[Issue No.]	SSC-A-0005-A
[Title]	Migration Guide from RD77MS Simple Motion Module to RD78G Motion Module (Simple Motion Mode)
[Date of Issue]	October 2021
[Relevant Models]	RD78G4, RD78G8, RD78G16, RD77MS2, RD77MS4, RD77MS8, RD77MS16

Thank you for your continued support of Mitsubishi Electric servo system controllers.
This technical bulletin provides precautions when migrating the existing system using RD77MS2/RD77MS4/RD77MS8/RD77MS16 (hereinafter called RD77MS) to a new system using RD78G4/RD78G8/RD78G16 (hereinafter called RD78G).

The new system uses RD78G Simple Motion mode (hereinafter called RD78G(S)).
RD78G(S) is a function that provides the same usability as the previous models (Simple Motion modules) when RD78G is used with MR-J5-G. This function is supported by RD78G4/RD78G8/RD78G16.

Point

The contents in this document are based on the product lines and the specifications of the modules and engineering software as of May 2021. The contents are subject to change without notice due to a product line expansion or a specification improvement. Please refer to the latest edition at the time of considering the migration.

MITSUBISHI ELECTRIC CORPORATION

1. WHEN MIGRATING MR-J4 SERIES TO MR-J5 SERIES

Prepare modules, servo amplifiers, and an engineering environment according to the following tables in this chapter.

1.1. Correspondence Table for System Components

Item	When using RD77MS	When using RD78G
	Model	Model
Simple Motion module	RD77MS2	RD78G4[*1]
	RD77MS4	RD78G4
	RD77MS8	RD78G8
	RD77MS16	RD78G16
External signal input module	RD77MS	RX41C4
INC synchronous encoder input module	RD77MS	RD62D2 (differential-input type, 2ch) [*2]
Manual pulse generator input module	RD77MS	RD62P2 (DC input, 2ch) [*2] RD62P2E (DC input, 2ch) [*2]
Serial absolute synchronous encoder	Q171ENC-W8	— [*3]
Manual pulse generator	MR-HDP01	MR-HDP01

Servo system network cable	MR-J3BUS_
	 MR-J3BUS_M-A
	 MR-J3BUS_M-B
		Ethernet cable
		   Category 5e or higher,
		   (double shielded/STP)
		   straight cable

*1. The maximum number of control axes is increased from 2 to 4.

*2. Connect this module to an external power supply separately.

*3. The encoder of HK-KT series servo motor can be used as a synchronous encoder when connected to MR-J5-_G-RJ.

> **Point**
> - Select the power supply module after estimating the system current consumption.
> - RD78G has larger current consumption than RD77MS, and therefore the number of modules connected per power supply module is fewer.
> - If the current capacity of the power supply module becomes insufficient as a result of migration, separate the system by using the extension base unit (R6_B).

1.2. Servo Amplifiers/Servo Motors/Servo System Network/Encoder Cables

The servo system network is changed from SSCNET III/H to CC-Link IE TSN.

Select a CC-Link IE TSN-compatible servo amplifier and servo motors/servo motor cables for the selected servo amplifier.

(1) Servo amplifiers/rotary servo motors/servo motor cables

RD77MS		RD78G	
Servo amplifier		Servo amplifier	
MR-J4 series	MR-J4-_B MR-J4W2-_B MR-J4W3-_B MR-J4-_B-RJ	MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G MR-J5-_G-RJ

(→ between the two amplifier tables)

RD77MS			RD78G		
Rotary servo motor			Rotary servo motor		
Features	Capacity	Model	Features	Capacity	Model
Ultra-compact size	Ultra-small capacity	HG-AK_	Ultra-compact size	Ultra-small capacity	-
Ultra-low inertia	Small capacity	HG-MR_	Ultra-low inertia	Small capacity	-
	Medium capacity	HG-RR_		Medium capacity	HK-RT_
Low inertia	Small capacity	HG-KR_	Low inertia	Small capacity	HK-KT_
	Medium/large/ultra-large capacity	HG-JR_		Medium/large/ultra-large capacity	HK-KT_ HK-ST_ *1
Medium inertia	Medium capacity	HG-SR_	Medium inertia	Medium capacity	HK-ST_
Flat type	Medium capacity	HG-UR_	Flat type	Medium capacity	-

*1. The medium capacity range of HG-JR (3.3 kW to 5.0 kW) can be replaced with HK-ST_.

	Rotary servo motor		Servo amplifier power supply	0.01 kW ··· 0.1 kW ··· 1 kW ··· 10 kW ··· 200 kW
Ultra compact	MR-J4 series	HG-AK_	48/24 V DC	0.01 to 0.03 kW
	MR-J5 series	N/A	-	
Ultra-low inertia	MR-J4 series	HG-MR_	200 V	0.05 to 0.75 kW
	MR-J5 series	N/A	-	
	MR-J4 series	HG-RR_	200 V	1 to 5 kW
	MR-J5 series	HK-RT_	200 V	1 to 7 kW
		HK-RT_4	400 V	1 to 3.5 kW
Low inertia	MR-J4 series	HG-KR_	200 V	0.05 to 0.75 kW
	MR-J5 series	HK-KT_	200 V	0.05 to 2 kW
		HK-KT_4	200 V	0.2 to 1 kW
		HK-KT_	400 V	0.05 to 0.15 kW
		HK-KT_4	400 V	0.4 to 2 kW
	MR-J4 series	HG-JR_	200 V	0.5 to 37 kW
	MR-J5 series	HK-KT_	200 V	0.6 to 2 kW
		HK-KT_4	200 V	0.75 to 1 kW
		HK-ST_	200 V	2.6 to 5 kW
	MR-J4 series	HG-JR_4	400 V	0.5 to 220 kW
	MR-J5 series	HK-KT_4	400 V	0.6 to 2 kW
		HK-ST_4	400 V	2.6 to 5 kW
Medium inertia	MR-J4 series	HG-SR_	200 V	0.5 to 7 kW
	MR-J5 series	HK-ST_	200 V	0.5 to 7 kW
		HK-ST_4	200 V	0.3 to 4.2 kW
	MR-J4 series	HG-SR_4	400 V	0.5 to 7 kW
	MR-J5 series	HK-ST_4	400 V	0.5 to 3.5 kW
Flat type	MR-J4 series	HG-UR_	200 V	0.75 to 5 kW
	MR-J5 series	N/A	-	

RD77MS				RD78G		
MR-J4 series	Rotary servo motor	Encoder cable/connector		MR-J5 series	Rotary servo motor	Encoder cable/connector
	HG-RR_	MR-J3ENSCBL_M-H/L			HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-AENSCBL_M-H/L [1] MR-ENCNS2_ [1] MR-J3ENSCBL_M-H/L [1] MR-J3SCNS_ [1]
	HG-KR_	MR-EKCBL_M-H/L MR-J3ENCBL_M-A_-H/L MR-J3ENSCBL_M-H/L MR-J3JCBL03M-A_-L MR-J3JSCBL03M-A_-L			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HG-JR_	MR-ENECBL_M-H-MTH MR-ENE4CBL_M-H-MTH MR-J3ENSCBL_M-H/L				
	HG-SR_	MR-J3ENSCBL_M-H/L			HK-ST_	MR-AENSCBL_M-H/L MR-ENCNS2_ MR-J3ENSCBL_M-H/L MR-J3SCNS_

*1. This is used for HK-RT (3.5 kW to 7.0 kW).

RD77MS				RD78G		
MR-J4 series	Rotary servo motor	Servo motor power cable/connector		MR-J5 series	Rotary servo motor	Servo motor power cable/connector
	HG-RR_	MR-PWCNS1/2			HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-APWCNS5 [1]
	HG-KR_	MR-PWS1CBL_M-A_-H MR-PWS2CBL03M-A_-L			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HG-JR_	MR-PWCNS3/4/5				
	HG-SR_	MR-PWCNS3/4/5			HK-ST_	MR-APWCNS4/5

*1. This is used for HK-RT (3.5 kW to 7.0 kW).

RD77MS				RD78G		
MR-J4 series	Rotary servo motor	Electromagnetic brake cable/connector		MR-J5 series	Rotary servo motor	Electromagnetic brake cable/connector
	HG-RR_	- [1]	→		HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L [2] MR-AEP2CBL_M-A_-H/L [2] MR-AEP2J10CBL03M-A_-L [2] MR-AEP2J20CBL03M-A_-L [2] MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-BKCNS1_ [3] MR-BKCNS2_ [3]
	HG-KR_	MR-BKS1CBL_M-A_-H/L MR-BKS2CBL03M-A_-L			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L [2] MR-AEP2CBL_M-A_-H/L [2] MR-AEP2J10CBL03M-A_-L [2] MR-AEP2J20CBL03M-A_-L [2] MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HG-JR_	MR-BKCNS1/2 MR-BKCNS1A/2A MR-BKCN				
	HG-SR_	MR-BKCNS1/2 MR-BKCNS1A/2A			HK-ST_	MR-BKCNS1_ MR-BKCNS2_

*1. The power connector of HG-RR series has electromagnetic brake terminals.

*2. This cable does not include electromagnetic brake wires.

*3. This is used for HK-RT (3.5 kW to 7.0 kW).

Point

The cable for the HK-KT series and the HK-RT series (1.0 kW to 2.0 kW) has a single connector combining the motor power supply, encoder, and electromagnetic brake.

(2) Servo amplifiers/linear servo motors

RD77MS				RD78G		
Servo amplifier		Linear servo motor		Servo amplifier		Linear servo motor
MR-J4 series	MR-J4-_B MR-J4W2-_B MR-J4W3-_B	LM-H3_ LM-F_ LM-K2_ LM-U2_	→	MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G	LM-H3_ LM-F_ LM-K2_ LM-U2_

(3) Servo amplifiers/direct drive motors

RD77MS				RD78G		
Servo amplifier		Direct drive motor		Servo amplifier		Direct drive motor
MR-J4 series	MR-J4-_B MR-J4W2-_B MR-J4W3-_B	TM-RFM_ TM-RG2M_ TM-RU2M_	→	MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G	TM-RFM_ TM-RG2M_ TM-RU2M_

Point

When configuring an absolute position detection system with the MR-J5 series and a direct drive motor, a battery (MR-BAT6V1SET or MR-BAT6V1SET-A) and an absolute position storage unit (MR-BTAS01) are required.

(4) Comparison of servo system network

Item	SSCNET Ⅲ/H SERVO SYSTEM CONTROLLER NETWORK		CC-Link IE TSN
Communication medium	Optical fiber cable		Ethernet cable Category 5e or higher, (double shielded/STP) straight cable
Communication speed	150 Mbps	→	1 Gbps
Maximum distance between stations	[Standard code for inside panel and standard cable for outside panel] 20 m [Long distance cable] 100 m		100 m

1.3. Engineering Environment

The engineering environment that supports RD78G(S) is as follows.

