Station (STA#1) connected by a line. The Remote Station is labeled 'NZ2GN2S1-32D'. A callout box points to this module with the text: 'The remote input module NZ2GN2S1-32D is added to the station No. 1.'

The right-hand 'Module List' window shows the following modules selected:

- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi)
- Master/Local Module
- Motion Module
- GOT2000 Series
- DC Input
 - NZ2GN2S1-32D 32 points
- Transistor Output
- Analog Input
- Analog Output
- General purpose Inverter
- General Purpose AC Servo
- I/O Combined

The [Outline] section shows: DC input module (spring clamp terminal block type). The [Specification] section shows: CC-Link IE TSN Class B.

* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module

The screenshot shows the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window displays a table of modules and a rack diagram. The table has the following data:

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RW Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station	<input type="checkbox"/>	32	32	4

The rack diagram shows a Host Station (STA#0) and a Remote Station (STA#1) connected by an orange line. The Remote Station is labeled 'NZ2GN2S1-32D'. A callout box points to 'General-Purpose AC Servo' in the Module List on the right side of the screen.

Module List:

- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi)
 - Master/Local Module
 - Motion Module
 - GOT2000 Series
 - DC Input
 - NZ2GN2S1-32D 32 points
 - Transistor Output
 - Analog Input
 - Analog Output
 - General purpose Inverter
 - General-Purpose AC Servo
 - I/O Combined

Click [General-Purpose AC Servo].

[Outline]
DC input module (spring clamp terminal block type)

[Specification]
CC-Link IE TSN Class B

* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module

The screenshot shows the 'CC-Link IE TSN Configuration' window in MELSOFT GX Works3. The main window is divided into several sections:

- Table:** A table listing modules with columns for No., Model Name, STA#, Station Type, Motion Control Station, RX Setting Points, RY Setting Points, and RWr Setting Points.

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station		32	32	4
- Physical Layout:** A diagram showing a 'Host Station' and a 'Remote Station' (STA#1) connected by an orange line. The remote station is labeled 'NZ2GN2S1-32D'.
- Module List:** A list of modules on the right side of the screen. The 'MR-J5-G' module is highlighted with a red box, and a callout box points to it with the text 'Drag and drop [MR-J5-G]'.

* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of stations and a physical rack diagram. A callout box points to the MR-J5-G module in the rack, stating: "MR-J5-G is added to the station No. 2."

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station		32	32	4
2	MR-J5-G	2	Remote Station	<input checked="" type="checkbox"/>			24

The rack diagram shows a Host Station (STA#0) connected to STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). The MR-J5-G module is highlighted with a green box in the rack and a blue callout box.

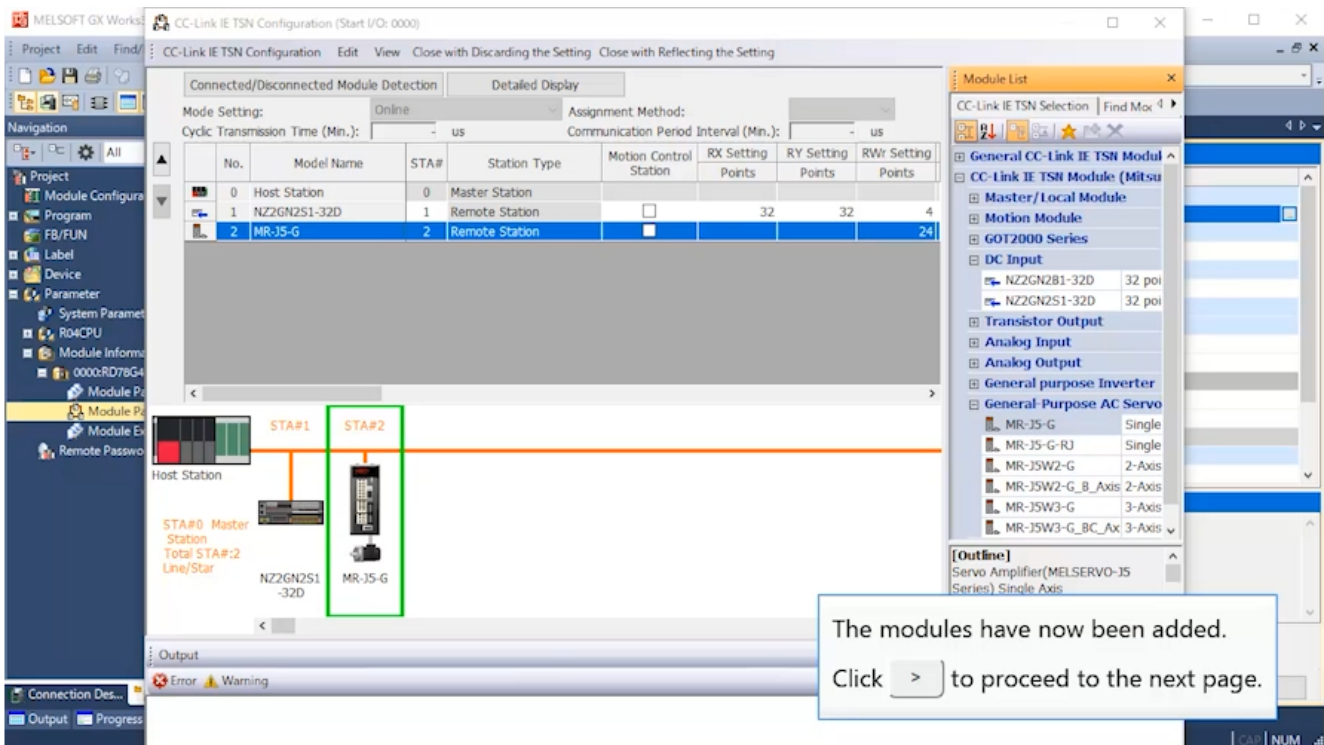
The Module List on the right side of the screen shows the following modules:

- General CC-Link IE TSN Modul
- CC-Link IE TSN Module (Mitsu)
- Master/Local Module
- Motion Module
- GOT2000 Series
- DC Input
- NZ2GN2S1-32D 32 poi
- NZ2GN2S1-32D 32 poi
- Transistor Output
- Analog Input
- Analog Output
- General purpose Inverter
- General Purpose AC Servo
- MR-J5-G Single
- MR-J5-G-RJ Single
- MR-J5W2-G 2-Axis
- MR-J5W2-G_B_Axis 2-Axis
- MR-J5W3-G 3-Axis
- MR-J5W3-G_BC_Ax 3-Axis

The [Outline] section shows: Servo Amplifier(MELSERVO-J5 Series) Single Axis. The [Specification] section shows: CC-Link IE TSN Class B.

* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(2) Adding a module



The screenshot shows the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window displays a table of stations and a network diagram. The table lists the following stations:

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station		32	32	4
2	MR-J5-G	2	Remote Station				24

The network diagram shows a Host Station connected to STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). The modules are highlighted in green in the diagram.

The Module List on the right side of the screen shows the following modules:

- General CC-Link IE TSN Modul
- CC-Link IE TSN Module (Mitsu)
- Master/Local Module
- Motion Module
- GOT2000 Series
- DC Input
 - NZ2GN2B1-32D 32 poi
 - NZ2GN2S1-32D 32 poi
- Transistor Output
- Analog Input
- Analog Output
- General purpose Inverter
- General Purpose AC Servo
 - MR-J5-G Single
 - MR-J5-G-RJ Single
 - MR-J5W2-G 2-Axis
 - MR-J5W2-G_B_Axis 2-Axis
 - MR-J5W3-G 3-Axis
 - MR-J5W3-G_BC_Ax 3-Axis

The [Outline] section shows: Servo Amplifier(MELSERVO-J5 Series) Single Axis.

A callout box at the bottom right of the screenshot contains the text: "The modules have now been added. Click > to proceed to the next page."

* If NZ2GN2S1-32D or MR-J5-G is not displayed in the module list on the right side of the screen, download the profile data (CSP+ file) from [here](#), and register it to GX Works3.

(3) Remote station setting

The screenshot displays the MELSOFT GX Works3 interface for configuring a CC-Link IE TSN network. The main window is titled "CC-Link IE TSN Configuration (Start I/O: 0000)".

Table 1: Configuration Parameters

Mode Setting:	Online	Assignment Method:	
Cyclic Transmission Time (Min.):	- us	Communication Period Interval (Min.):	- us

Table 2: Station List

No.	Model Name	STA#	Station Type	Motion Control	RX Setting	RY Setting	RW Setting
0	Host Station	0					
1	NZ2GN2S1-32D	1					4
2	MR-J5-G	2	Remote Station				24

Diagram: A network diagram shows a Host Station (STA#0) connected to two remote stations: STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). STA#2 is highlighted with a green box.

Module List: The right-hand pane shows the "Module List" for the CC-Link IE TSN selection. The "General CC-Link IE TSN Module" is expanded, showing various modules including the selected MR-J5-G.

Callout: A white box with black text says "Click the Play button." pointing to the play icon in the top toolbar.

Output: The bottom status bar shows "Error" and "Warning" icons.

(3) Remote station setting

The screenshot displays the MELSOFT GX Works3 interface for configuring a CC-Link IE TSN network. The main window shows a table of station configurations and a physical network diagram.

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RW Setting Points
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station		32	32	4
2	MR-J5-G	2	Remote Station	<input checked="" type="checkbox"/>			24

The network diagram below the table shows a Host Station (STA#0) connected to two Remote Stations (STA#1 and STA#2). STA#1 is represented by an NZ2GN2S1-32D module, and STA#2 is represented by an MR-J5-G module. A red line indicates the network connection between the Host Station and the Remote Stations.

A callout box with a white background and black border contains the text: "Configure the settings of the remote input module and servo amplifier." This callout points to the MR-J5-G module in the diagram.

The right-hand side of the interface shows a "Module List" window with a tree view of the configuration. The "Motion Module" section is expanded, showing the selection of "MR-J5-G" for the remote station. Below this, the "Outline" section shows the configuration for the "Servo Amplifier(MELSERVO-J5 Series) Single Axis" and "CC-Link IE TSN Class B".

(3) Remote station setting

The screenshot displays the 'CC-Link IE TSN Configuration' window in MELSOFT GX Works2. The main window is titled 'CC-Link IE TSN Configuration (Start I/O: 0000)'. The 'Mode Setting' is set to 'Online'. The 'Cyclic Transmission Time (Min.)' is set to 'us'. The 'Assignment Method' is set to 'us'. A callout box with the text 'Click [Detailed Display].' points to the 'Detailed Display' button in the top right corner of the main window.

The main window contains a table with the following data:

No.	Model Name	STA#	Station	Assignment Method	Transmitting Points	Receiving Points	R/W Setting
0	Host Station	0	Master Station				
1	NZ2GN2S1-32D	1	Remote Station		32	32	4
2	MR-J5-G	2	Remote Station				24

Below the table is a network diagram showing a 'Host Station' connected to 'STA#1' and 'STA#2'. The 'Host Station' is represented by a rack of modules, including 'STA#0 Master Station' and 'Total STA# :2 Line/Star'. The 'Host Station' is connected to 'STA#1' (NZ2GN2S1-32D) and 'STA#2' (MR-J5-G). The 'Host Station' is also connected to 'STA#1' and 'STA#2' via a network line.

The 'Module List' window on the right shows the following modules:

- General CC-Link IE TSN Modul
- CC-Link IE TSN Module (Mitsu)
- Master/Local Module
- Motion Module
- GOT2000 Series
- DC Input
 - NZ2GN2B1-32D 32 poi
 - NZ2GN2S1-32D 32 poi
- Transistor Output
- Analog Input
- Analog Output
- General purpose Inverter
- General Purpose AC Servo
 - MR-J5-G Single
 - MR-J5-G-RJ Single
 - MR-J5W2-G 2-Axis
 - MR-J5W2-G_B_Axis 2-Axis
 - MR-J5W3-G 3-Axis
 - MR-J5W3-G_BC_Ax 3-Axis

The 'Output' window at the bottom shows the following information:

- Output
- Error Warning
- Servo Amplifier(MELSERVO-J5 Series) Single Axis
- CC-Link IE TSN Class B

(3) Remote station setting

The screenshot displays the MELSOFT GX Works2 interface for CC-Link IE TSN Configuration. The main window shows a table of station settings and a network diagram below it. A text box in the center of the diagram states "The displayed items increase." The network diagram shows a Host Station connected to two Remote Stations (STA#1 and STA#2) via a network line. The Host Station is labeled "STA#0 Master Station Total STA#:2 Line/Star". The Remote Stations are labeled "STA#1" and "STA#2". The Host Station is connected to an NZ2GN2S1-32D module, which is connected to an MR-J5-G module. The Remote Stations are connected to MR-J5-G modules.

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	Start	End	Y Settin Points
0	Host Station	0	Master Station					
1	NZ2GN2S1-32D	1	Remote Station	<input type="checkbox"/>	32	0000	001F	32
2	MR-J5-G	2	Remote Station	<input type="checkbox"/>				

Module List:

- General CC-Link IE TSN Modul
- CC-Link IE TSN Module (Mitsu)
 - Master/Local Module
 - Motion Module
 - GOT2000 Series
 - DC Input
 - NZ2GN281-32D 32 poi
 - NZ2GN2S1-32D 32 poi
 - Transistor Output
 - Analog Input
 - Analog Output
 - General purpose Inverter
 - General Purpose AC Servo
 - MR-J5-G Single
 - MR-J5-G-RJ Single
 - MR-J5W2-G 2-Axis
 - MR-J5W2-G_B_Axis 2-Axis
 - MR-J5W3-G 3-Axis
 - MR-J5W3-G_BC_Ax 3-Axis

Output: Error Warning

(3) Remote station setting

The screenshot displays the 'CC-Link IE TSN Configuration' window. The main table lists the configured stations:

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	Start	End	Y Settin Points
0	Host Station	0	Master Station	<input checked="" type="checkbox"/>				
1	NZ2GN2S1-32D	1	Remote Station	<input type="checkbox"/>	32	0000	001F	32
2	MR-J5-G	2	Remote Station	<input type="checkbox"/>				

A callout box with the text "Select 'Motion Control Station' of the remote input module." points to the checkbox in the 'Motion Control Station' column for STA#1. Below the table, a network diagram shows a Host Station connected to STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). The 'Module List' on the right shows the selected module: MR-J5-G, Single.

(3) Remote station setting

The screenshot displays the MELSOFT GX Works2 interface for configuring a CC-Link IE TSN network. The main window shows a table of station configurations and a network diagram below it.

No.	Model Name	STA#	Station Type	Motion Control Station	RX Setting Points	Start	End	Y Settin Points
0	Host Station	0	Master Station					
1	NZ2GN2S1-32D	1	Remote Station	<input checked="" type="checkbox"/>	32			32
2	MR-J5-G	2	Remote Station	<input checked="" type="checkbox"/>				

The network diagram below the table shows a Host Station (STA#0) connected to two Remote Stations: STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). A callout box points to the 'Motion Control Station' checkbox for the MR-J5-G module in the table, with the text: "Select 'Motion Control Station' of the servo amplifier."

The right-hand side of the interface shows a 'Module List' window with a tree view of modules. The 'Motion Module' section is expanded, showing the selection of 'MR-J5-G' as a 'Single' axis servo amplifier.

The bottom status bar shows 'Output' and 'Error' indicators, with a warning message: "Warning".

(3) Remote station setting

The screenshot displays the 'CC-Link IE TSN Configuration' window. At the top, there are tabs for 'Connected/Disconnected Module Detection' and 'Simple Display'. Below these are settings for 'Mode Setting' (Online), 'Assignment Method' (Start/End), 'Cyclic Transmission Time (Min.)' (- us), and 'Communication Period Interval (Min.)' (- us). A table lists the stations:

No.	Model Name	RWw Setting		LB Setting		LW Setting		Autom.
		Start	End	Points	Start	End	Points	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							

Below the table is a network diagram showing a 'Host Station' (STA#0) connected to a remote station (STA#2) via a line. The remote station is represented by a rack containing an 'MR-J5-G' servo amplifier. A callout box with a blue border and white background points to the 'LB Setting' and 'LW Setting' columns in the table, containing the text: 'If values are set in "LB Setting" and "LW Setting", delete them.'

The right side of the window shows a 'Module List' and a 'Module Selection' pane. The 'Module Selection' pane lists various modules, including 'General CC-Link IE TSN Modul', 'CC-Link IE TSN Module (Mits)', 'Master/Local Module', and 'Motion Module'. The 'Module List' pane shows the selected module 'MR-J5-G' and its specifications, including 'Transistor Output', 'Analog Input', 'Analog Output', 'General purpose Inverter', and 'General Purpose AC Servo'. The 'Outline' pane shows 'Servo Amplifier(MELSERVO-J5 Series) Single Axis' and 'CC-Link IE TSN Class B'.

(3) Remote station setting

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of station settings:

No.	Model Name	RWw Setting		LB Setting		LW Setting		Autom.
		Start	End	Start	End	Start	End	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							

Below the table, a network diagram shows a Host Station (STA#0) connected to a Remote Station (STA#2) via a network line. The Remote Station is highlighted with a green box and contains an MR-J5-G servo amplifier. The status bar indicates: STA#0 Master Station, Total STA#2 Line/Star.

The right-hand side of the interface shows the 'Module List' window, which is expanded to show the 'General CC-Link IE TSN Module' and 'CC-Link IE TSN Module (Mits)' categories. The 'Motion Module' is selected, showing a list of modules including NZZ2GN2S1-32D and MR-J5-G.

An output window at the bottom right contains the following text:

Continue to the next page.
Click to proceed to the next page.

(3) Remote station setting (continue)

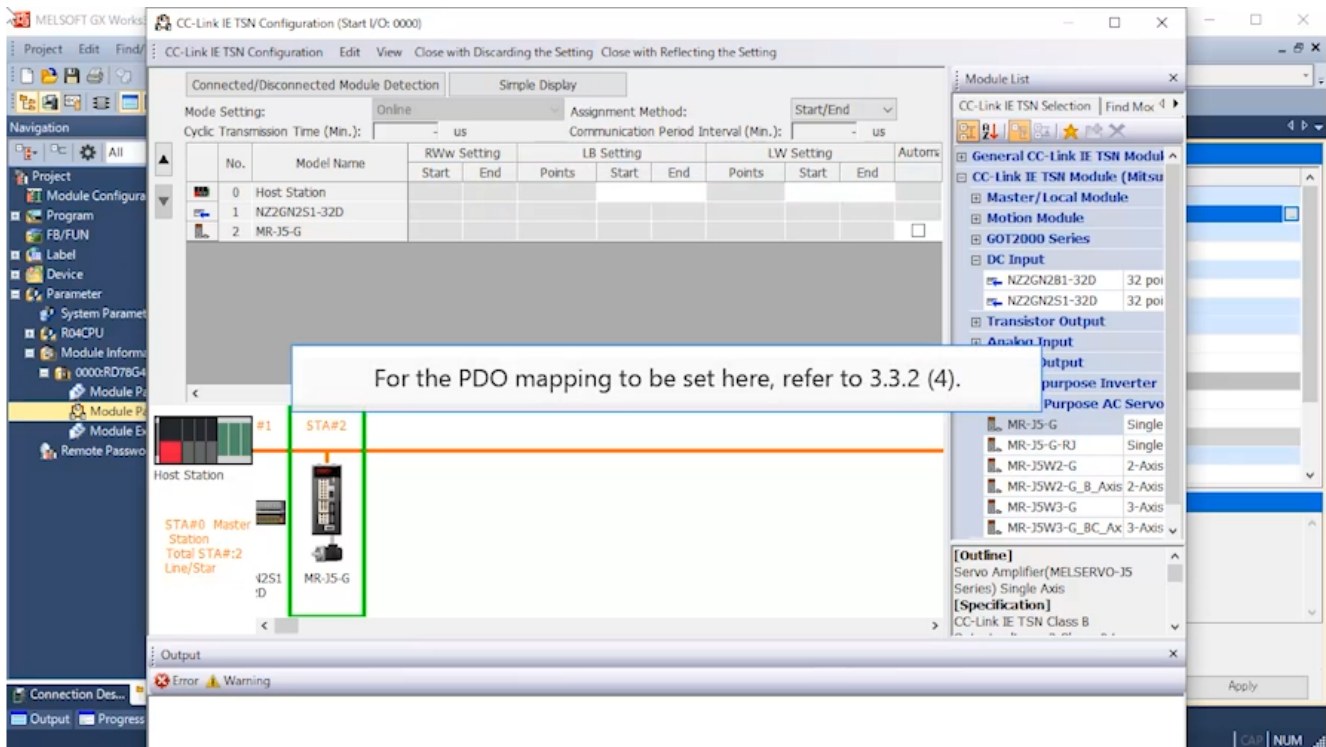
The screenshot displays the MELSOFT GX Works II interface for CC-Link IE TSN Configuration. The main window shows a table of station settings and a network diagram below it.

No.	Model Name	R/W Setting	LB Setting	LW Setting	Automa
0	Host Station				
1	NZ2GN2S1-32D				
2	MR-J5-G				

A callout box with the text "Click the Play button." is overlaid on the table. Below the table, a network diagram shows a Host Station (STA#0) connected to a Remote Station (STA#2) via a CC-Link IE TSN line. The Remote Station is represented by a vertical rack of modules, with the MR-J5-G servo amplifier highlighted in a green box. The Host Station is labeled with a '1' and the Remote Station with a '2'.

The right-hand side of the interface shows the "Module List" window, which contains a tree view of modules. The "General CC-Link IE TSN Modul" is selected, and the "MR-J5-G" is listed under the "General Purpose AC Servo" category. The "Outline" window shows the selected module's details: "Servo Amplifier(MELSERVO-J5 Series) Single Axis" and "CC-Link IE TSN Class B".

(3) Remote station setting (continue)



The screenshot displays the 'CC-Link IE TSN Configuration' window in MELSOFT GX Works3. The main window is divided into several sections:

- Table:** A table listing station configurations.

No.	Model Name	RWw Setting		LB Setting		LW Setting		Automa
		Start	End	Start	End	Start	End	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							
- Network Diagram:** Shows a 'Host Station' (STA#0) connected to a remote station (STA#2) via a line. The remote station is represented by an 'MR-J5-G' module icon, which is highlighted with a green box. A callout box points to this module with the text: "For the PDO mapping to be set here, refer to 3.3.2 (4)."
- Module List:** A list of modules on the right side of the window, including 'General CC-Link IE TSN Modul', 'CC-Link IE TSN Module (Mitsu', 'Master/Local Module', 'Motion Module', 'GOT2000 Series', 'DC Input', 'Transistor Output', 'Analog Input', 'Output', 'purpose Inverter', 'Purpose AC Servo', 'MR-J5-G', 'MR-J5-G-RJ', 'MR-J5W2-G', 'MR-J5W2-G_B_Axis', 'MR-J5W3-G', and 'MR-J5W3-G_BC_Ax'.
- Output:** A section at the bottom showing 'Servo Amplifier(MELSERVO-J5 Series) Single Axis' and 'CC-Link IE TSN Class B'.

(3) Remote station setting (continue)

Click [CC-Link IE TSN Configuration].

No.	Model Name	RWw Setting		LB Setting		LW Setting		Automa
		Start	End	Start	End	Start	End	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							

Host Station

STA#0 Master Station
Total STA#2
Line/Star

MR-J5-G

Module List

- General CC-Link IE TSN Modul
- CC-Link IE TSN Module (Mitsu
- Master/Local Module
- Motion Module
- GOT2000 Series
- DC Input
 - NZ2GN2B1-32D 32 poi
 - NZ2GN2S1-32D 32 poi
- Transistor Output
- Analog Input
- Analog Output
- General purpose Inverter
- General Purpose AC Servo
 - MR-J5-G Single
 - MR-J5-G-RJ Single
 - MR-J5W2-G 2-Axis
 - MR-J5W2-G_B_Axis 2-Axis
 - MR-J5W3-G 3-Axis
 - MR-J5W3-G_BC_Ax 3-Axis

[Outline]
Servo Amplifier(MELSERVO-J5 Series) Single Axis

[Specification]
CC-Link IE TSN Class B

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows the configuration for a Host Station and a Remote Station (STA#2). The Remote Station is highlighted with a green box and contains an MR-J5-G servo amplifier. The 'Batch Setting of PDO Mapping' menu option is highlighted in red, and a callout box points to it with the text 'Select [Batch Setting of PDO Mapping]'. The 'Module List' on the right shows the configuration for the Remote Station, including a CC-Link IE TSN Module (Mitsumi) and a Master/Local Module. The 'Output' window at the bottom shows an error message.

CC-Link IE TSN Configuration (Start I/O: 0000)

Change Module
Change Transmission Path Method
Parameter of Slave Station...
Device No. Reassignment...
Batch Setting of PDO Mapping
Open System Configuration
Check
Online
Close with Discarding the Setting
Close with Reflecting the Setting

Select [Batch Setting of PDO Mapping].

Host Station
STA#0 Master Station
Total STA#2 Line/Star
Q2S1 ID
MR-J5-G

Module List
CC-Link IE TSN Selection Find Mod 4
General CC-Link IE TSN Modul
CC-Link IE TSN Module (Mitsu
Master/Local Module
Motion Module
GOT2000 Series
DC Input
N2ZGN281-32D 32 poi
N2ZGN251-32D 32 poi
Transistor Output
Analog Input
Analog Output
General purpose Inverter
General Purpose AC Servo
MR-J5-G Single
MR-J5-G-RJ Single
MR-J5W2-G 2-Axis
MR-J5W2-G_B_Axis 2-Axis
MR-J5W3-G 3-Axis
MR-J5W3-G_BC_Ax 3-Axis

[Outline]
Servo Amplifier(MELSERVO-J5 Series) Single Axis
[Specification]
CC-Link IE TSN Class B

Output
Error Warning

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. A warning dialog box is open, titled "MELSOFT GX Works3", with a yellow warning icon. The dialog contains the following text:

Batch set default pattern of PDO mapping.

- Cannot set PDO mapping in the slave station when the points of RWr/RWw Setting is less than the used points of default pattern. Please check that it has been set correctly.
- Please set it in PDO Mapping Setting screen when you want to set it other than default pattern.
- Please uncheck "Batch set default pattern only for slave station for which PDO mapping is not set." when setting the PDO mapping setting which has already been set to default pattern.
- Clear PDO mapping which has already been set when setting RWr/RWw Setting to blank, unchecking the "Batch set default pattern only when PDO mapping is unset slave station." and executing "Batch Setting of PDO Mapping".
- * The module in which RWr/RWw Setting cannot be set to blank is not the target.
- The operation may need some time.

Do you want to execute?

Batch set default pattern only for slave station for which PDO mapping is not set.

Yes No

The background shows the "CC-Link IE TSN Configuration" window with a table of modules. A text box overlaid on the table reads: "The precautions on the batch setting of the POD mapping are displayed." The table has columns for No., Model Name, RWr Setting, LB Setting, LW Setting, and Autom. The "Module List" window on the right shows a list of modules including DC Input, Transistor Output, Analog Input, Analog Output, General purpose Inverter, and General Purpose AC Servo.

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. A warning dialog box is open, titled "Batch set default pattern of PDO mapping." The dialog contains the following text:

Batch set default pattern of PDO mapping.

- Cannot set PDO mapping in the slave station when the points of RWw/RWw Setting is less than the used points of default pattern. Please check that it has been set correctly.
- Please set it in PDO Mapping Setting screen when you want to set it other than default pattern.
- Please uncheck "Batch set default pattern only for slave station for which PDO mapping is not set." when setting the PDO mapping setting which has already been set to default pattern.
- Clear PDO mapping which has already been set when setting RWw/RWw Setting to blank, unchecking the "Batch set default pattern only when PDO mapping is unset slave station." and executing "Batch Setting of PDO Mapping".
- * The module in which RWw/RWw Setting cannot be set to blank is not the target.
- The operation may need some time.

Do you want to execute?

Batch set default pattern only for slave station for which PDO mapping is not set.

Buttons: Yes, No

A callout box with the text "Click [Yes]." points to the Yes button.

The background configuration window shows a table of modules:

No.	Model Name	RWw Setting		LB Setting		LW Setting		Automa
		Start	End	Start	End	Start	End	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							

The interface also shows a navigation tree on the left, a module list on the right, and a hardware diagram at the bottom left.

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. A central dialog box with an information icon and the text "Batch setting of PDO mapping was completed." is shown. A red box highlights the "OK" button in the dialog, with a callout bubble containing the text "After the batch setting is completed, click [OK].".

The background configuration window shows a table of station settings:

No.	Model Name	RWw Setting		LB Setting		LW Setting		Autom.
		Start	End	Start	End	Start	End	
0	Host Station							
1	NZ2GN2S1-32D							
2	MR-J5-G							

Below the table, a hardware rack diagram shows a Host Station (STA#0) and a Remote Station (STA#2) connected. The Remote Station is highlighted with a green box and contains an MR-J5-G servo amplifier. The status bar at the bottom shows "Error0" and "Warning0".

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of stations and a network diagram. A callout box points to the 'PDO Mapping Setting' column for station 2 (MR-J5-G).

No.	Model Name	I/W Sett'n End	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station				
1	NZ2GN2S1-32D			<Detail Setting>	.168.3.
2	MR-J5-G			<Detail Setting>	2.168.1.

Double-click <Detail Setting> in PDO Mapping Setting for the MR-J5-G.

The network diagram shows a Host Station (STA#0) connected to a remote station (STA#2) via a line. The remote station is labeled 'MR-J5-G' and is highlighted with a green box. The Host Station is labeled 'i2S1 ID'.

(3) Remote station setting (continue)

The screenshot shows the 'PDO Mapping Setting' dialog box in MELSOFT GX Works3. The dialog is titled 'MR-15-G (Station No. 2)' and shows the 'PDO Mapping Parameter' table. A callout box points to the table with the text 'The PDO Mapping Setting screens appears.'

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	1402	01	Watchdog counter UL 1		UNSIGNED 16
-	6061	00	Modes of operation display		INTEGER 8
-	6064	00	Position actual value		INTEGER 32
-	6064	00	Position actual value		INTEGER 32
-	606c	00	Velocity actual value		INTEGER 32
-	-	-	-	-	-
-	0000	00	GAP	1byte GAP	UNSIGNED 16
-	6077	00	Torque actual value		INTEGER 16
-	2411	00	Status DO 1		UNSIGNED 16
-	2412	00	Status DO 2		UNSIGNED 16
-	2413	00	Status DO 3		UNSIGNED 16
-	2414	00	Status DO 4		UNSIGNED 16
-	2415	00	Status DO 5		UNSIGNED 16
-	2a41	00	Current alarm		UNSIGNED 32
-	2a41	00	Current alarm		UNSIGNED 32
-	2d21	00	For manufacturer's use		UNSIGNED 32
-	2d21	00	For manufacturer's use		UNSIGNED 32

(3) Remote station setting (continue)

CC-Link IE TSN Configuration (Start I/O: 0000)

Mode Setting: Online Assignment Method: Start/End

Link Device Points: 24

MR-15-G (Station No. 2)

TPDO

Select [TPDO].

Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	1402	01	Watchdog counter: UL 1		UNSIGNED16
-	6061	00	Modes of operation display		INTEGER8
-	6064	00	Position actual value		INTEGER32
-	6064	00	Position actual value		INTEGER32
-	606C	00	Velocity actual value		INTEGER32
-	606C	00	Velocity actual value		INTEGER32
-	60F4	00	Following error actual value		INTEGER32
-	60F4	00	Following error actual value		INTEGER32
-	6041	00	Statusword		UNSIGNED16
-	0000	00	GAP	Byte GAP	-
-	6077	00	Torque actual value		INTEGER16
-	2411	00	Status DO 1		UNSIGNED16
-	2412	00	Status DO 2		UNSIGNED16
-	2413	00	Status DO 3		UNSIGNED16
-	2414	00	Status DO 4		UNSIGNED16
-	2415	00	Status DO 5		UNSIGNED16
-	2a41	00	Current alarm		UNSIGNED32
-	2a41	00	Current alarm		UNSIGNED32
-	2d21	00	For manufacturer's use		UNSIGNED32
-	2d21	00	For manufacturer's use		UNSIGNED32

OK Cancel

(3) Remote station setting (continue)

CC-Link IE TSN Configuration (Start I/O: 0000)

Mode Setting: Online Assignment Method: Start/End

Link Device Points: 24

PDO Mapping Parameter

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	1402	01	Watchdog counter UL 1		UNSIGNED 16
-	6061	00	Modes of operation display		INTEGER 8
-	6064	00	Position actual value		INTEGER 32
-	6064	00	Position actual value		INTEGER 32
-	606C	00	Velocity actual value		INTEGER 32
-	606C	00	Velocity actual value		INTEGER 32
-	60F4	00	Following error actual value		INTEGER 32
-	60F4	00	Following error actual value		INTEGER 32
-	6041	00	Statusword		UNSIGNED 16
-	0000	00	GAP	byte GAP	-
-	6077	00	Torque actual value		INTEGER 16
-	2411	00	Status DO 1		UNSIGNED 16
-	2412	00	Status DO 2		UNSIGNED 16
-	2413	00	Status DO 3		UNSIGNED 16
-	2414	00	Status DO 4		UNSIGNED 16
-	2415	00	Status DO 5		UNSIGNED 16
-	2a41	00	Current alarm		UNSIGNED 32
-	2a41	00	Current alarm		UNSIGNED 32
-	2d21	00	For manufacturer's use		UNSIGNED 32
-	2d21	00	For manufacturer's use		UNSIGNED 32

Scroll down.

OK Cancel

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works2 interface with the CC-Link IE TSN Configuration window open. The 'PDO Mapping Setting' dialog box is active, showing the configuration for Link Device Points. The 'Index' column in the table is highlighted, and a callout box indicates that the value [60fd] should be entered.

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	605c	00	Velocity actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	6041	00	Statusword		UNSIGNED16
-	0000	00	GAP	2byte GAP	-
-	6077	00	Torque actual value		INTEGER16
-	2d11	00	Status DO 1		UNSIGNED16
-	2d12	00	Status DO 2		UNSIGNED16
-	2d13	00	Status DO 3		UNSIGNED16
-	2d14	00	Status DO 4		UNSIGNED16
-	2d15	00	Status DO 5		UNSIGNED16
-		00	Current alarm		UNSIGNED32
-		00	Current alarm		UNSIGNED32
-		00	For manufacturer's use		UNSIGNED32
-		00	For manufacturer's use		UNSIGNED32
-		00	For manufacturer's use		INTEGER16

(3) Remote station setting (continue)

CC-Link IE TSN Configuration (Start I/O: 0000)

Mode Setting: Online Assignment Method: Start/End

Link Device Points: 24

PDO Mapping Parameter

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	605c	00	Velocity actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	6041	00	Statusword		UNSIGNED 16
-	0000	00	GAP	2byte GAP	-
-	6077	00	Torque actual value		INTEGER16
-	2d11	00	Status DO 1		UNSIGNED 16
-	2d12	00	Status DO 2		UNSIGNED 16
-	2d13	00	Status DO 3		UNSIGNED 16
-	2d14	00	Status DO 4		UNSIGNED 16
-	2d15	00	Status DO 5		UNSIGNED 16
-			Current alarm		UNSIGNED 32
-			Current alarm		UNSIGNED 32
-			For manufacturer's use		UNSIGNED 32
-			For manufacturer's use		UNSIGNED 32
-	2d22	00			INTEGER16
-	60f0	00			

Enter [00] in the sub-index.

OK Cancel

(3) Remote station setting (continue)

The screenshot shows the 'PDO Mapping Setting' dialog box in the MELSOFT GX Works2 software. The dialog box is titled 'MR-15-G (Station No. 2)' and shows the 'PDO Mapping Parameter' table. The table has columns for Link Device, Index [Hexadecimal], Sub-Index [Hexadecimal], Entry Name, Comment, and Data Type. The entry with Index 60fd and Sub-Index 00 is highlighted, and its entry name is 'Digital inputs'. A callout box points to this entry with the text '[Digital Inputs] is displayed in the entry name.'

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	605c	00	Velocity actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	6041	00	Statusword		UNSIGNED 16
-	0000	00	GAP	2byte GAP	-
-	6077	00	Torque actual value		INTEGER16
-	2d11	00	Status DO 1		UNSIGNED 16
-	2d12	00	Status DO 2		UNSIGNED 16
-	2d13	00	Status DO 3		UNSIGNED 16
-	2d14	00	Status DO 4		UNSIGNED 16
-	2d15	00	Status DO 5		UNSIGNED 16
-			alarm		UNSIGNED 32
-			alarm		UNSIGNED 32
-			factoryer's use		UNSIGNED 32
-			factoryer's use		UNSIGNED 32
-	2d22	00	For manufacturer's use		INTEGER16
-	60fd	00	Digital inputs		UNSIGNED 32
-	60fd	00	Digital inputs		UNSIGNED 32

(3) Remote station setting (continue)

The screenshot shows the 'PDO Mapping Setting' dialog box in the MELSOFT GX Works3 software. The dialog is titled 'MR-1S-G (Station No. 2)' and shows the 'PDO Mapping Parameter' table. The table has columns for Link Device, Index [Hexadecimal], Sub-Index [Hexadecimal], Entry Name, Comment, and Data Type. The 'Digital inputs' entry is highlighted in blue. A callout box with the text 'Click [OK].' points to the 'OK' button at the bottom right of the dialog.

Link Device	Index [Hexadecimal]	Sub-Index [Hexadecimal]	Entry Name	Comment	Data Type
-	605c	00	Velocity actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	60f4	00	Following error actual value		INTEGER32
-	6041	00	Statusword		UNSIGNED16
-	0000	00	GAP	2byte GAP	-
-	6077	00	Torque actual value		INTEGER16
-	2d11	00	Status DO 1		UNSIGNED16
-	2d12	00	Status DO 2		UNSIGNED16
-	2d13	00	Status DO 3		UNSIGNED16
-	2d14	00	Status DO 4		UNSIGNED16
-	2d15	00	Status DO 5		UNSIGNED16
-	2a41	00	Current alarm		UNSIGNED32
-	2a41	00	Current alarm		UNSIGNED32
-	2d21	00	For manufacturer's use		UNSIGNED32
-	2d21	00	For manufacturer's use		UNSIGNED32
-	2d22	00	For manufacturer's use		INTEGER16
-	60fd	00	Digital inputs		UNSIGNED32
-	60fd	00	Digital inputs		UNSIGNED32

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of station configurations and a network diagram below it.

No.	Model Name	I/W Sett'n End	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station				.168.3.
1	NZ2GN2S1-32D				2.168.1.
2	MR-J5-G		<Detail Setting>	<Detail Setting>	2.168.1.

The network diagram shows a Host Station (STA#0) connected to a remote station (STA#2) via a line. The remote station is highlighted with a green box and labeled 'MR-J5-G'. The status of the remote station is shown as 'Total STA#2 Line/Star'.

A callout box on the right side of the screen contains the following text:

The PDO mapping has now been set.
Click > to proceed to the next page.

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works2 interface for CC-Link IE TSN Configuration. The main window shows a network diagram with a Host Station (STA#0) and a Remote Station (STA#2) connected by an orange line. The Remote Station is highlighted with a green box and contains an MR-J5-G servo amplifier. A text box with a play button icon and the text "Click the Play button." is overlaid on the diagram.

The table below shows the station configuration details:

No.	Model Name	LW Setting	Parameter Automatic Setting	DDO Mapping Setting
0	Host Station			
1	NZ2GN2S1-32D			
2	MR-J5-G			

The right-hand side of the interface shows the "Module List" window, which includes a tree view of modules and a detailed view of the selected "MR-J5-G" module. The detailed view shows the "Outline" (Servo Amplifier(MELSERVO-J5 Series) Single Axis) and "Specification" (CC-Link IE TSN Class B).

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works2 interface for CC-Link IE TSN Configuration. The main window shows a table with the following data:

No.	Model Name	PDO Mapping Setting	IP Address	Subnet Mask	Default Gateway	Valid
0	Host Station		192.168.3.253			
1	NZ2GN2S1-32D		192.168.3.1			No
2	MR-J5-G	<Detail Setting>	192.168.3.2			No

Below the table is a network diagram showing a Host Station connected to two remote stations, STA#1 (NZ2GN2S1-32D) and STA#2 (MR-J5-G). A callout box points to the Subnet Mask column in the table with the text: "Before setting the servo parameters, enter the IP addresses and subnet masks."

The right side of the interface shows a Module List and a General-Purpose AC Servo configuration panel. The servo panel includes the following details:

- MR-J5-G Single Ax
- MR-J5-G-RJ Single Ax
- MR-J5W2-G 2-Axis Un
- MR-J5W2-G_B_Axis 2-Axis Un
- MR-J5W3-G 3-Axis Un
- MR-J5W3-G_BC_Axis 3-Axis Un

The [Outline] section shows: Servo Amplifier(MELSERVO-J5 Series) Single Axis. The [Specification] section shows: CC-Link IE TSN Class B.

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works2 interface for CC-Link IE TSN Configuration. The main window shows a table of station configurations and a physical connection diagram. A callout box points to the table with the text: "Set the items according to the system configuration."

No.	Model Name	PDO Mapping Setting	IP Address	Subnet Mask	Default Gateway	Enabled
0	Host Station		192.168.3.253			
1	NZ2GN2S1-32D		192.168.3.1	255.255.255.0		No
2	MR-J5-G	<Detail Setting>	192.168.3.2	255.255.255.0		No

The physical connection diagram shows a Host Station (STA#0) connected to a Remote Station (STA#2) via a network cable. The Remote Station is labeled as MR-J5-G. The Host Station is labeled as STA#0 Master Station. The Remote Station is labeled as STA#2 Line/Star. The Host Station is also labeled as 42S1 ID.

The right-hand side of the interface shows a Module List and a list of modules, including General CC-Link IE TSN Module, Master/Local Module, Motion Module, GOT2000 Series, and various servo amplifiers.

(3) Remote station setting (continue)

The screenshot displays the 'CC-Link IE TSN Configuration' window. At the top, there are tabs for 'Connected/Disconnected Module Detection' and 'Simple Display'. Below these are settings for 'Mode Setting' (Online), 'Assignment Method' (Point/Start), 'Cyclic Transmission Time (Min.)', and 'Communication Period Interval (Min.)'. A table lists the configured stations:

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input type="checkbox"/>	<Detail Setting>	192.168.3.2

A callout box points to the checkbox in the 'Parameter Automatic Setting' column for station 2, containing the text: "Select [Parameter Automatic Setting]. If the item is selected, parameters are sent to the servo amplifier during the initial communication." Below the table is a network diagram showing a 'Host Station' (STA#0) connected to a 'Remote Station' (STA#2) via a CC-Link IE TSN line. The remote station is represented by a servo amplifier icon labeled 'MR-J5-G'. On the right side, there are panels for 'Module List' and 'I/O Combined', showing details for the selected MR-J5-G module.

(3) Remote station setting (continue)

The screenshot shows the 'CC-Link IE TSN Configuration' window in MELSOFT GX Works2. The main table lists the following modules:

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input type="checkbox"/>	<Detail Setting>	192.168.3.2

A callout box points to the checkbox in the 'Parameter Automatic Setting' column for station #2, containing the text: "Select [Parameter Automatic Setting]. If the item is selected, parameters are sent to the servo amplifier during the initial communication."

Tips
 Two setting methods are provided for the parameters of the MR-J5-G servo amplifier.
 1) Parameters are transferred from the controller during the initial communication. Then, they are saved with project files of the PLC.
 2) Parameters are set, saved, and written to the axes one by one separately from the project files of the PLC in MR Configurator2.
 If you select [Parameter Automatic Setting], the setting method of 1) is used, if you do not select it, the setting method of 2) is used.

(3) Remote station setting (continue)

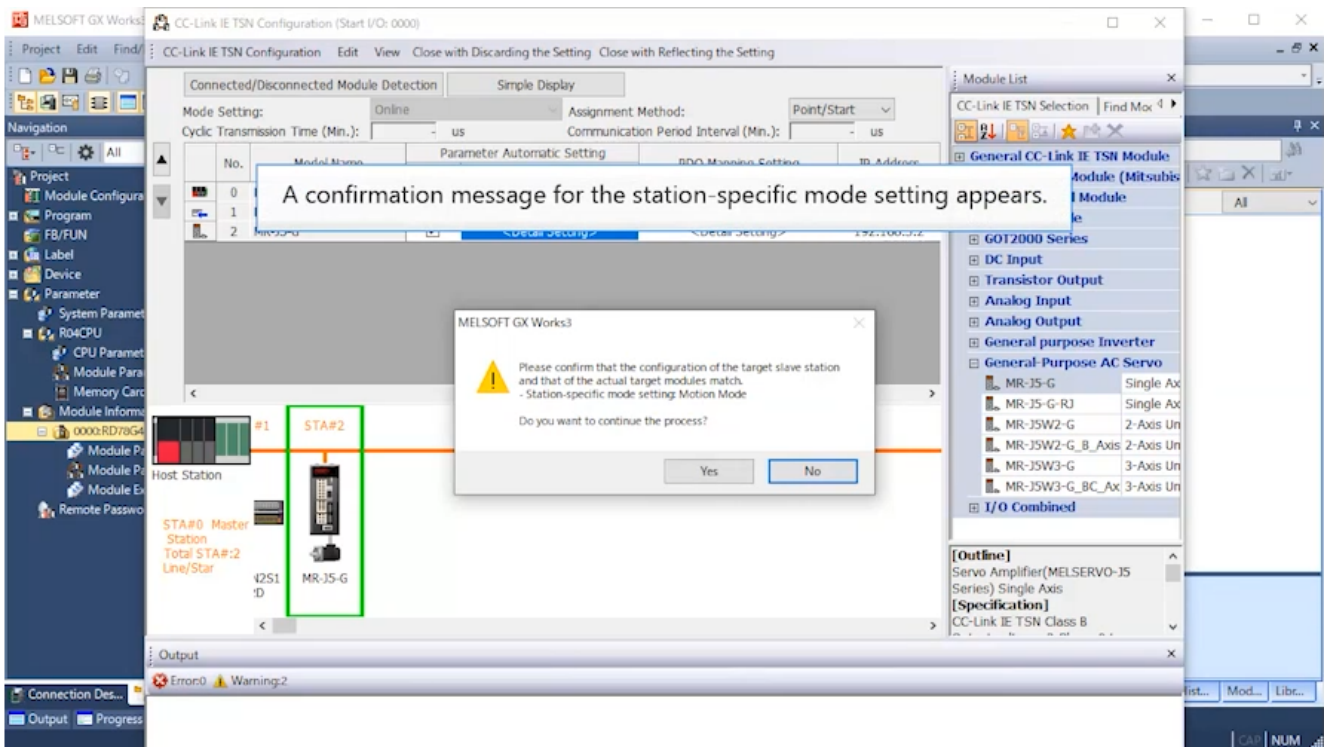
The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of stations and a graphical representation of the network topology.

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.2

A callout box with the text "Click <Detail Setting>" points to the "<Detail Setting>" button in the table. Below the table, a graphical representation shows a Host Station (STA#0) connected to a Remote Station (STA#2) via a network line. The Remote Station is highlighted with a green box and labeled "MR-J5-G".

The right-hand side of the interface shows the "Module List" and "Outline" panels. The "Module List" panel displays various modules, including "General CC-Link IE TSN Module", "Motion Module", "GOT2000 Series", "DC Input", "Transistor Output", "Analog Input", "Analog Output", "General purpose Inverter", and "General Purpose AC Servo". The "Outline" panel shows the configuration for the selected module, including "Servo Amplifier(MELSERVO-J5 Series) Single Axis" and "CC-Link IE TSN Class B".

(3) Remote station setting (continue)



(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for CC-Link IE TSN Configuration. The main window shows a table of station configurations and a warning dialog box.

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.2

The warning dialog box contains the following text:

MELSOFT GX Works3

⚠ Please confirm that the configuration of the target slave station and that of the actual target modules match.
- Station-specific mode setting: Motion Mode

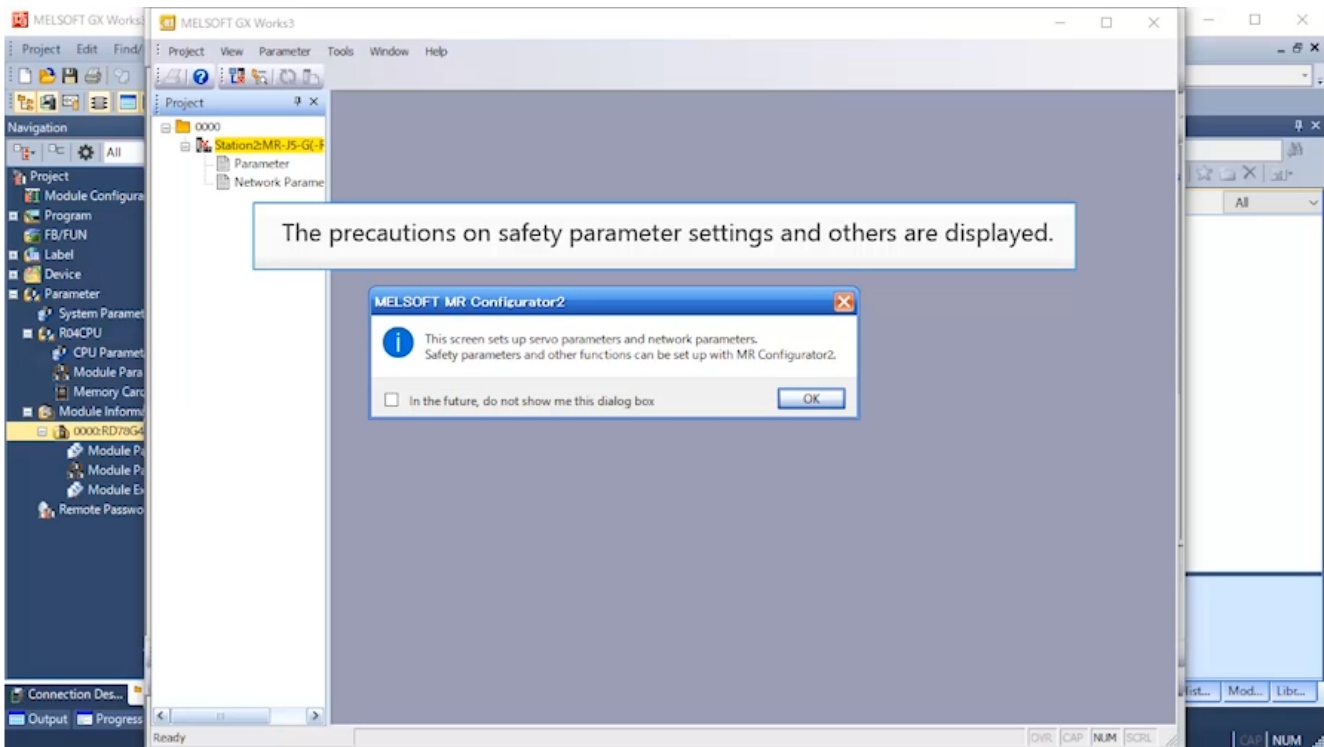
Do you want to continue the process?

Buttons: Yes, No

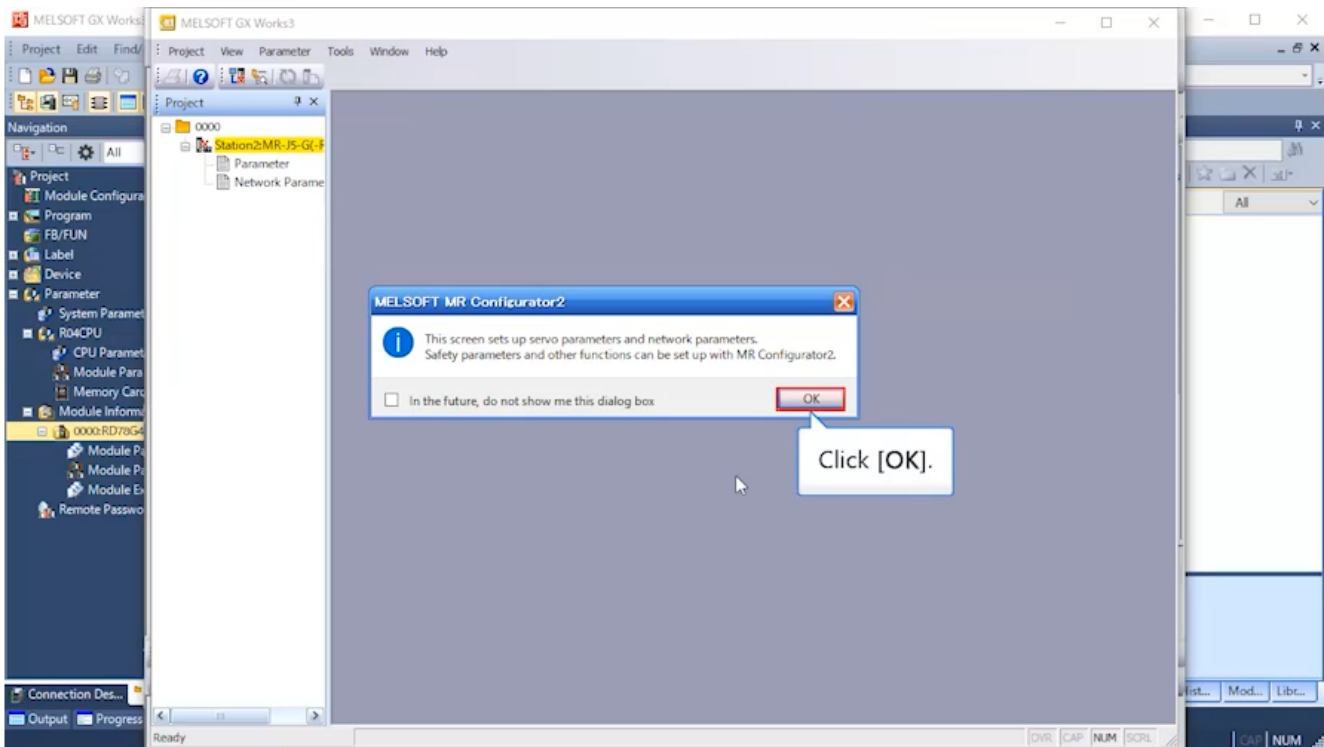
A callout box points to the 'Yes' button with the text: Click [Yes].

The background window shows a network diagram with a Host Station (STA#0) and two slave stations (STA#1 and STA#2). STA#2 is highlighted with a green box and contains an MR-J5-G module. The 'Module List' on the right shows the configuration for the selected module.

(3) Remote station setting (continue)



(3) Remote station setting (continue)

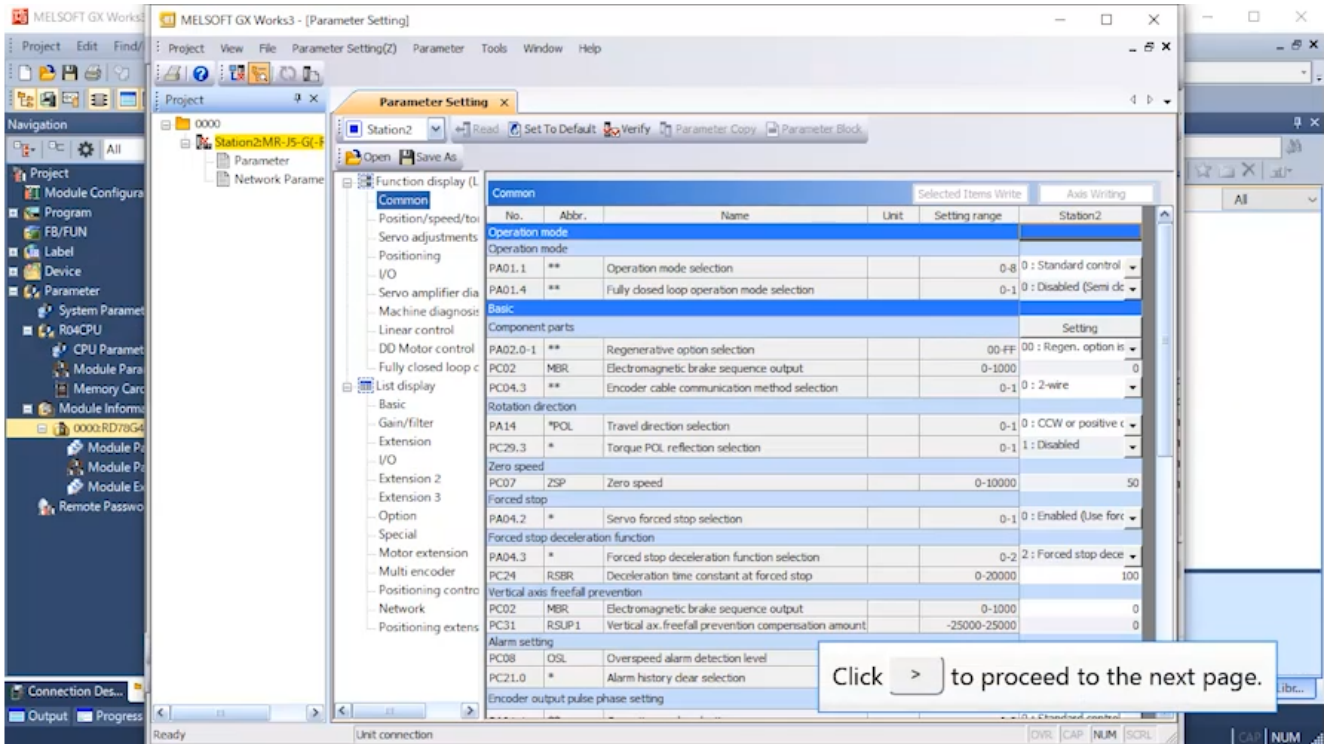


(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 software interface for parameter setting. The main window is titled "MELSOFT GX Works3 - [Parameter Setting]" and shows a "Parameter Setting" dialog for "Station2". The "Common" section is selected, and a callout box with the text "The servo parameter setting screen appears." points to the parameter table.

No.	Abbr.	Name	Unit	Setting range	Station2
Operation mode					
PA01.1	**	Operation mode selection		0-8	0 : Standard control
PA01.4	**	Fully closed loop operation mode selection		0-1	0 : Disabled (Semi dc
Basic					
Component parts					
Setting					
00.FF		00 : Regen. option is			
0-1000					0
0-1					0 : 2-wire
Basic					
PA14	*POL	Travel direction selection		0-1	0 : CCW or positive c
PC29.3	*	Torque POL. reflection selection		0-1	1 : Disabled
Zero speed					
PC07	ZSP	Zero speed		0-10000	50
Forced stop					
PA04.2	*	Servo forced stop selection		0-1	0 : Enabled (Use forc
Forced stop deceleration function					
PA04.3	*	Forced stop deceleration function selection		0-2	2 : Forced stop dece
PC24	RSBR	Deceleration time constant at forced stop		0-20000	100
Positioning contro					
Vertical axis freefall prevention					
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC31	RSUP1	Vertical ax. freefall prevention compensation amount		-25000-25000	0
Alarm setting					
PC08	OSL	Overspeed alarm detection level		0-20000	0
PC21.0	*	Alarm history clear selection		0-1	0 : Disabled
Encoder output pulse phase setting					
Setting					

(3) Remote station setting (continue)



The screenshot displays the 'Parameter Setting' window for 'Station2' in MELSOFT GX Works3. The 'Common' parameter group is selected, showing a table of parameters. A callout box highlights a right arrow button with the text 'Click > to proceed to the next page.'

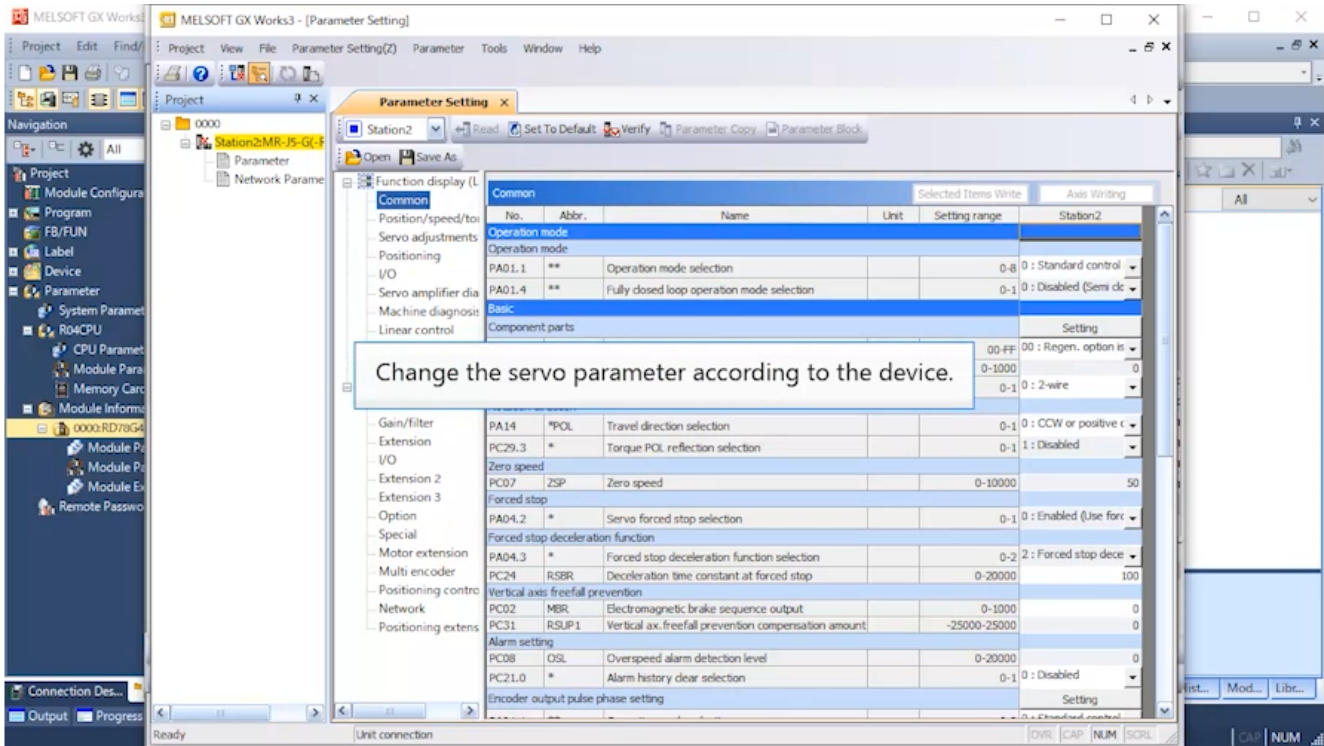
No.	Abbr.	Name	Unit	Setting range	Station2
Operation mode					
PA01.1	**	Operation mode selection		0-8	0 : Standard control
PA01.4	**	Fully closed loop operation mode selection		0-1	0 : Disabled (Semi dc
Basic					
Component parts					
PA02.0-1	**	Regenerative option selection		00-FF	00 : Regen. option is
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC04.3	**	Encoder cable communication method selection		0-1	0 : 2-wire
Rotation direction					
PA14	*POL	Travel direction selection		0-1	0 : CCW or positive c
PC29.3	*	Torque POL reflection selection		0-1	1 : Disabled
Zero speed					
PC07	ZSP	Zero speed		0-10000	50
Forced stop					
PA04.2	*	Servo forced stop selection		0-1	0 : Enabled (Use forc
Forced stop deceleration function					
PA04.3	*	Forced stop deceleration function selection		0-2	2 : Forced stop dece
PC24	RSBR	Deceleration time constant at forced stop		0-20000	100
Vertical axis freefall prevention					
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC31	RSUP1	Vertical ax.freefall prevention compensation amount		-25000-25000	0
Alarm setting					
PC08	OSL	Overspeed alarm detection level			
PC21.0	*	Alarm history clear selection			
Encoder output pulse phase setting					

(3) Remote station setting (continue)

Click the Play button.

