

**Automating the World** 

FACTORY AUTOMATION

# MELSERVO-J5 Series CC-Link IE TSN Drive Safety Device Introduction Guide AC Servo System



### INTRODUCTION

This manual explains an example of the wiring for receiving safety signal data with the AC servo MELSERVO-J5, and the setting procedure using the engineering tools (GX Works3, MR Configurator2).

Please carefully read this manual and related materials before using the products, fully understand the functions and

performance of the programmable controller and servo amplifier, and use them correctly. For descriptions of the terms used in this manual, check "Terminology" listed in each manual.

When using the sample program introduced in this manual with an actual system, fully verify that there are no problems with control in that system.

### **PRODUCT APPLICATIONS**

Regarding the product applications, please check the contents of the product warranty below.

- MELSEC iQ-R CPU Module User's Manual (Application), manual No.: SH-081264ENG "CONDITIONS OF USE FOR THE PRODUCT")
- MR-J5 User's Manual (Hardware), manual No.: SH-030298ENG "Warranty"
- MELSEC iQ-R Motion Module User's Manual (Application), manual No.: IB-0300411ENG "Warranty"

### **RELEVANT MANUALS**

[O: Available, -: Not available]

Manual name	Available form	
<manual number=""></manual>	e-Manual	PDF
MELSEC iQ-R CPU Module User's Manual (Application) [SH-081264ENG]	0	0
MELSEC iQ-R Motion Module User's Manual (Application) [IB-0300411ENG]	0	0
MELSEC iQ-R Motion Module User's Manual (Network) [IB-0300426ENG]	0	0
MELSEC iQ-R CC-Link IE TSN User's Manual (Application) [SH-082129ENG]	0	0
MR-J5 User's Manual (Hardware) [SH-030298ENG]	0	0
MR-J5 User's Manual (Function) [SH-030300ENG]	0	0
MR-J5 User's Manual (Troubleshooting) [SH-030312ENG]	0	0
MR-J5-G/MR-J5W-G User's Manual (Parameters) [SH-030308ENG]	0	0
CC-Link IE TSN Remote I/O Module (With Safety Functions) User's Manual [SH-082227ENG]	0	0
GX Works3 Operating Manual [SH-081215ENG]	0	0
MELSEC iQ-R Safety Application Guide [SH-081538ENG]	0	0

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#### Safety sub-functions

The MR-J5 servo amplifier includes safety sub functions.

However the achievable safety sub functions and safety level vary depending on the combination of servo amplifier and servo motor. Refer to the table below.

#### Safety sub-function compatibility list (servo amplifier firmware version: B2)

Servo amplifier	Function delivery	Servo motor	Safety sub-functions (IEC/EN 61800-5-2)						
model	method (wiring	category	STO	SS1	S1			2 <sup>*3</sup>	SOS <sup>*3</sup>
	connectiony			SS1-t	SS1	-r <sup>*3</sup>	SS2 SS2	2-t, 2-r	
MR-J5-G MR-J5-A(-RJ)	DI/O connection (CN8)	Servo motor supporting functional safety Rotary type servo motor Linear servo motor Direct drive motor	Cat. 3 PL e, SIL 3	*8	-		_		_
MR-J5-G-RJ	DI/O connection <sup>*2*6</sup> (CN8)	Servo motor supporting functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SII	_3 Cat.	4 , SIL 3	Cat. PL €	. 4 e, SIL 3	Cat. 4 PL e, SIL 3
		Rotary type servo motor Linear servo motor Direct drive motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SII	_3 Cat. _3 PL c	3 , SIL 2	-		
	Network connection <sup>*1*5*7</sup> (CN1A/CN1B)	Servo motor supporting functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SII	Cat. . 3 PL e	4 , SIL 3	Cat. PL e	. 4 e, SIL 3	Cat. 4 PL e, SIL 3
		Rotary type servo motor Linear servo motor Direct drive motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SII	_3 Cat.	3 , SIL 2	-		_
MR-J5W2-G <sup>*4</sup> MR-J5W3-G <sup>*4</sup>	DI/O connection <sup>*2*6</sup> (CN8)	Servo motor supporting functional safety Rotary type servo motor Linear servo motor Direct drive motor	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SII	_3		_		_
Servo amplifier	Function delivery	Servo motor	Safety sul	o-functions	(IEC/EN 6	1800-5-2	2)		
model	method (wiring connection)	category	SBC	SLS <sup>*3</sup>	SSM <sup>*3</sup>	SDI <sup>*3</sup>		SLI <sup>*3</sup>	SLT
MR-J5-G MR-J5-A(-RJ)	DI/O connection (CN8)	Servo motor supporting functional safety Rotary type servo motor Linear servo motor Direct drive motor	_	_	_	_		_	_
MR-J5-G-RJ	DI/O connection <sup>*2*6</sup> (CN8)	Servo motor supporting functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL	Cat. 4 3 PL e, \$	SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2
		Rotary type servo motor Linear servo motor Direct drive motor	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL	Cat. 3 2 PL d, \$	SIL 2	_	Cat. 3 PL d, SIL 2
	Network connection <sup>*1*5*7</sup> (CN1A/CN1B)	Servo motor supporting functional safety	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL 3	Cat. 4 PL e, SIL	Cat. 4 3 PL e, 5	SIL 3	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2
		Rotary type servo motor Linear servo motor Direct drive motor	Cat. 4 PL e, SIL 3	Cat. 3 PL d, SIL 2	Cat. 3 PL d, SIL	Cat. 3 2 PL d, \$	SIL 2	—	Cat. 3 PL d, SIL 2
MR-J5W2-G <sup>*4</sup> MR-J5W3-G <sup>*4</sup>	DI/O connection <sup>*2*6</sup> (CN8)	Servo motor supporting functional safety Rotary type servo motor Linear servo motor	Cat. 4 PL e, SIL 3	_	_	_			_