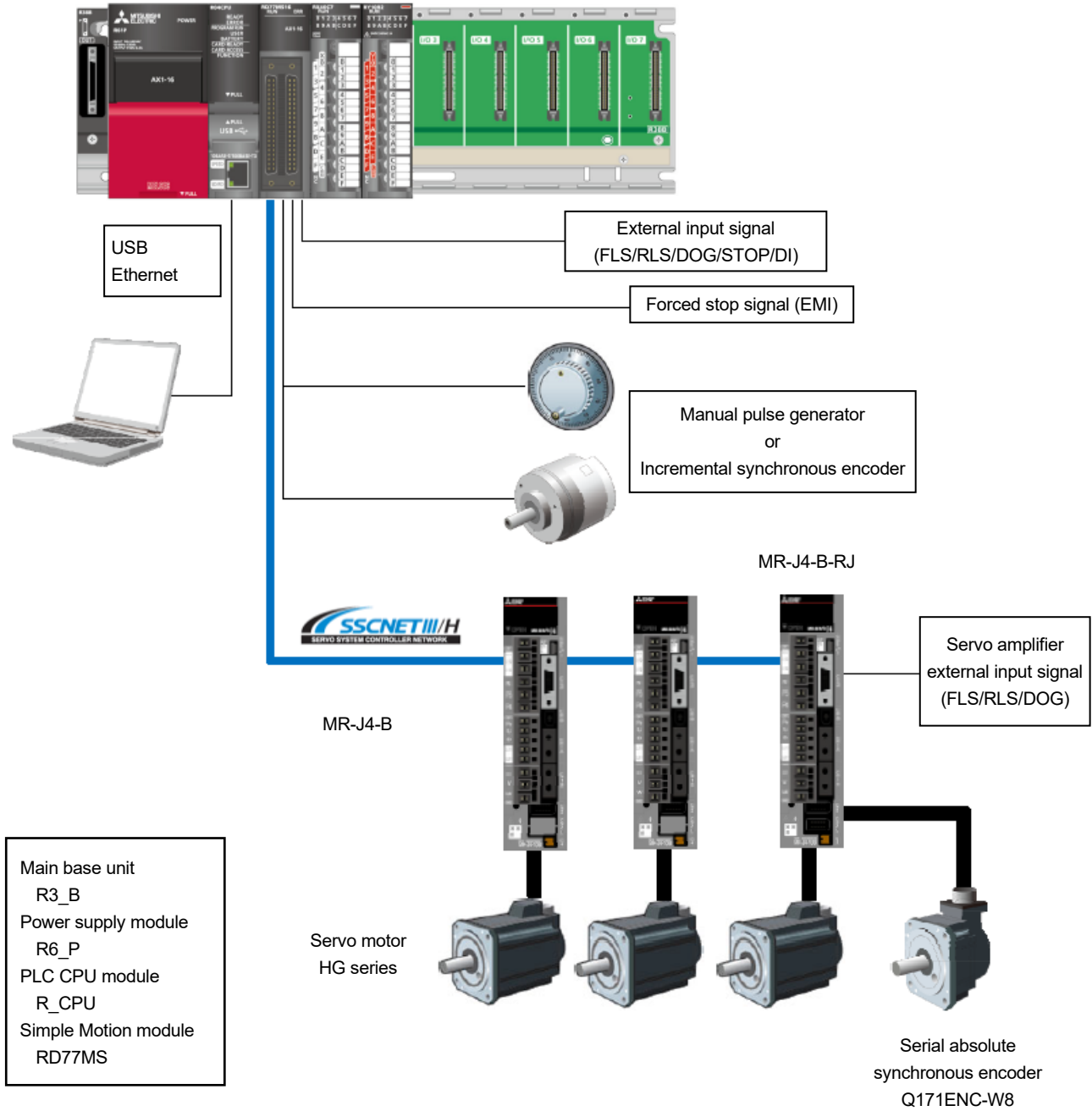| Product name	Model	Version
MELSOFT GX Works3	SW1DND-GXW3-E	Ver.1.075D or later
Simple Motion module setting function (included in MELSOFT GX Works3)	-	Ver.1.165X or later
MELSOFT MR Configurator2 (included in MELSOFT GX Works3)	SW1DNC-MRC2-E	Ver.1.100E or later

Point

Supported servo amplifier functions and servo motor types vary by the version of MELSOFT MR Configurator2. Use the version which supports the devices to be used.

1.4. System Configuration
1.4.1. System configuration before migration (RD77MS and MR-J4 series)

USB
Ethernet

External input signal
(FLS/RLS/DOG/STOP/DI)

Forced stop signal (EMI)

Manual pulse generator
or
Incremental synchronous encoder

MR-J4-B-RJ

SSCNET III/H
SERVO SYSTEM CONTROLLER NETWORK

Servo amplifier
external input signal
(FLS/RLS/DOG)

MR-J4-B

Main base unit
  R3_B
Power supply module
  R6_P
PLC CPU module
  R_CPU
Simple Motion module
  RD77MS

Servo motor
HG series

Serial absolute
synchronous encoder
Q171ENC-W8

1.4.2. System configuration after migration (RD78G and MR-J5 series)

USB
Ethernet

Manual pulse generator

Forced stop signal
External input signal

Incremental synchronous encoder

MR-J5-G-RJ

CC-Link **IE TSN**

Servo amplifier
external input signal
(LSP/LSN/DOG)

MR-J5-G

Main base unit
　R3_B
Power supply module
　R6_P
PLC CPU module
　R_CPU
Motion module
　RD78G(S)

Servo motor
HK series

Synchronous encoder
(HK-KT servo motor)

Point

When using an absolute position detection system, change [Pr. PC29.5 [AL. 0E3 Absolute position counter warning] selection] from [1: Enabled (initial value)] to [0: Disabled].

2. WHEN MIGRATING MR-J3 SERIES TO MR-J5 SERIES

Prepare modules, servo amplifiers, and an engineering environment according to the following tables in this chapter.

2.1. Correspondence Table for System Components

Item	When using RD77MS	When using RD78G
	Model	Model
Simple Motion module	RD77MS2	RD78G4 [*1]
	RD77MS4	RD78G4
	RD77MS8	RD78G8
	RD77MS16	RD78G16
External signal input module	RD77MS	RX41C4
INC synchronous encoder input module	RD77MS	RD62D2 (differential-input type, 2ch) [*2]
Manual pulse generator input module	RD77MS	RD62P2 (DC input, 2ch) [*2]
		RD62P2E (DC input, 2ch) [*2]
Manual pulse generator	MR-HDP01	MR-HDP01
Servo system network cable	MR-J3BUS_ MR-J3BUS_M-A MR-J3BUS_M-B	Ethernet cable Category 5e or higher, (double shielded/STP) straight cable

*1. The maximum number of control axes is increased from 2 to 4.

*2. Connect this module to an external power supply separately.

Point

- Select the power supply module after estimating the system current consumption.
- RD78G has larger current consumption than RD77MS, and therefore the number of modules connected per power supply module is fewer.
- If the current capacity of the power supply module becomes insufficient as a result of migration, separate the system by using the extension base unit (R6_B).

2.2. Servo Amplifiers/Servo Motors/Servo System Network/Encoder Cables

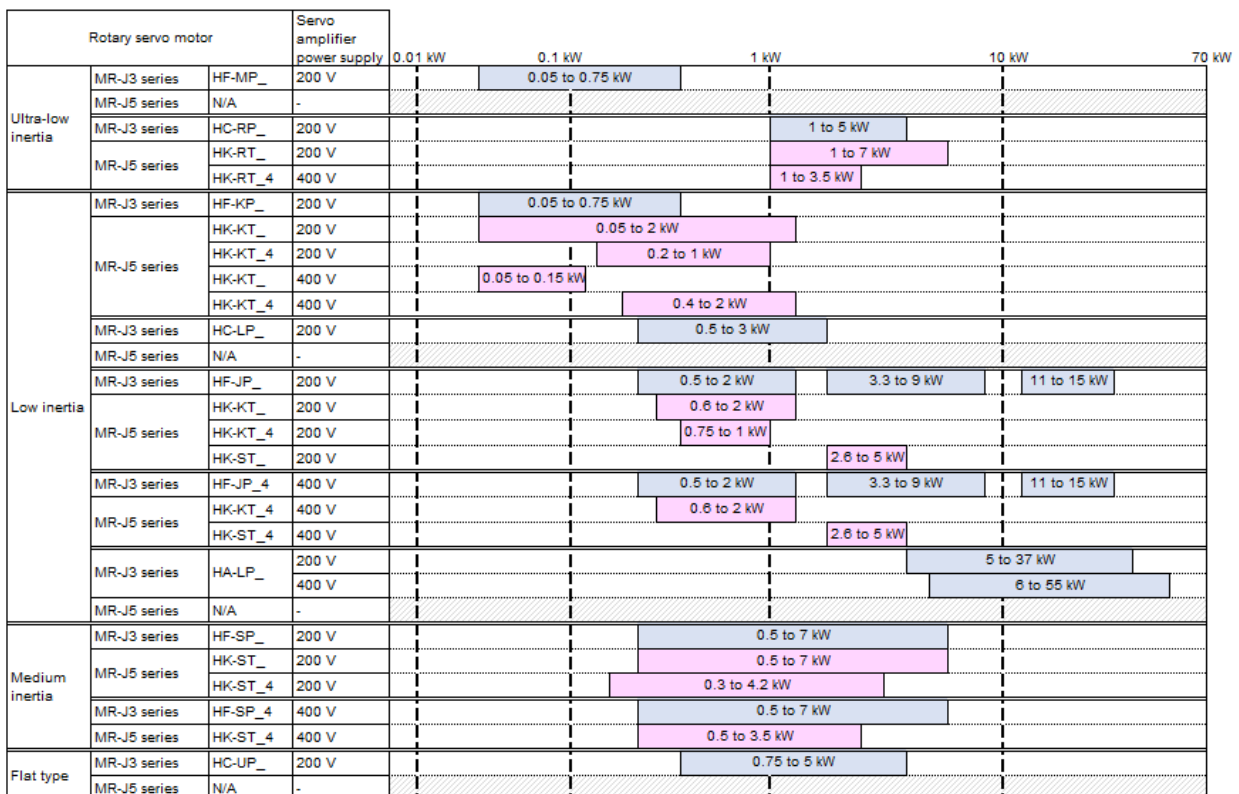The servo system network is changed from SSCNET III to CC-Link IE TSN.

Select a CC-Link IE TSN-compatible servo amplifier and servo motors/servo motor cables for the selected servo amplifier.