Parameter	Setting range	Station2
PA01.1	**	0 : Standard control
PA01.4	**	0 : Disabled (Semi dc
PA02.0-1	**	00 : Regen. option is
PC02	MBR	0
PC04.3	**	0 : 2-wire
PA14	*POL	0 : CCW or positive c
PC29.3	*	1 : Disabled
PC07	ZSP	50
PAD4.2	*	0 : Enabled (Use forc
PAD4.3	*	0-2 : Forced stop dece
PC24	RSBR	100
PC02	MBR	0
PC31	RSUP1	0
PC08	OSL	0
PC21.0	*	0 : Disabled

(3) Remote station setting (continue)



The screenshot displays the MELSOFT GX Works3 software interface for parameter setting. The main window is titled "MELSOFT GX Works3 - [Parameter Setting]" and shows a "Parameter Setting" dialog for "Station2". The interface includes a navigation pane on the left, a menu bar, and a main parameter table.

A callout box with the text "Change the servo parameter according to the device." is overlaid on the parameter table. The table lists various parameters for the servo motor, including operation mode, basic settings, and alarm settings.

No.	Abbr.	Name	Unit	Setting range	Station2
Operation mode					
PA01.1	**	Operation mode selection		0-8	0 : Standard control
PA01.4	**	Fully closed loop operation mode selection		0-1	0 : Disabled (Semi dc
Basic					
Component parts					
Setting					
00-FF		00 : Regen. option is			
0-10000				0	
0-1					0 : 2-wire
Gain/filter					
PA14	*POL	Travel direction selection		0-1	0 : CCW or positive c
PC29.3	*	Torque POL reflection selection		0-1	1 : Disabled
Zero speed					
PC07	ZSP	Zero speed		0-10000	50
Forced stop					
PA04.2	*	Servo forced stop selection		0-1	0 : Enabled (Use forc
Forced stop deceleration function					
PA04.3	*	Forced stop deceleration function selection		0-2	2 : Forced stop dece
PC24	RSBR	Deceleration time constant at forced stop		0-20000	100
Vertical axis freefall prevention					
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC31	RSUP1	Vertical ax.freefall prevention compensation amount		-25000-25000	0
Alarm setting					
PC08	OSL	Overspeed alarm detection level		0-20000	0
PC21.0	*	Alarm history clear selection		0-1	0 : Disabled
Encoder output pulse phase setting					
Setting					

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works3 interface for parameter setting. The left-hand navigation pane shows a tree structure with 'Positioning' highlighted under the 'Function display (L)' category. A callout box with the text 'Click "Positioning".' points to this category. The main window shows a table of parameters for 'Station2'.

No.	Abbr.	Name	Unit	Setting range	Station2
Operation mode					
PA01.1	**	Operation mode selection		0-8	0 : Standard control
				0-1	0 : Disabled (Semi dc
Setting					
PA02.0-1	**	Regenerative option selection		00-FF	00 : Regen. option is
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC4.3	**	Encoder cable communication method selection		0-1	0 : 2-wire
Rotation direction					
PA14	*POL	Travel direction selection		0-1	0 : CCW or positive c
PC29.3	*	Torque POL reflection selection		0-1	1 : Disabled
Zero speed					
PC07	ZSP	Zero speed		0-10000	50
Forced stop					
PA04.2	*	Servo forced stop selection		0-1	0 : Enabled (Use forc
Forced stop deceleration function					
PA04.3	*	Forced stop deceleration function selection		0-2	2 : Forced stop dece
PC24	RSBR	Deceleration time constant at forced stop		0-20000	100
Vertical axis freefall prevention					
PC02	MBR	Electromagnetic brake sequence output		0-1000	0
PC31	RSUP1	Vertical ax.freefall prevention compensation amount		-25000-25000	0
Alarm setting					
PC08	OSL	Overspeed alarm detection level		0-20000	0
PC21.0	*	Alarm history clear selection		0-1	0 : Disabled
Encoder output pulse phase setting					

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 Parameter Setting window for Station2. The 'Positioning' section is expanded, displaying a table of parameters. A callout box with the text 'Click "Setting"' points to the 'Setting' column header in the table.

No.	Abbr.	Name	Unit	Setting range	Station2
Homing					
Homing method					
PT45	HMM	Homing method		-43-37	37 : Method / Data set t
Homing operation basic settings 1 (r/min, mm/s)					
PTD5	ZRF	Homing speed			100.00
PT56	HMA	Homing acceleration time constant			0
PT55.0	*	Homing deceleration time constant selection			0 : Pr. PT56 Homing accel
PT57	HMB	Homing deceleration time constant		0-20000	
PT06	CRF	Creep speed		0.00-167772.15	10.00
Homing operation basic settings 2 (command/s)					
PV11	ZRFE	Homing speed extension setting		0-4294967295	500000
PV15	HMACC	Homing acceleration		0-4294967295	0
PT55.0	*	Homing deceleration time constant selection		0-1	0 : Pr. PT56 Homing accel
PV17	HMDEC	Homing deceleration		0-4294967295	0
PV13	CRFE	Creep speed extension setting		0-4294967295	100000
Homing detailed settings					
PTD7	ZST	Home position shift distance		0-2147483647	0
PTD9	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0 : Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	15.0

(3) Remote station setting (continue)

Set the home position return method.
In this course, configure the settings as follows.
Method selection: Manufacturer-specific
Homing method: Dog type (Back end detection Z-phase reference)
Homing direction: Address decreasing direction

No.	Abbr.	Name	Unit	Setting range	Station2
Homing					
Homing method					
Method selection					
				0.00-167772.15	100.00
				0-20000	0
				0-1	0 : Pr. PT56 Homing accel
				0-20000	0
				0.00-167772.15	10.00
				0-4294967295	500000
				0-4294967295	0
				0-1	0 : Pr. PT56 Homing accel
				0-4294967295	0
				0-4294967295	100000
PT07	ZST	Home position shift distance		0-2147483647	0
PT09	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0 : Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTI	Stopper type homing - Torque limit value		0.1-100.0	15.0

The 'Hominc' dialog box shows the following settings:

- Homing method: Dog type (Back end detection Z-phase reference)
- Method selection: OA 402, Manufacturer-specific
- Homing method: Method 37 (Data set type)
- Homing direction: Address decreasing direction

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 Parameter Setting dialog for Station2. The 'Homing' section is active, and the 'Manufacturer-specific' option is selected. A callout box points to this option with the text: "Click [Manufacturer-specific]. (The Dog type (Back end detection Z-phase reference) is automatically set.)"

No.	Abbr.	Name	Unit	Setting range	Station2
		Homing			Setting
		Homing method			
		Method selection		0.00-167772.15	100.00
		Method 37 (Data set f		0-20000	0
		Homing method		0-1	0 : [Pr. PT56 Homing accel
		Homing direction		0-20000	0
PT07	ZST	Home position shift distance		0-2147483647	0
PT09	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0 : Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	15.0

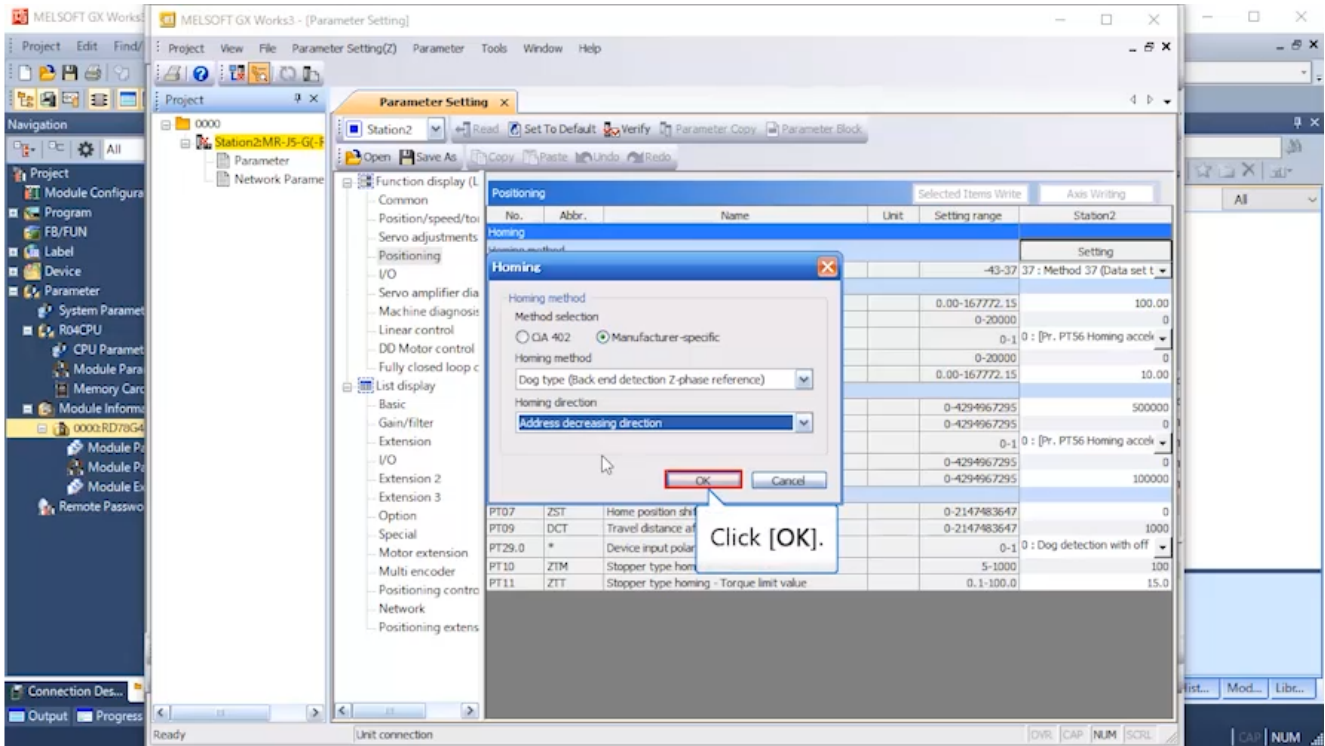
(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 Parameter Setting window. The 'Homing' dialog box is open, and the 'Address decreasing direction' option is selected in the 'Homing direction' dropdown menu. A callout box highlights this selection with the text "Select [Address decreasing direction].".

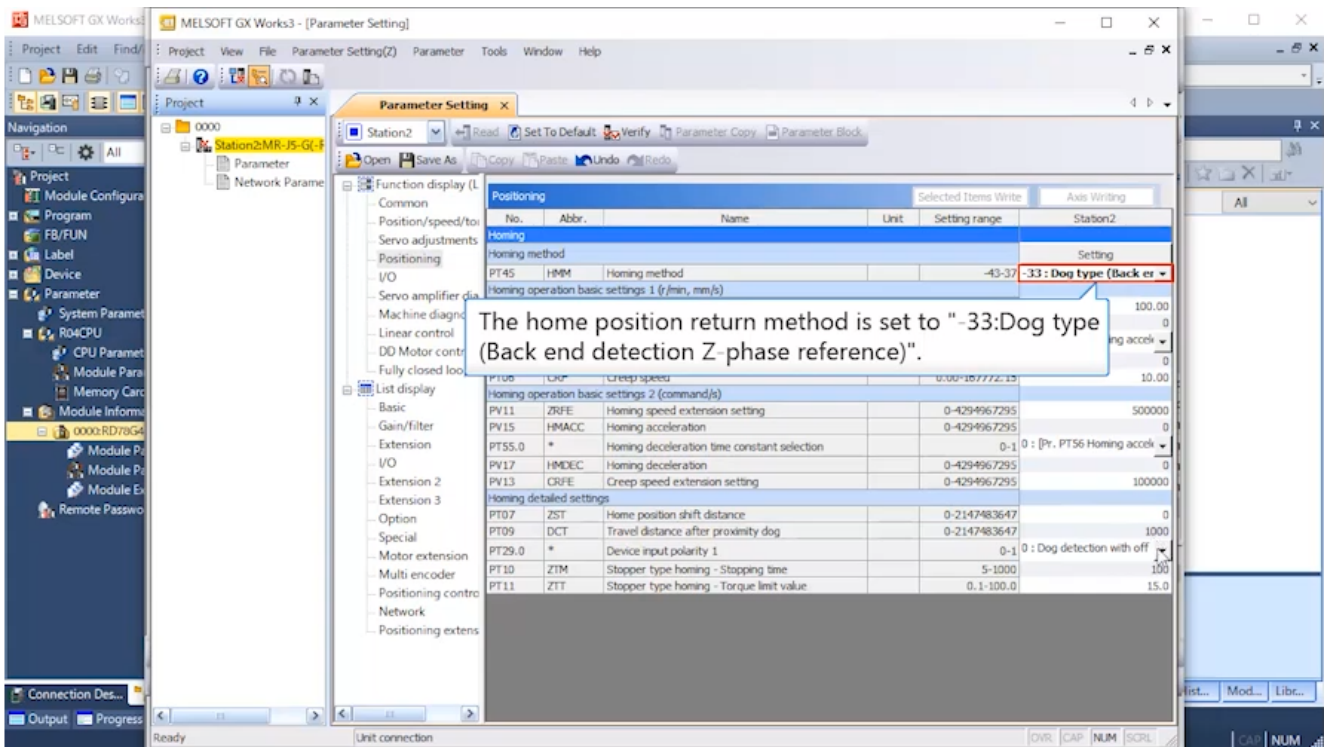
The background table shows the following parameters for Station2:

No.	Abbr.	Name	Unit	Setting range	Station2
		Homing			
		Homing method			37: Method 37 (Data set t
		Method selection		0.00-167772.15	100.00
				0-20000	0
		Homing method		0-1	0: [Pr. PT56 Homing accel
		Dog type (Back end detection Z-phase reference)		0.00-167772.15	10.00
		Homing direction		0-4294967295	500000
		Address increasing direction		0-4294967295	0
		Address decreasing direction		0-1	0: [Pr. PT56 Homing accel
		Address decreasing direction		0-4294967295	0
				0-4294967295	100000
					0
					1000
PT29.0	*	Device input polarity 1		0-1	0: Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	15.0

(3) Remote station setting (continue)



(3) Remote station setting (continue)



The screenshot shows the MELSOFT GX Works3 Parameter Setting window for Station2. The 'Homing method' parameter (PT45) is highlighted, and its value is set to '-33: Dog type (Back end detection Z-phase reference)'. A callout box points to this setting with the text: "The home position return method is set to \"-33:Dog type (Back end detection Z-phase reference)\"."

No.	Abbr.	Name	Unit	Setting range	Station2
Positioning					
Homing					
		Homing method		Setting	
PT45	HMM	Homing method		-43-37	-33: Dog type (Back end detection Z-phase reference)
Homing operation basic settings 1 (r/min, mm/s)					
PT06	CRP	Creep speed		0.00-107772.15	100.00
Homing operation basic settings 2 (command/s)					
PV11	ZRFE	Homing speed extension setting		0-4294967295	500000
PV15	HMACC	Homing acceleration		0-4294967295	0
PT55.0	*	Homing deceleration time constant selection		0-1	0: [Pr. PT56 Homing accel
PV17	HMDEC	Homing deceleration		0-4294967295	0
PV13	CRFE	Creep speed extension setting		0-4294967295	100000
Homing detailed settings					
PT07	ZST	Home position shift distance		0-2147483647	0
PT09	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0: Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	15.0

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 - [Parameter Setting] window. The main window displays a table of parameters for Station2. The table has columns for No., Abbr., Name, Unit, Setting range, and Station2. The parameters are grouped into sections: Homing, Homing operation basic settings 1, Homing operation basic settings 2, and Homing detailed settings. A callout box highlights the PT29.0 parameter, which is 'Device input polarity 1', and instructs the user to change the setting to '1: Dog detection with on' to use a normally-open contact.

No.	Abbr.	Name	Unit	Setting range	Station2
Positioning					
Homing					
Homing method					Setting
PT45	HMM	Homing method		-43-37	33 : Dog type (back er
Homing operation basic settings 1 (r/min, mm/s)					
PTD5	ZRF	Homing speed		0.00-167772.15	100.00
PTS6	HMA	Homing acceleration time constant		0-20000	0
PTS5.0	*	Homing deceleration time constant selection		0-1	0 : [Pr. PTS6 Homing accel
PTS7	HMB	Homing deceleration time constant		0-20000	0
PTD6	CRF	Creep speed		0.00-167772.15	10.00
Homing operation basic settings 2 (command/s)					
PV11	ZRFE	Homing speed extension setting		0-4294967295	500000
PV15	HMACC	Homing acceleration		0-4294967295	0
PTS5.0	*	Homing deceleration time constant selection		0-1	0 : [Pr. PTS6 Homing accel
PV17	HMDEC	Homing deceleration		0-4294967295	0
PV13	CRFE	Creep speed extension setting		0-4294967295	100000
Homing detailed settings					
PTD7	ZST	Home position shift distance		0-2147483647	0
PTD9	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0 : Dog detection with off
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100

Select the polarity of the proximity dog signal.
In this course, change the setting to "1:Dog detection with on"
to use a normally-open contact.

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 interface for parameter setting. The 'Positioning' section is active, displaying a table of parameters for 'Station2'. A callout box highlights the 'Dog type (back er)' column, specifically pointing to the '1: Dog detection with on' option.

No.	Abbr.	Name	Unit	Setting range	Station2
Positioning					
Homing					
Homing method					Setting
PT45	HMM	Homing method		-43-37	33: Dog type (back er
Homing operation basic settings 1 (r/min, mm/s)					
PTD5	ZRF	Homing speed		0.00-167772.15	100.00
PT56	HMA	Homing acceleration time constant		0-20000	0
PT55.0	*	Homing deceleration time constant selection		0-1	0: [Pr. PT56 Homing accel
PT57	HMB	Homing deceleration time constant		0-20000	0
PT06	CRF	Creep speed		0.00-167772.15	10.00
Homing operation basic settings 2 (command/s)					
PV11	ZRFE	Homing speed extension setting		0-4294967295	500000
PV15	HMACC	Homing acceleration		0-4294967295	0
PT55.0	*	Homing deceleration time constant selection		0-1	0: [Pr. PT56 Homing accel
PV17	HMDEC	Homing deceleration		0-4294967295	0
PV13	CRFE	Creep speed extension setting		0-4294967295	100000
Homing detailed settings					
PTD7	ZST	Home position shift distance		0-2147483647	0
PTD9	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	0: Dog detection with off 1: Dog detection with on
PT10	ZTM	Stopper type homing - Stopping time		5-1000	0
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	0

Select [1:Dog detection with on].

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 Parameter Setting window for Station2. The 'I/O' parameter category is selected in the left-hand navigation pane. A callout box with the text 'Click [I/O]' points to the 'I/O' parameter list. The main window displays a table of parameters for Station2, including homing and positioning settings.

No.	Abbr.	Name	Unit	Setting range	Station2
Homing					
Homing method					
PT45	HMM	Homing method		-43-37	-33 : Dog type (back er
Homing operation basic settings 1 (r/min, mm/s)					
ZRF		Homing speed		0.00-167772.15	100.00
HMA		Homing acceleration time constant		0-20000	0
*		Homing deceleration time constant selection		0-1	0 : [Pr. PT56 Homing accel
HMB		Homing deceleration time constant		0-20000	0
CRF		Creep speed		0.00-167772.15	10.00
Homing operation basic settings 2 (command/s)					
PV11	ZRFE	Homing speed extension setting		0-4294967295	500000
PV15	HMACC	Homing acceleration		0-4294967295	0
PT55.0	*	Homing deceleration time constant selection		0-1	0 : [Pr. PT56 Homing accel
PV17	HMDEC	Homing deceleration		0-4294967295	0
PV13	CRFE	Creep speed extension setting		0-4294967295	100000
Homing detailed settings					
PTD7	ZST	Home position shift distance		0-2147483647	0
PTD9	DCT	Travel distance after proximity dog		0-2147483647	1000
PT29.0	*	Device input polarity 1		0-1	1 : Dog detection with
PT10	ZTM	Stopper type homing - Stopping time		5-1000	100
PT11	ZTT	Stopper type homing - Torque limit value		0.1-100.0	15.0

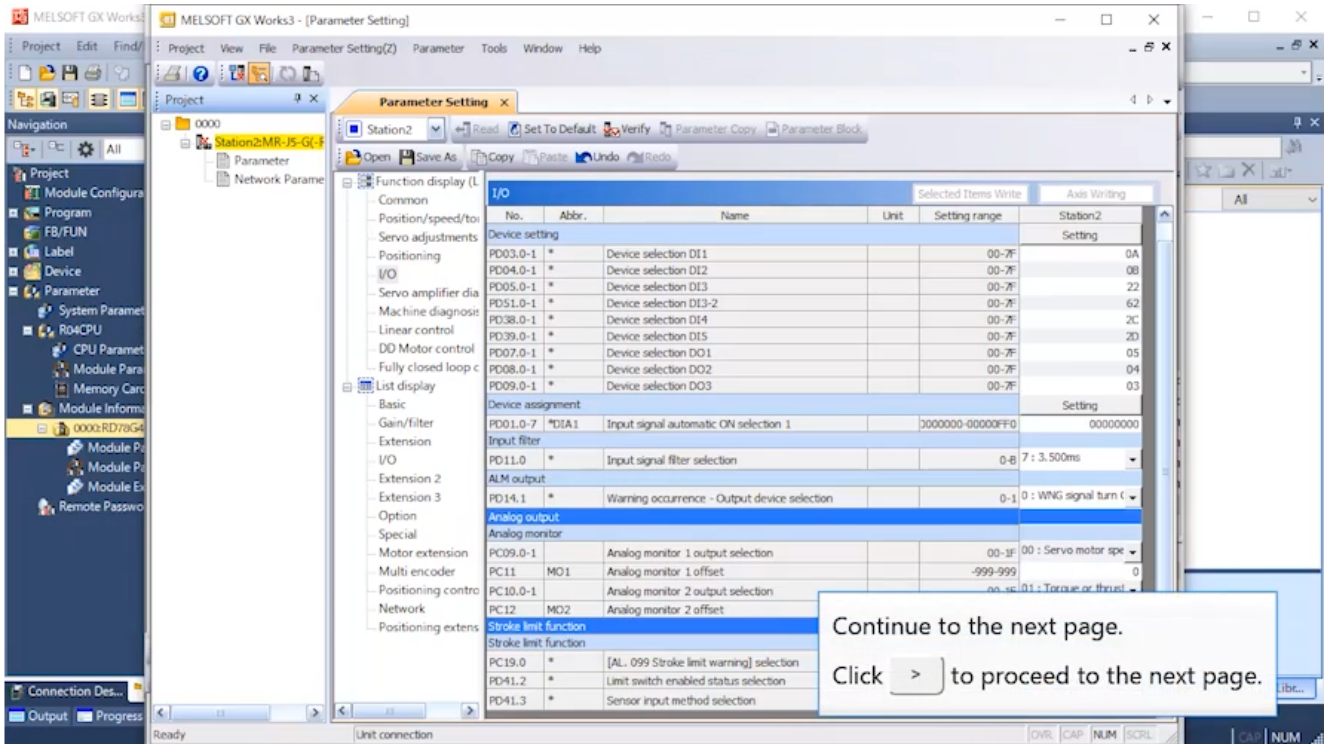
(3) Remote station setting (continue)

The screenshot displays the 'Parameter Setting' window in MELSOFT GX Works3. The 'I/O' parameter table is visible, with the following data:

No.	Abbr.	Name	Unit	Setting range	Station2 Setting
Device setting					
PD03.0-1	*	Device selection D11		00-7F	0A
PD04.0-1	*	Device selection D12		00-7F	0B
PD05.0-1	*	Device selection D13		00-7F	22
PD51.0-1	*	Device selection D13-2		00-7F	62
PD38.0-1	*	Device selection D14		00-7F	2C
PD39.0-1	*	Device selection D15		00-7F	2D
PD07.0-1	*	Device selection DO1		00-7F	05
PD08.0-1	*	Device selection DO2		00-7F	04
PD09.0-1	*	Device selection DO3		00-7F	03
Device assignment					
PD01.0-7	*DIA1	Input signal automatic ON selection 1		0000000-0000FFF0	00000000
Input filter					
PD11.0	*	Input signal filter selection		0-8	7 : 3.50ms
ALM output					
PD14.1	*	Warning occurrence - Output device selection		0-1	0 : WNG signal turn (
Analog output					
Analog monitor					
PC09.0-1		Analog monitor 1 output selection		00-3F	00 : Servo motor spe
PC11	MO1	Analog monitor 1 offset		-999-999	0
Limit switch					
PC19.0	*	[AL_099 Stroke limit warning] selection		0-1	0 : Enabled
PD41.2	*	Limit switch enabled status selection		0-1	0 : Limit switch always
PD41.3	*	Sensor input method selection		0-1	0 : Limit switch always enabled 1 : Only enabled in home position return mode

A callout box points to the PD41.2 parameter, containing the text: "Change PD41.2 Limit switch enabled status selection to [1: Only enabled in home position return mode]."

(3) Remote station setting (continue)



The screenshot displays the 'Parameter Setting' window for Station2 in MELSOFT GX Works3. The 'I/O' section is expanded, showing a table of parameters. The table has columns for No., Abbr., Name, Unit, Setting range, and Station2 Setting. The parameters listed include device selections (D11-D15), device assignment (DIA1), input filter (PD11.0), ALM output (PD14.1), analog output (PC09.0-1), multi encoder (MO1), analog monitor (PC10.0-1), stroke limit function (PC19.0, PD41.2, PD41.3), and sensor input method selection.

No.	Abbr.	Name	Unit	Setting range	Station2 Setting
Device setting					
PD03.0-1	*	Device selection D11		00-7F	0A
PD04.0-1	*	Device selection D12		00-7F	0B
PD05.0-1	*	Device selection D13		00-7F	22
PD51.0-1	*	Device selection D13-2		00-7F	62
PD38.0-1	*	Device selection D14		00-7F	2C
PD39.0-1	*	Device selection D15		00-7F	2D
PD07.0-1	*	Device selection DO1		00-7F	05
PD08.0-1	*	Device selection DO2		00-7F	04
PD09.0-1	*	Device selection DO3		00-7F	03
Device assignment					
PD01.0-7	*DIA1	Input signal automatic ON selection 1		0000000-00000FF0	00000000
Input filter					
PD11.0	*	Input signal filter selection		0-8	7 : 3.500ms
ALM output					
PD14.1	*	Warning occurrence - Output device selection		0-3	0 : WNG signal turn (
Analog output					
Analog monitor					
PC09.0-1		Analog monitor 1 output selection		00-3F	00 : Servo motor spe
MO1		Analog monitor 1 offset		-999-999	0
PC10.0-1		Analog monitor 2 output selection		00-3F	01 : Torque or thrust
MO2		Analog monitor 2 offset			
Stroke limit function					
Stroke limit function					
PC19.0	*	[AL. 099 Stroke limit warning] selection			
PD41.2	*	Limit switch enabled status selection			
PD41.3	*	Sensor input method selection			

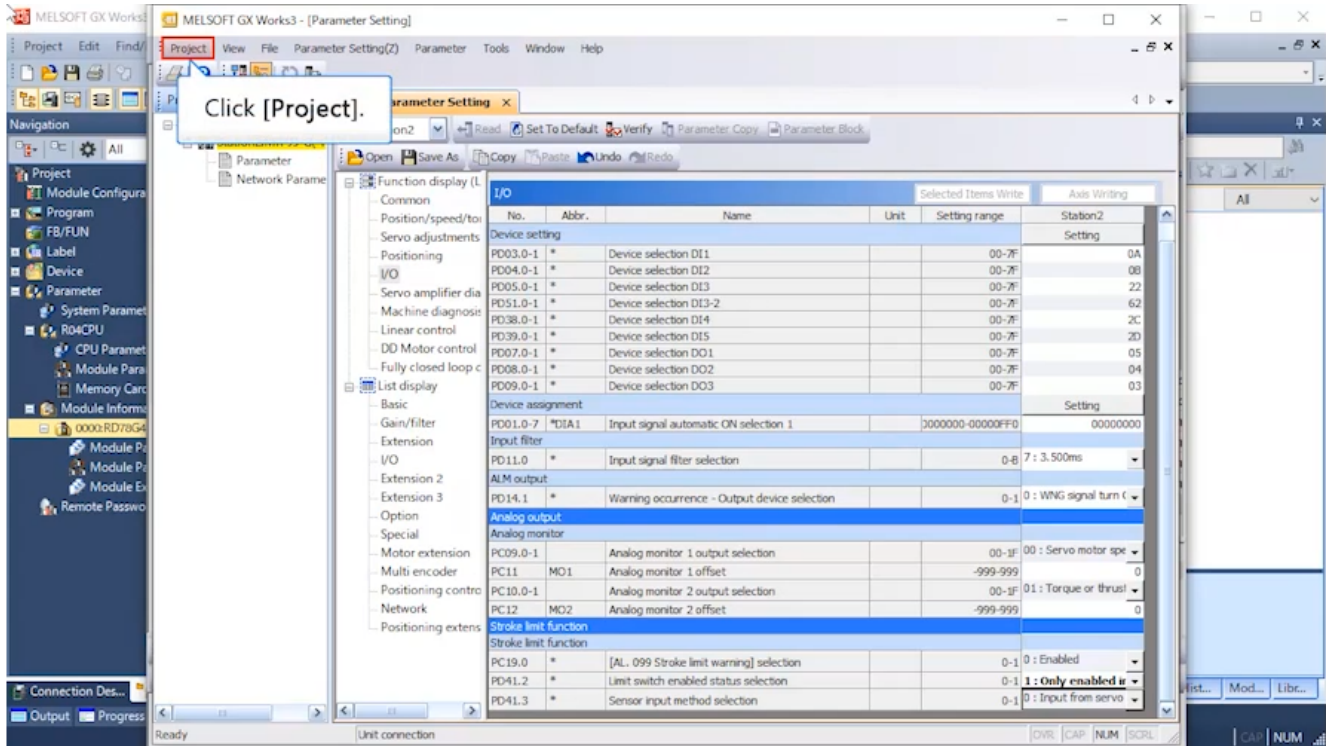
Continue to the next page.
Click > to proceed to the next page.