\*1 Combine with a Safety CPU that has firmware version 20 or later.

\*2 The safety level indicated in the table is for a case when safety sub-function control is performed using a Safety CPU or safety controller that supports category 4 PL e, SIL 3. When directly connecting the emergency stop switch, safety switch, enable switch, or another switch to the servo amplifier, the safety level will be category 3 PL d, SIL 2.

\*3 A full-closed control system does not support SS1-r, SS2, SOS, SLS, SSM, SDI, or SLI.

\*4 The safety sub functions are supported by MR-J5W that were manufactured in or after November 2019. STO can be set for each axis.

\*5 Connect with a communications cycle of 125  $\mu s$  or longer.

\*6 With a DI/O connection (CN8), diagnosis using a test pulse is required in order to satisfy category 4 PL e, SIL 3.

\*7 Safety sub functions using a network can only be used with MR-J5-G-RJ.

\*8 The combination of MR-J3-D05 and the servo amplifier supports SS1-t.

#### Safety sub-functions conforming to IEC/EN 61800-5-2

The MR-J5-G-RJ supports the STO, SS1, SS2, SOS, SBC, SLS, SSM, SDI, SLI, and SLT safety sub-functions.

In this manual, SLS, SS1, and SDI are used.





### **Safety Communication Characteristics**

The [Safety sub-function] which is a feature of the servo amplifier can use safety communication to perform control. Depending on the combination of the Safety CPU set and Motion module, it may be possible for the servo amplifier to receive safety signal data from the Safety CPU via the CC-Link IE TSN that is connected to the Motion module.



Point P

Because it is possible to integrate general communication and safety communication using a single CC-Link IE TSN, it is possible to use both general remote I/O modules and safety remote I/O modules together.



### **System Configuration**

This manual explains the following example of system configuration.



\*1 In the case of a single phase 200 to 240 V AC power supply, the power supply is connected to L1 and L3, and nothing should be connected to L2.

No.	Device name	Model
(1)	Main base unit	R33B
(2)	Power supply module	R61P
(3)	Safety CPU set <sup>*2</sup>	R16SFCPU-SET
(4)	Motion module	RD78G4
(5)	Servo amplifier	MR-J5-10G-RJ
(6)	Safety remote I/O module	NZ2GNSS2-16DTE
(7)	Motor cable (2 m)	MR-AEP2CBL2M-A1-H
(8)	Servo motor	HK-KT053WWS

\*2 Set consisting of R16SFCPU Safety CPU and R6SFM safety function module

### GX Works3 (model: SW1DND-GXW3-E)

GX Works3 is an engineering tool that is used for configuring settings, programming, debugging, and maintenance of a programmable controller such as the MELSEQ iQ-R series or MELSEC iQ-F series.

Connect the PC and Safety CPU with a USB cable, and set the motion and servo amplifier parameters (except the safety parameters).



\*1 For other cables where operation has been verified, refer to the following.

#### MR Configurator2 (model: SW1DNC-MRC2-E)

MR Configurator2 is software that supports all phases from servo amplifier start-up to maintenance.

It can be used to change parameters, display graphs, perform program operation using a simplified language, perform test operation, and other tasks.

Connect the PC and servo amplifier with a USB cable, and set the servo amplifier safety parameters.



#### Motion Setting Tool (model: SW1DNN-MUCNF-E)

Motion Setting Tool is software that performs setting and monitoring of the Motion module in combination with GX Works3.