(1) Servo amplifiers/rotary servo motors/servo motor cables

RD77MS				RD78G	
Servo amplifier				Servo amplifier	
MR-J3 series	MR-J3-_B MR-J3W-_B MR-J3-_BS MR-J3-_B-RJ006	→		MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G MR-J5-_G-RJ

RD77MS			→	RD78G		
Rotary servo motor				Rotary servo motor		
Features	Capacity	Model		Features	Capacity	Model
Ultra-low inertia	Small capacity	HF-MP_		Ultra-low inertia	Small capacity	-
	Medium capacity	HC-RP_			Medium capacity	HK-RT_
Low inertia	Small capacity	HF-KP_		Low inertia	Small capacity	HK-KT_
	Medium capacity	HC-LP_			Medium capacity	-
	Medium/large capacity	HF-JP_			Medium/large capacity	HK-KT_ HK-ST_ *1
		HA-LP_				-
Medium inertia	Medium capacity	HF-SP_		Medium inertia	Medium capacity	HK-ST_
Flat type	Medium capacity	HC-UP_		Flat type	Medium capacity	-

*1. The medium capacity range of HF-JP (3.3 kW to 5.0 kW) can be replaced with HK-ST_.

Rotary servo motor			Servo amplifier power supply	0.01 kW	0.1 kW	1 kW	10 kW	70 kW
Ultra-low inertia	MR-J3 series	HF-MP_	200 V		0.05 to 0.75 kW			
	MR-J5 series	N/A	-					
	MR-J3 series	HC-RP_	200 V			1 to 5 kW		
	MR-J5 series	HK-RT_	200 V			1 to 7 kW		
		HK-RT_4	400 V			1 to 3.5 kW		
Low inertia	MR-J3 series	HF-KP_	200 V		0.05 to 0.75 kW			
	MR-J5 series	HK-KT_	200 V		0.05 to 2 kW			
		HK-KT_4	200 V		0.2 to 1 kW			
		HK-KT_	400 V	0.05 to 0.15 kW				
		HK-KT_4	400 V		0.4 to 2 kW			
	MR-J3 series	HC-LP_	200 V		0.5 to 3 kW			
	MR-J5 series	N/A	-					
	MR-J3 series	HF-JP_	200 V		0.5 to 2 kW	3.3 to 9 kW	11 to 15 kW	
	MR-J5 series	HK-KT_	200 V		0.6 to 2 kW			
		HK-KT_4	200 V		0.75 to 1 kW			
		HK-ST_	200 V			2.6 to 5 kW		
	MR-J3 series	HF-JP_4	400 V		0.5 to 2 kW	3.3 to 9 kW	11 to 15 kW	
	MR-J5 series	HK-KT_4	400 V		0.6 to 2 kW			
		HK-ST_4	400 V			2.6 to 5 kW		
	MR-J3 series	HA-LP_	200 V				5 to 37 kW	
			400 V				6 to 55 kW	
	MR-J5 series	N/A	-					
Medium inertia	MR-J3 series	HF-SP_	200 V			0.5 to 7 kW		
	MR-J5 series	HK-ST_	200 V			0.5 to 7 kW		
		HK-ST_4	200 V			0.3 to 4.2 kW		
	MR-J3 series	HF-SP_4	400 V			0.5 to 7 kW		
	MR-J5 series	HK-ST_4	400 V			0.5 to 3.5 kW		
Flat type	MR-J3 series	HC-UP_	200 V			0.75 to 5 kW		
	MR-J5 series	N/A	-					

RD77MS				RD78G		
MR-J3 series	Rotary servo motor	Encoder cable/connector	→	MR-J5 series	Rotary servo motor	Encoder cable/connector
	HC-RP_	MR-J3ENSCBL_M-H/L MR-J3SCNS_			HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-AENSCBL_M-H/L [1] MR-ENCNS2_ [1] MR-J3ENSCBL_M-H/L [1] MR-J3SCNS_ [1]
	HF-KP_	MR-EKCBL_M-H/L MR-J3ENCBL_M-A_-H/L MR-J3ENSCBL_M-H/L MR-J3JCBL03M-A_-L MR-J3JSCBL03M-A_-L MR-J3SCNS			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HF-JP_	MR-ENECNS MR-ENECBL_M-H MR-J3ENSCBL_M-H/L MR-J3SCNS_				
	HF-SP_	MR-J3ENSCBL_M-H/L MR-J3SCNS_			HK-ST_	MR-AENSCBL_M-H/L MR-ENCNS2_ MR-J3ENSCBL_M-H/L MR-J3SCNS_

*1. This is used for HK-RT (3.5 kW to 7.0 kW).

RD77MS				RD78G		
MR-J3 series	Rotary servo motor	Servo motor power cable/connector		MR-J5 series	Rotary servo motor	Servo motor power cable/connector
	HC-RP_	MR-PWCNS1/2	→		HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-APWCNS5[*1]
	HF-KP_	MR-PWS1CBL_M-A_-H/L MR-PWS2CBL03M-A_-L			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L MR-AEP2CBL_M-A_-H/L MR-AEP2J10CBL03M-A_-L MR-AEP2J20CBL03M-A_-L MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HF-JP_	MR-PWCNS3/4/5				
	HF-SP_	MR-PWCNS3/4/5			HK-ST_	MR-APWCNS4/5

*1. This is used for HK-RT (3.5 kW to 7.0 kW).

RD77MS				RD78G		
MR-J3 series	Rotary servo motor	Electromagnetic brake cable/connector		MR-J5 series	Rotary servo motor	Electromagnetic brake cable/connector
	HC-RP_	-	→		HK-RT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L [1] MR-AEP2CBL_M-A_-H/L [1] MR-AEP2J10CBL03M-A_-L [1] MR-AEP2J20CBL03M-A_-L [1] MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L MR-BKCNS1_ [2] MR-BKCNS2_ [2]
	HF-KP_	MR-BKS1CBL_M-A_-H/L MR-BKS2CBL03M-A_-L			HK-KT_	MR-AEKCBL_M-H/L MR-AENSCBL_M-H/L MR-AEP1CBL_M-A_-H/L [1] MR-AEP2CBL_M-A_-H/L [1] MR-AEP2J10CBL03M-A_-L [1] MR-AEP2J20CBL03M-A_-L [1] MR-AEPB1CBL_M-A_-H/L MR-AEPB2CBL_M-A_-H/L MR-AEPB2J10CBL03M-A_-L MR-AEPB2J20CBL03M-A_-L
	HF-JP_	MR-BKCNS1_ MR-BKCN				
	HF-SP_	MR-BKCNS1_			HK-ST_	MR-BKCNS1_ MR-BKCNS2_

*1. This cable does not include electromagnetic brake wires.

*2. This is used for HK-RT (3.5 kW to 7.0 kW).

Point

The cable for the HK-KT series and the HK-RT series (1.0 kW to 2.0 kW) has a single connector combining the motor power supply, encoder, and electromagnetic brake.

(2) Servo amplifiers/linear servo motors

RD77MS			RD78G		
Servo amplifier		Linear servo motor	Servo amplifier		Linear servo motor
MR-J3 series	MR-J3-_B-RJ004	LM-H2_ LM-F_ LM-K2_ LM-U2_	MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G	LM-H3_ LM-F_ LM-K2_ LM-U2_

(3) Servo amplifiers/direct drive motors

RD77MS			RD78G		
Servo amplifier		Direct drive motor	Servo amplifier		Direct drive motor
MR-J3 series	MR-J3-_B-RJ080W	TM-RFM_	MR-J5 series	MR-J5-_G MR-J5W2-_G MR-J5W3-_G	TM-RFM_

Point

When configuring an absolute position detection system with the MR-J5 series and a direct drive motor, a battery (MR-BAT6V1SET or MR-BAT6V1SET-A) and an absolute position storage unit (MR-BTAS01) are required.

(4) Comparison of servo system network

Item	SSCNET III		CC-Link IE TSN
Communication medium	Optical fiber cable		Ethernet cable Category 5e or higher, (double shielded/STP) straight cable
Communication speed	50 Mbps	→	1 Gbps
Maximum distance between stations	[Standard code for inside panel and standard cable for outside panel] 20 m [Long distance cable] 50 m		100 m

2.3. Engineering Environment

The engineering environment that supports RD78G(S) is as follows.

Product name	Model	Version
MELSOFT GX Works3	SW1DND-GXW3-E	Ver.1.075D or later
Simple Motion module setting function (included in MELSOFT GX Works3)	-	Ver.1.165X or later
MELSOFT MR Configurator2 (included in MELSOFT GX Works3)	SW1DNC-MRC2-E	Ver.1.100E or later

Point

Supported servo amplifier functions and servo motor types vary by the version of MELSOFT MR Configurator2. Use the version which supports the devices to be used.

2.4. System Configuration
2.4.1. System configuration before migration (RD77MS and MR-J3 series)
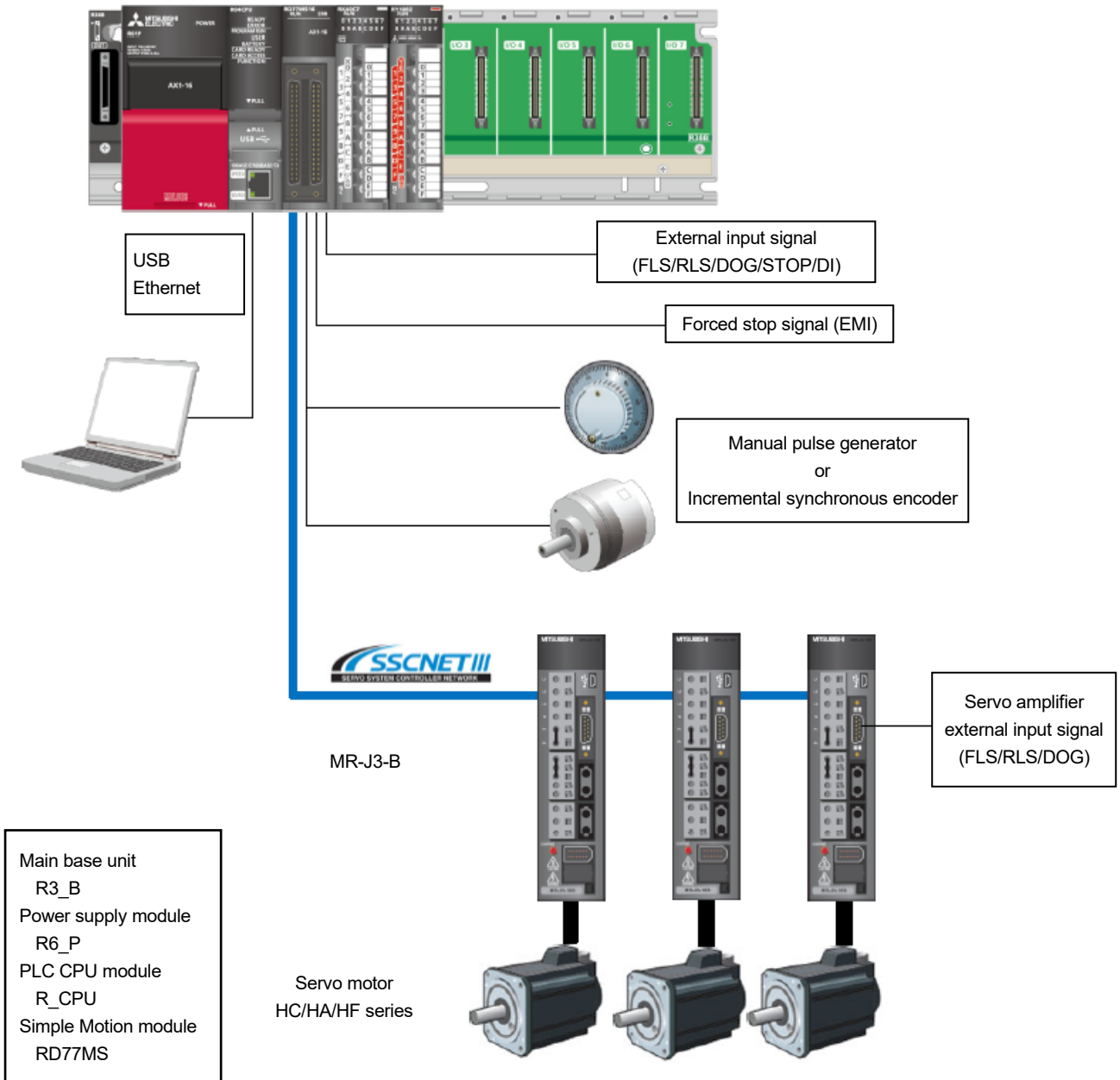
USB
Ethernet