(3) Remote station setting (continue)

Click the Play button.

Function	Setting range	Station2 Setting
Device setting		
PD03.0-1 *	Device selection D11	00-7F
PD04.0-1 *	Device selection D12	00-7F
PD05.0-1 *	Device selection D13	00-7F
PD51.0-1 *	Device selection D13-2	00-7F
PD38.0-1 *	Device selection D14	00-7F
PD39.0-1 *	Device selection D15	00-7F
PD07.0-1 *	Device selection DO1	00-7F
PD08.0-1 *	Device selection DO2	00-7F
PD09.0-1 *	Device selection DO3	00-7F
Device assignment		
PD01.0-7 *DIA1	Input signal automatic ON selection 1	0000000-00000FF0
Input filter		
PD11.0 *	Input signal filter selection	0-8
ALM output		
PD14.1 *	Warning occurrence - Output device selection	0-1
Analog output		
Analog monitor		
PC09.0-1	Analog monitor 1 output selection	00-1F
PC11 MO1	Analog monitor 1 offset	-999-999
PC10.0-1	Analog monitor 2 output selection	00-1F
PC12 MO2	Analog monitor 2 offset	-999-999
Stroke limit function		
Stroke limit function		
PC19.0 *	[AL_099 Stroke limit warning] selection	0-1
PD41.2 *	Limit switch enabled status selection	0-1
PD41.3 *	Sensor input method selection	0-1

(3) Remote station setting (continue)



The screenshot displays the MELSOFT GX Works3 software interface for parameter setting. The 'Project' menu is highlighted, and a callout box indicates to click it. The main window shows a table of I/O parameters for a remote station.

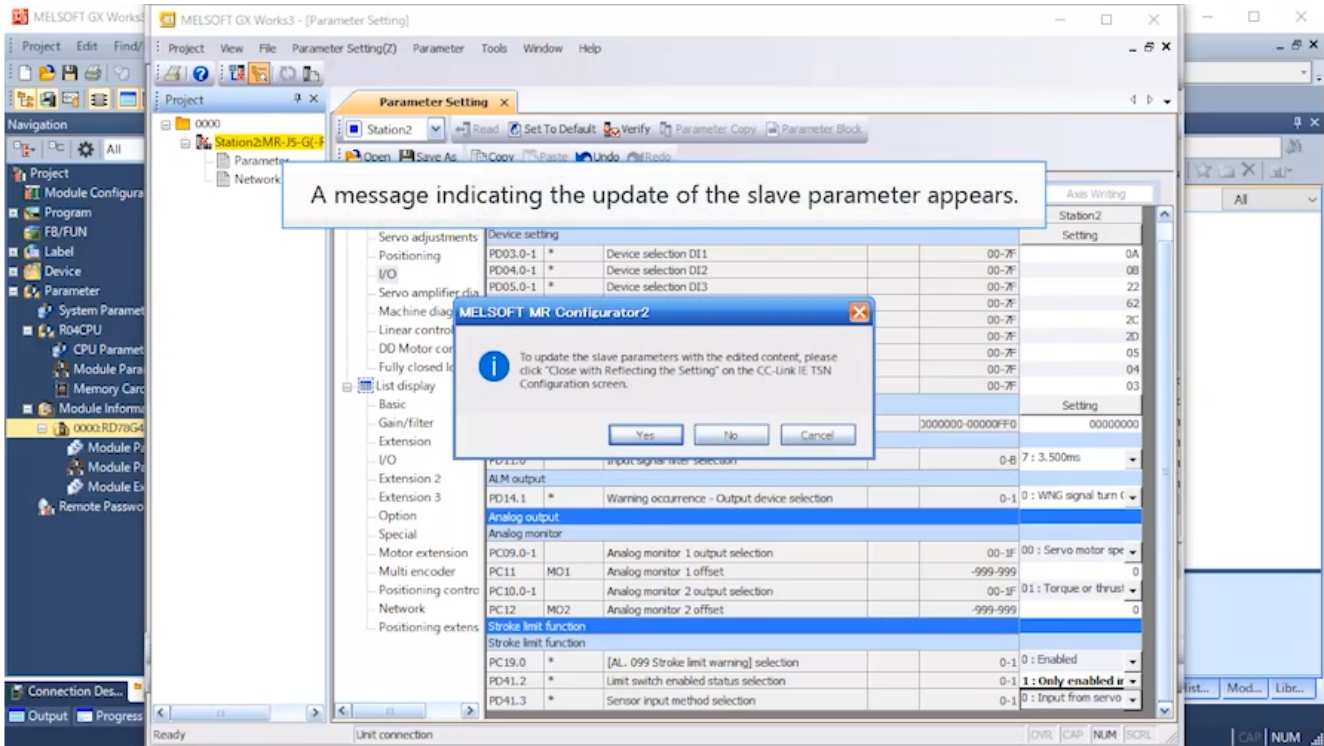
No.	Abbr.	Name	Unit	Setting range	Station2 Setting
Device setting					
PD03.0-1	*	Device selection D11		00-7F	0A
PD04.0-1	*	Device selection D12		00-7F	0B
PD05.0-1	*	Device selection D13		00-7F	22
PD51.0-1	*	Device selection D13-2		00-7F	62
PD38.0-1	*	Device selection D14		00-7F	2C
PD39.0-1	*	Device selection D15		00-7F	2D
PD07.0-1	*	Device selection DO1		00-7F	05
PD08.0-1	*	Device selection DO2		00-7F	04
PD09.0-1	*	Device selection DO3		00-7F	03
Device assignment					
PD01.0-7	*DIA1	Input signal automatic ON selection 1		0000000-00000FF0	00000000
Input filter					
PD11.0	*	Input signal filter selection		0-8	7 : 3.500ms
ALM output					
PD14.1	*	Warning occurrence - Output device selection		0-3	0 : WNG signal turn (
Analog output					
Analog monitor					
PC09.0-1		Analog monitor 1 output selection		00-3F	00 : Servo motor spe
PC11	MO1	Analog monitor 1 offset		-999-999	0
PC10.0-1		Analog monitor 2 output selection		00-3F	01 : Torque or thrust
PC12	MO2	Analog monitor 2 offset		-999-999	0
Stroke limit function					
Stroke limit function					
PC19.0	*	[AL_099 Stroke limit warning] selection		0-1	0 : Enabled
PD41.2	*	Limit switch enabled status selection		0-1	1 : Only enabled it
PD41.3	*	Sensor input method selection		0-1	0 : Input from servo

(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 interface in the 'Parameter Setting' mode. The 'Exit MR Configurator2' option is highlighted in the 'Project' menu. A callout box indicates that this option should be selected. The main parameter table is displayed below.

Name	Unit	Setting range	Station2 Setting
Device setting			
PD03.0-1 *		00-7F	0A
PD04.0-1 *		00-7F	0B
PD05.0-1 *		00-7F	22
PD51.0-1 *		00-7F	62
PD38.0-1 *		00-7F	2C
PD39.0-1 *		00-7F	2D
PD07.0-1 *		00-7F	05
PD08.0-1 *		00-7F	04
PD09.0-1 *		00-7F	03
Device assignment			
PD01.0-7 *DIA1		0000000-00000FF0	00000000
Input filter			
PD11.0 *		0-8	7 : 3.500ms
ALM output			
PD14.1 *		0-3	0 : WNG signal turn (
Analog output			
Analog monitor			
PC09.0-1		00-3F	00 : Servo motor spe
PC11	MO1	-999-999	0
PC10.0-1		00-3F	01 : Torque or thrust
PC12	MO2	-999-999	0
Stroke limit function			
Stroke limit function			
PC19.0 *		0-1	0 : Enabled
PD41.2 *		0-1	1 : Only enabled it
PD41.3 *		0-1	0 : Input from servo

(3) Remote station setting (continue)



(3) Remote station setting (continue)

The screenshot shows the MELSOFT GX Works3 software interface. The main window is titled "Parameter Setting" and displays a table of parameters for "Station2". A dialog box titled "MELSOFT MR Configurator2" is overlaid on the screen, containing the following text:

To update the slave parameters with the edited content, please click "Close with Reflecting the Setting" on the CC-Link IE TSN Configuration screen.

The dialog box has three buttons: "Yes", "No", and "Cancel". A callout box points to the "Yes" button with the text "Click [Yes].".

No.	Abbr.	Name	Unit	Setting range	Station2 Setting
Device setting					
PD03.0-1	*	Device selection D11		00-7F	0A
PD04.0-1	*	Device selection D12		00-7F	08
PD05.0-1	*	Device selection D13		00-7F	22
Stroke limit function					
PC19.0	*	[AL. 099 Stroke limit warning] selection		0-1	0 : Enabled
PD41.2	*	Limit switch enabled status selection		0-1	1 : Only enabled is
PD41.3	*	Sensor input method selection		0-1	0 : Input from servo

(3) Remote station setting (continue)

The screenshot displays the 'CC-Link IE TSN Configuration' window in MELSOFT GX Works2. The main window is titled 'CC-Link IE TSN Configuration (Start I/O: 0000)'. It features a navigation pane on the left, a main configuration area, and a 'Module List' pane on the right.

The main configuration area shows a table with the following data:

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.2

Below the table, a network diagram shows a 'Host Station' connected to 'STA#2' (MR-J5-G). A green box highlights the 'MR-J5-G' module in the diagram. A text box with a white background and black border is overlaid on the diagram, containing the text: 'When the screen returns to the CC-Link IE TSN Configuration screen, the remote station setting is completed.'

The 'Module List' pane on the right shows a tree view of modules, including 'General CC-Link IE TSN Module', 'CC-Link IE TSN Module (Mitsubis)', 'Master/Local Module', 'Motion Module', 'GOT2000 Series', 'DC Input', 'Transistor Output', 'Analog Input', 'Analog Output', 'I/O Combined', and 'Servo Amplifier (MELSERVO-J5 Series) Single Axis'. The 'Servo Amplifier' module is currently selected.

The bottom status bar shows 'Error0' and 'Warning:2'.

(3) Remote station setting (continue)

The screenshot displays the MELSOFT GX Works2 interface for CC-Link IE TSN Configuration. The main window shows a table of station parameters with the following data:

No.	Model Name	Parameter Automatic Setting	PDO Mapping Setting	IP Address
0	Host Station			192.168.3.253
1	NZ2GN2S1-32D			192.168.3.1
2	MR-J5-G	<input checked="" type="checkbox"/>	<Detail Setting>	192.168.3.2

A callout box points to the 'Close with Reflecting the Setting' button in the top right corner of the configuration window, with the text: "Click [Close with Reflecting the Setting]."

Below the table, a network diagram shows a Host Station (STA#0) connected to two Remote Stations (STA#1 and STA#2). STA#2 is highlighted with a green box and contains an MR-J5-G servo amplifier. The diagram also shows a power supply (PS) and a ground symbol (GND).

The right-hand side of the interface shows a tree view of the configuration, including sections for General CC-Link IE TSN Module, CC-Link IE TSN Module (Mitsubishi), Master/Local Module, Motion Module, GOT2000 Series, DC Input, Transistor Output, Analog Input, Analog Output, General purpose Inverter, and General purpose AC Servo. The General purpose AC Servo section is expanded, showing various servo models like MR-J5-G, MR-J5-G-RJ, MR-J5W2-G, MR-J5W2-G_B_Axis, MR-J5W3-G, and MR-J5W3-G_BC_Axis.

The bottom status bar shows "Error0" and "Warning2".

(3) Remote station setting (continue)

MELSOFT GX Works3 EYRD78GYSample_RD78GBasic.gx3 - [0000:RD78G4 Module Parameter]

Project Edit Find/Replace Convert View Online Debug Recording Diagnostics Tool Window Help

Navigation Module Configuration 0000:RD78G4 Module Parameter 0000:RD78G4 Module Parameter

Setting Item List

Input the Setting Item to Search

- Required Settings
- Basic Settings
 - Network Configuration Settings
 - Refresh Setting
 - Network Topology
 - Communication Period Setting
 - Connection Device Information
 - Slave Station Setting
- Application Settings

Setting Item

Item	Setting
Network Configuration Settings	<Detailed Setting>
Refresh Settings	<Detailed Setting>
Network Topology	Line/Star
Communication Period Setting	
Setting in Units of Ius	Not Set
Communication Period Interval Setting (Do not Set it in Units of Ius)	1000.00 us
Communication Period Interval Setting (Set it in Units of Ius)	1000.00 us
System Reservation Time	20.00 us
Cyclic Transmission Time	500.00 us
Transient Transmission Time	480.00 us
Multiple Period Setting	x4
Normal-Speed	

Explanation

Set the number of device points and assignments of slave station to the master station.

Check Restore the Default Settings

The remote station has now been set.
Click > to proceed to the next page.

RD78G Display Target: All

Item List Find Result

Connection Des... Navigation

Output Progress

R04 Host CAP NUM

(4) PDO mapping

PDO is the abbreviation for Process Data Object, which is one of the communication profiles of CANopen objects. The PDO communication is equivalent to the existing CC-Link cyclic communication. It allows OD (Object Dictionary) to be directly operated.

The PDO mapping means mapping (relating) the data to be exchanged between the controller and slave in the cyclic communication (PDO communication) in advance.

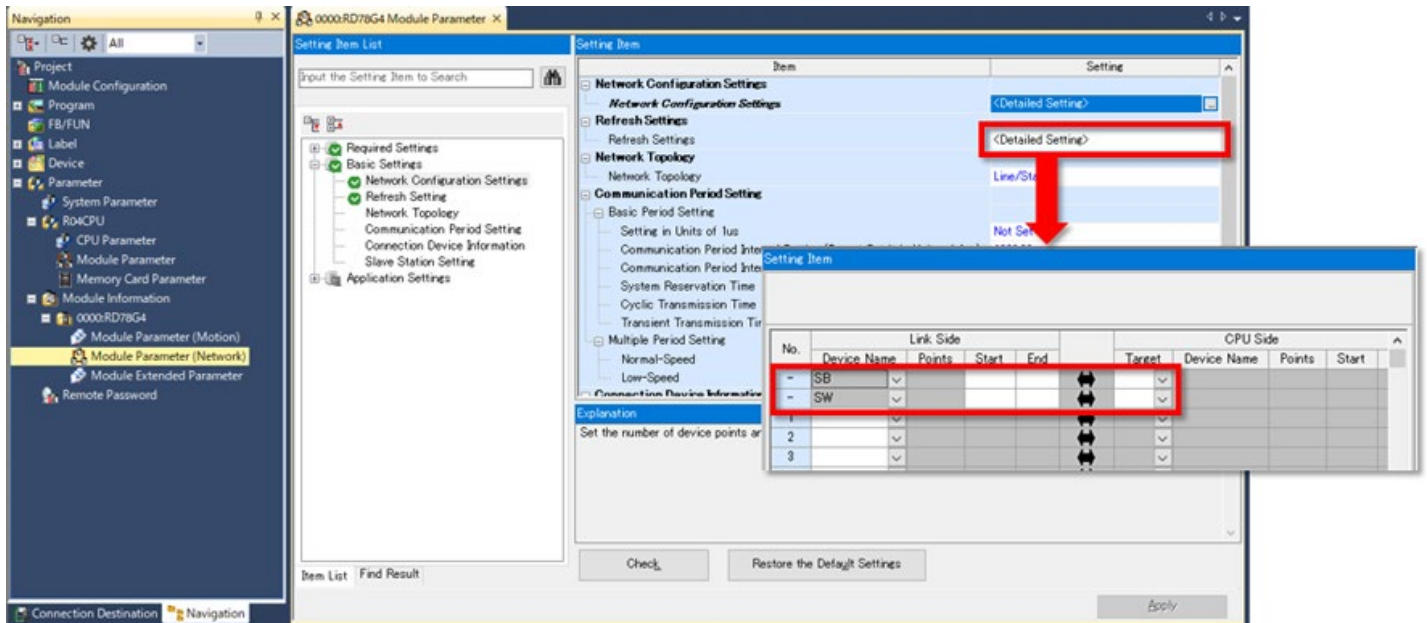
When adding sleeve stations or changing the IP address, perform the PDO mapping again.

Digital Inputs has been added to the PDO mapping. This sets the input signal status of the servo amplifier to be transmitted to the motion module by the cyclic communication.

(5) Refresh setting

Double-click [Refresh Settings] → <Detailed Setting>.

All the setting fields must be blank.

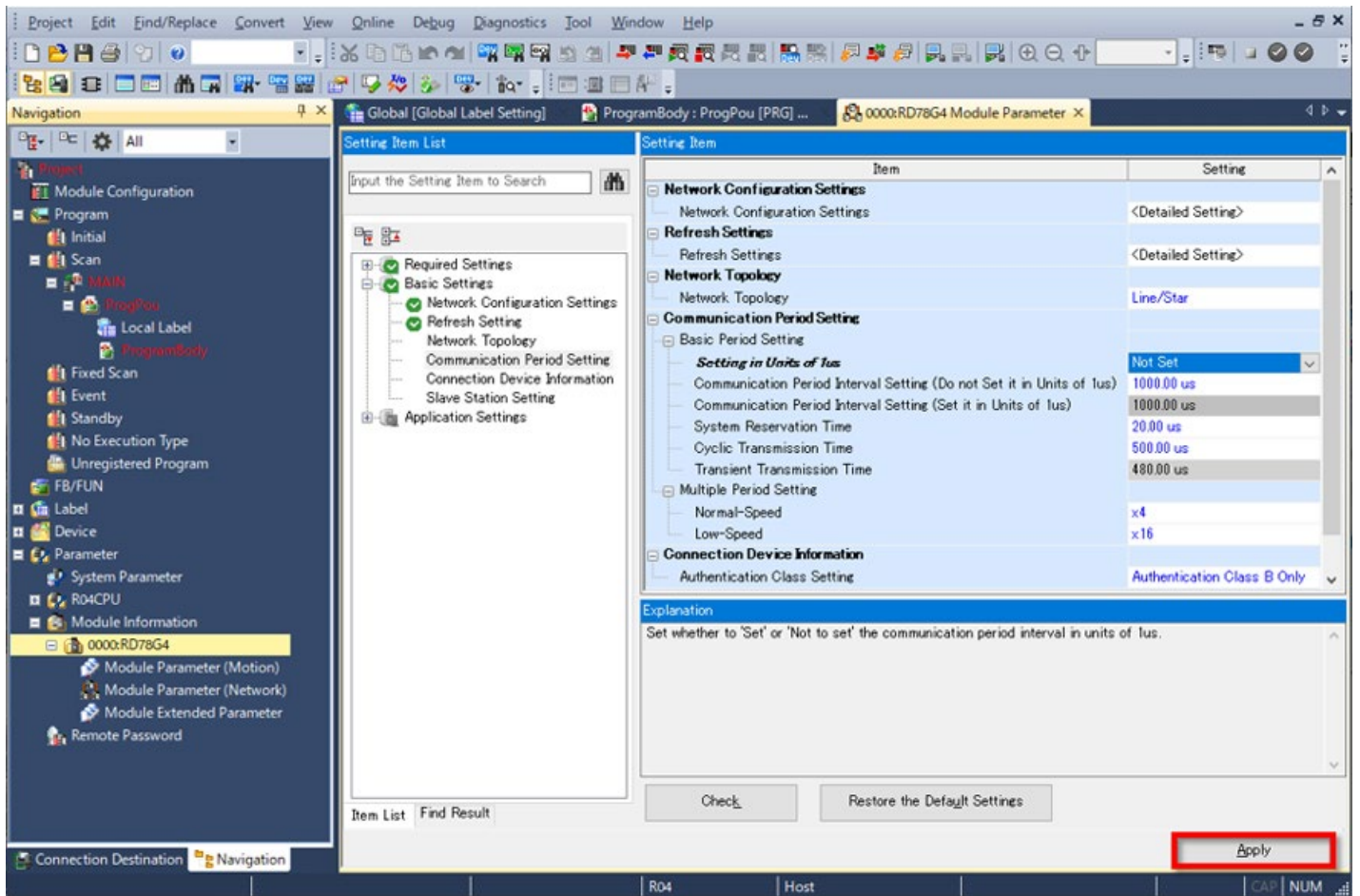


(Note) When the module label is set to [Not use], the setting field of the refresh target is blank from the beginning.

3.3.2 Module parameter (Network)

(6) Confirming module parameters

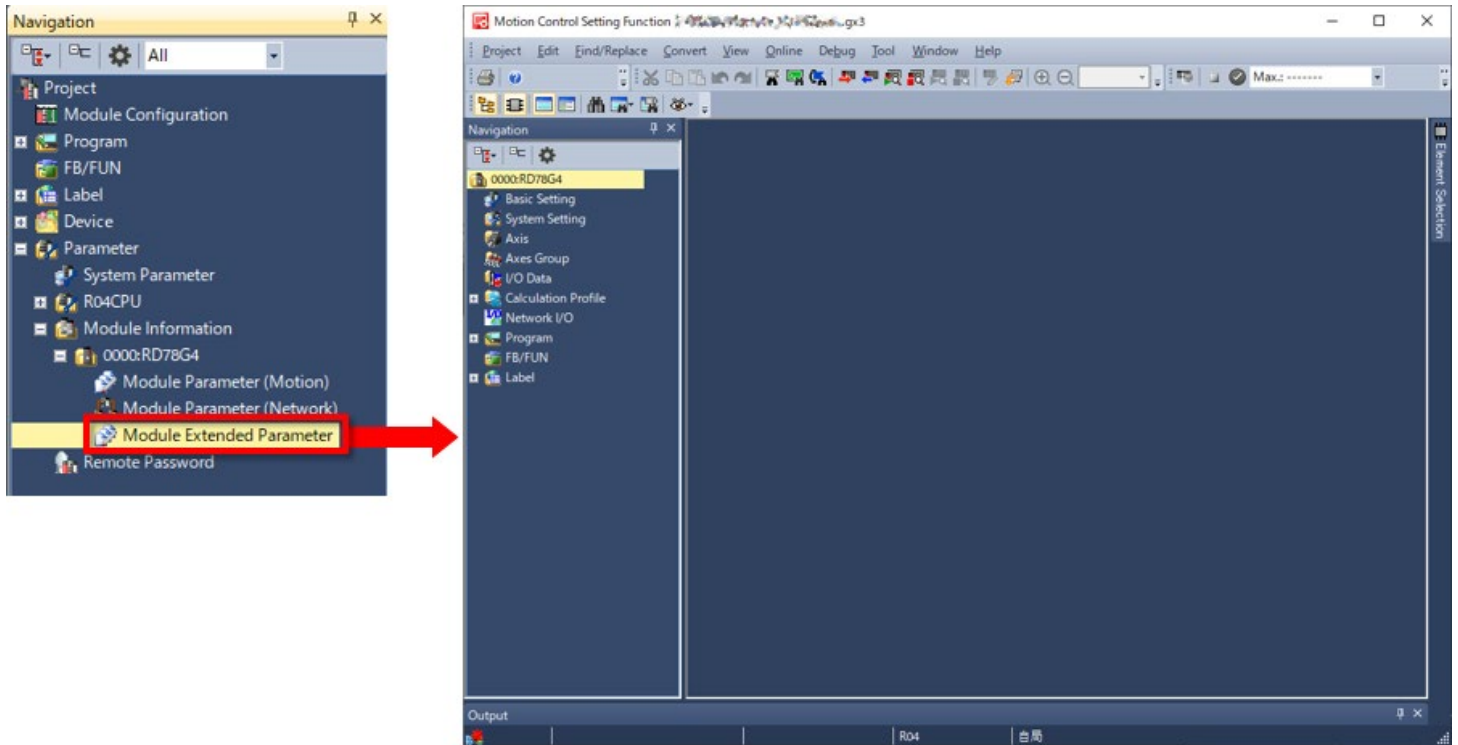
When the screen returns to the main screen of GX Works3, confirm the parameters that have been set. Be sure to click the [Apply] button on the lower right of the screen.



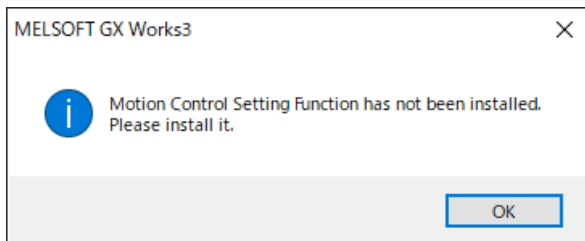
3.3.3

Module extended parameter

Double-click [Parameter] → [Module Information] → [0000:RD78G4] → [Module Extended Parameter] in the project tree.
The Motion Control Setting Function screen appears.
Program the motion module on this screen.
For the actual programs, refer to Chapter 4.



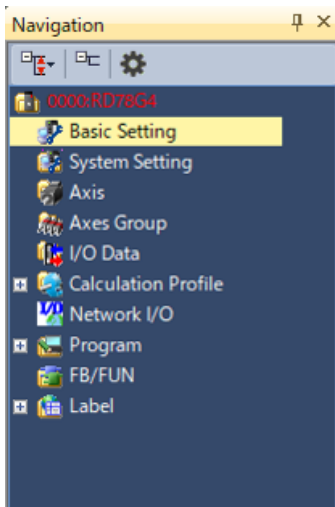
When Motion Control Setting is not started and the following message is displayed, Motion Control Setting is not installed in the personal computer used(*).



Please install Motion Control Setting Function.

(*) Indicates a personal computer running Windows®.

This section describes the setting items required for the motion control setting function.



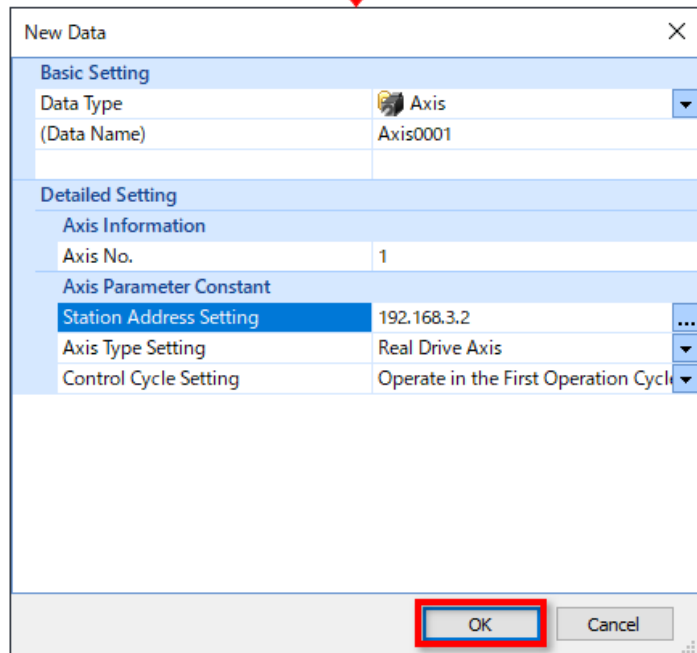
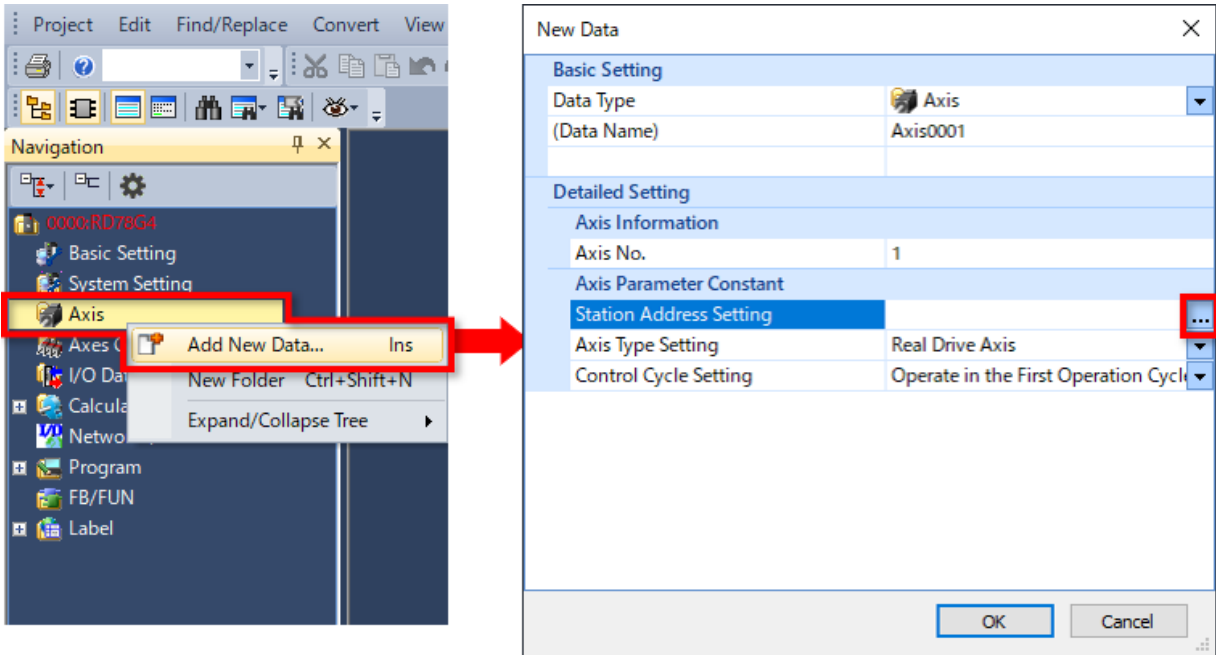
In this course, initial values are used in the basic setting and system setting on the navigation tree.

3.4.1

Axis registration

(1) Creating a new axis

Right-click [Axis] in the Navigation tree and select [Add New Data].
After the New Data window appears, set the items as shown below.



(2) Setting the driver unit conversion

The Axis Parameter Setting tab opens.

Mainly set the command unit, electronic gear, and limit values here.

In this course, change the items in the red flame in the figure below.

The screenshot shows the 'Axis Parameter Setting' window. On the left, a tree view shows 'Axis Parameter' expanded, with 'Driver Unit Conversion' and 'Position Command Unit' highlighted in red. The main window is titled 'Electronic Gear Setting Axis001' and contains the following fields:

- Machine Components:** Ball Screw, Horizontal
- Position Command Unit:** um
- Lead of Ball Screw (PB):** 10000.0 [um]
- Reduction Ratio (NL/NM):** 1 / 1
- Encoder Resolution:** 67108864 [pulse/rev]
- Setting Range:** (empty)

Below these fields is a 'Calculate Axis Parameters' button. To the right is a 3D diagram of a ball screw assembly with labels 'NL/NM' and 'PB'. Below the diagram is a 'Calculation Result' section with a table:

Axis Parameters	Value
Position Command Unit	um
Driver Unit Conversion Numerator	67108864
Driver Unit Conversion Denominator	10000

Below the table, it states: '* The electronic gear on driver side is calculated as 1:1.' At the bottom of the window are 'OK' and 'Cancel' buttons.

Callout 1: Points to the [...] button next to the 'Driver Unit Conversion' field in the left tree view.

Callout 2: Points to the 'Machine Components' dropdown and the 'Lead of Ball Screw (PB)' input field.

Callout 3: Points to the 'Calculate Axis Parameters' button.