#### Motion Setting Tool download procedure

MITSUBISHI ELECTRIC FA Global Website top page

https://www.mitsubishielectric.com/fa/

 $\mathsf{Download} \to \mathsf{Software}$ 

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Servo & Motion Controllers  $\rightarrow$  Motion Setting Tool (GX Works3 is Required)

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Servo & Motion Controllers



MR Configurator2

- MR Configuration Setup 161E (J2S)
- MSIZE Servo Sizing
- Motorizer Servo Sizing (NEW 06/2023)
   PNMOT11 3rd Party Motor Tool

## **Setting Flow**

Follo	ow the procedure below and configure the safety communication settings before start-up.
啮	Page 14 Registering a Profile
무노	Page 19 Creating a Project
43	(Page 19 Creating a New Project, Page 21 Programmable Controller Initialization, Page 23 Registering User
	Information, Page 24 Module Configuration)
啮	Page 28 Parameter Settings (Servo amplifier, safety remote I/O module)
啮	Page 39 Safety Communication Settings
啮	Page 47 Extended Parameter Settings (Servo amplifier, safety remote I/O module)
啮	Page 59 Safety Function Cancel Program
啮	Page 60 Program Writing
-11	Page 64 Safety Parameter Settings Using MR Configurator2 (Servo amplifier)
-11	Page 69 Writing the safety parameter settings
啮	Page 71 Enabling the Safety Settings (Safety Remote I/O Module)
啮	: GX Works3 🛛 💷 : MR Configurator2

# **1** Preparation

## **1.1** Devices to Prepare

#### Prepare the following devices.

Safety CPU set		Power supply module (1)	Main base unit (1)
Safety CPU (1)	Safety function module (1)		
R16SFCPU Firmware version 21 or later	R6SFM	R61P	R33B
Motion module (1)	Safety remote I/O module (1)	Servo amplifier (1)	Servo motor (1)
RD78G4 baseSystem: Ver. 1.8 or later NetworkDriver_CCIETSN: Ver. 1.7 or later	NZ2GNSS2-16DTE	MR-J5-10G-RJ	HK-KT053WWS
Motor cable (1)	Ethernet cables (2)	Power supply (24 V)	Emergency stop switch (1)
MR-AEP2CBL2M-A1-H (2 m)	Prepare a category 5e or above (double-shielded, STP) straight cable that satisfies one of the standards below. • IEEE802.3 (1000BASE-T) • ANSI/TIA/EIA-568-B (Category 5e)	Prepare a power supply with input 100 to 200 V AC, output 24 V DC, and capacity 1 A or more.	Prepare normally closed twin contacts.

Switches (4)	PC (1)	USB cables for PC connection (iQ-R CPU module ⇔ PC) (Servo amplifier ⇔ PC)
Prepare a momentary type with normally open single contact.	GX Works3: Supports RD78G safety communication function with Ver.1.065T (Motion Control Setting). MR Configurator2: Supports MR-J5-G safety functions with Ver.1.110Q.	When connecting iQ-R CPU module ⇔ PC USB cable confirmed to operate correctly • MR-J3USBCBL3M (Mitsubishi Electric Corporation) • GT09-C30USB-5P (Mitsubishi Electric System & Service Co., Ltd.) When connecting servo amplifier ⇔ PC USB cable confirmed to operate correctly • MR-J3USBCBL3M (Mitsubishi Electric Corporation)

1

# **1.2** Registering a Profile

The "Safety remote I/O module" and "Servo amplifier" profiles are used with GX Works3 [CC-Link IE TSN Configuration Settings].

Please consult your local Mitsubishi Electric representative.

#### Operating procedure

This explains how to register a profile using GX Works3. Before registering a profile, close all other projects.

1. From [Tool] on the menu bar, select [Profile Management] ⇒ [Register].



2. Select the profile to register and click [Register].



3. Click [OK].



## 1.3 Wiring

This explains an example of the wiring.

#### **CC-Link IE TSN wiring**

The CC-Link IE TSN wiring is as shown below.

The master station is the Motion module (STA#0) and the device modules are the servo amplifier (STA#1) and safety remote I/O module (STA#2).

The safety remote I/O module (NZ2GNSS2-16DTE) includes connectors P1 and P2. Although both connectors can be used, this manual explains the connection to P1.

In this manual, the modules are connected in a line type. They can be connected without using a TSN HUB.



\*1 In the case of a single phase 200 to 240 V AC power supply, the power supply is connected to L1 and L3, and nothing should be connected to L2.

Refer to the following for an example of connecting the power supply circuit when using DC input.