External input signal
(FLS/RLS/DOG/STOP/DI)

Forced stop signal (EMI)

Manual pulse generator
or
Incremental synchronous encoder

SSCNETⅢ

Servo amplifier
external input signal
(FLS/RLS/DOG)

MR-J3-B

Main base unit
  R3_B
Power supply module
  R6_P
PLC CPU module
  R_CPU
Simple Motion module
  RD77MS

Servo motor
HC/HA/HF series

2.4.2. System configuration after migration (RD78G and MR-J5 series)

USB
Ethernet

Forced stop signal
External input signal

Manual pulse generator

Incremental synchronous encoder

CC-Link IE TSN

MR-J5-G

Servo amplifier external
input signal
(LSP/LSN/DOG)

Main base unit
　R3_B
Power supply module
　R6_P
PLC CPU module
　R_CPU
Motion module
　RD78G(S)

Servo motor
HK series

Point
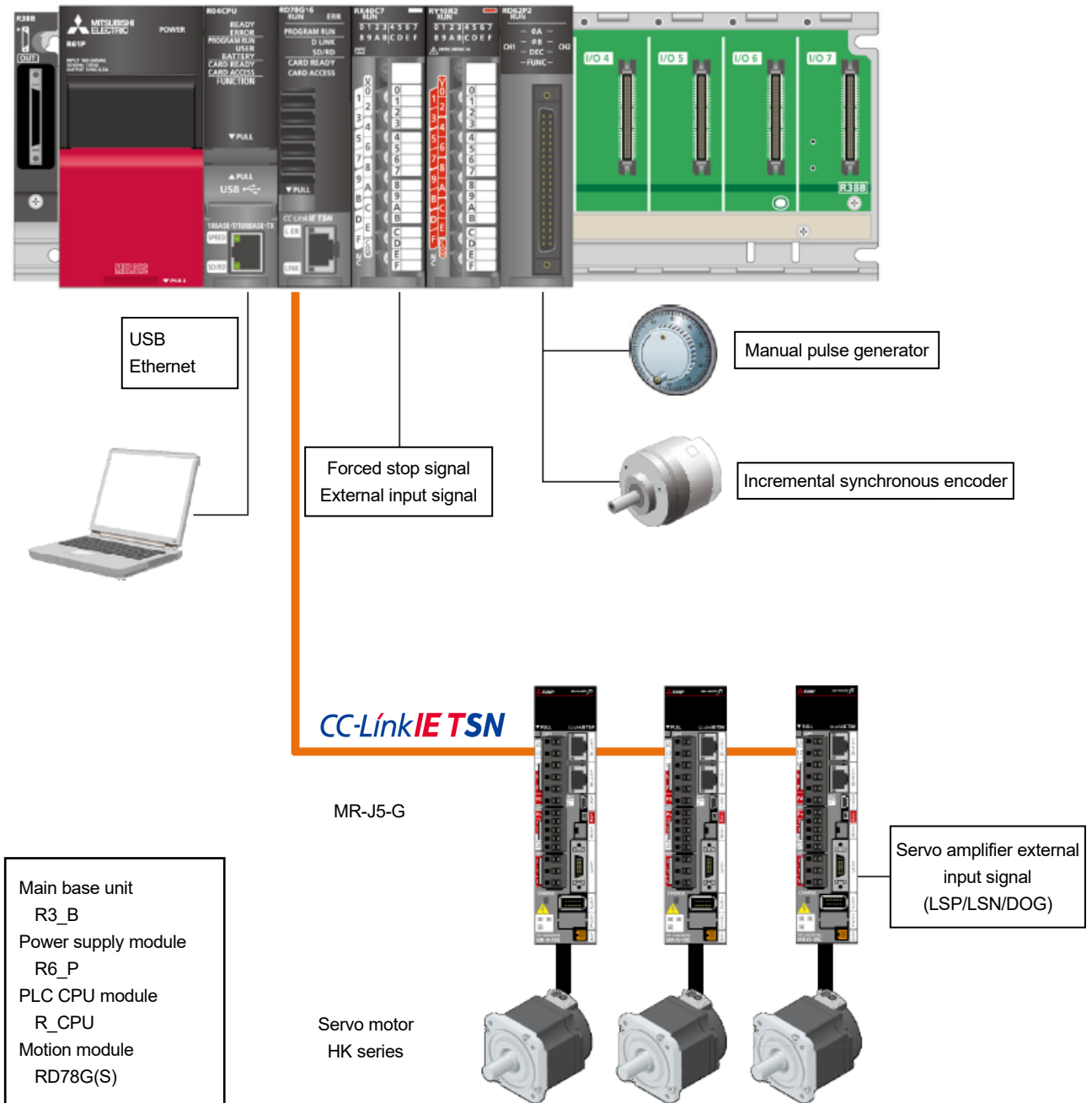
When using an absolute position detection system, change [Pr. PC29.5 [AL. 0E3 Absolute position counter warning] selection] from [1: Enabled (initial value)] to [0: Disabled].

3. DIFFERENCES BETWEEN RD77MS AND RD78G

3.1. Performance Specifications

Item	RD77MS				RD78G(S)			Points for migration
	RD77MS2	RD77MS4	RD77MS8	RD77MS16	RD78G4 (S)	RD78G8 (S)	RD78G16 (S)	
Maximum number of control axes	2	4	8	16	4	8	16	
Network	SSCNET III SSCNET III/H				CC-Link IE TSN			
Buffer memory assignment compatibility	○				-			
Operation cycle	0.444 ms/0.888 ms/1.777 ms/3.555 ms				0.250 ms/0.500 ms/1.000 ms 2.000 ms/4.000 ms			
Number of applicable modules	Up to 64				Up to 32 (Up to 8 modules can be controlled by one CPU.)			
Machine home position return function	6 types (proximity dog method, count method1, count method2, data set method, scale home position signal detection method, driver home position return method)				1 type (driver home position return method)			Set the parameters related to home position return with the positioning control parameters (PT) of servo parameters.
Home position return retry	○				×			To use this function, set PC19.0 ([AL. 099 Stroke limit warning] selection) to "1: Disabled".
Home position shift	○				×			Set this function with the positioning control parameters (PT) of servo parameters.
Speed-position switching control	[Cd.45] Speed-position switching device selection 0: Use the external command signal for switching from speed control to position control. 1: Use the proximity dog signal for switching from speed control to position control 2: Use "[Cd. 46] Speed-position switching command" for switching from speed control to position control				[Cd.45] Speed-position switching device selection 0: Use the external command signal for switching from speed control to position control (operation cycle accuracy). 1: Use the proximity dog signal for switching from speed control to position control 2: Use "[Cd. 46] Speed-position switching command" for switching from speed control to position control			The signal is fetched at operation cycle.
Forced stop	0: Valid (external input) 1: Invalid 2: Valid (buffer memory)				- 1: Invalid 2: Valid (buffer memory)			
Speed change	Buffer memory, built-in DI				Buffer memory, external signal of servo amplifier			
Skip	Buffer memory, built-in DI				Buffer memory, external signal of servo amplifier			
Servo parameter operation	Transmission during initialized communication, transmission when PLC READY is turned on, 1-word writing, 2-word writing				Parameter transmission during initialized communication, parameter reading with specified size, parameter writing with specified size			When changing servo parameters during RUN time, use the servo transient transmission function.

Item	RD77MS				RD78G(S)			Points for migration
	RD77MS2	RD77MS4	RD77MS8	RD77MS16	RD78G4 (S)	RD78G8 (S)	RD78G16 (S)	
Servo parameter management	Managed by a Simple Motion module (possible to change using the buffer memory) PA, PB, PC, PD, PE, PS, PF, Po, PL				Managed by a CPU module/a servo amplifier (when the parameters are managed by a CPU module, the parameters changed by a servo amplifier is baked up. The backup is performed periodically following the setting of [Pr. PN20 Parameter automatic backup update interval].)			
External input signal setting	Modules, servo amplifier (FLS, RLS), buffer memory				- Servo amplifier (LSP, LSN, DOG), buffer memory			
Amplifier-less operation	○				×			Use the virtual servo amplifier function as an alternative.
Error code Warning code	MELSEC iQ-R series code system				MELSEC iQ-R series code system			
Mark detection accuracy	10 us (built-in DI)				Operation cycle			
Driver communication	○				×			
Servo input axis	2 axes	4 axes	8 axes	16 axes	4 axes	8 axes	16 axes	
Command generation axis	×				4 axes	8 axes		
Number of synchronous encoder axes	4 axes				4 axes	8 axes	16 axes	
Synchronous encoder axis type	Built-in, via a CPU or a servo amplifier				Via a CPU or a servo amplifier			
Synchronous encoder axis start	Buffer memory, built-in DI				Buffer memory, external signal of servo amplifier			
Clutch smoothing	0: Direct 1: Time constant method (Exponent) 2: Time constant method (Linear) 3: Slippage method (Exponent) 4: Slippage method (Linear) 5: Slippage method (Linear: Input value follow up)				0: Direct 1: Time constant method (Exponent) 2: Time constant method (Linear) 3: Slippage method (Exponent) 4: Slippage method (Linear) 5: Slippage method (Linear: Input value follow up)			

Clutch	ON control mode
	  0: No clutch
	  1: Clutch command ON/OFF
	  2: Clutch command leading edge
	  3: Clutch command trailing edge
	  4: Address mode
	  5: High speed input request
	OFF control mode
	  0: OFF control invalid
	  1: One-shot OFF
	  2: Clutch command leading edge
	  3: Clutch command trailing edge
	  4: Address mode
	  5: High speed input request
					ON control mode
					  0: No clutch
					  1: Clutch command ON/OFF
					  2: Clutch command leading edge
					  3: Clutch command trailing edge
					  4: Address mode
					  5: High speed input request
					    (operation cycle accuracy)
					OFF control mode
					  0: OFF control invalid
					  1: One-shot OFF
					  2: Clutch command leading edge
					  3: Clutch command trailing edge
					  4: Address mode
					  5: High speed input request
					    (operation cycle accuracy)
								The signal is fetched at the operation cycle for "5: The high speed input request".