Callout 4: Points to the 'OK' button at the bottom of the window.

3.4.2 Network I/O

When using the remote I/O module, slave labels must be created from the network I/O.

- 1) Double-click [Network I/O] in the Navigation tree.
- 2) After the Network I/O tab opens, click the "+" marks on the left side of the lines of the remote input module and MR-J5-G.
- 3) Select the data for labeling. Select the following items in this course.
 - RX0 to RX4 and RX1F of the NZ2GN2S1-32D
 - RWr15 of the MR-J5-G
- 4) Click [Create Label] to create slave labels of the selected data.

The screenshot illustrates the steps to select data for labeling in the Axis Parameter Setting software. It shows the Navigation tree on the left, the main data table, and the detailed view of the selected data.

Navigation Tree: The 'Network I/O' option is highlighted in red.

Main Data Table: A table with columns: No., IP Address, Model Name, Device Label, Data Type, Labeling Target, and Data. Two rows are highlighted with red boxes and '+' signs on the left:

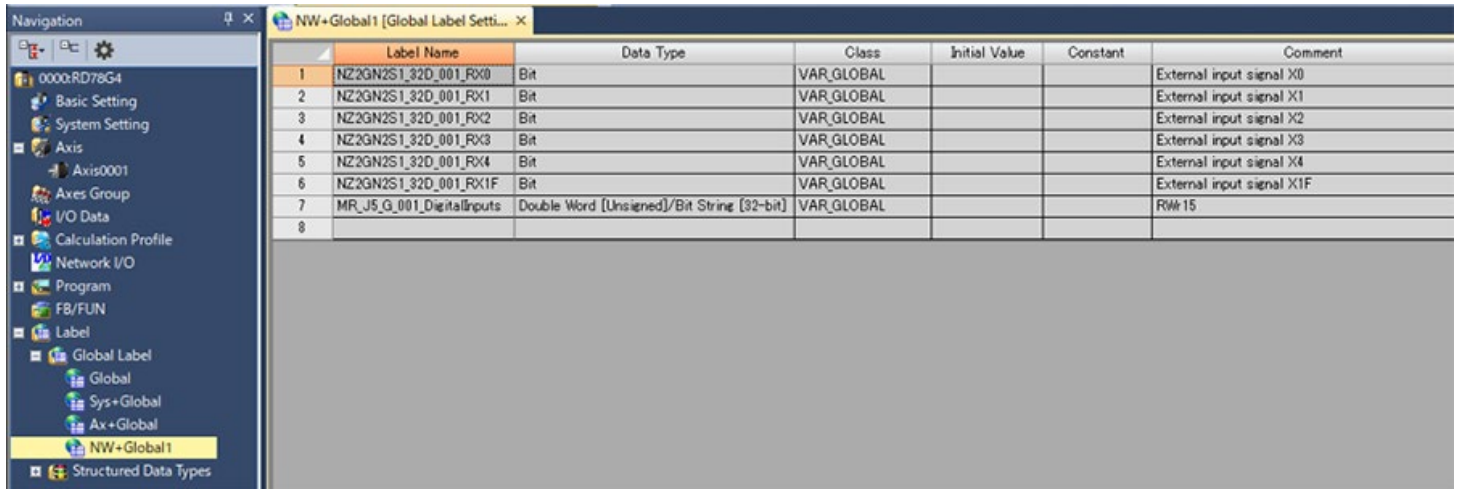
No.	IP Address	Model Name	Device Label	Data Type	Labeling Target	Data
1	192.168.3.1	NZ2GN2S1-32D	NZ2GN2S1_32D_001	Entire Device	<input type="checkbox"/>	-
2	192.168.3.2	MR-J5-G	MR_J5_G_001	Entire Device	<input type="checkbox"/>	-

Detailed View of Selected Data: The software displays a detailed view of the selected data, with red boxes highlighting the specific items to be labeled:

- Device 1 (NZ2GN2S1-32D):**
 - RX0 to RX4: Bit, External input signal X0 to X4. Labeling Target:
 - RX1F: Bit, External input signal X1F. Labeling Target:
- Device 2 (MR-J5-G):**
 - RW15: Double Word (Unsigned), MR_J5_G_001_DigitalInputs. Labeling Target:

Buttons: The 'Create Label' button is highlighted with a red box at the bottom right.

The created slave labels are registered in [Label] → [Global Label] → [NW+Global1] in the Navigation tree.



The screenshot shows the 'Global Label Settings' window for 'NW+Global1'. The left sidebar displays a navigation tree with 'NW+Global1' selected. The main area contains a table with the following data:

	Label Name	Data Type	Class	Initial Value	Constant	Comment
1	NZ2GN2S1_32D_001_RX0	Bit	VAR_GLOBAL			External input signal X0
2	NZ2GN2S1_32D_001_RX1	Bit	VAR_GLOBAL			External input signal X1
3	NZ2GN2S1_32D_001_RX2	Bit	VAR_GLOBAL			External input signal X2
4	NZ2GN2S1_32D_001_RX3	Bit	VAR_GLOBAL			External input signal X3
5	NZ2GN2S1_32D_001_RX4	Bit	VAR_GLOBAL			External input signal X4
6	NZ2GN2S1_32D_001_RX1F	Bit	VAR_GLOBAL			External input signal X1F
7	MR_J5_G_001_DigitalInputs	Double Word [Unsigned]/Bit String [32-bit]	VAR_GLOBAL			RW 15
8						

3.4.3 Limit signal setting

After the slave labels are created, double-click "Axis0001" in the Navigation tree to display the Axis Parameter Setting tab again. Set the lower limit and upper limit as shown in the figure below. In the target field, the icon for displaying the input auxiliary window is displayed.

The screenshot displays the Axis Parameter Setting interface for Axis0001. The navigation tree on the left shows the hierarchy: 0000:RD78G4 > Axis > Axis0001. The main window shows the following settings:

Item	Setting
Axis No.	1
Station Address Setting	192.168.3.2
Axis Type Setting	0 Real Drive Axis
Upper Limit Signal	
Signal	
Target	[VAR]MR_J5_G_001_DigitalInputs.1
Signal Detection Method	1: Detection at FALSE
Compensation Time	0.0 s
Filter Time	0.0 s
Lower Limit Signal	
Signal	
Target	[VAR]MR_J5_G_001_DigitalInputs.0
Signal Detection Method	1: Detection at FALSE
Compensation Time	0.0 s
Filter Time	0.0 s
Control Cycle Setting	0 Operate in the First Operation Cycle
Absolute Position Reference	3 Feed Machine Position
Absolute Position Management	1 Automatic Setting (Acquire from Coi
Ring Counter Enabled Select	0 Disable
Ring Counter Lower Limit Val	-1000000000.0
Ring Counter Upper Limit Val	10000000000.0
Slave Emulation Enabled	0 Disable
Torque Limit Maximum Value	1000.0 %
Negative Direction Torque Lir	300.0 %
Positive Direction Torque Lir	300.0 %
High-speed Mode Setting	0000
Axis Parameter	
Acceleration Limit Value	2147483647.0 um/s ²
Operation Selection at Start	1 Force (After Start)

The Target Setting dialog box is open, showing the following settings:

Item	Setting
Source Type	Global Label
Source Data Type	
Source	MR_J5_G_001_DigitalInputs.1

Upper Limit Signal
Target: [VAR]MR_J5_G_001_DigitalInputs.1
Signal Detection Method: 1: Detection at FALSE

Lower Limit Signal
Target: [VAR]MR_J5_G_001_DigitalInputs.0
Signal Detection Method: 1: Detection at FALSE

In this chapter, you have learned:

- Creating a New Project
- PLC CPU Settings
- Motion Module Setting
- Motion Control Setting Function

Important points

Creating a New Project	<ul style="list-style-type: none">• Create a project of GX Works3 and create a module configuration diagram.
PLC CPU Settings	<ul style="list-style-type: none">• Change the link direct device setting to the extended mode (iQ-R series mode).
Motion Module Setting	<ul style="list-style-type: none">• In the Module Parameter (Network) screen, set the network configuration and parameters of the remote station.• In the network configuration setting, add a remote station, set the IP address, and perform the PDO mapping.• Delete all the link refresh settings.
Motion Control Setting Function	<ul style="list-style-type: none">• In the Motion Control Setting Function screen, register the axes.• The slave labels are created from the network I/O.

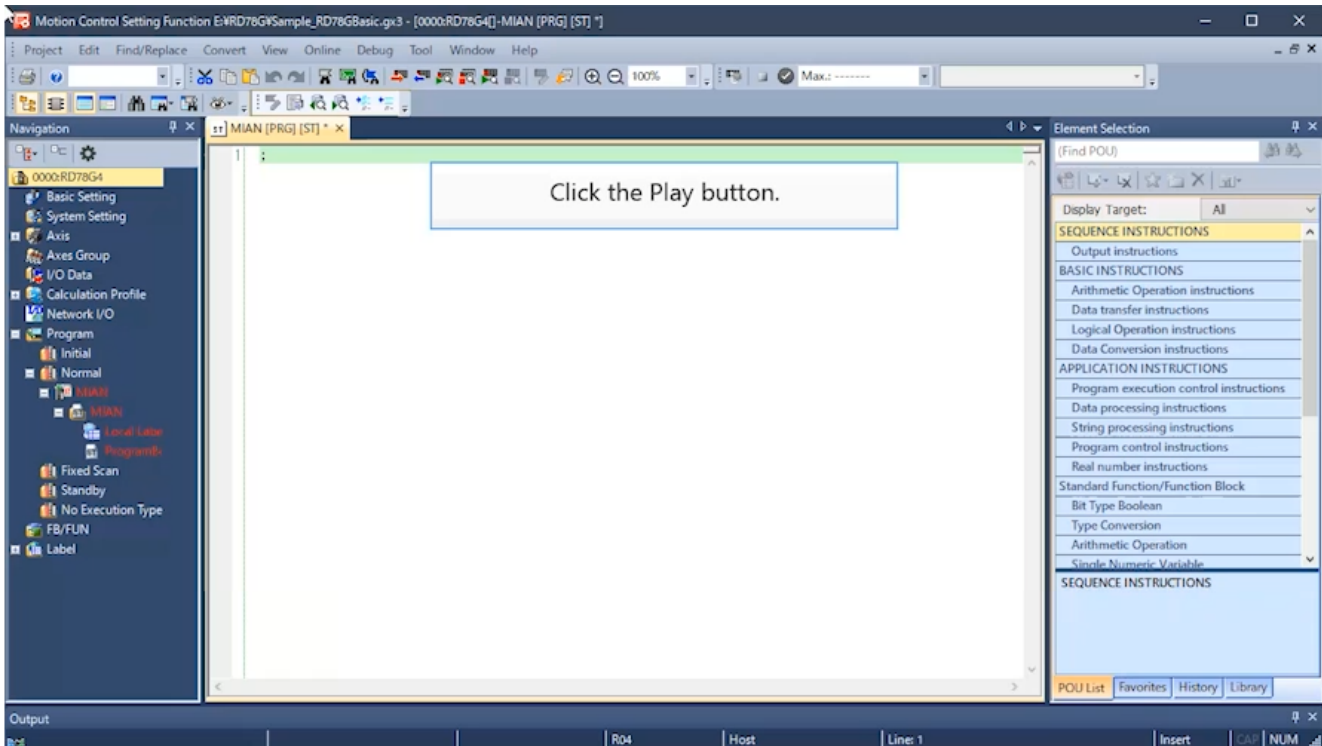
4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



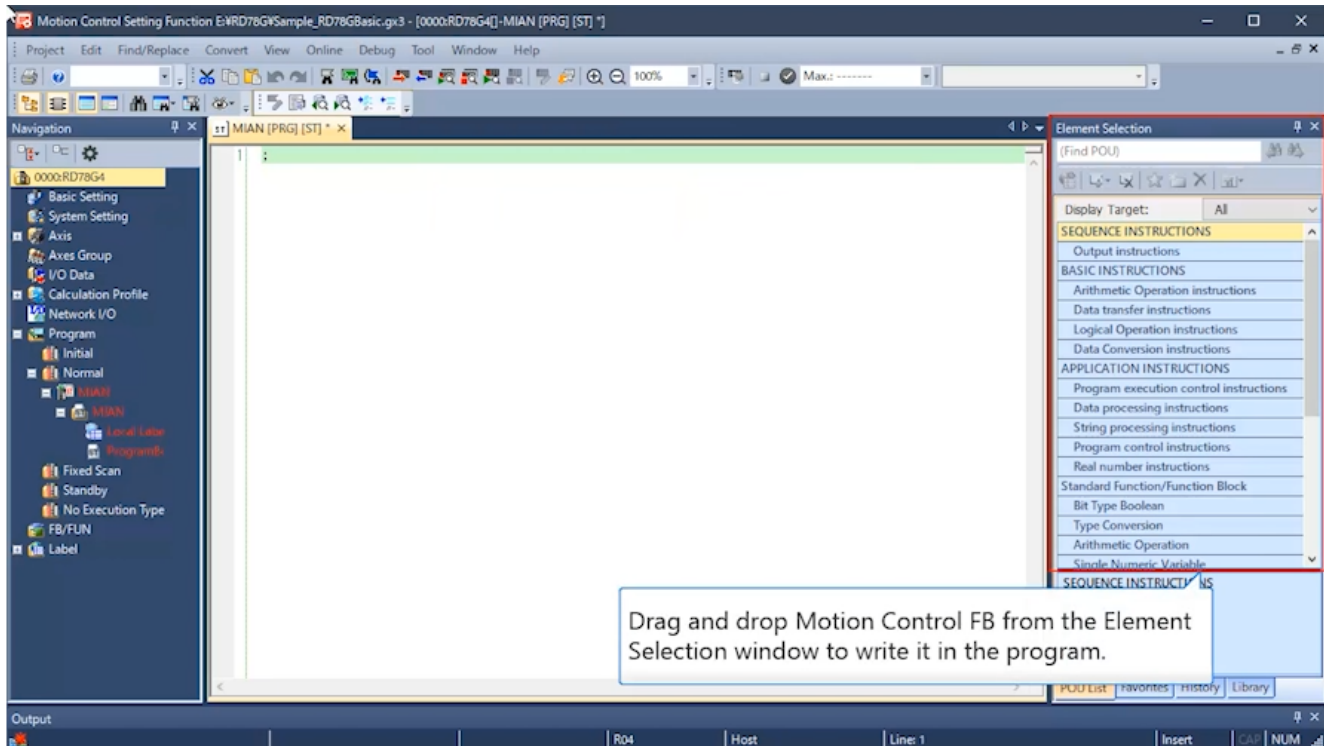
4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



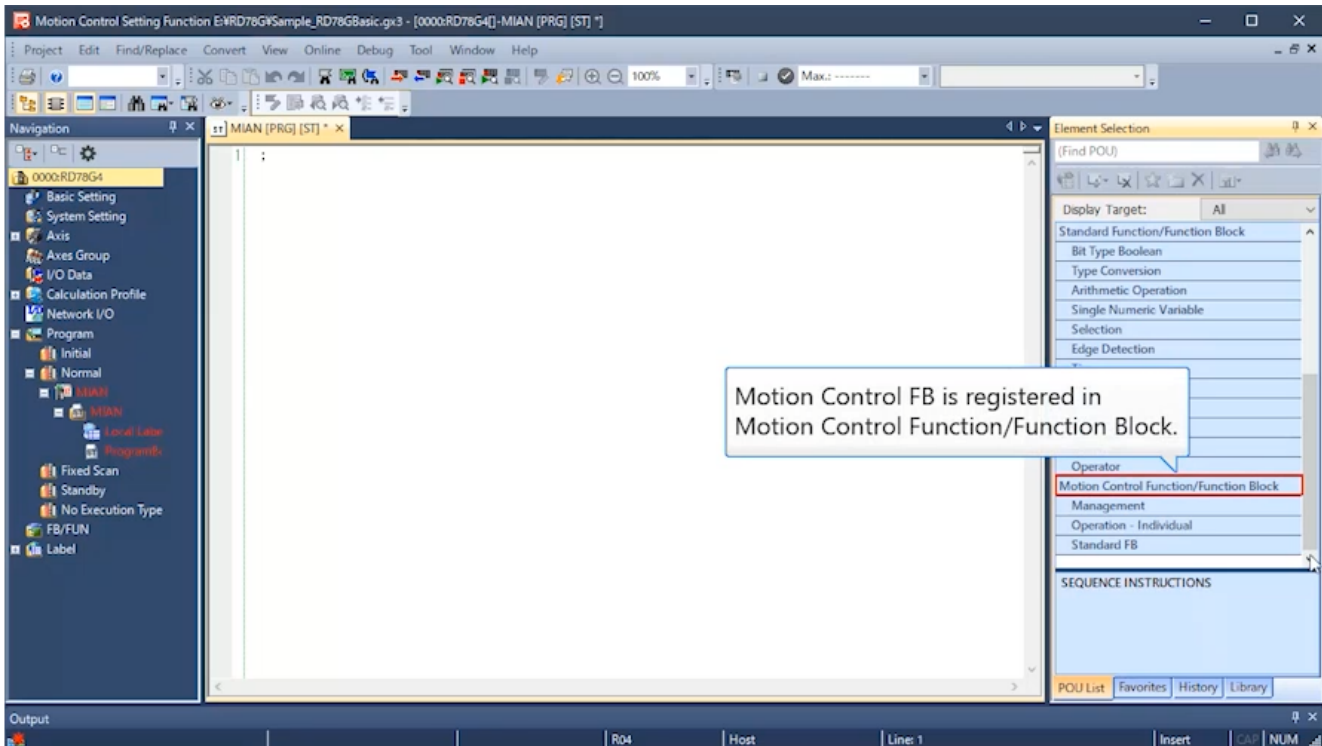
4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



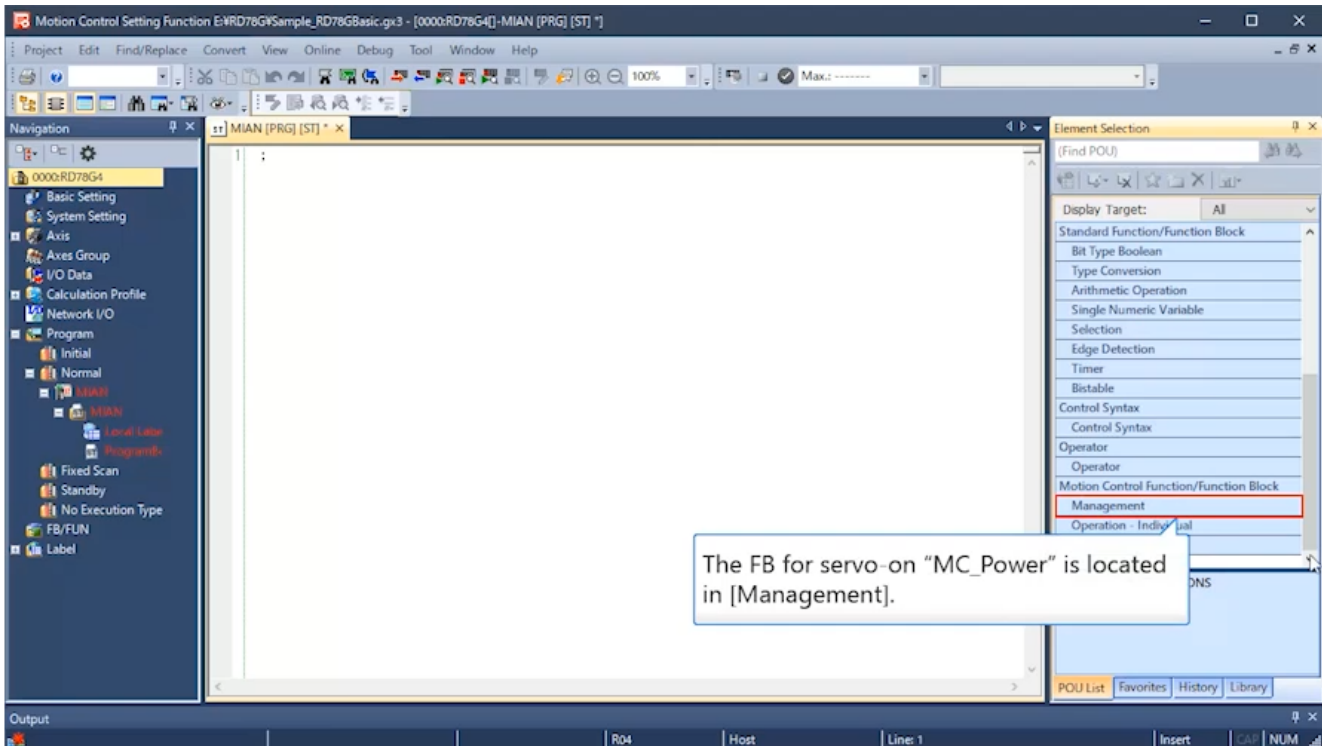
4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



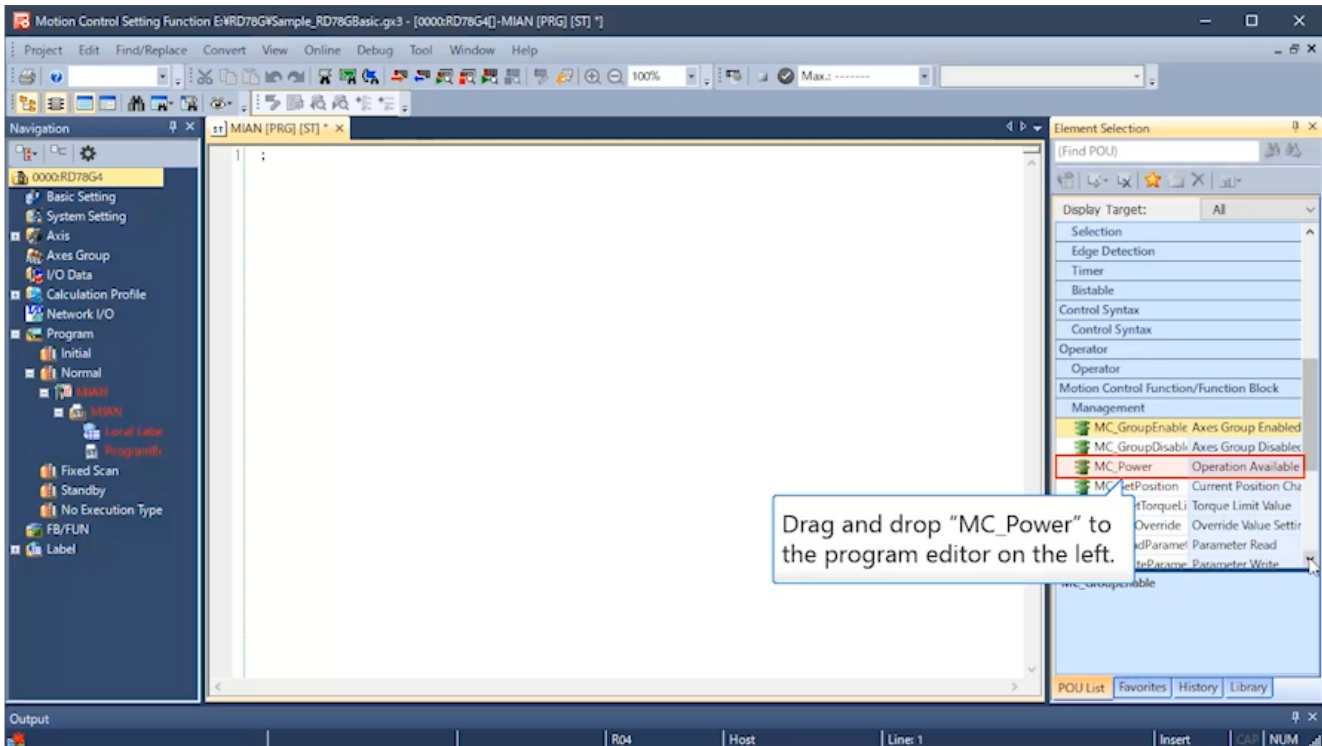
4.2

Motion Module Program

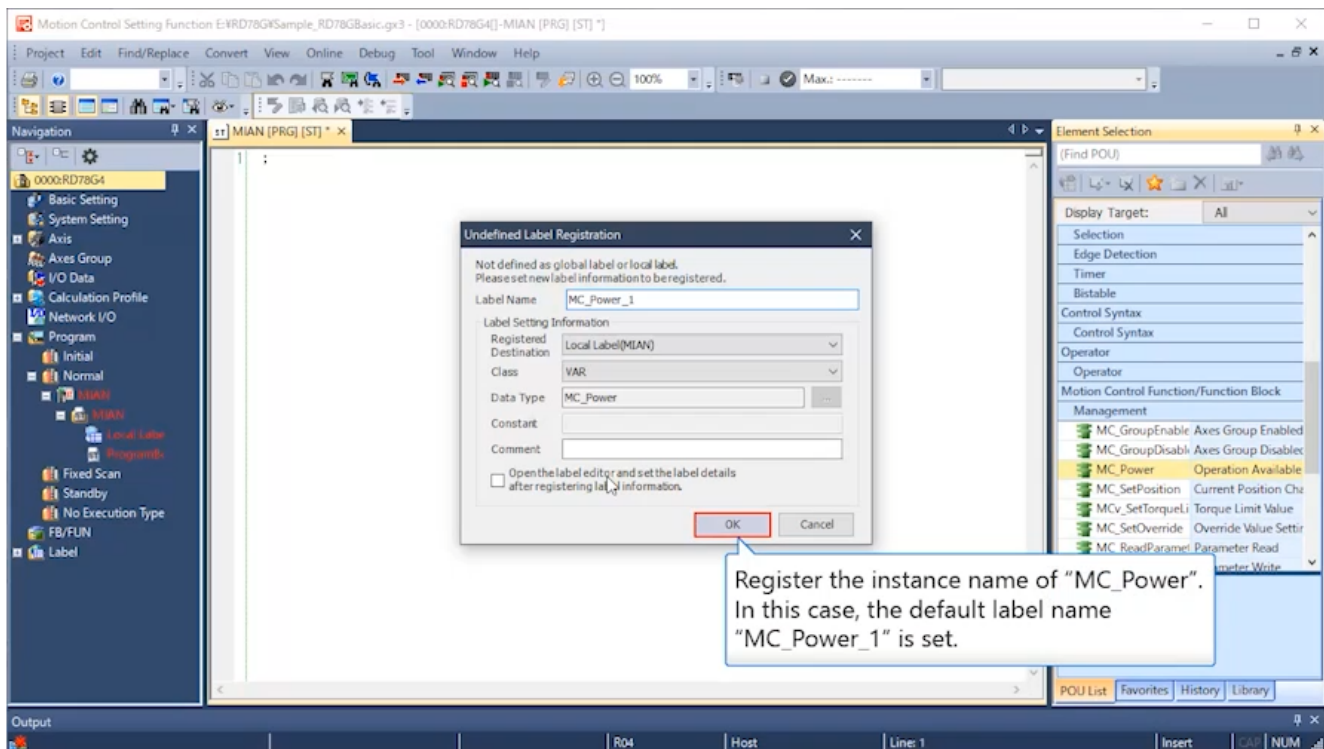
Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.



4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB

The screenshot displays the Motion Control Setting Function software interface. The main window shows a program code editor with the following code:

```
1 MC_Power_1(Axis:= 2AXIS_BEE2 ,Enable:= 2B00L2 ,ServoON:= 2B00L2 ,Status=> 2B00L2 ,ReadyStatu  
2 Busy=> 2B00L2 ,Error=> 2B00L2 ,ErrorID=> 2B0R02 );:
```

A callout box highlights the code and contains the text: "MC_Power_1" has been registered to the program. The semicolons ";" at the end of the sentence overlap. Delete one of them.

The left sidebar shows the project tree with the following structure:

- 0000:RD78G4
 - Basic Setting
 - System Set
 - Axis
 - Axis Group
 - I/O Data
 - Calculation
 - Network I/O
 - Program
 - Initial
 - Normal
 - MAIN
 - Local Label
 - ProgramBd
 - Fixed Scan
 - Standby
 - No Execution Type
 - FB/FUN
 - Label

The right sidebar shows the Element Selection panel with the following content:

Display Target: All

(Find POU)

Selection

- Edge Detection
- Timer
- Bistable
- Control Syntax
- Control Syntax
- Operator
- Operator
- Motion Control Function/Function Block
- Management
- MC_GroupEnable: Axes Group Enabled
- MC_GroupDisable: Axes Group Disable
- MC_Power: Operation Available
- MC_SetPosition: Current Position Ch
- MCv_SetTorqueLi: Torque Limit Value
- MC_SetOverride: Override Value Settir
- MC_ReadParamel: Parameter Read
- MC_WriteParamel: Parameter Write

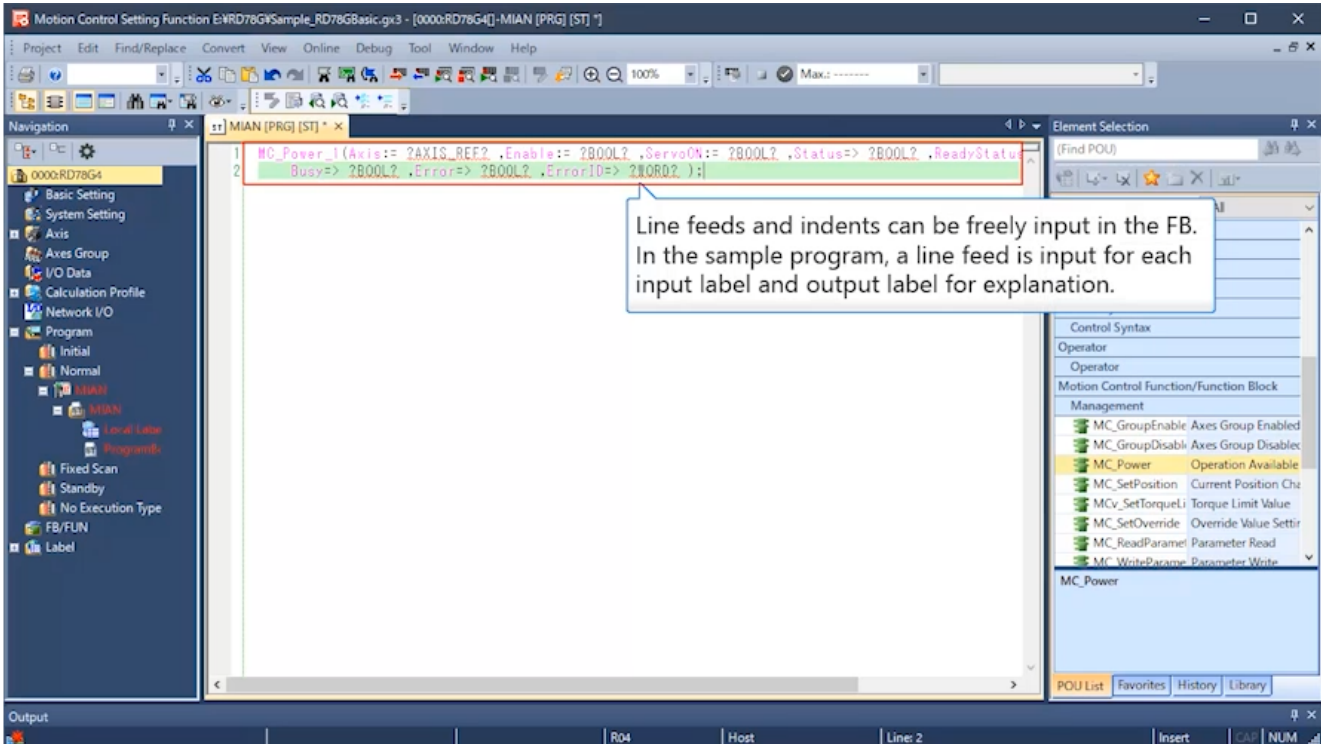
MC_Power

POU List Favorites History Library

Output

R04 Host Line: 2 Insert NUM

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.