#### Safety remote I/O module wiring

The safety remote I/O module includes "I/O terminal block" and "Unit power supply/FG terminal block" connectors, and the specifications of the cables used are different. The processing of the cable ends is the same in all cases.



Refer to the following for wiring details.

CC-Link IE TSN Remote I/O Module (With Safety Functions) User's Manual

#### Precautions for servo amplifier wiring

When connecting wiring to the servo amplifier, supply power correctly to the locations shown below. Refer to the following for cable standards, cable sizes, and details of the wiring method.

MR-J5 User's Manual (Hardware)



(1) L1, L2, L3 (main circuit power supply): Connect the input power supply (3-phase 200 to 240 V AC).
(2) L11, L21 (control circuit power supply): Connect the control circuit power supply and regenerative option.
(3) U, V, W (servo motor power supply output): Connect the servo motor.

# **2** Creating a Project

### 2.1 Creating a New Project

Create a GX Works3 project.

#### Operating procedure

- **1.** Create a project.
- ‴◯ [Project] ⇔ [New]

New		×
Series	📲 RCPU	~
Туре	11 R 16SF	$\sim$
Mode		~
Program Language	ы Ladder	$\sim$
	OK Cancel	
Itom		

Item	Setting
Series	RCPU
Туре	R16SF
Program Language	Ladder

#### 2. The window shown below appears. Click [OK].



**3.** Enter the desired [User Name], [Password], and [Re-enter Password], then click [OK]. In this manual, "melsec" is used for both [User Name] and [Password].

User Name:	melsec
Access vel:	Administrators $$
•	Grant full access to all functions.
Password:	•••••
Re-enter Password:	•••••
Passwo Strength:	8 9 Ø
Passwo Strength: Please er r the passw lphabet -Z, a-z, sin Password are case-se	Image: System of the syste
Passwo Strength: Vease er r the passw alphabet -2, a-2, sin assword are case-se	Image: System of the syste
Passwo Strength: Vease er the passw uphabeth -2, e-2, sin assword are case-se Add 3UEST User GUE: user is a us wind when read	ord with 6 to 32 single-byte characters, numeric characters, give-byte space and 1°#\$%s{()*+,-,/:;<=>?@[¥]^_`{}}. nsitive. er who is able to skip entering password at User Authentication ing/editing only a standard program.

- Enter a password that is six 1-byte characters or more.Because the user name and password are used for subsequent settings, make a note of them so that you
  - do not forget them.

4. The [Save as] window appears. Enter the desired file name and click [Save].

Here, we enter "Sample."

Save in	Sample		- G 🖉 🔛 🗔 🗸			
Culdk access	Name	~	Date modified No items match your search	Туре	Size	
Lbrains						
This PC						
	File name:	Sample		v	Save	
	Files of type:	GX Works3 Project (*.	gx3)	×	Cancel	-
	Title(A):					
Other Format:						

5. If the window shown below appears, click [OK].

MELSOFT GX Works3	
Add a module. [Module Name] R16SFCPU [Start I/O No.] 3E00	
Module Setting	Setting Change
Module Label:Not use Sample Comment:Use	^
	~
Do Not Show this Dialog Again	ОК

### 2.2 Programmable Controller Initialization

Initialize all programmable controller information. The operations and settings hereafter described must be performed with the PC and CPU module connected.





USB cable

### Point P

- · Stop the CPU module.
- · Connect the CPU module and PC using the USB cable.
- · Set the GX Works3 connection destination setting to USB.

#### Operating procedure

**1.** Perform initialization.

(Online) ⇒ [User Authentication] ⇒ [Initialize all PLC Data]



#### 2. A confirmation window appears. Click [Yes].



### 3. A second confirmation window appears. Click [Yes].



### 4. Click [OK].



# 2.3 Registering User Information

The user information which is registered in a project is written to the CPU module.

#### Operating procedure

- **1.** Perform writing of user information to the programmable controller.
- [Online] ⇒ [User Authentication] ⇒ [Write User Information to PLC]



#### 2. A confirmation window appears. Click [Yes].



#### **3.** Click [OK].



# 2.4 Module Configuration

The module configuration is defined according to the system configuration which is actually used. For details of the system configuration, refer to " Page 8 System Configuration."

#### Operating procedure

- **1.** Display the module configuration.
- ★ Navigation window ⇒ Double-click [Module Configuration]



2. If the window shown below appears, click [OK].



3. From the [Element Selection] window, drag & drop the following modules into the module configuration.



	-
Category	Model
Safety CPU	R16SFCPU <sup>*1</sup>
CPU Extension	R6SFM
Power Supply	R61P
Main base	R33B
Motion Module	RD78G4

\*1 This is the CPU module that was selected at the time the new project was created, and is displayed from the beginning in the module configuration.