Inter-module synchronization function	○				×			
Online module change	○				×			

3.2. Replacement of I/O Signals and Buffer Memory

(1) Parameter area

Buffer memory No.		Change/revision
RD77MS	RD78G16 (S)	
"[Pr.22] Input signal logic selection" (31+150n)	"[Pr.22] Input signal logic selection" (31+150n)	Refer to 3.2 (1) for details.
"[Pr.89] Manual pulse generator/Incremental synchronous encoder input type selection". (67)	-	The manual pulse generator/incremental synchronous encoder input type selection function has been removed.
"[Pr.24] Manual pulse generator/incremental synchronous encoder input selection" (33)	-	The manual pulse generator/incremental synchronous encoder input selection function has been removed.

"[Pr.43] Home position return method" (70+150n)
"[Pr.46] Home position return speed" (74+150n)
"[Pr.51] Home position return acceleration time selection" (82+150n)
"[Pr.52] Home position return deceleration time selection" (83+150n)
	"[Pr.43] Home position return method" (70+150n)
	"[Pr.46] Home position return speed" (74+150n, 75+150n)
	"[Pr.51] Home position return acceleration time selection" (82+150n)
	"[Pr.52] Home position return deceleration time selection" (83+150n)
		The settings of these parameters are as follows because the servo system network has been changed to CC-Link IE TSN.
		· Home position return method
		   8: Driver home position return method
		· Home position return speed
		  The high-speed home position return is executed with the home position return speed.
		· Home position return acceleration time selection and home position return deceleration time selection
		  These parameters are valid only when the high-speed home position return is executed.

"[Pr.47] Creep speed" (76+150n, 77+150n)	-	The settings of these parameters are not necessary because only "8: Driver home position return method" is selectable for "[Pr.43] Home position return method".
"[Pr.48] Home position return retry" (78+150n)	-	
"[Pr.50] Setting for the movement amount after proximity dog ON" (80+150n, 81+150n)	-	
"[Pr.53] Home position shift amount" (84+150n, 85+150n)	-	
"[Pr.54] Home position return torque limit value" (83+150n)	-	
"[Pr.56] Speed designation during home position shift" (88+150n)	-	
"[Pr.57] Wait time during home position return retry" (89+150n)	-	
"[Pr.97] SSCNET setting" (106)	-	The setting of this parameter is not necessary because the servo system network has been changed to CC-Link IE TSN.
"[Pr.82] Forced stop valid/invalid selection" (35)	"[Pr.82] Forced stop valid/invalid selection" (35)	The setting value "0: Valid (external input signal)" has been removed in RD78G(S). Refer to the description of "[Pr.82] Forced stop valid/invalid selection" for details.
"[Pr.87] Pulse conversion unit: Waiting time after clear signal output" (91+150n)	-	The waiting time after the pulse conversion unit clear signal output function has been removed.
"[Pr.86] Pulse conversion unit: Home position return request setting" " (90+150n)	-	The pulse conversion unit home position return request setting function has been removed.

Buffer memory No.		Change/revision
RD77MS	**RD78G16 (S)**	
"[Pr.116] FLS signal selection" "[Pr.117] RLS signal selection" "[Pr.118] DOG signal selection" "[Pr.119] STOP signal selection" (116+150n, 117+150n, 118+150n, 119+150n)	"[Pr.116] FLS signal selection" "[Pr.117] RLS signal selection" "[Pr.118] DOG signal selection" "[Pr.119] STOP signal selection" (116+150n, 117+150n, 118+150n, 119+150n)	The setting value "0: Simple Motion" has been removed.
"[Pr.95] External command signal selection" (69+150n)	"[Pr.95] External command signal selection" (69+150n)	Refer to 3.2 (1) for details.
"[Pr.150] Input terminal logic selection" (69+150n)	-	
"[Pr.153] External input signal digital filter setting" (69+150n)	-	
"[Pr.90] Operation setting for speed-torque control mode" (68+150n)	"[Pr.90] Operation setting for speed-torque control mode" (68+150n)	The setting value "b12 to b15: Condition selection at mode switching" has been changed as follows. · 0: Check the switching conditions in Simple Motion module. · 1: According to the servo amplifier specification [Additional information] When this parameter is set to "0: Check the switching conditions in Simple Motion module.", and the mode switching condition is not satisfied, a warning occurs and the mode switching is disabled. When this parameter is set to "1: According to the servo amplifier specification", the mode switching condition is judged following the parameter [PC76.1] of the servo amplifier (refer to [PC76.1] of the servo amplifier.). [When switching the control mode without waiting for the motor stop] Set "b12 to b15: Condition selection at mode switching" of "[Pr.90] Operation setting for speed-torque control mode" to "1: According to the servo amplifier specification". When using MR-J4-GF and MR-J5-G, set "ZSP disabled selection at control switching" of "Function selection C-E (PC76.1)" to "Disabled". * With the setting above, note that the mode switching may cause vibrations and shock.
"[Pr.91] Optional data monitor: Data type setting 1" (100+150n)	"[Pr.91] Optional data monitor: Data type setting 1" (100+150n)	Set the index of the corresponding object of the slave device in "Optional data monitor: Data type setting". Set the sub index and size of the corresponding object of the slave device in "Optional data monitor: Data type expansion setting". Refer to the manuals of the slave devices to be used for details.
	"[Pr.591] Optional data monitor: Data type expansion setting 1" (92+150n)	
"[Pr.92] Optional data monitor: Data type setting 2" (101+150n)	"[Pr.92] Optional data monitor: Data type setting 2" (101+150n)	
	"[Pr.592] Optional data monitor: Data type expansion setting 2" (93+150n)	
"[Pr.93] Optional data monitor: Data type setting 3" (102+150n)	"[Pr.93] Optional data monitor: Data type setting 3" (102+150n)	
	"[Pr.593] Optional data monitor: Data type expansion setting 3" (94+150n)	

Buffer memory No.		Change/revision
RD77MS	**RD78G16 (S)**	
"[Pr.94] Optional data monitor: Data type setting 4" (103+150n)	"[Pr.94] Optional data monitor: Data type setting 4" (103+150n)	
	"[Pr.594] Optional data monitor: Data type expansion setting 4" (95+150n)	
"[Pr.96] Operation cycle setting" (105)	-	In RD78G(S), the operation cycle is set as the network communication cycle. The following shows the settable communication cycle. Communications cycle: 0.25 ms, 0.5 ms 1 ms 2 ms 4 ms
"[Pr.320] Synchronous encoder axis type" (34720+20n)	"[Pr.320] Synchronous encoder axis type" (34720+20n)	The setting value "1: Incremental synchronous encoder" has been removed.
"[Pr.800] Mark detection signal setting" (54000+20n)	"[Pr.800] Mark detection signal setting" (54000+20n)	Set "[Pr.95] External command signal selection" together with this parameter. [Setting example] When [Pr.95] of axis 8 is set to "101: Axis 1 Dog signal" and [Pr.800] is set to "8: Axis 8 external command signal [DI]", the mark detection is executed using the DOG signal of the servo amplifier connecting axis 1.
"[Pr.100] Connected device" (28400+100n)	"[Pr.141] IP address (the third and fourth octets), (the first and second octets)" (58024+150n, 58025+150n)	The setting has been changed as follows because the servo system network has been changed to CC-Link IE TSN. The setting of "[Pr.100] Connected device" is not necessary. Set "[Pr.141] IP address" and "[Pr.142] Multidrop number". [Additional information] · "[Pr.141] IP address": the IP address of the real servo amplifier to be used · "[Pr.142] Multidrop number": the identification No. for each servo motor connected to a multi-axis servo amplifier
	"[Pr.142] Multidrop number" (58028+150n)	

n: Axis No. -1

(2) Monitor data area

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
"[Md.35] Torque limit stored value/forward torque limit stored value" (2426+100n)	"[Md.35] Torque limit stored value/forward torque limit stored value" (2426+100n)	This monitor data has been changed as follows. (1) "[Pr.54] Home position return torque limit value" is not stored. (2) "[Pr.17] Torque limit setting value" or "[Cd.101] Torque output setting value" is not stored when a home position return is executed.
"[Md.120] Reverse torque limit stored value" (2491+100n)	"[Md.120] Reverse torque limit stored value" (2491+100n)	This monitor data has been changed as follows. (1) "[Pr.54] Home position return torque limit value" is not stored. (2) "[Pr.17] Torque limit setting value" or "[Cd.101] Torque output setting value" is not stored when a home position return is executed.
"[Md.103] Motor rotation speed" (2454+100n, 2455+100n)	"[Md.103] Motor rotation speed" (2454+100n, 2455+100n)	Note that the unit can be changed with [Pr. PT01.1 Speed/acceleration/deceleration unit selection]. [Additional information] The unit is "pulse/s" when the servo parameter PT01.1 (speed/acceleration/deceleration unit selection) is set to "1: Command unit/s". (The same applies to linear servo motors.)
"[Md.107] Parameter error No." (2470+100n)	-	The parameter error No. monitor function has been removed.
"[Md.109] Regenerative load ratio/Optional data monitor output 1" (2478+100n)	"[Md.109] Regenerative load ratio/Optional data monitor output 1" (2478+100n)	This monitor data has been changed as follows. · The contents set in "[Pr.91] Optional data monitor: Data type setting 1" and "[Pr.591] Optional data monitor: Data type expansion setting 1" are stored.
"[Md.110] Effective load torque/Optional data monitor output 2" (2479+100n)	"[Md.110] Effective load torque/Optional data monitor output 2" (2479+100n)	This monitor data has been changed as follows. · The contents set in "[Pr.92] Optional data monitor: Data type setting 2" and "[Pr.592] Optional data monitor: Data type expansion setting 2" are stored.
"[Md.111] Peak torque ratio/Optional data monitor output 3" (2480+100n)	"[Md.111] Peak torque ratio/Optional data monitor output 3" (2480+100n)	This monitor data has been changed as follows. · The contents set in "[Pr.93] Optional data monitor: Data type setting 3" and "[Pr.593] Optional data monitor: Data type expansion setting 3" are stored.
"[Md.112] Optional data monitor output 4" (2481+100n)	"[Md.112] Optional data monitor output 4" (2481+100n)	This monitor data has been changed as follows. · The contents set in "[Pr.94] Optional data monitor: Data type setting 4" and "[Pr.594] Optional data monitor: Data type expansion setting 4" are stored.
"[Md.502] Driver operation alarm No." (59302+100n)	-	The driver alarm No. monitor function has been removed because the driver communication function has been removed.
"[Md.51] Amplifier-less operation mode status" (4232)	-	The amplifier-less operation mode status monitor function has been removed.
"[Md.53] SSCNET control status" (4233)	-	The SSCNET control status monitor function has been removed.
"[Md.52] Communication between amplifiers axes searching flag" (4234)	-	The communication between amplifiers axes searching flag monitor function has been removed.