The screenshot displays the Motion Control Setting Function software interface. The main editor window shows a program with the following code:

```
1 MC_Power_1(Axis:= ?AXIS_REF?, .Enable:= ?B00L?, .ServoON:= ?B00L?, .Status=> ?B00L?, .ReadyStatus  
2 Busy=> ?B00L?, .Error=> ?B00L?, .ErrorID=> ?ERROR? );
```

A callout box points to the code with the text: "Line feeds and indents can be freely input in the FB. In the sample program, a line feed is input for each input label and output label for explanation."

The interface includes a navigation pane on the left showing the project tree, an element selection pane on the right, and a status bar at the bottom.

4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB

The screenshot displays the Motion Control Setting Function software interface. The main window shows a code editor with the following code:

```
1 MC_Power_1(  
2   Axis:= 2AXIS_REF?,  
3   Enable:= 2BOOL?,  
4   ServoON:= 2BOOL?,  
5   Status=> 2BOOL?,  
6   ReadyStatus=> 2BOOL?,  
7   Busy=> 2BOOL?,  
8   Error=> 2BOOL?,  
9   ErrorID=> 2WORD? );
```

A callout box points to the code with the text: "At last, input the appropriate labels for the input label and output label. This completes the settings."

The interface includes a navigation pane on the left showing a project tree with folders like "Basic Setting", "System Setting", "Axis", "Axis Group", "I/O Data", "Calculation Profile", "Network I/O", "Program", "Initial", "Normal", "MAIN", "Local Label", "Programs", "Fixed Scan", "Standby", "No Execution Type", "FB/FUN", and "Label". The "MAIN" folder is expanded, showing "Local Label" and "Programs".

The right side of the interface features an "Element Selection" pane with a search bar and a list of function blocks. The "MC_Power" block is highlighted in the list. The list includes:

- MC_GroupEnable: Axes Group Enabled
- MC_GroupDisable: Axes Group Disable
- MC_Power: Operation Available
- MC_SetPosition: Current Position Ch
- MCv_SetTorqueLi: Torque Limit Value
- MC_SetOverride: Override Value Settir
- MC_ReadParamet: Parameter Read
- MC_WriteParamet: Parameter Write

The bottom status bar shows "R04", "Host", "Line: 9", and "Insert".

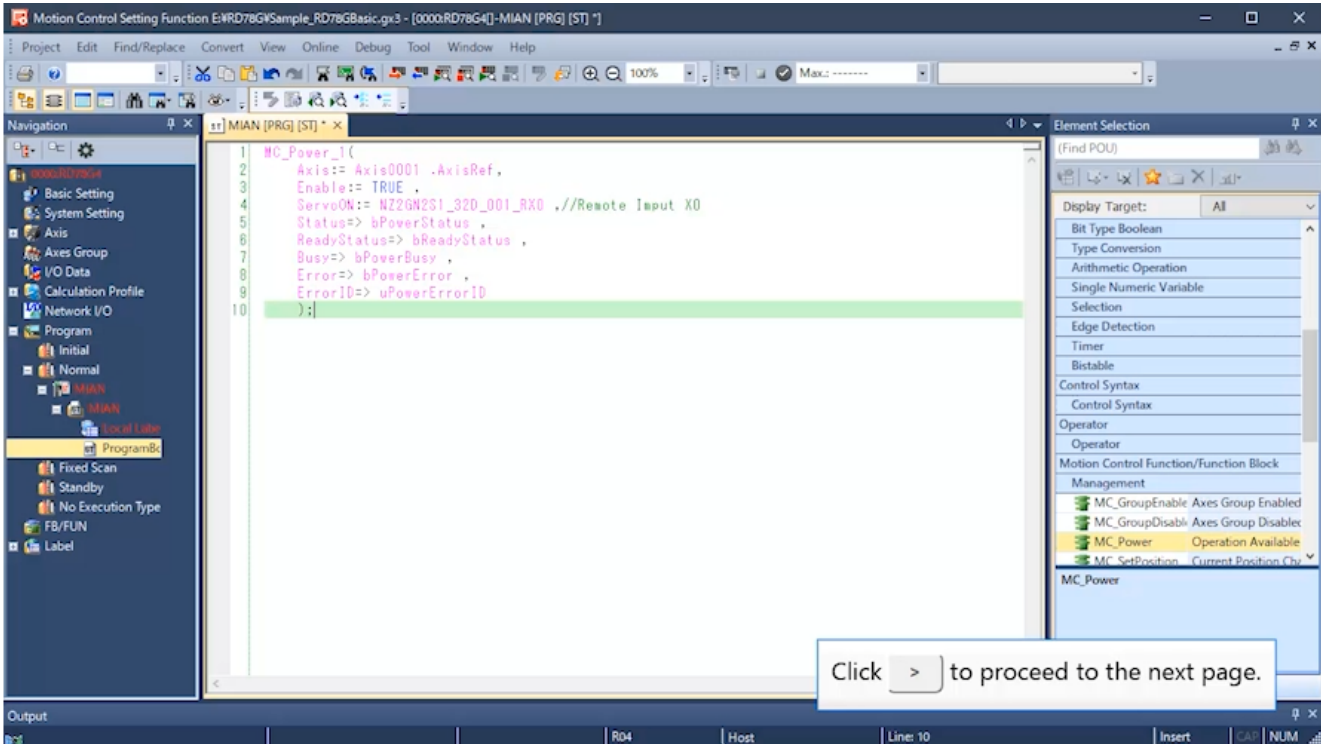
4.2

Motion Module Program

Double-click the module extended parameter to display the [Motion Control Setting Function] screen.
Double-click [Program] → [Normal] → [MAIN] → [ProgramBody] in the project tree on the Motion Control Setting Function screen to open the program.

4.2.1

How to use Motion Control FB



The screenshot displays the Motion Control Setting Function software interface. The main window shows a program code editor with the following code:

```
1 MC_Power_1(  
2   Axis:= Axis0001 .AxisRef,  
3   Enable:= TRUE ,  
4   ServoON:= N22GN2S1_32D_001_RXD //Remote Input X0  
5   Status=> bPowerStatus ,  
6   ReadyStatus=> bReadyStatus ,  
7   Busy=> bPowerBusy ,  
8   Error=> bPowerError ,  
9   ErrorID=> uPowerErrorID  
10  );
```

The left sidebar shows the project tree with the following structure:

- Basic Setting
- System Setting
- Axis
- Axis Group
- I/O Data
- Calculation Profile
- Network I/O
- Program
 - Initial
 - Normal
 - MAIN
 - ProgramBody
- Local Label
- Fixed Scan
- Standby
- No Execution Type
- FB/FUN
- Label

The right sidebar shows the Element Selection list with the following items:

- Bit Type Boolean
- Type Conversion
- Arithmetic Operation
- Single Numeric Variable
- Selection
- Edge Detection
- Timer
- Bistable
- Control Syntax
- Control Syntax
- Operator
- Operator
- Motion Control Function/Function Block Management
 - MC_GroupEnable Axes Group Enabled
 - MC_GroupDisable Axes Group Disabled
 - MC_Power Operation Available
 - MC_SetPosition Current Position Chy
- MC_Power

A callout box at the bottom right of the screenshot contains the text: "Click > to proceed to the next page."

Program name in the sample program: ServoON_JOG

Set the initial value and servo-on of the global label in this program.

Use MC_Power in Motion Control FB for servo-on.

Connecting X0 of the remote input module to the input of ServoON in the FB completes the program in which the servo turns on by turning on X0.

```

1  //-----Initial Value Setting-----
2  G_leJogVelocity := 20000.0;//20000um/s = 1200mm/min
3  G_leJogAcc      := 20000.0;//20000um/s2 = 1200mm/min/s
4  G_leJogDec      := 20000.0;//20000um/s2 = 1200mm/min/s
5  G_leJogJerk     := 25000.0;//25000um/s3
6
7  G_lePoint0Address := 0.0; //0.0mm
8  G_lePoint1Address := 150000.0;//150.0000mm
9
10 //-----Axis0001 Servo ON-----
11 MC_Power_1(
12   Axis    := Axis0001.AxisRef ,
13   Enable  := TRUE ,
14   ServoON := NZ2GN2S1_32D_001_RX0 ,//Remote Input X0
15   Status  => bPowerStatus ,
16   ReadyStatus => bReadyStatus ,
17   Busy    => bPowerBusy ,
18   Error   => bPowerError ,
19   ErrorID => uPowerErrorID
20 );
    
```



Set the velocity during JOG operation, acceleration/deceleration, jerk value, home position address during positioning operation, and positioning address assigned to the global label. Describing the meanings of the input values with comments beforehand enables the programs to be easily reviewed.

MCFB

Specify X0 of the remote input module for the servo-on request.

<MC_Power specification (extract)>

I/O variable name		Variable name	Data type	Description
Input	Enable	Enable	BOOL	While the Enable input is TRUE, the axis control is enabled.
	Servo-on request	ServoON	BOOL	Specifies the signal for the servo-on request.
Output	Ready	Status	BOOL	Indicates the operation ready status.
	Ready-on status	ReadyStatus	BOOL	Indicates the ready-on/off status.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

-  MELSEC iQ-R Motion Module User's Manual (Application) 2.4 Servo ON/OFF
-  MELSEC iQ-R Programming Manual (Motion Control Function Blocks) 3.1 Management FBs MC_Power

Tips
 If each manual of the motion module has been downloaded in e-manual Viewer, pressing the F1 button with the text cursor pointed on the FB name can call the the pages in the manual where the FB specifications are described.

Program name in the sample program: ServoON_JOG

Use MCv_Jog in Motion Control FB.

To prevent MCv_Jog from being executed during the home position return and positioning operation, a bit called bJogEnable is provided to interlock.

```

22  //-----Jog Operation-----
23  bJogEnable := (G_bHomeBusy=FALSE) & (G_bPositioningReq=FALSE);
24
25  MCv_Jog_1(
26    Axis      := Axis0001.AxisRef ,
27    JogForward := NZ2GN2S1_32D_001_RX1 & (NZ2GN2S1_32D_001_RX2=FALSE)
28              & bJogEnable ,//Remote Input X1
29    JogBackward := (NZ2GN2S1_32D_001_RX1=FALSE) & NZ2GN2S1_32D_001_RX2
30              & bJogEnable ,//Remote Input X2
31    Velocity   := G_leJogVelocity,
32    Acceleration:= G_leJogAcc ,
33    Deceleration:= G_leJogDec ,
34    Jerk       := G_leJogJerk ,
35    Options    := H0, //0:mcAccDec
36    //Done     => ?BOOL? ,
37    Busy      := G_bJogBusy //,
38    //Active   => ?BOOL? ,
39    //CommandAborted=> ?BOOL? ,
40    //Error    => ?BOOL? ,
41    //ErrorID  => ?WORD?
42  );
    
```

bJogEnable turns on only when the interlock conditions are satisfied.

Motion Control FB

Specify X1 and X2 of the remote input module for the forward rotation JOG command and reverse rotation JOG command. This prevents simultaneous ON and startup under the condition that the interlock conditions are not satisfied.

A comma at the end of the FB is commented out.


The output signals of the FB that are not used in the program can be commented out or deleted.

<MCv_Jog specification (extract)>

I/O variable name		Variable name	Data type	Description
Input	Forward rotation JOG command	JogForward	BOOL	When TRUE is set, the forward rotation JOG is executed.
	Reverse rotation JOG command	JogBackWard	BOOL	When TRUE is set, the reverse rotation JOG is executed.
	Target velocity	Velocity	LREAL	Sets the command velocity.
	Acceleration	Acceleration	LREAL	Sets the acceleration.
	Deceleration	Deceleration	LREAL	Sets the deceleration.
	Jerk	Jerk	LREAL	Sets the jerk.
	Option	Options	DWORD(HEX) (Note)	Sets the function option with bit specification.(→Refer to the next page.)
Output	Execution completion	Done	BOOL	Turns TRUE for only one scan when the JOG command is turned off and the operation is decelerated to stop.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Controlling	Active	BOOL	Turns TRUE when the FB is controlling the axis.
	Abortion of execution	CommandAborted	BOOL	Turns TRUE when the execution is aborted.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

(Note) A hexadecimal is written in the format of "H□" or "16#□".

6.3 Single Axis Manual Control

 MELSEC iQ-R Programming Manual (Motion Control Function Blocks) 3.2 Operation FBs
MCv_Jog

The following shows the setting values and descriptions of the options for MCv_Jog.

Setting value	Acceleration/deceleration method setting
0h	mcAccDec . . . Acceleration/deceleration specification method (Jerk acceleration/deceleration method)
1h	mcFixedTime . . . Acceleration/deceleration time constant method (acceleration/deceleration time constant specification method)

When 0h: mcAccDec is specified, the acceleration/deceleration method is set to the jerk acceleration/deceleration method.

At this time, set Acceleration and Deceleration in a unit of $[U/s^2]$, and Jerk in a unit of $[U/s^3]$.
For the details of the jerk acceleration/deceleration (U: Axis command unit), refer to the next page.

When 1h: mcFixedTime is specified, the acceleration/deceleration method is set to the acceleration/deceleration time constant specification method.

At this time, set Acceleration in a unit of [s].
Deceleration and Jerk are not used.



MELSEC iQ-R Motion Module User's Manual (Application)



6.3 Single Axis Manual Control

MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

3.2 Operation FBs

MCv_Jog

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

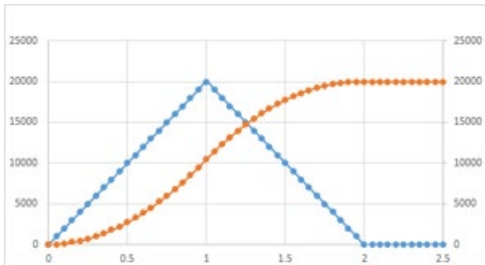
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

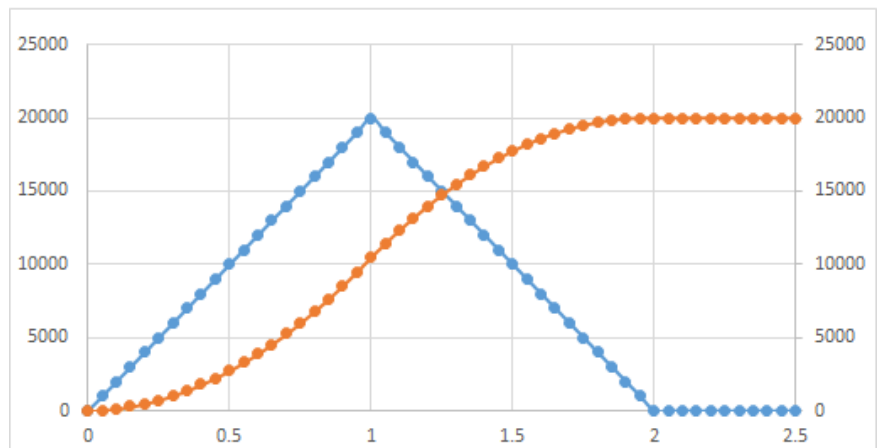
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

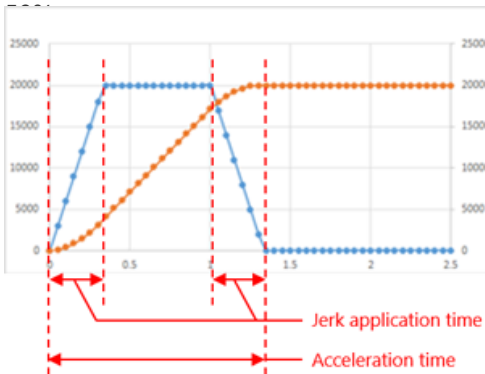
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



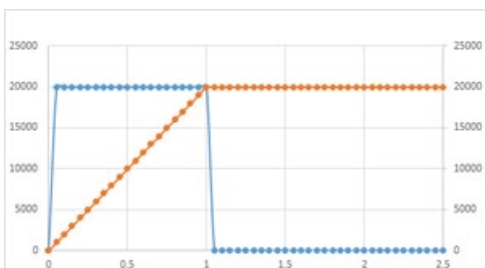
$J = 20000$ [$\mu\text{m/s}^3$] Jerk application ratio: 100%



$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

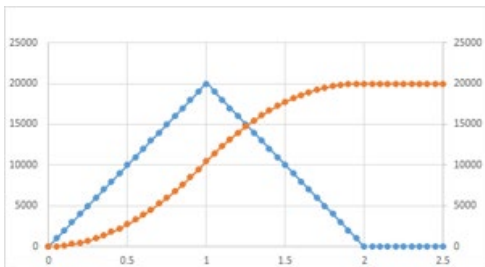
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

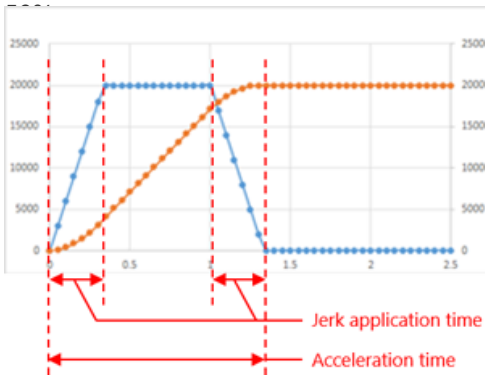
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

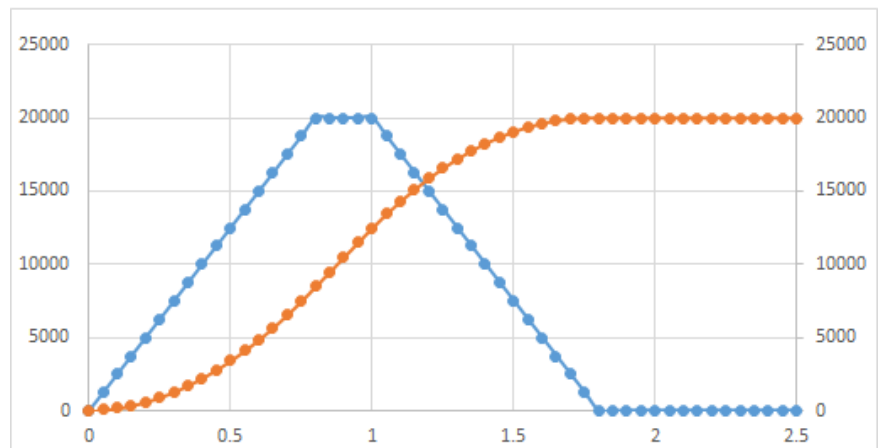
$J = 20000 [\mu\text{m/s}^3]$
Jerk application ratio: 100%



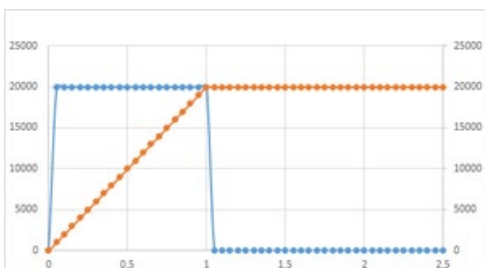
$J = 60000 [\mu\text{m/s}^3]$
Jerk application ratio:



$J = 25000 [\mu\text{m/s}^3]$ Jerk application ratio: 88.8%



When $J = 0 [\mu\text{m/s}^3]$ is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

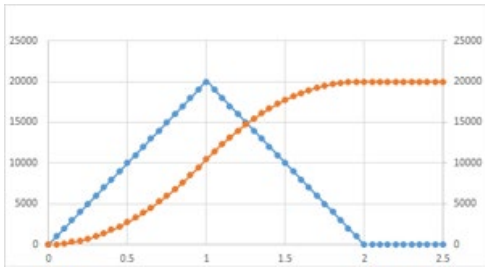
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

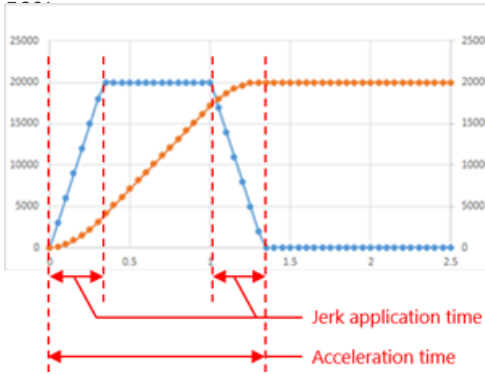
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

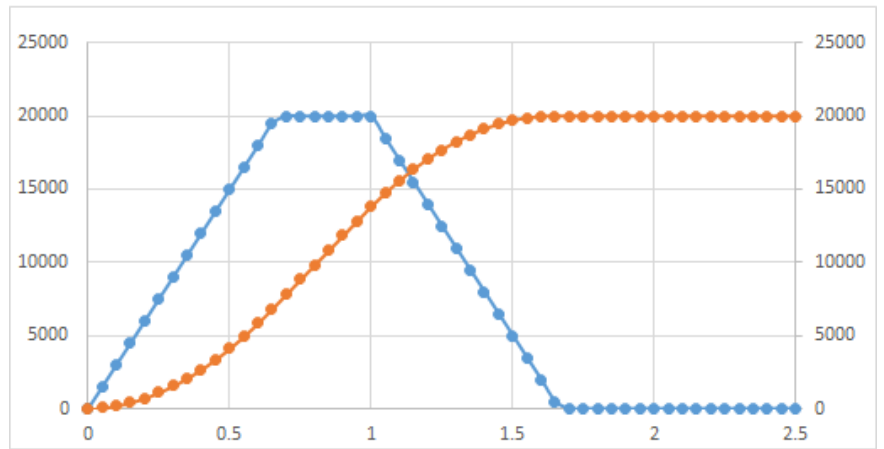
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



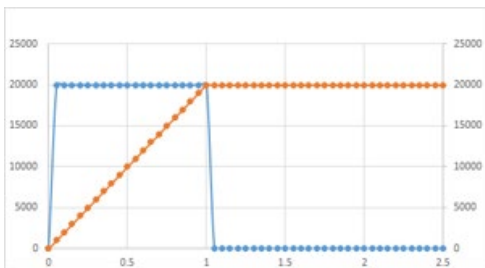
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 30000$ [$\mu\text{m/s}^3$] Jerk application ratio: 80%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

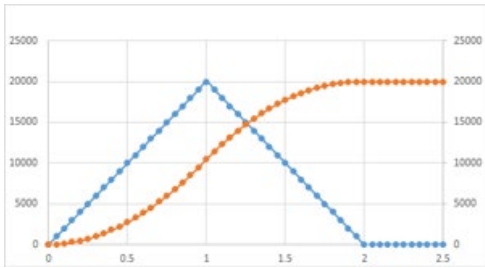
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

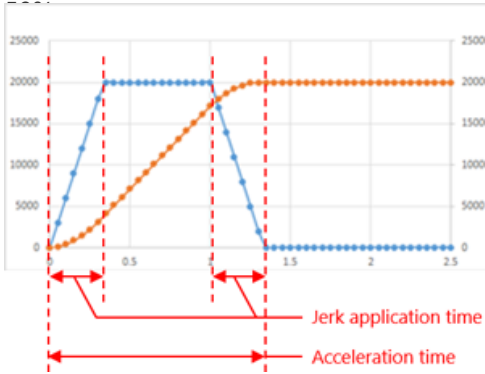
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

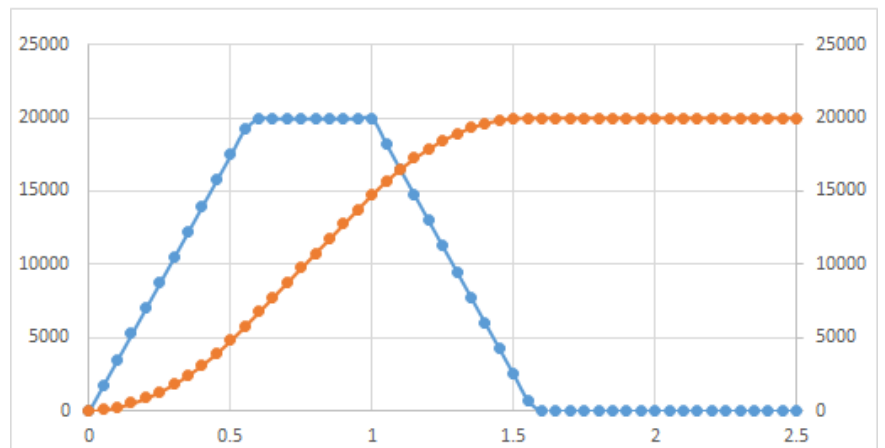
$J = 20000 [\mu\text{m/s}^3]$
Jerk application ratio: 100%



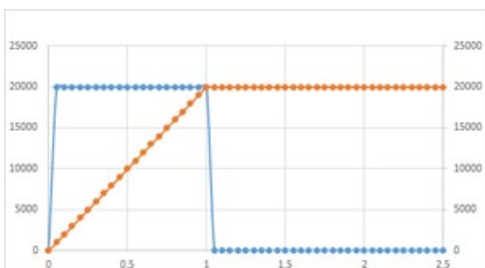
$J = 60000 [\mu\text{m/s}^3]$
Jerk application ratio:



$J = 35000 [\mu\text{m/s}^3]$ Jerk application ratio: 72.7%



When $J = 0 [\mu\text{m/s}^3]$ is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

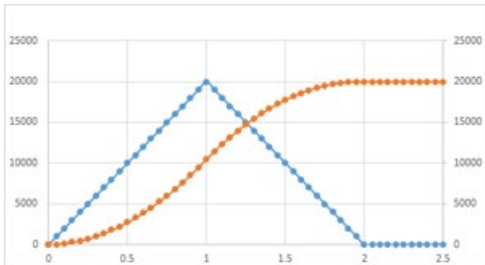
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

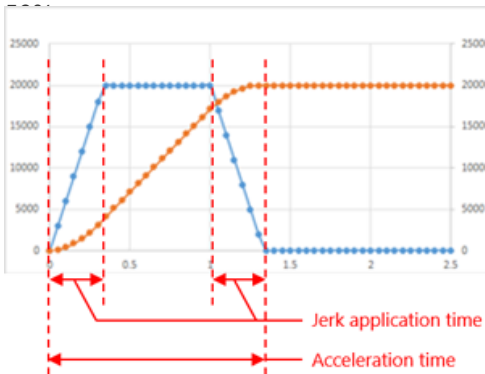
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

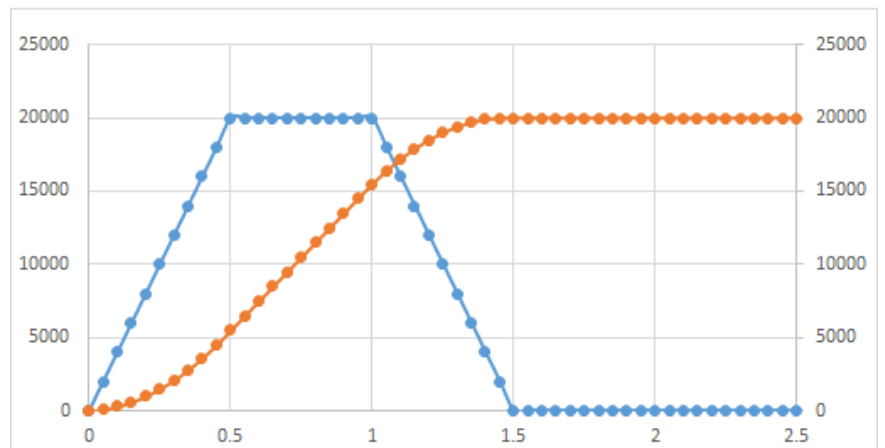
$J = 20000 [\mu\text{m/s}^3]$
Jerk application ratio: 100%



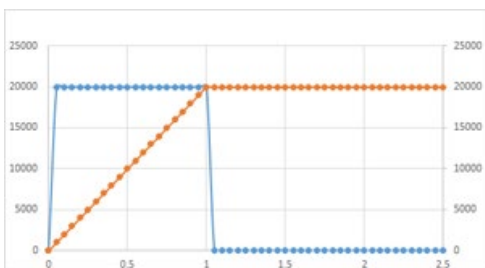
$J = 60000 [\mu\text{m/s}^3]$
Jerk application ratio:



$J = 40000 [\mu\text{m/s}^3]$ Jerk application ratio: 66.6%



When $J = 0 [\mu\text{m/s}^3]$ is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

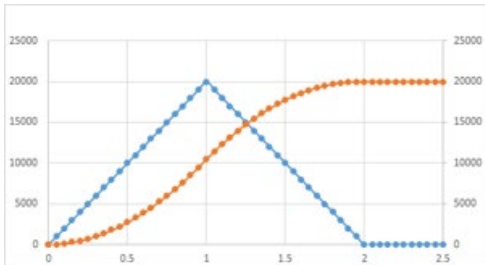
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

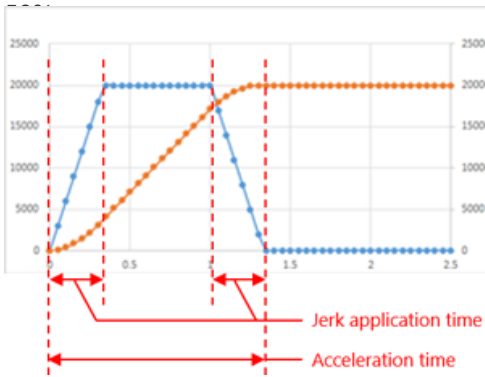
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

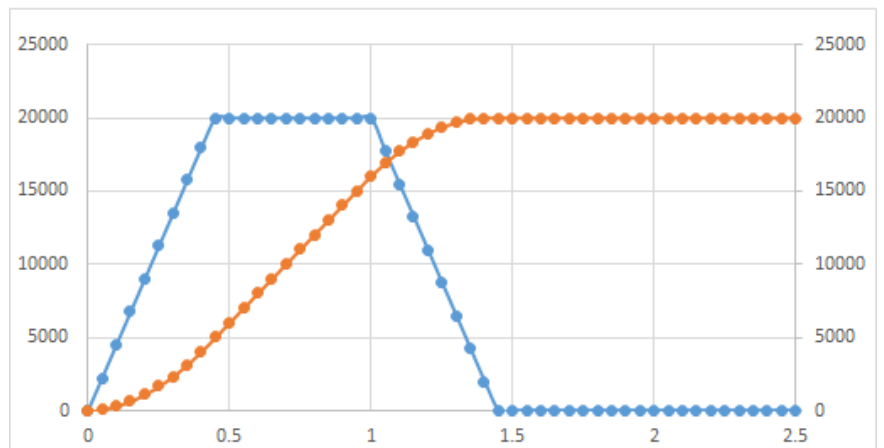
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