Point P

Perform the operation below to change the display in the [Element Selection] window. [View] ⇔ [Docking Window] ⇔ [Element Selection]

#### 4. Place the modules as shown below.



Point P

Perform the operation below to change the module name display. [Edit] ⇔ [Display Module Information]

**5.** Check the module configuration.

#### 6. Click [OK].



7. Confirm the module configuration.

C Right-click in the module configuration ⇔ [Parameter] ⇔ [Fix]

8. A confirmation window appears. Click [Yes].



9. The following window appears. Click [Yes].



#### 10. If the window shown below appears, click [OK].

MELSOFT GX Works3	
Add a module. [Module Name] R6SFM [Start I/O No.] 0000	
Module Setting	Setting Change
Module Label:Not use Sample Comment:Use	^
	~
Do Not Show this Dialog Again	ОК

**11.** If the window shown below appears, click [OK].

MELSOFT	GX Works3		
i	Add a module. [Module Name] RD78G4 [Start I/O No.] 0010		
Mod	ule Setting	Setting Char	nge
Sar	nple Comment:Use		^
			~
Dol	Not Show this Dialog Again	ОК	

## 2.5 Parameter Settings

### **Network configuration settings**

Set the network configuration of the Motion module (RD78G4).

#### Precautions

The settings introduced in this section are an example. When using with an actual system, give sufficient consideration to ensure that there are no problems with control in that system.

For details of the parameters, refer to the following manuals.

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

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

MR-J5-G/MR-J5W-G User's Manual (Parameters)

#### Operating procedure

**1.** Display the module parameters.

🥎 Navigation window ⇔ [Parameter] ⇔ [Module Information] ⇔ [RD78G4] ⇔ Double-click [Module Parameter (Network)]



- **2.** Set the communication period interval.
- [Basic Settings] ⇒ [Communication Period Setting] ⇒ [Communication Period Interval Setting (Do not Set it in Units of 1µs)]

0010:RD78G4 Module Parameter			×
Setting Item List	Setting Item		
Turput the Setting Item to Search	Item	Setting	^
	Communication Period Setting		
	Basic Period Setting		
	Setting in Units of Tus	Not Set	-11
	Communication Period Interval Setting (Set it in Units of Tus/	1000.00 US	<u>~</u>
🖻 🚮 Basic Settings	System Reservation Time	20.00 us	
Retwork Configuration Settings	Cyclic Transmission Time	500.00 us	
Network Topology	Transient Transmission Time	480.00 us	~
Communication Period Setting	Explanation		
Connection Device prormation Device Station Setting Safety Communication Setting (B-) Application Settings	Set the fixed scan interval for communication cycle. To execute inter-module synchronization through Network Synchronous Comm the same communication period interval with the ones of 'Fixed Scan Interval Synchronization' ([System Parameter] -> [Inter-module Synchronization Settin Synchronization Setting]).	unication Setting, please set Setting of Inter-module g] tab -> [Inter-module	
Item List Find Result	Check Restore the Default Settings		
		Apply	

Item	Setting
$\left[ \text{Communication Period Interval Setting} \left( \text{Do not Set it in Units of } 1\mu\text{s} \right) \right]^{*1}$	1000.00 μs (default)

- \*1 Refer to the following for details of the communication period setting.
- **3.** Display the network configuration settings.

(Network Configuration Settings) ⇒ Double-click [Detailed Setting]

0010:RD78G4 Module Parameter			x
Setting Item List	Setting Item		
Input the Setting Item to Search	Item Network Configuration Settings Network Configuration Settings Refresh Settings Network Topology Communication Period Setting Construction Period Setting	Setting <detailed settine=""></detailed>	^
Retresh Setting 	Device Station Setting     Safety Communication Setting		¥
Communication Feriod Setting Connection Device Information Device Station Setting Safety Communication Setting Application Settings	Explanation Set parameters of device stations (the number of points and assignment of lin station.	nk devices) in the master	^
Item List Find Result	Check Restore the Default Settings		~
		Apply	