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
"[Md.132] Operation cycle setting" (4238)	"[Md.132] Operation cycle setting" (4238)	In RD78G(S), the operation cycle is set as the network communication cycle. The following shows the settable communication cycle. Communications cycle: 0.25 ms, 0.5 ms 1 ms 2 ms 4 ms

p: Point No. -1

n: Axis No. –

(3) Control data area

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
"[Cd.13] Positioning operation speed override" (4313+100n)	"[Cd.13] Positioning operation speed override" (4313+100n)	The override function is invalid during the driver home position return.
"[Cd.14] New speed value" (4314+100n, 4315+100n)	"[Cd.14] New speed value" (4314+100n, 4315+100n)	The speed change function is invalid during the driver home position return.
"[Cd.147] Speed limit value at continuous operation to torque control mode" (4386+100n, 4387+100n)	"[Cd.147] Speed limit value at continuous operation to torque control mode" (4386+100n, 4387+100n)	The setting value varies as follows depending on the setting value of [Pr. 1]. 0: mm 0 to 2000000000 1: inch 0 to 2000000000 2: degree 0 to 2000000000 3: pulse 0 to 1000000000
"[Cd.130] Servo parameter write request" (4354+100n)	-	When changing servo parameters with RD78G(S), use the servo transient transmission function.
"[Cd.131] Parameter No. (settings for servo parameters to be changed)" (4355+100n)	-	
"[Cd.132] Change data" (4356+100n, 4357+100n)	-	
"[Cd.137] Amplifier-less operation mode switching request" (5926)	-	The amplifier-less operation mode switching request function has been removed. Use the virtual servo amplifier.
"[Cd.102] SSCNET control command" (5932)	-	The SSCNET control command function has been removed because the servo system network has been changed to CC-Link IE TSN.

n: Axis No. -1

(4) Servo parameter area

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
Servo parameter (28401+100n to 28495+100n, 64400+70n to 64463+70n)	-	RD78G(S) does not support the servo parameter writing from the buffer memory. Set the parameters with the engineering tool.

n: Axis No. -1

(5) Synchronous control area

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
"[Pr.320] Synchronous encoder axis type" (34720+20j)	"[Pr.320] Synchronous encoder axis type" (34720+20j)	The setting value "1: Incremental synchronous encoder" has been removed.

j: Synchronous encoder axis No. -1

(6) Mark detection area

Buffer memory No.		Change/revision
RD77MS	RD78G(S)	
"[Pr.800] Mark detection signal setting" (54000+20k)	"[Pr.800] Mark detection signal setting" (54000+20k)	Set "[Pr.95] External command signal selection" together with this parameter. [Setting example] When [Pr.95] of axis 8 is set to "101: Axis 1 Dog signal" and [Pr.800] is set to "8: Axis 8 external command signal [DI]", the mark detection is executed using the DOG signal of the servo amplifier connecting axis 1.

k: Mark detection setting No. -1

(1) External input signals of Simple Motion modules
This section explains the replacement method for external input signals.

(a) DI signal assignment
The DI signal is not available in RD78G(S).
Therefore, assign DOG signals as shown in the table below.

Parameter (buffer memory)	Setting value	Description
[Pr.95] External command signal selection (69+150n)	0	An external command signal is not used.
	101: Dog signal of axis 1	The DOG signal of axis 1 is used as an external command signal.
	102: Dog signal of axis 2	The DOG signal of axis 2 is used as an external command signal.
	103: Dog signal of axis 3	The DOG signal of axis 3 is used as an external command signal.
	104: Dog signal of axis 4	The DOG signal of axis 4 is used as an external command signal.
	105: Dog signal of axis 5	The DOG signal of axis 5 is used as an external command signal.
	106: Dog signal of axis 6	The DOG signal of axis 6 is used as an external command signal.
	107: Dog signal of axis 7	The DOG signal of axis 7 is used as an external command signal.
	108: Dog signal of axis 8	The DOG signal of axis 8 is used as an external command signal.
	109: Dog signal of axis 9	The DOG signal of axis 9 is used as an external command signal.
	110: Dog signal of axis 10	The DOG signal of axis 10 is used as an external command signal.
	111: Dog signal of axis 11	The DOG signal of axis 11 is used as an external command signal.
	112: Dog signal of axis 12	The DOG signal of axis 12 is used as an external command signal.
	113: Dog signal of axis 13	The DOG signal of axis 13 is used as an external command signal.
	114: Dog signal of axis 14	The DOG signal of axis 14 is used as an external command signal.
	115: Dog signal of axis 15	The DOG signal of axis 15 is used as an external command signal.
	116: Dog signal of axis 16	The DOG signal of axis 16 is used as an external command signal.

(b) DI signal logic selection
For RD78G, the logic of the external command signal cannot be set with "[Pr.150] Input terminal logic selection". Therefore, set the logic of the external command signal as shown in the table below.

Parameter (buffer memory)	Setting value	Description
Bit 4 of "[Pr.22] Input signal logic selection" (31+150n)	0	Negative logic
	1	Positive logic

(c) DI filter setting
For RD78G, the filter cannot be set with "[Pr.153] External input signal digital filter setting".
Set the filter with Pr. PD11.0 (Input signal filter selection) of the connected servo amplifier.

3.3. External Dimensions/Mass/Installation

Item	RD77MS	RD78G
External dimensions		
External dimensions [mm]	106.0[H] × 27.8[W] × 110.0[D]	106.0[H] × 27.8[W] × 110.0[D]
Mass [kg]	0.22 (MS2), 0.23 (MS4/MS8/MS16)	0.26
Internal current consumption (5 VDC) [A]	1.00	1.93

Point

- RD78G is equipped with a module fixing screw on its case. Tighten the module fixing screw to fix the module on the base unit.
- Select the power supply module after estimating the system current consumption.
- RD78G has larger current consumption than RD77MS, and therefore the number of modules connected per power supply module is fewer.
- If the current capacity of the power supply module becomes insufficient as a result of migration, separate the system by using the extension base unit (R6_B).

4. PROJECT CREATION PROCEDURE

4.1. Project Conversion Procedure by an Engineering Environment

The following shows how to convert the existing project.

4.1.1. How to convert an existing project for the PLC CPU by MELSOFT GX Works3

1) Start MELSOFT GX Works3, and open the target project data.

2) Select and right-click RD77MS (the setting example: RD77MS4) in "Module Information" of the navigation tree. Select "Change Module" from the context menu to open the "Change Module" screen.
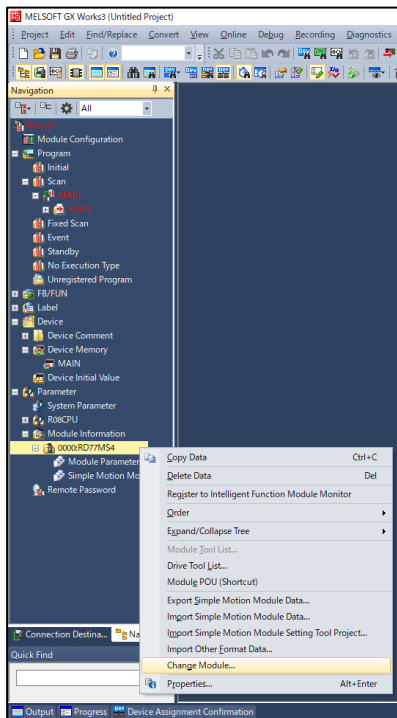
3) Select the Motion Module for "Module Type" and the Motion module model to be used (setting example: RD78G4(S)) for "Module Name" on the "Change Module" screen. Click "OK".
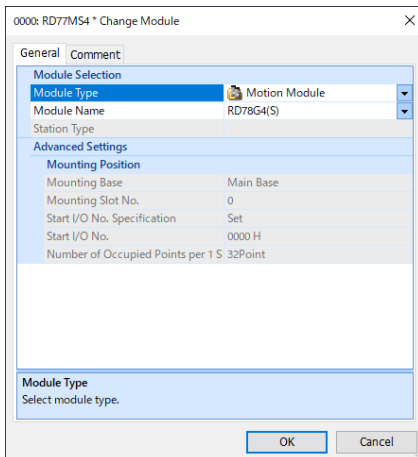
4) Read the precautions when changing the module, and click "OK".
   After changing the module, check the data on each screen.

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   ⚠ Change the module. Are you sure you want to continue?

   Parameters of selected module shown below are not
   imported.
   - Module Parameter
   - System Configuration Data
   - Servo Parameter

   Please check data in each window of module extended
   parameter after changing.
   Please refer to the Help for the simple motion module setting
   function for more details.

   [Yes] [No]

5) When the confirmation screen of the module label setting appears, click "OK".

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   ⓘ Add a module.
       [Module Name] RD78G4(S)
       [Start I/O No.] 0000

   Module Setting   [Setting Change]

   Module Label:Not use
   Sample Comment:Use

   ☐ Do Not Show this Dialog Again   [OK]
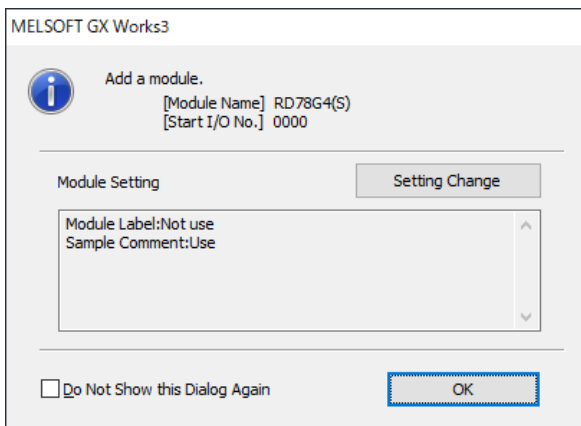
6) When the confirmation screen of changing the link direct device setting of a CPU parameter appears,
   click "Yes".

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   ⚠ For the control CPU to use CC-Link IE TSN module of host PLC,
   setting 'Extended Mode (iQ-R Series Mode)' is required for
   Link Direct Device Setting of CPU Parameter.
   Do you want to change the setting?