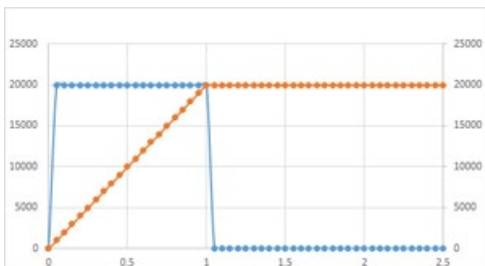
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 45000$ [$\mu\text{m/s}^3$] Jerk application ratio: 61.5%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

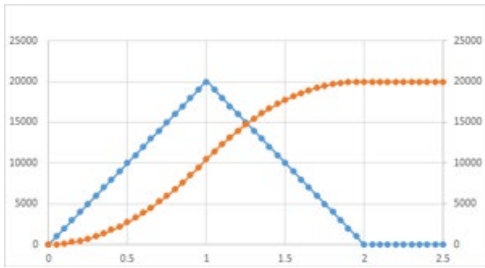
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

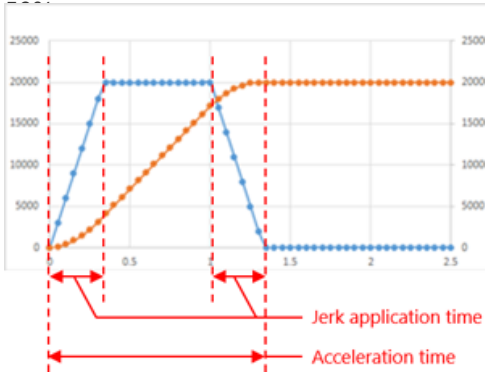
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

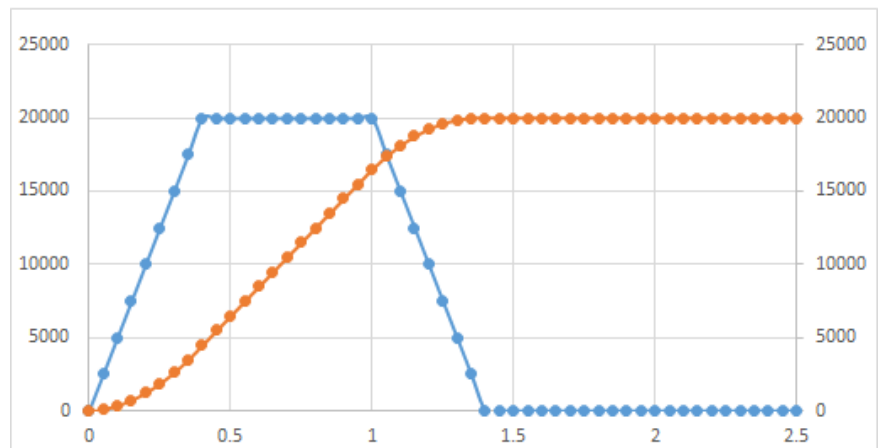
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



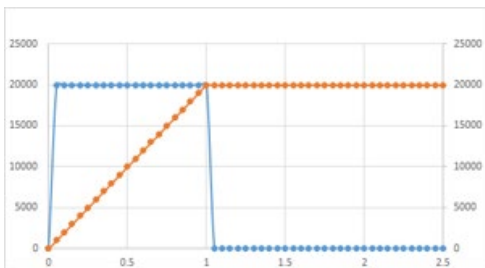
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 50000$ [$\mu\text{m/s}^3$] Jerk application ratio: 57.1%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

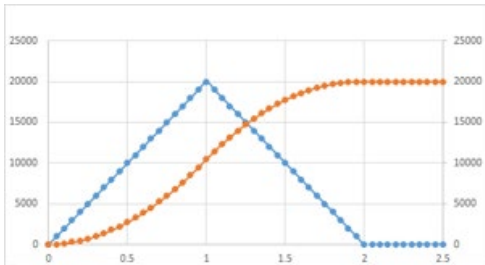
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

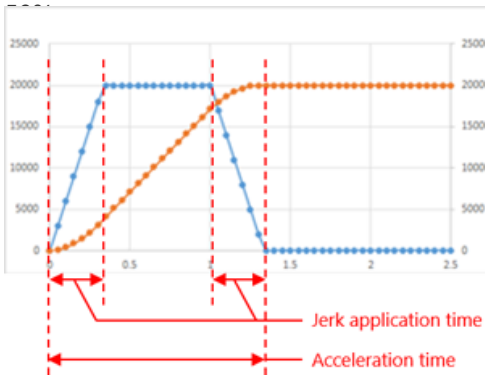
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

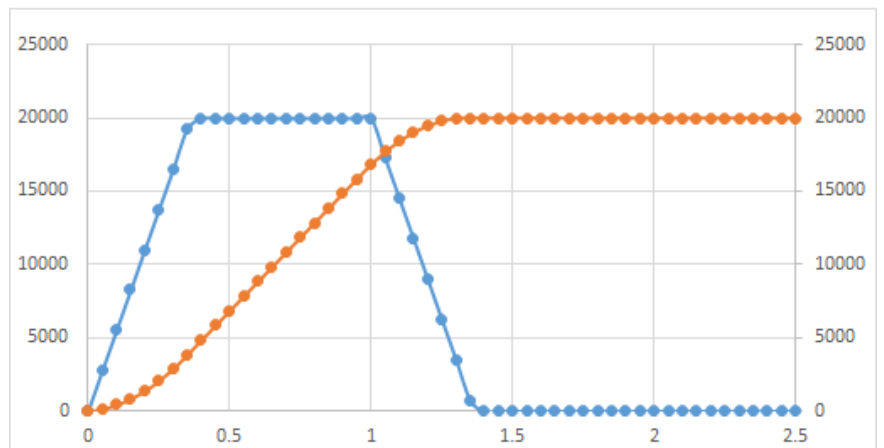
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



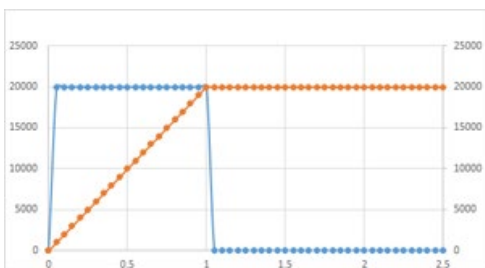
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 55000$ [$\mu\text{m/s}^3$] Jerk application ratio: 53.3%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

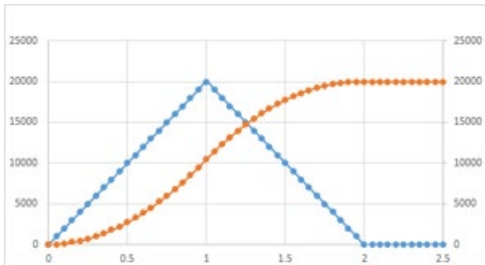
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

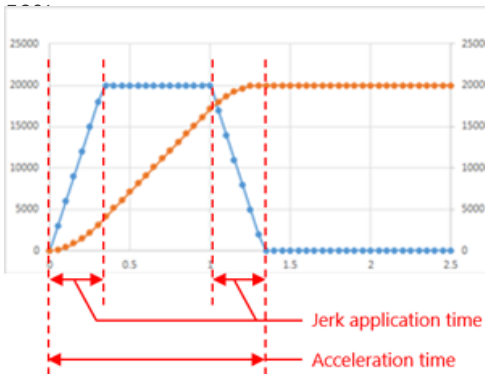
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

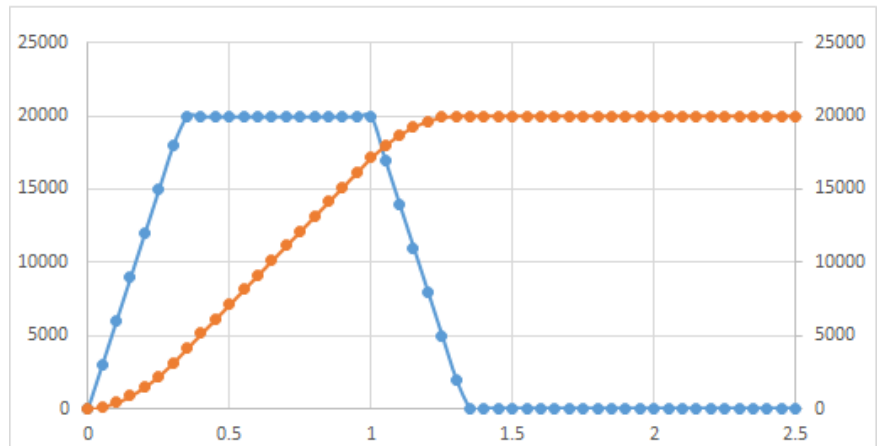
$J = 20000 [\mu\text{m/s}^3]$
Jerk application ratio: 100%



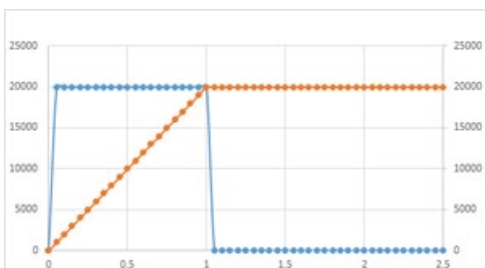
$J = 60000 [\mu\text{m/s}^3]$
Jerk application ratio:



$J = 60000 [\mu\text{m/s}^3]$ Jerk application ratio: 50%



When $J = 0 [\mu\text{m/s}^3]$ is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

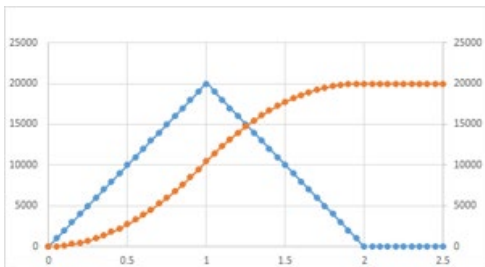
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

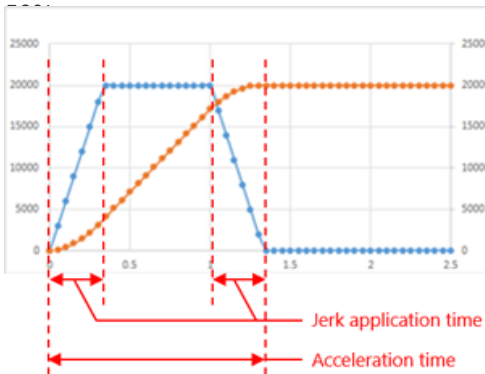
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

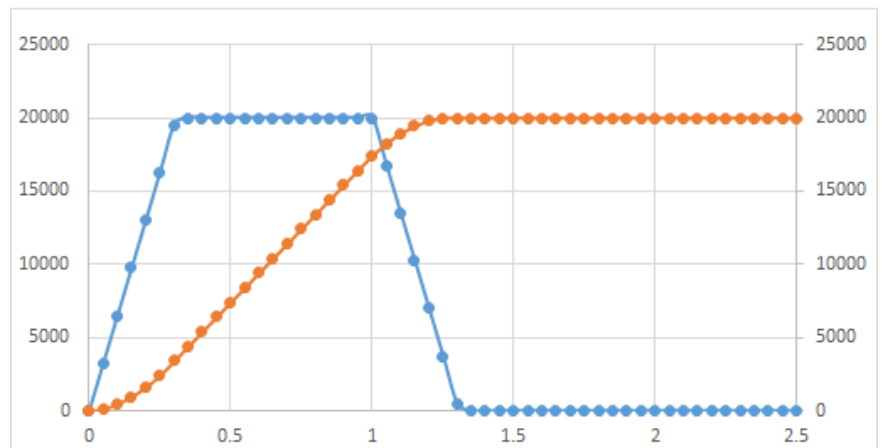
$J = 20000 \text{ } [\mu\text{m/s}^3]$
 Jerk application ratio: 100%



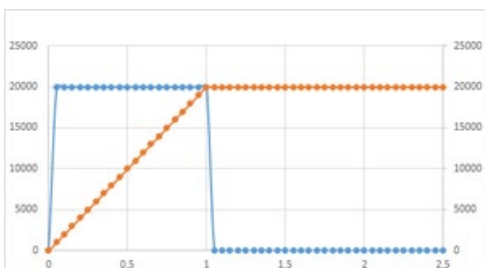
$J = 60000 \text{ } [\mu\text{m/s}^3]$
 Jerk application ratio:



$J = 65000 \text{ } [\mu\text{m/s}^3]$ Jerk application ratio: 47%



When $J = 0 \text{ } [\mu\text{m/s}^3]$ is set,
 the velocity pattern changes to the
 trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

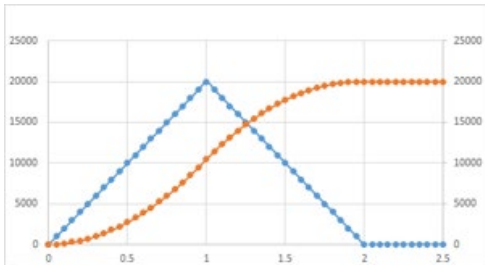
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

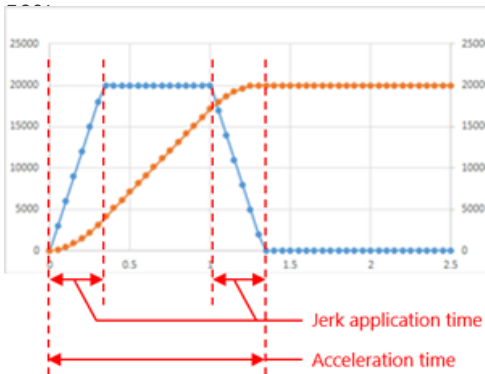
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

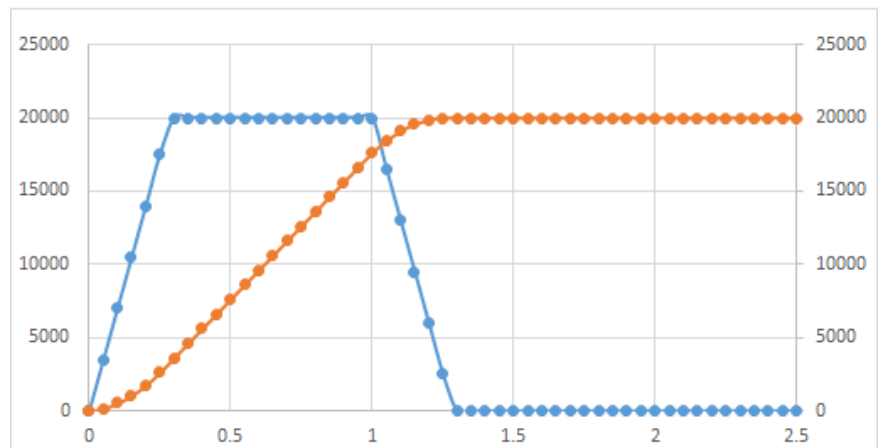
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



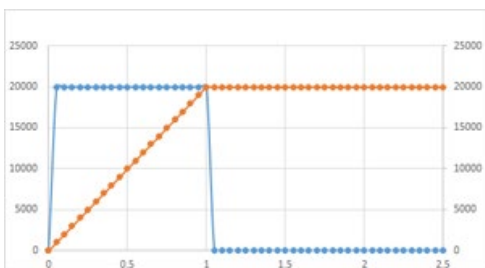
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 70000$ [$\mu\text{m/s}^3$] Jerk application ratio: 44.4%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

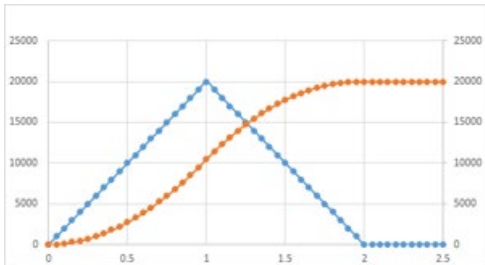
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

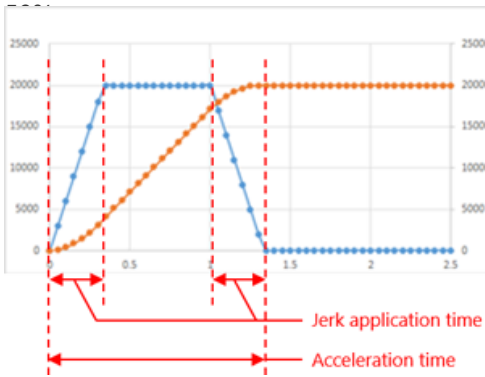
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

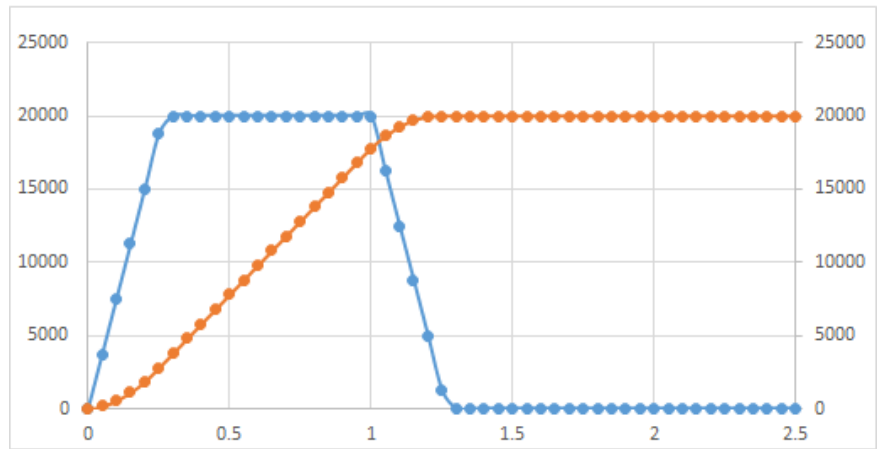
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



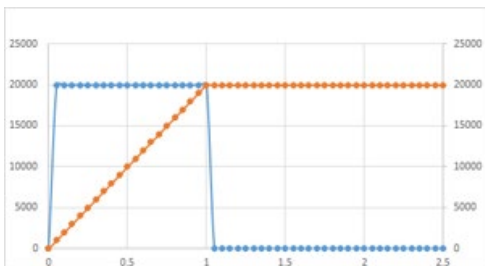
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 75000$ [$\mu\text{m/s}^3$] Jerk application ratio: 42.1%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



4.2.3

JOG operation

The following figures show the velocity waveforms during the jerk acceleration/deceleration.

The sum of the time to reach the target acceleration and the time to reach 0 from the target acceleration at the end of the acceleration is called the jerk application time. The ratio of the jerk application time in the acceleration (deceleration) time is called the jerk application ratio.

The following figures show the velocity waveforms and acceleration waveforms at a time of acceleration when the command velocity and command acceleration are constant and the jerk is changed.

The larger the jerk value becomes, the smaller the jerk application ratio becomes, and the velocity pattern changes to the trapezoidal acceleration/deceleration.

Additionally, the acceleration time and deceleration time will be shorter.

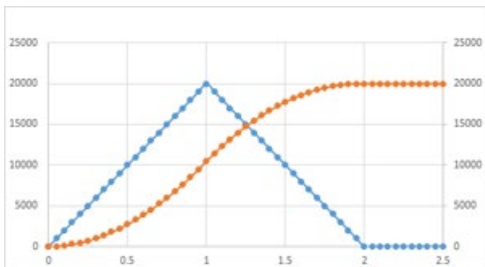
Command velocity: 20000 [$\mu\text{m/s}$] = 1200 [mm/min]

Blue line: Acceleration [$\mu\text{m/s}^2$] Vertical axis on the left

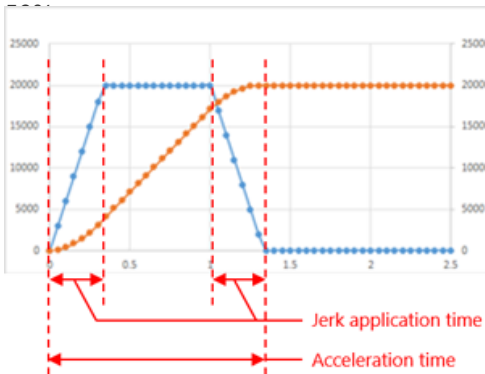
Command acceleration: 20000 [$\mu\text{m/s}^2$] = 1200 [mm/min/s]

Orange line: Velocity [$\mu\text{m/s}$] Vertical axis on the right

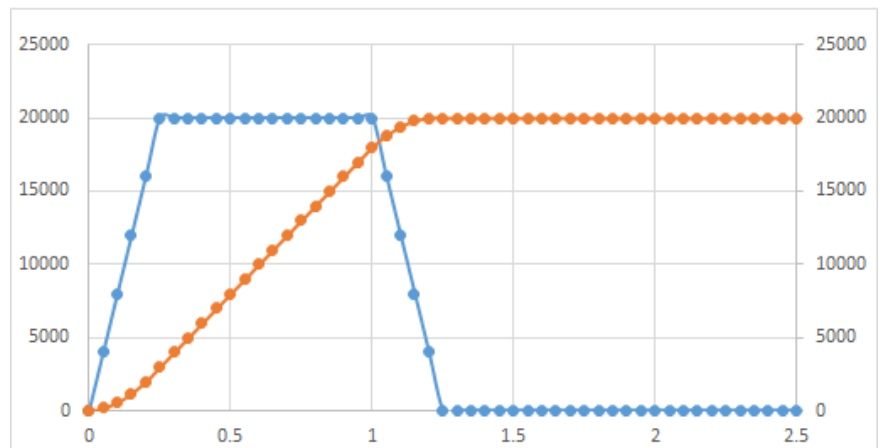
$J = 20000$ [$\mu\text{m/s}^3$]
Jerk application ratio: 100%



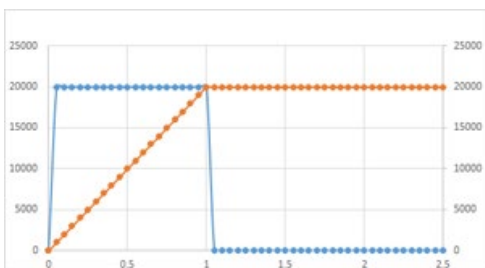
$J = 60000$ [$\mu\text{m/s}^3$]
Jerk application ratio:



$J = 80000$ [$\mu\text{m/s}^3$] Jerk application ratio: 40%



When $J = 0$ [$\mu\text{m/s}^3$] is set,
the velocity pattern changes to the
trapezoidal acceleration/deceleration.



Program name in the sample program: Homing

Use MC_Home in Motion Control FB.

To prevent MC_Home from being executed when the servo cannot be started, such as when the servo is off or when an error has occurred, or during JOG and positioning operation, a bit called bHomeEnable is provided to interlock.

Set the Homing method with the parameter [Pr.PT45] of the MR-J5-G servo amplifier.

```

1  //-----Homing Operation-----
2  //Homing Method is set to the Servo Parameter [Pr.PT45].
3  bHomeEnable := (Axis0001.Md.AxisStatus=4) & (G_bJogBusy=FALSE)
4              & (G_bPositioningReq=FALSE);
5
6  //Homing Trigger
7  SET(NZ2GN2S1_32D_001_RX3 & bHomeEnable,bHomeReq); //Remote Input X3
8
9  //Homing
10 MC_Home_I(
11     Axis      := Axis0001.AxisRef ,
12     Execute   := bHomeReq ,
13     Position  := G_lePoint0Address ,
14     //AbsSwitch := ?MC_INPUT_REF? ,
15     Options   := H0 , // "0" Only
16     Done      => bHomeDone ,
17     Busy      => G_bHomeBusy //,
18     //Active   => ?BOOL? ,
19     //CommandAborted=> ?BOOL? ,
20     //Error    => ?BOOL? ,
21     //ErrorID  => ?WORD?
22 );
23
24 //Reset Trigger
25 RST(bHomeDone,bHomeReq);
26

```

Indicates that the axis status is 4 (Standstill).

bHomeEnable turns on only when the interlock condition are satisfied.

Specify X3 of the remote input module for the Homing command. The bit called bHomeReq holds the ON state of X3 and uses it as the trigger of MCFB.

Motion Control FB

When using the proximity dog to be input to the servo amplifier, the specification of the proximity dog can be omitted.

After the Homing is completed, reset bHomeReq.

<MC_Home specification (extract)>

I/O variable name		Variable name	Data type	Description
Input	Execution command	Execute	BOOL	Executes a home position return when TRUE is set.
	Target position	Position	LREAL	Specifies the home position address.
	Home position switch	AbsSwitch	MC_INPUT_REF	Specifies the proximity dog signal.
	Option	Options	DWORD(HEX)	Set "0".
Output	Execution completion	Done	BOOL	Turns TRUE after the home position return is completed.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Controlling	Active	BOOL	Turns TRUE when the FB is controlling the axis.
	Abortion of execution	CommandAborted	BOOL	Turns TRUE when the execution is aborted.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

MELSEC iQ-R Motion Module User's Manual (Application)
5 HOMING

MELSEC iQ-R Programming Manual (Motion Control Function Blocks) 3.2 Operation FBs
MC_Home

Program name in the sample program: Positioning

Use MC_MoveRelative and MC_MoveAbsolute in Motion Control FB.

To prevent MC_Move from being executed when the servo cannot be started, such as when the servo is off or when an error has occurred, when the home position return is not completed, or during JOG operation and home position return operation, a bit called bMoveEnable is provided to interlock.

```

1  |  //-----Initial Value Setting-----
2  |  lePosVelocity  := 20000.0 ;//20000um/s = 1200mm/min
3  |  lePosAcc       := 20000.0 ;//20000um/s2 = 1200mm/min/s
4  |  lePosDec       := 20000.0 ;//20000um/s2 = 1200mm/min/s
5  |  lePosJerk      := 25000.0 ;//25000um/s3
6  |
7  |  //-----Positioning Operation-----
8  |  bMoveEnable := (Axis0001.Md.AxisStatus=4) & (Axis0001.Md.Homing_Request=FALSE)
9  |              & (G_bJogBusy=FALSE) & (G_bHomeBusy=FALSE);
10 |
11 |  //Start Trigger
12 |  SET(NZ2GN2S1_32D_001_RX4 & bMoveEnable,G_bPositioningReq); //Remote input X4
13 |
14 |  //PTP1(Move Relative)
15 |  MC_MoveRelative_1(
16 |      Axis       := Axis0001.AxisRef ,
17 |      Execute    := G_bPositioningReq ,
18 |      ContinuousUpdate:= FALSE ,
19 |      Distance   := G_lePointIAddress ,
20 |      Velocity   := lePosVelocity ,
21 |      Acceleration := lePosAcc ,
22 |      Deceleration := lePosDec ,
23 |      Jerk       := lePosJerk ,
24 |      BufferMode  := 0 ,//0:mcAborting
25 |      Options    := H0 ,//0:mcAccDec
26 |      Done       => bMove1Done ,
27 |      Busy       => bMove1Busy //,
28 |      //Active   => ?BOOL? ,
29 |      //CommandAborted=> ?BOOL? ,
30 |      //Error     => ?BOOL? ,
31 |      //ErrorID   => ?WORD?
32 |  );
33 |
34 |  //Dwell
35 |  TON_1(
36 |      IN:= bMove1Done ,
37 |      PT:= T#500ms , //Dwell Time:500ms
38 |      Q => bMove1Dwell //,
39 |      //ET=> ?TIME?
40 |  );
41 |
42 |  //PTP2(Move Absolute)
43 |  MC_MoveAbsolute_1(
44 |      Axis       := Axis0001.AxisRef ,
45 |      Execute    := bMove1Dwell ,
46 |      ContinuousUpdate:= FALSE ,
47 |      Position   := G_lePointOAddress ,
48 |      Velocity   := lePosVelocity ,
49 |      Acceleration := lePosAcc ,
50 |      Deceleration := lePosDec ,
51 |      Jerk       := lePosJerk ,
52 |      Direction  := 3 ,//3:mcShortestWay
53 |      BufferMode  := 0 ,//0:mcAborting
54 |      Options    := H0 ,//0:mcAccDec
55 |      Done       => bMove2Done ,
56 |      Busy       => bMove2Busy //,
57 |      //Active   => ?BOOL? ,
58 |      //CommandAborted=> ?BOOL? ,
59 |      //Error     => ?BOOL? ,
60 |      //ErrorID   => ?WORD?
61 |  );
62 |
63 |  //Dwell
64 |  TON_2(
65 |      IN:= bMove2Done ,
66 |      PT:= T#500ms , //Dwell Time:500ms
67 |      Q => bMove2Dwell //,
68 |      //ET=> ?TIME?
69 |  );
70 |
71 |  //Reset Trigger
72 |  RST(bMove2Dwell,G_bPositioningReq);
73 |

```

Set the velocity, acceleration/deceleration, and jerk value during the positioning operation.

bMoveEnable turns on only when the interlock conditions are satisfied.

Specify X4 of the remote input module for the positioning start command. The bit called G_bPositioningReq holds the ON state of X4 and uses it as the trigger of Motion Control FB.

Motion Control FB

Standard FB for dwell (On-delay timer)

Motion Control FB

Standard FB for dwell (On-delay timer)

After the reciprocating operation is completed, reset G_bPositioningReq.