#### 4. From the [Module List], select the following modules and drag & drop them into the configuration.

	Cont	ected/C	Naconnected Ho	dule De	tection	Detailed Displ	ey .								Module List		
Mo	de Set dic Tra	ing: nemiesio	n Time (Min.):	Online	0.00 vs		Assignment Communicar	Method: ton Period In	terval (Min.):	125.00	10				CC-Link IE TSN Selection   Find Modu	ule   My Favorites	
	8	o, 1	Model Name	STAR	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	Rilly Setting Points	RWW Setting Points	Parame	eter Automatic Setting	PDO Mapping Setting	IP Address	E I/O Combined N2204S12A2-14DT	14 points	
-		0 H08 1 MR 2 NZ	It Station -35-G-A3 204552-140TE	0 1 2	Master Station Remote Station Remote Station	Ø		36	24	20	8	<detail setting=""> <detail setting=""></detail></detail>	<detail setting=""></detail>	192, 168, 3, 253 192, 169, 3, 1 192, 169, 3, 2	w. N220N12A42-16DT     w. N220N12A42-16DT     w. N220N12A42-16DTE     w. N220N512A2-16DTE     w. N220N512A2-16DTE     w. N220N512A2-16DTE	16 points 16 points 16 points 16 points	
			STARI	STA#2											DC safety input/transistor safety of terminal block type)	sut combined module (sprin	e cl
Stat			STAF1	STA#2										_	DC safety input/transistor safety of terminal block type) [Specification] CC-Lirk E TSN Class B/A input: DC safety input, negative co	ait combined module (sprin on type, 24VDC, 8 points on type, 24VDC, 054/1 poi	e cl

oategory	
General Purpose AC Servo	MR-J5-G-RJ
I/O Combined	NZ2GNSS2-16DTE

Point P

- Perform the following operation to change the display in the [Module List] window.
- [View] ⇒ [Docking Window] ⇒ [Module List]
- If a module is not displayed, profile registration is necessary. For details, refer to "SP Page 14 Registering a Profile."

#### **5.** The modules are as shown below.

2	-Link E	TSN Configuration (	Start I/C	0: 0010)																		– 🗆 ×
cc	Link IE T	SN Configuration	Edit	View Close with	Discarding the	Setting Close	e with Refle	cting the Sett	ing													
	Con	nected/Disconnected P	ledule Di	etection	Detailed Disp	lay																
	lode Set	ting: comission Time (Min. ):	Online	(Unicast Mode)	P	Assignment I	Nethod: nn Period Int	etval (Min ):	125.00	18												
*	1	io. Model Name	STAR	Station Type	Motion Control Station	RX Setting Points	RY Setting Points	RWr Setting Points	RWw Setting Points	Param	eter Automatic Setting	PDO Mapping Setting	IP Address	Subnet Mask	Default Gateway	Reserved/Error Invalid Station	Network Synchronous Communication	Communication Period Setting	Alas	Sto	ton Information Station-specific mode setting	Authentication Class
v.	-	0 Host Station	0	Master Station	1								192.168.3.253	1	1				17.000			
	L. 94	1 HR-J5-G-RJ 2 N23GN553-36DTI	1 2	Remote Station Remote Station		56	16	24 4	20		<detail setting=""> <detail setting=""></detail></detail>	<detail setting=""></detail>	192.168.3.1 192.168.3.2			No Setting No Setting	Asynchronious Asynchronious	Basic Period Basic Period			Moton Mode (Safety)	Authentication Class B Authentication Class B
		STAR1	STARS	ř.																		
Host :	ation	-	Т																			
			a series																			
ato	STAP:2																					
Line	Sta	NR-JS-G-RJ	122GN55 160TE	2.																		
		e	200410																			

Item	Setting	Setting						
	MR-J5-G-RJ	NZ2GNSS2-16DTE						
STA#	1	2						
Motion Control Station	Checked	Checked						
RX Setting	—	16						
RY Setting	—	16						
RWr Setting	24	4						
RWw Setting	20	4						
Parameter Automatic Setting <sup>*1</sup>	Checked	Checked						
Station-specific mode setting	Motion Mode (Safety)	—						

\*1 When the [Parameter Automatic Setting] checkbox is checked, the parameters set in the detailed settings are automatically transferred to the target unit when the CPU module power is turned OFF to ON.

#### 6. Set PDO mapping.

#### (CC-Link IE TSN Configuration) ⇒ [Batch Setting of PDO Mapping]



#### 7. Click [Yes].



#### 8. Click [OK].



### Servo Amplifier

Set the other servo parameters.