   [Yes] [No]
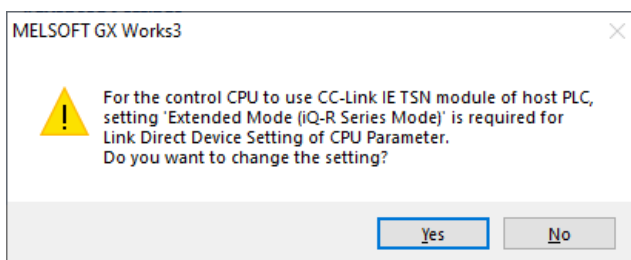
   The conversion of the project for the PLC CPU is completed.

4.1.2. How to convert an existing project for the PLC CPU by MELSOFT GX Works3

The settings of the servo amplifier system configuration and servo parameters are not automatically migrated. Set them manually.

1) Double-click "Module Parameter (Network)" of RD78G(S) to open the module parameters related to the network.
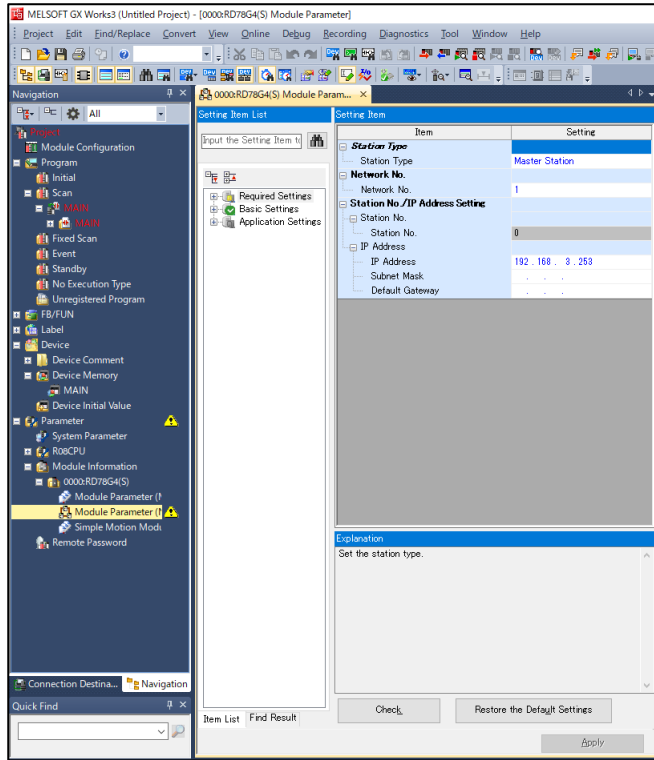
2) In RD78G(S), the operation cycle is set as the network communication cycle. Set the communication cycle according to your system in the Communication Period Interval Setting. Refer to 3.2 "Replacement of I/O Signals and Buffer Memory" for the setting values.
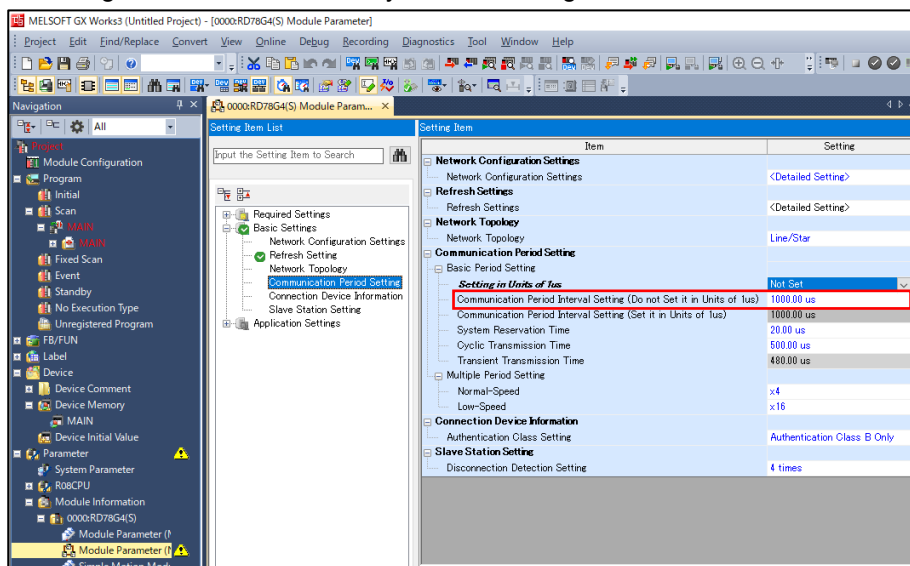
3) In the module parameter setting window, double-click "<Detailed Setting>" of "Network Configuration Settings" in "Basic Settings" to open the CC-Link IE TSN configuration.
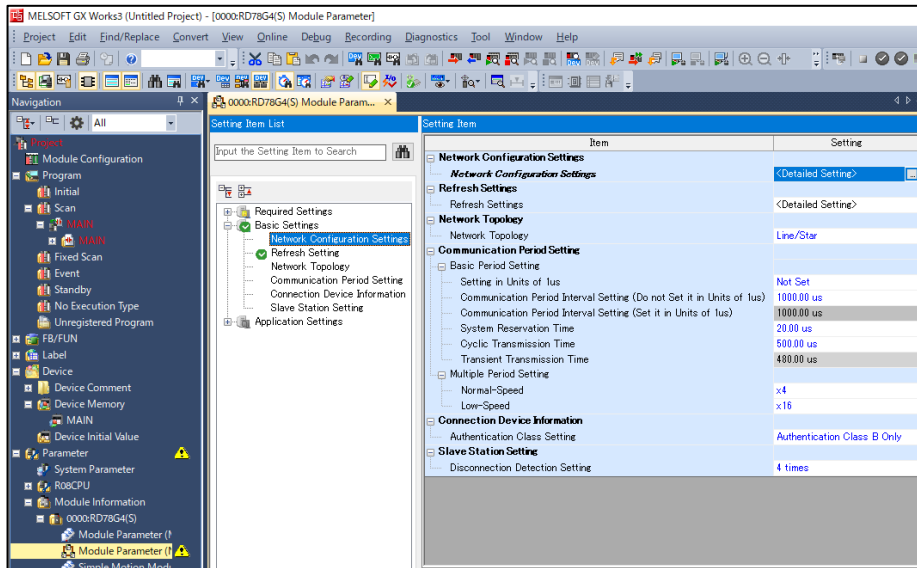
4) Set the servo amplifier to be used according to your system configuration, such as "MR-J5-G", from "General-Purpose AC Servo" in the CC-Link IE TSN configuration setting window.
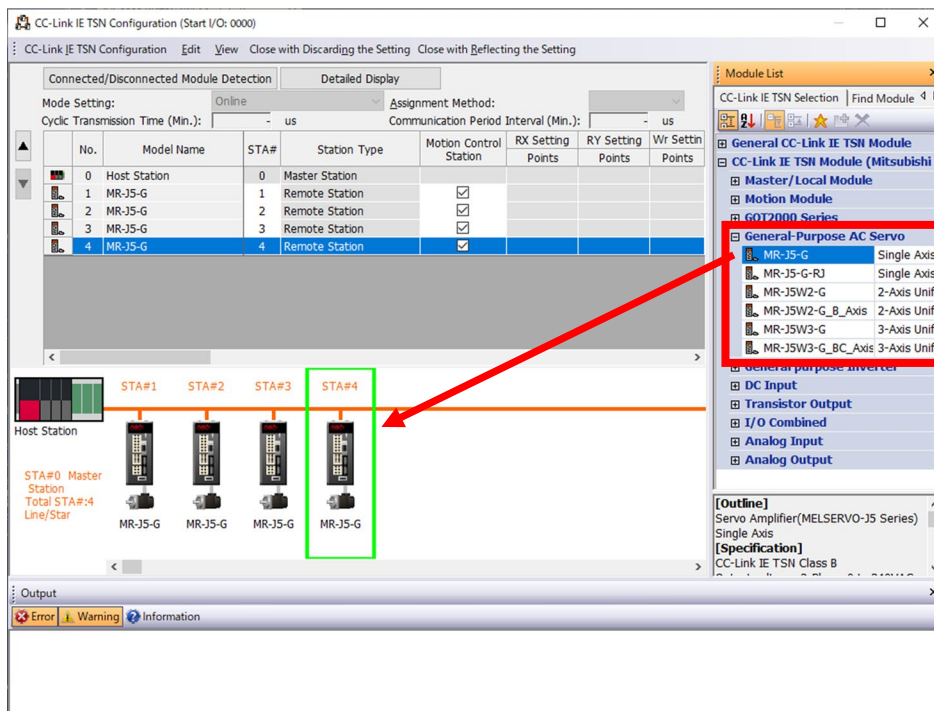
5) When managing the servo parameters by the PLC CPU/RD78G(S) and distributing the servo parameters to the servo amplifiers, check the box of "Parameter Automatic Setting".
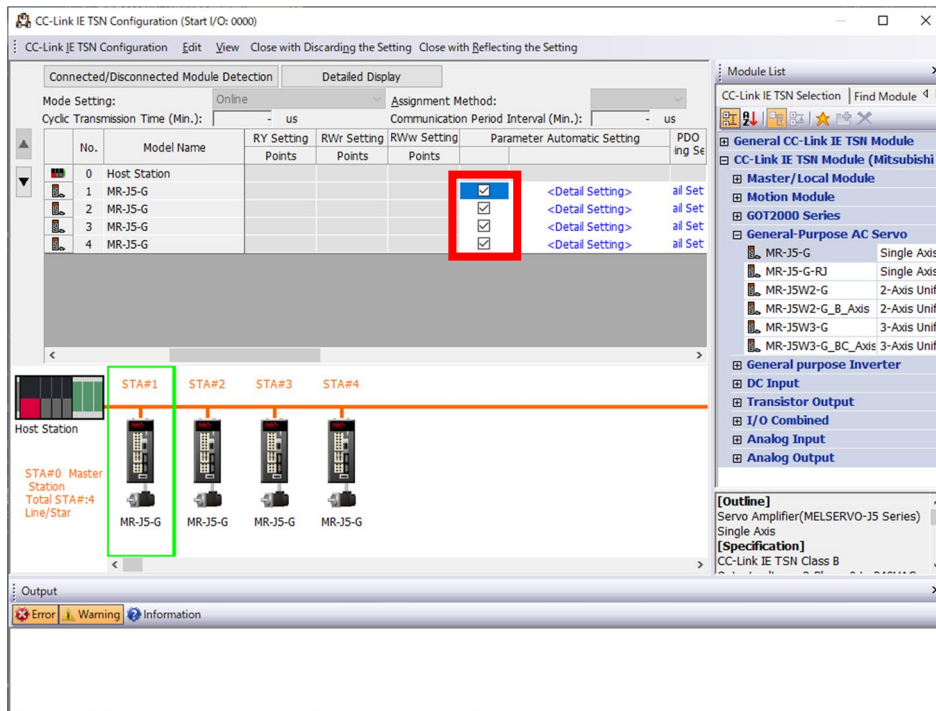
6) Double-click "<Detailed Setting>" of the "Parameter Automatic Setting" column. Check the station-specific mode is correctly set, and click "Yes".
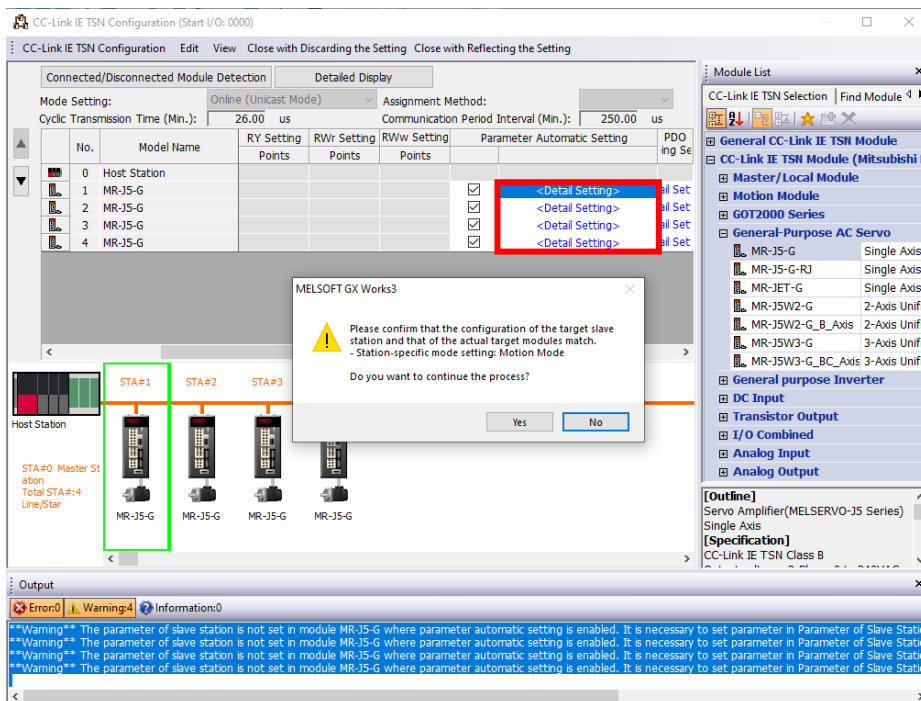
7) When the message regarding parameter settings of MR Configurator2 appears, click "OK".
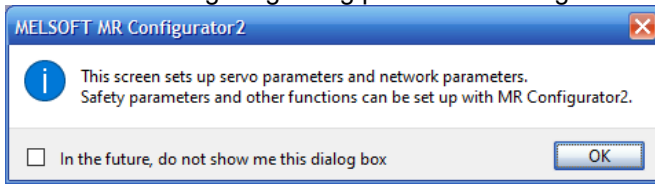
8) In the parameter setting window, set the servo parameters by referring to the setting values of the servo parameters of the RD77MS project.
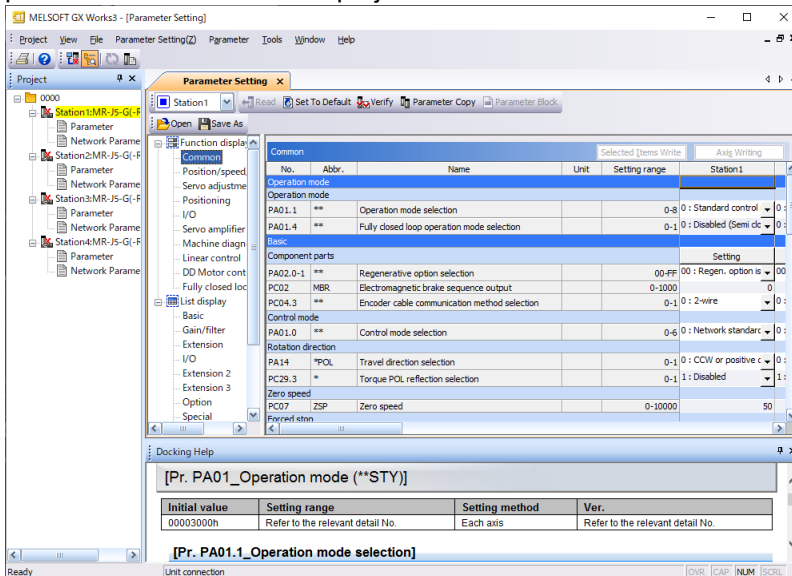
Point