Going

Returning

The following describes the I/O variables of MC_MoveRelative.

```


14 //PTPI(Move Relative)
15 MC_MoveRelative_1(
16     Axis           := Axis0001.AxisRef ,
17     Execute        := G_bPositioningReq ,
18     ContinuousUpdate:= FALSE ,
19     Distance        := G_lePoint1Address ,
20     Velocity        := lePosVelocity ,
21     Acceleration    := lePosAcc ,
22     Deceleration    := lePosDec ,
23     Jerk            := lePosJerk ,
24     BufferMode       := 0 ,//0:mcAborting
25     Options         := H0 ,//0:mcAccDec
26     Done            => bMove1Done ,
27     Busy            => bMove1Busy //,
28     //Active        => ?BOOL? ,
29     //CommandAborted=> ?BOOL? ,
30     //Error         => ?BOOL? ,
31     //ErrorID       => ?WORD?
32 );
33

```

<MC_MoveRelative specification (extract)>

I/O variable name		Variable name	Data type	Description
Input	Execution command	Execute	BOOL	Executes the positioning control when TRUE is set.
	Continuous update	ContinuousUpdate	BOOL	The movement distance, velocity, acceleration, and deceleration can be continuously changed while TRUE is set.
	Movement distance	Distance	LREAL	Sets the relative position according to the axis unit from the current position at start to the end point.
	Velocity	Velocity	LREAL	Sets the velocity according to the axis unit.
	Acceleration	Acceleration	LREAL	Sets the acceleration according to the axis unit.
	Deceleration	Deceleration	LREAL	Sets the deceleration according to the axis unit.
	Jerk	Jerk	LREAL	Sets the jerk according to the axis unit.
	Buffer mode	BufferMode	MC_BUFFER_MODE	Selects the buffer mode. →4.2.5-4 page
Option	Options	DWORD(HEX)	Sets the function option. →4.2.5-6 page	
Output	Execution completion	Done	BOOL	Turns TRUE after the positioning control is completed.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Controlling	Active	BOOL	Turns TRUE when the FB is controlling the axis.
	Abortion of execution	CommandAborted	BOOL	Turns TRUE when the execution is aborted.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

Relative Positioning Control

 MELSEC iQ-R Programming Manual (Motion Control Function Blocks)

3.2 Operation FBs

MC_MoveRelative

The following describes the I/O variables of MC_MoveAbsolute.


```

42 //PTP2(Move Absolute)
43 MC_MoveAbsolute_1(
44     Axis           := Axis0001.AxisRef ,
45     Execute        := bMove1Dwell ,
46     ContinuousUpdate:= FALSE ,
47     Position       := G_lePoint0Address ,
48     Velocity       := lePosVelocity ,
49     Acceleration   := lePosAcc ,
50     Deceleration   := lePosDec ,
51     Jerk           := lePosJerk ,
52     Direction      := 3 ,//3:mcShortestWay
53     BufferMode     := 0 ,//0:mcAborting
54     Options        := H0 ,//0:mcAccDec
55     Done           => bMove2Done ,
56     Busy           => bMove2Busy //,
57     //Active       => ?BOOL? ,
58     //CommandAborted=> ?BOOL? ,
59     //Error        => ?BOOL? ,
60     //ErrorID      => ?WORD?
61 );

```


<MC_MoveAbsolute specification (extract)>

I/O variable name		Variable name	Data type	Description
Input	Execution command	Execute	BOOL	Executes the positioning control when TRUE is set.
	Continuous update	ContinuousUpdate	BOOL	The movement distance, velocity, acceleration, and deceleration can be continuously changed while TRUE is set.
	Target position	Position	LREAL	Sets the target position of the absolute position according to the axis unit.
	Velocity	Velocity	LREAL	Sets the velocity according to the axis unit.
	Acceleration	Acceleration	LREAL	Sets the acceleration according to the axis unit.
	Deceleration	Deceleration	LREAL	Sets the deceleration according to the axis unit.
	Jerk	Jerk	LREAL	Sets the jerk according to the axis unit.
	Direction selection	Direction	MC_DIRECTION	Selects the moving direction. →4.2.5-5 page
	Buffer mode	BufferMode	MC_BUFFER_MODE	Selects the buffer mode. →4.2.5-4 page
	Option	Options	DWORD(HEX)	Sets the function option. →4.2.5-6 page
Output	Execution completion	Done	BOOL	Turns TRUE after the positioning control is completed.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Controlling	Active	BOOL	Turns TRUE when the FB is controlling the axis.
	Abortion of execution	CommandAborted	BOOL	Turns TRUE when the execution is aborted.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

 Motion Module User's Manual (Application)

6.1 Single Axis Positioning Control

Absolute Positioning Control

 MELSEC iQ-R Programming Manual (Motion Control Function Blocks)


3.2 Operation FBs

MC_MoveAbsolute

The following shows the setting values and descriptions of the buffer mode of MC_MoveAbsolute and MC_MoveRelative.

Setting value	Buffer mode type	Description
0:mcAborting	Aborting	Interrupts (cancels) the FB being executed and executes the next FB immediately.
1:mcBuffered	Buffered	Buffers the next FB on the FB being executed. If the FB being executed has already been buffered, the next FB is buffered on the previous FB. (Up to 2.) When the FB being executed is completed, the buffering FB is executed sequentially.
2:mcBlendingLow	BlendingLow	The lower target velocity between the FB being executed and the buffering FB is the switching speed.
3:mcBlendingPrevious	BlendingPrevious	The target velocity of the FB being executed is the switching speed.
4:mcBlendingNext	BlendingNext	The target velocity of the buffering FB is the switching speed.
5:mcBlendingHigh	BlendingHigh	The higher target velocity between the FB being executed and the buffering FB is the switching speed.

The buffer mode is a function that starts multiple motion control FBs simultaneously and performs the positioning continuously. For details, refer to the MELSEC iQ-R Series Motion Module Basics (RD78G(H)/Positioning Control), which is a course of an online training system, and the following manual.

-  Motion Module User's Manual (Application)
4.3 Multiple Start (Buffer Mode)

The following shows the setting values and descriptions for selecting the direction of MC_MoveAbsolute.

Ignore this setting when the software stroke limit is valid. Perform the positioning control in a direction in which the area outside the software stroke limit range is not crossed over. However, when both directions do not cross over the area outside the software stroke limit range, positioning control is performed in the direction closer to the target position (the one with the smaller absolute movement distance) based on the current position. If the distance is the same between the positive direction and the negative direction, the operation is performed in the current direction.

When the software stroke limit is invalid, the movement direction from the current position to the target position can be selected from the positive direction, negative direction, and shortest path.

Setting value	Direction selection	Description
1:mcPositiveDirection	Positive direction	Positioning is performed in the positive direction (address increase) from the current position to the target position.
2:mcNegativeDirection	Negative direction	Positioning is performed in the negative direction (address decrease) from the current position to the target position.
3:mcShortestWay	Shortest path	Positioning control is performed in the direction closer to the target position (the one with the smaller absolute movement distance) based on the current position.

For the details, refer to the following manual.



Motion Module User's Manual (Application)

6.1 Single Axis Positioning Control

Absolute Positioning Control



MELSEC iQ-R Programming Manual (Motion Control Function Blocks)



3.2 Operation FBs

MC_MoveAbsolute

The following shows the setting values and descriptions of the options for MC_MoveAbsolute and MC_MoveRelative.

Bit	Description
0 to 2	Acceleration/deceleration method specification (The contents are the same as MCv_Jog.) 0h:mcAccDec 1h:mcFixedTime
3	Only for MC_MoveRelative Position selection during buffer mode 0: Command current position 1: Actual current value For MC_MoveAbsolute, specify "0".
4	Empty (Specify "0".)
5	Reverse rotation permission selection 0: Permit 1: Not permit
6 to 15	Empty (Specify "0".)
16	Only for MC_MoveAbsolute Target position specification exceeding ring counter 0: Not permit 1: Permit For MC_MoveRelative, specify "0".
17 to 31	Empty (Specify "0".)

For the details of the settings on bit 3, bit 5, and bit 16, refer to the following manual.

-  Motion Module User's Manual (Application)
6.1 Single Axis Positioning Control
-  MELSEC iQ-R Programming Manual (Motion Control Function Blocks)
3.2 Operation FBs
MC_MoveRelative or MC_MoveAbsolute

Program name in the sample program:

ErrorReset Use MC_Reset of Motion Control FB.

```

1  //-----Error Reset-----
2  MC_Reset_1(
3      Axis      := Axis0001.AxisRef ,
4      Execute   := NZ2GN2S1_32D_001_RXIF , //Remote Input X1F
5      Options   := H0 //,
6      //Done    => ?BOOL? ,
7      //Busy    => ?BOOL? ,
8      //CommandAborted=> ?BOOL? ,
9      //Error    => ?BOOL? ,
10     //ErrorID  => ?WORD?
11 );


```


MCFB

Specify X1 F of the remote input module for the error reset command.

<MC_Reset specification (extract)>

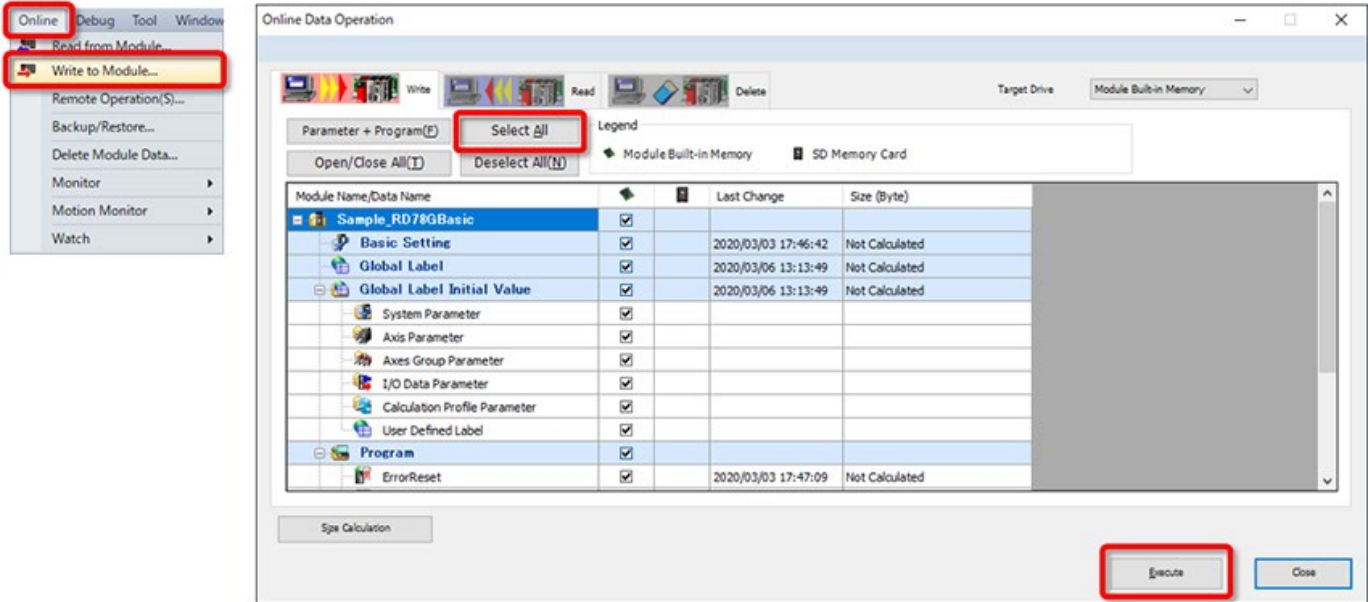
I/O variable name		Variable name	Data type	Description
Input	Execution command	Execute	BOOL	Executes the error reset when TRUE is set.
	Option	Options	DWORD(HEX)	Specify "0".
Output	Execution completion	Done	BOOL	Indicates that reset has been completed.
	Executing	Busy	BOOL	Turns TRUE while the FB is being executed.
	Abortion of execution	CommandAborted	BOOL	Indicates that the command has been aborted due to timeout. Turns TRUE by setting Execute to FALSE.
	Error	Error	BOOL	Turns TRUE when an error occurs in the FB.
	Error code	ErrorID	WORD (UINT)	Returns the error code occurred in the FB.

 MELSEC iQ-R Programming Manual (Application)
22.3 Error and Warning Reset

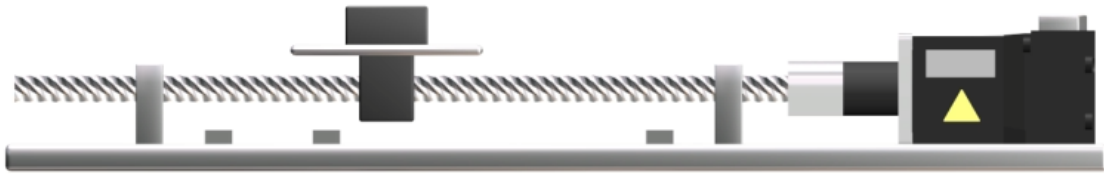
 MELSEC iQ-R Programming Manual (Motion Control Function Blocks)
3.1 Management FBs
MC_Reset

(2) Motion module program

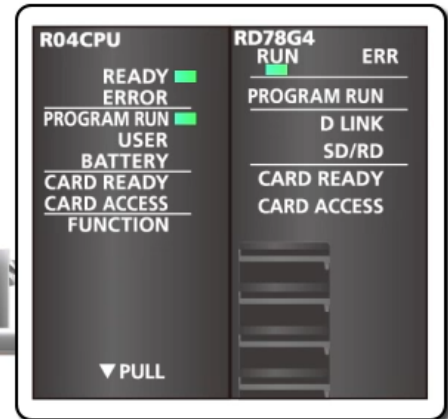
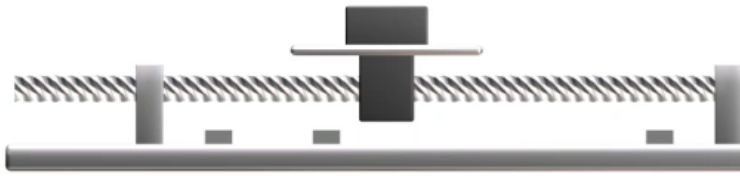
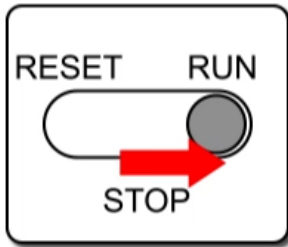
- 1) Convert all the programs of the motion module on the Motion Control Setting Function screen.
- 2) Check that the PLC CPU is set to the "STOP" state.
- 3) Select [Online] → [Write to Module], and click [Select All] on the Write tab in the Online Data Operation screen.
- 4) Click [Execute] to write data.



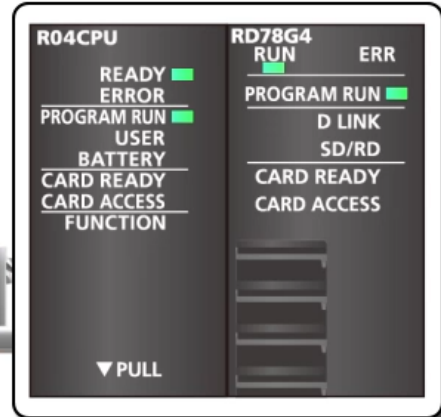
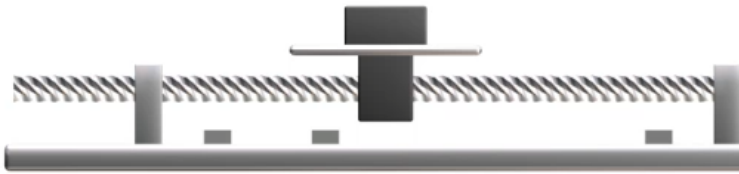
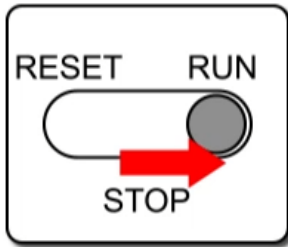
Click the play button at the lower left of the window.



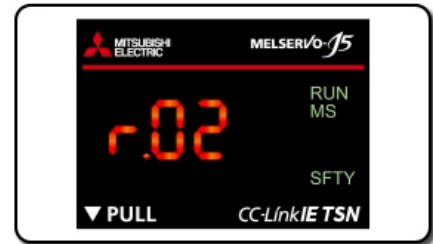
Check the sample program operation.
Start with the state where the programs of the PLC CPU and
motion module are written.



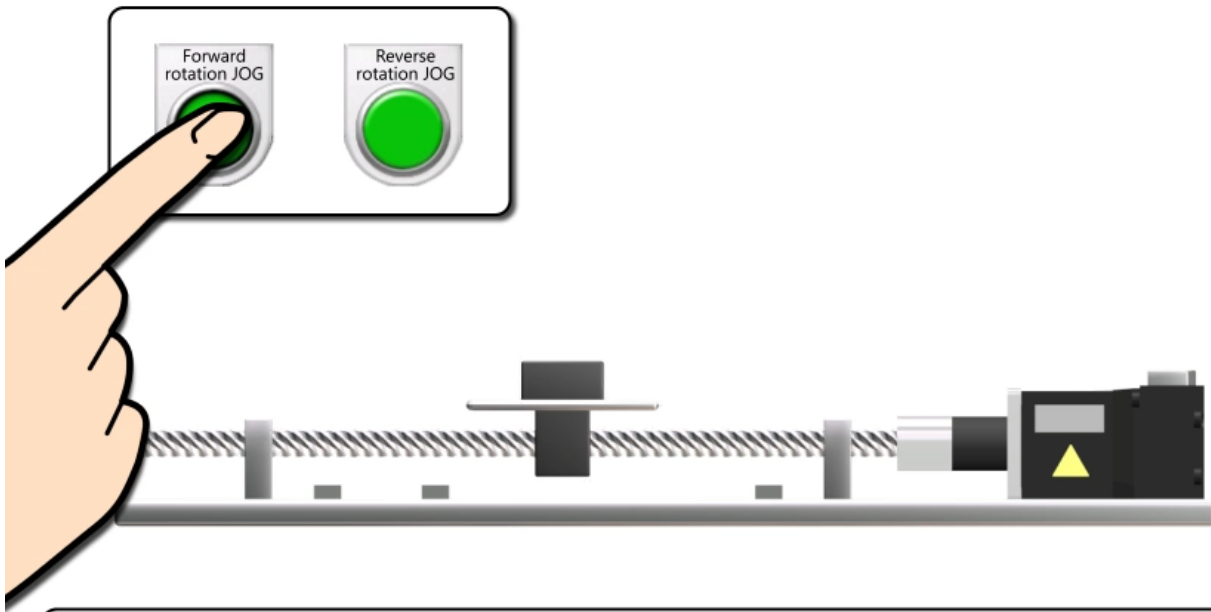
Set the RUN/STOP/RESET switch of the PLC CPU to RUN.
READY and PROGRAM RUN of the PLC CPU turn on.
RUN of the motion module turns on.



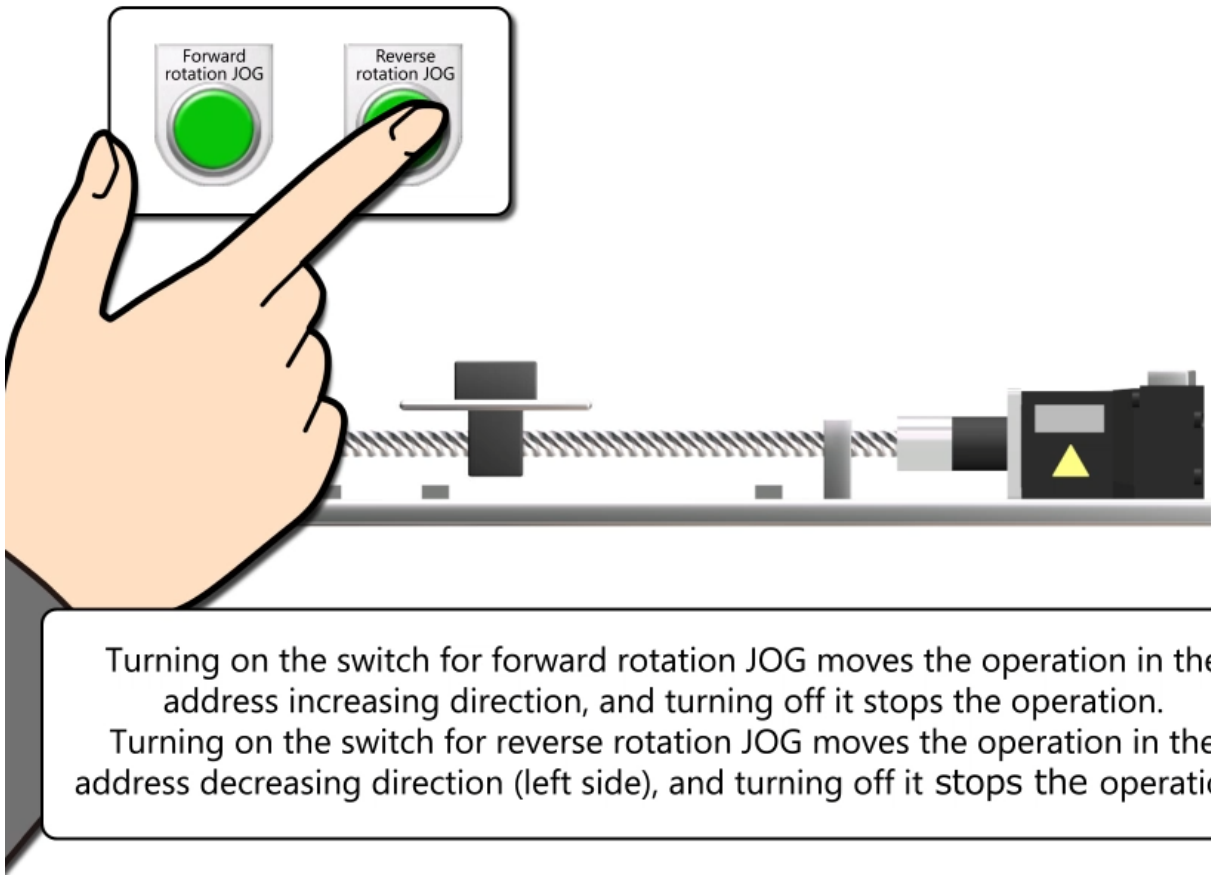
Wait until PROGRAM RUN of the motion module turns on.
"r.02" is displayed on the servo amplifier. (The dot blinks.)



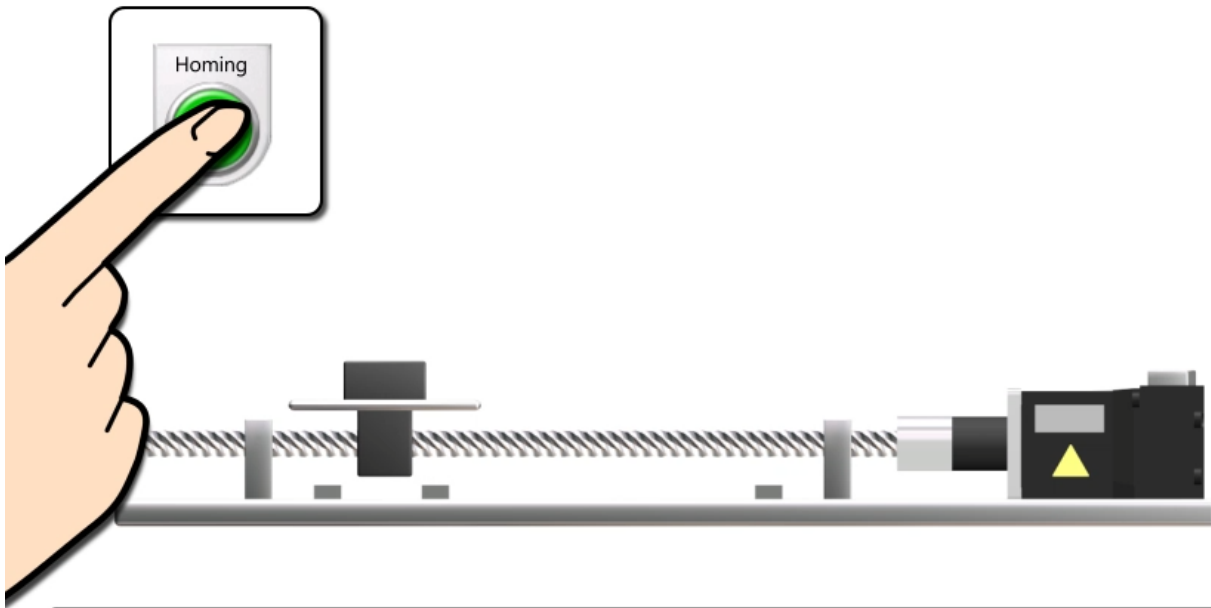
Turn on the servo ON switch (X0 of the remote input module).
"r.02" is displayed on the servo amplifier. (The dot turns on.)
The servo motor enters the servo-on state.



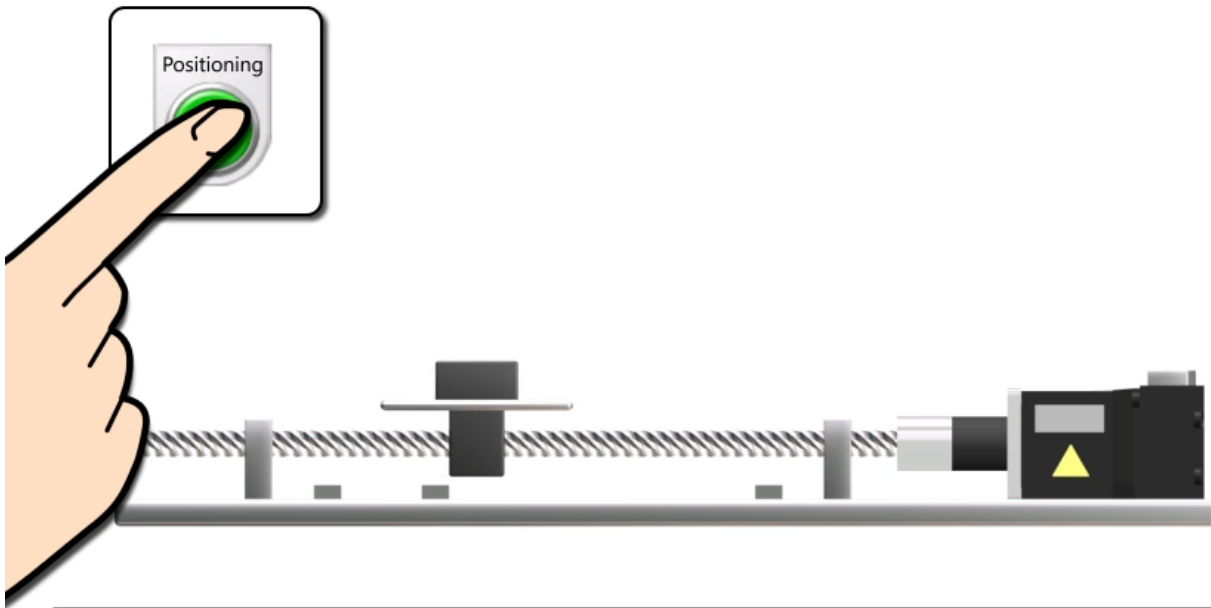
Turning on the switch for forward rotation JOG moves the operation in the address increasing direction, and turning off it stops the operation.
Turning on the switch for reverse rotation JOG moves the operation in the address decreasing direction (left side), and turning off it stops the operation.



Turning on the switch for forward rotation JOG moves the operation in the address increasing direction, and turning off it stops the operation.
Turning on the switch for reverse rotation JOG moves the operation in the address decreasing direction (left side), and turning off it stops the operation.



Turning on the switch for homing starts the homing operation. Execute the homing of the proximity dog method (Pr.PT45: -33). The operation stops at a position where the dog is passed over a little, and the position is set as the home position.



Tuning on the switch for positioning start starts the reciprocating operation. The operation moves forward by 150 mm and stops for 0.5 seconds. Then, it moves backward by 150 mm and stop for 0.5 seconds.



The operation check has been completed.
Go to the next page.

In this chapter, you have learned:

- PLC CPU program
- Motion Module Program
- Writing Programs
- Operation Check

Important points

PLC CPU program	<ul style="list-style-type: none"> • Always turn on Y0: PLC READY of the motion module on the PLC CPU.
Motion Module Program	<ul style="list-style-type: none"> • Drag and drop Motion Control FB from the Element Selection window to use. • Use MC_Power for servo-on, MCv_Jog for JOG operation, MC_Home for home position return, MC_MoveRelative for relative value positioning, MC_MoveAbsolute for absolute value positioning, and MC_Reset for error reset. • Set the home position return method with parameters of the servo amplifier.
Writing Programs	<ul style="list-style-type: none"> • Write the programs to the PLC CPU and motion module.
Operation Check	<ul style="list-style-type: none"> • The sample system operation is checked in the video.

Now that you have completed all of the lessons of the MELSEC iQ-R Series Motion Module Basics (RD78G(H)/Startup) 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 (7 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	✓	✓	✓	✗							Total questions: 28
	Final Test 2	✓	✓	✓	✓							Correct answers: 23
	Final Test 3	✓										Percentage: 82 %
	Final Test 4	✓	✓									
	Final Test 5	✓	✓									
Retry	Final Test 6	✓	✗	✗	✗							
	Final Test 7	✓	✓	✓	✓							
	Final Test 8	✓	✓	✓	✓	✓						
	Final Test 9	✓										
Retry	Final Test 10	✗										

To pass the test, 60% of correct answers is required.

Select the correct description(s) below. (Multiple selections are available)

Q1

- Velocity waveforms during the jerk acceleration/deceleration change smoothly.
- If the jerk value is increased, the acceleration/deceleration time becomes longer.
- In the motion module, programs are created with the FBs created by Mitsubishi Electric.
- Statements must end with a ":" (colon)" in the ST.
- Local labels can be used only in each POU.

Select the correct word for () in the following sentences.

- To perform the test operation, change the (Q1) of the servo amplifier before power-on.
- Check the motor rotation direction and machine operations with the test operation function of (Q2).
- Set the (Q3) with the rotary switches of the remote input module and servo amplifier.

Q1

Select the corresponding word.



Q2

Select the corresponding word.



Q3

Select the corresponding word.



- Q1: • DIP switch
• Rotary switch
• Command switch

- Q2: • GX Works3
• MR Configurator2
• Motion control setting function

- Q3: • IP address
• Station number

Select the correct description(s) below. (Multiple selections are available)

Q1

- Once the PDO mapping is performed, there is no problem even if the network configuration is changed.
- Parameters of the servo amplifier can be transferred from the controller at the time of initial communication or can be written to each axis using MR Configurator2.
- The link direct device setting of the CPU parameters must be set to the extended mode (iQ-R series mode).

Select the correct description(s) about the program when using the motion module. (Multiple selections are available)

Q1

- Always turn on Y0 of the motion module in the program of the PLC CPU.
- By turning on Y1 of the motion module, the servo turns on.
- Motion Control FB can be written to the program editor by drag-and-drop action.
- All the I/O signals of Motion Control FB must be set.

Select a correct description about the settings of the homing method.

Q1

- Set the homing method with the input variable "Options" in the FB "MC_Home".
- Set the homing method with the axis parameters on the Motion Control Setting Function screen.
- Set the homing method with the parameters of the servo amplifier MR-J5-G.

Select the correct description(s) below. (Multiple selections are available)

Q1

- Velocity waveforms during the jerk acceleration/deceleration change smoothly.**
- If the jerk value is increased, the acceleration/deceleration time becomes longer.**
- In the motion module, programs are created with the FBs created by Mitsubishi Electric.**
- Statements must end with a ":" (colon)" in the ST.**
- Local labels can be used only in each POU.**

Select the correct word for () in the following sentences.

- To perform the test operation, change the (Q1) of the servo amplifier before power-on.
- Check the motor rotation direction and machine operations with the test operation function of (Q2).
- Set the (Q3) with the rotary switches of the remote input module and servo amplifier.

Q1

1: DIP switch



Q2

2: MR Configurator2



Q3

1: IP address



- Q1: • DIP switch
• Rotary switch
• Command switch

- Q2: • GX Works3
• MR Configurator2
• Motion control setting function

- Q3: • IP address
• Station number

Select the correct description(s) below. (Multiple selections are available)

Q1

- Once the PDO mapping is performed, there is no problem even if the network configuration is changed.
- Parameters of the servo amplifier can be transferred from the controller at the time of initial communication or can be written to each axis using MR Configurator2.
- The link direct device setting of the CPU parameters must be set to the extended mode (iQ-R series mode).

Select the correct description(s) about the program when using the motion module. (Multiple selections are available)

Q1

- Always turn on Y0 of the motion module in the program of the PLC CPU.
- By turning on Y1 of the motion module, the servo turns on.
- Motion Control FB can be written to the program editor by drag-and-drop action.
- All the I/O signals of Motion Control FB must be set.

Select a correct description about the settings of the homing method.

Q1

- Set the homing method with the input variable "Options" in the FB "MC_Home".
- Set the homing method with the axis parameters on the Motion Control Setting Function screen.
- Set the homing method with the parameters of the servo amplifier MR-J5-G.

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

	1	2	3	4	5	6	7	8	9	10
Final Test 1	✓									
Final Test 2	✓	✓	✓							
Final Test 3	✓									
Final Test 4	✓									
Final Test 5	✓									

Total questions: **7**
Correct answers: **7**
Percentage: **100 %**

Clear

You have completed the "MELSEC iQ-R Series Motion Module Basics (RD78G(H)/Startup)" 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