#### Operating procedure

1. Configure the settings in the [CC-Link IE TSN Configuration] window.

[MR-J5-G-RJ] ⇔ [Parameter Automatic Setting] ⇔ Double-click [<Detail Setting>]

Conn	ected/Disconnecter	Medule Da	etection	Detailed Disp	ay	_															
lode Sett	ngi	Online	(Unicast Mode)		Assignment	Method:															
yele Tra	omission Time (Min		20.00 us		Communicat	ion Period Int	terval (Min.):	125.00	us												
	Model Stars	STAR	Challen Tuna	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Para	meter Automatic Setting	PDO Mapping	1D Address	Subnet	Default	Reserved/Error	Network Synchronous	Communication		Sta	ition Information	Authorsteanse (
	n. Prover regite	JUNE	ana	Station	Points	Points	Points	Points			Setting	51 HOUSE 555	Mark	Gateway	Invalid Station	Communication	Period Setting	Alas	Comment	Station-specific mode setting	Plant Her roce worth
	Host Station	0	Master Station						-	-		192.168.3.253									
h.,	MR-JS-G-RJ	1	Remote Station			1	24	20	M	<detail setting=""></detail>	<detail setting=""></detail>	192, 168, 3, 1			No Setting	Asynchronous	Basic Period			Moton Mode (Safety)	Authentication C
	STARL	STARS																			
ation	STAFI	STARS																			
ation	STAFI	STAVE							_												
ation	STARI	STAFE				_												_			
aton	STAFI	STARS							_									_			

#### 2. The following window appears. Click [Yes].



**3.** If the window shown below appears, click [OK].



4. MR Configurator2 starts. Set the parameters according to the system control.

MILSOFT GX Works3 - (Parameter Set	ting]						- 0	×
Project View File Parameter Setting	(2) Parameter Tools Window Help							- 8 ×
ALC BELOE								
Project	X Parameter Setting X							43.4
gi 🛅 0010	Station1 + + hand # Set To D	efault	erfy Di	wanness Carlo R Parameter Mick.				
In Parameter	Con Plave As Phone Plante	Merclash -	Atting.					
and the second s	I I Function display (List)	-			-			-
1 10 10 10 10 10 10 10 10 10 10 10 10 10	Common	Commen	A PARTY OF		Sale	had Direct With a	Asia Writing	
	Absolute position detection system	No.	Abbr.	Tiane /	Unt	Setting range	Station1	-
	Position/speed/torque control	Concession	node.					
	Servó adjustments	2401.1		President mode selection		1.04	0 : Standard control mode	
	Positioning	and a	1	B.B. does here an an in the set of the set			D - Dashiel (Seni dosel control mode)	
	10	CAULO	0.222	Fuel other way operation mode selection				-
	Machine diagnosis	Conpone	rtperts		Setting			
	- Linear control	PA02.0-1	-	Recenerative option selection		00-89	00 : Regen, option to not used	
	DD Motor control	PC02	MER	Electromagnetic brake sequence output		0-1000	a second s	-
	Fully closed loop control	PC04.2		Encoder cable communication method selection		84	0:2-018	
	Application function	Protector	coordinat	on setting				
	😑 🌉 List display	PC46.1	+	Converter stop mode selection		(0-)	0 : Shut off converter main circuit MC at converter stop alarm accurrence	
	Beek	PC46-2		Protection coordination - Multiple connections selection		0-1	0 : Connect converter unit and MR-35D_40 one-to-one	- <b>F</b>
	Gain/filter	PC46.3	+	Protection coordination - Final end setting		0-1	0 : End setting disabled	
	Extension	Networks	wotocol se	The second s			and the second	1000
	10	PN13.0-3	**	Network protocol setting		0000-0004	0000 : CC-LHk IE TSN	
	Extension 2	Control m	ode					
	Ontion	PA01.0		Cantrol mode selection		04	0 : Network standard mode	
	Special	Rotation	frection /					
	Motor extension	PA14	1901	Travel direction selection		0-1	0 : COW or positive dr. during fiel, ple, input, OW or negative dr. during rev. ple, input	
	Multiencoder	PC29.3	•	Torque POL reflection selection		0-1	L : Doubled	1
	Positioning control	PT55.1		Honing POL reflection selection			0 : Doubled	
	Network	Zero spee	d)					
	Positioning extension	PC07	252	Zero speed		0-10000		\$0
		Perced st		Renne Round also aslender			0 : Enabled (Jac forced also into # 1941 or 1947)	
		Real Property lies	-	den Election				1
Ready	- 37			Unit connection			TOW YOAP MAN	

**5.** In this manual, because servo forced stop input EM2 and EM1 are not used, the following is set.

~ ~			/·····	
C	[Function	display	(List)] ⇔	[Common]