You can refer to the parameters of an RD77MS project that have been changed from the default value. On the servo parameter setting screen, click "Verify" for each selected axis, and select "Default".
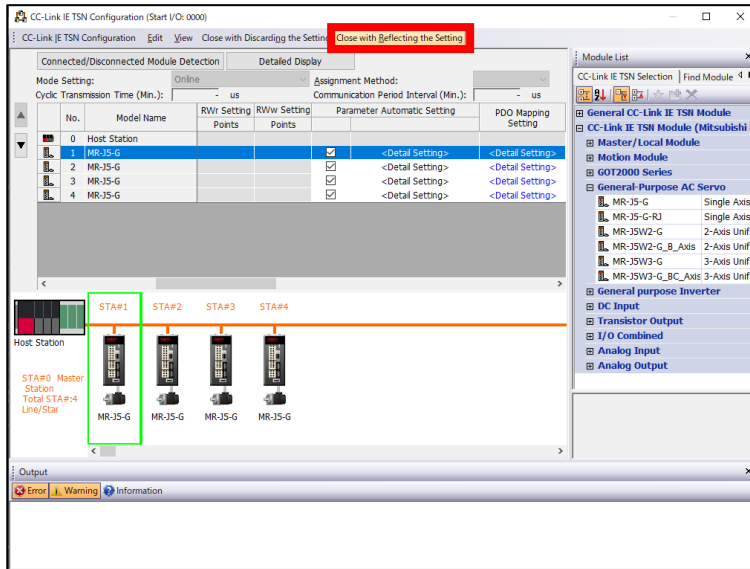
9) When the servo parameter setting is completed, close the "Parameter Setting" screen of the servo parameter.
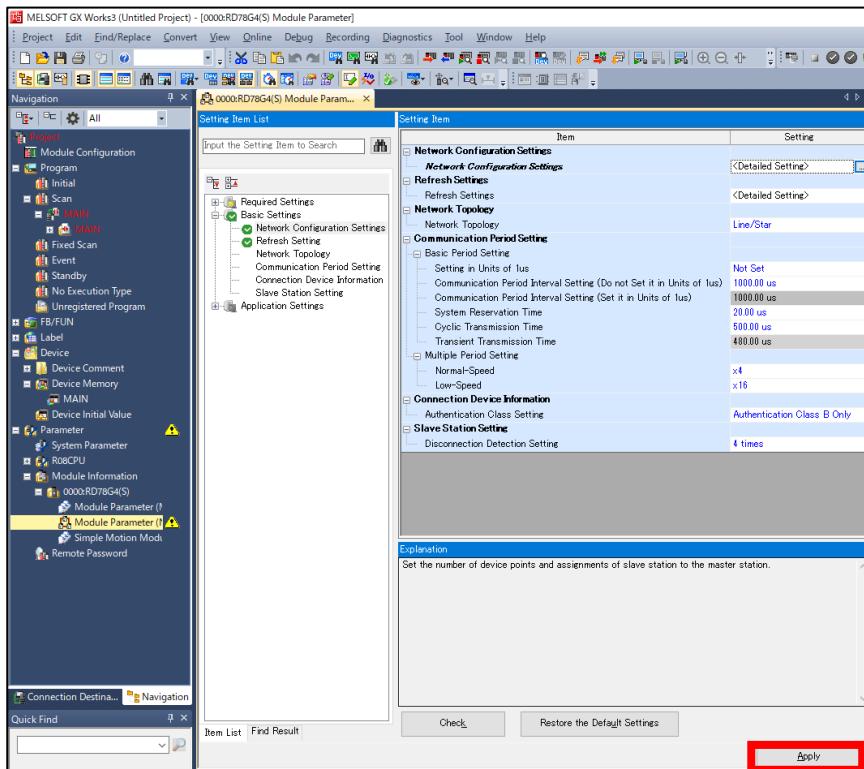
10) Read the displayed message, and click "Yes".
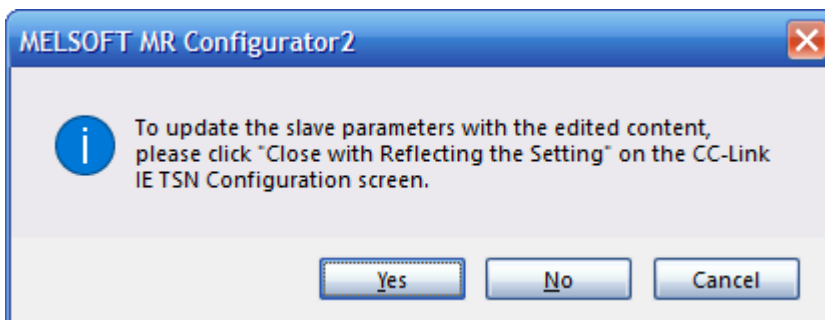
11) Click "Close with Reflecting the Setting" on the CC-Link IE TSN configuration screen. Read the displayed message, and click "Yes".

12) Click "Apply" on the module parameter setting screen.

Point

The following table shows the conversion details of a RD77MS project data.

Data name		Conversion status	Description
Item	Sub item		
System settings	System configuration	×	Refer to this section.
	Mark detection	○*1	
Parameters	Common parameter	○*1	
	Basic parameters1	○	
	Basic parameters2	○	
	Detailed parameters1	○*1	
	Detailed parameters2	○	
	Home position return basic parameters	△	RD78G(S) uses the driver home position return. Set the home position return method with servo parameters. Refer to this section.
	Home position return detailed parameters	△	
	Extended parameters	○	
Servo parameter data		×	
Positioning data		○*1	
Block start data		○*1	
Synchronous control data	Servo input axis	○	
	Synchronous encoder axis	○*1	
	Main input axis	○*1	
	Sub input axis	○*1	
	Composite main shaft gear	○	
	Main shaft gear	○	
	Main shaft clutch	○*1	
	Auxiliary shaft	○*1	
	Composite auxiliary shaft gear	○	
	Auxiliary shaft gear	○	
	Auxiliary shaft clutch	○*1	
Cam data		○	

○: Convertible, △: Partially convertible, ×: Not convertible

*1: Some items will be out of the range after conversion.

The conversion is completed.
Confirm that there is no problem in the converted project.

5. REVISIONS

Version	Revision date	Description
A	October 2021	First edition

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