Parameter Setting ×							4 4 4		
Station 1 🖌 🚽 Read 🖉 Set To De	fault 🗛 ve	enfy (1) P	cameter Copy, 🖳 Pacameter Mick						
Phonen FillSave As									
Function display (List)	Common			Selec	ted Demy Write	Aos Writing			
n system	No.	Abbr.	Name	Unit	Setting range	Station1	1		
Position/speed/torque control									
<ul> <li>Servo adjustments</li> </ul>	Componer	nt parts				Setting	-		
- Positioning	PA02.0-1		Regenerative option selection		00-FF	00 : Regen. option is not used	-		
- 1/0	PC02	MBR	Bectromagnetic brake sequence output Encoder cable communication method selection		0-1000		Ø		
<ul> <li>Servo amplifier diagnosis</li> </ul>	PC04.3				0-1	0:2-wre			
Machine diagnosis	Protector	1 coordinate	n setting						
- Linear control	PC46.1		Converter stop mode selection		0-1	0 : Shut off converter main circuit MC at converter stop alarm occurrence			
DD Motor control	PC46.2	-	Protection coordination + Multiple connections selection		0-1	0 : Connect converter unit and MR-JSD0 one-to-one	-		
- Fully closed loop control	PC46.3		Protection coordination - Final end setting		0-1	0 : End setting disabled			
Application function	Network protocal setting								
Eist display	PN13.0-3		Network protocol setting		0000-0004	0000 : CC-Link IE TSN			
- Basic	Control m	ode			-				
Gain/filter	PA01.0	-	Control mode selection		0.6	0 : Network standard mode			
Extension	Rotation of	drection							
0	PA14	"POL	Travel direction selection		0-1	0 : CCW or positive dr. during find, pls. input, CW or negative dr. during rev. pls. input			
Extension 2	PC29.3		Tordue POL reflection selection		0-1	1: Disabled	-		
Extension a	DTEE 1		Homing DOL reflection relection		0.1	0 : Disabled	-		
Search	7010 5000	-	noning For reneration selection		0.1		-		
Motor extension	0002	200	Tara mand		0.10000		60		
Multi exceder	Forced sto	op		1	(C)		1000		
Poritioning control	PA04.2		Servo forced stop selection		0-1	1 : Disabled (The forced stop input EM1 and EM2 are not used)	-		
Network	No ceo pa	op oecenera	SULT THE RESULT		10 0000				
Positioning extension	PA04.3		Forced stop deceleration function selection		0-2	2 : Forced stop decel, function is enabled (Use EM2)	٠		
and the second se	PC24	RSBR	Deceleration time constant at forced stop		0+20000		100		
	Vertical as	via freefall p	revention						
	PC02	MER	Bectromagnetic brake sequence output		0-1000		0		

No.	Abbr.	Name	Setting
PA04.2	*	Servo forced stop selection	1: Disabled (The forced stop input EM1 and EM2 are not used)

#### Precautions

When directly wiring forced stop to the servo amplifier, set PA04.2 to [0: Enabled].

**6.** In this manual, because external input signals are not used for forward stroke end (LSP) and reverse stroke end (LSN), the following is set.

[Function display (List)] ⇒ [I/O]

Parameter Setting X						4 Þ -
Station 1 + Read Set To De	fault 🙀 Verify 🕅 P	warieter Cesty, C. Parameter Block				
POpen Save As						
E Function display (List)			-			
Common	1/0		Select	ed Sterris Wirtle	Ave Writing	
Absolute position detection system	No. Abbr.	Name Name	Unit	Setting range	Station 1	
Position/speed/torque control	Digital 1/0	and the set of the set	100 200 201	1 - 10 MARCH 10 MARCH	1 E E E E E E E E E E E E E E E E E E E	
Servici adjustments	Device setting				Setting	
Desarraina	PD03.0-1 *	Device selection DI1		90-F	F	0
1775	PD04.0-1 *	Device selection DI2		00-P		0
	PD05.0-1 *	Device selection DI3		00-F		2
Machine Canancia	PD51.0-1 *	Device selection DI3-2		00-7		6
macrime diagnosis	PD38.0-1 *	Device selection DI4		90.4	7	2
Linear control	PD39.0-1 *	Device selection DIS		90-F		2
DD Motor control	PD07.0-1 *	Device selection DO1		00-#		0
Fully closed loop control	PD08.0-1 *	Device selection DO2		00-F		0
Application function	h004/0-1	Device selection DOJ		004	A CONTRACT	
E III List display	Decore exclosionent				Cathon	
Basic	PD01.0-7 "DIA1	Input signal automatic ON selection 1		00000000-00000FF	0	00000000
- Gain/filter	subor use.		11 1			
Extension	PD11.0 *	Input signal filter selection		0-	8 7 : 3.500ms	9
vo	ALM output					
Extension 2	PD14.1 *	Warning occurrence - Output device selection		0-	1 0 : WhiG signal turn ON	
Extension 3	Analog output					
Option	Analog monitor					
Special	PC09.0-1	Analog monitor 1 output selection		00-1	r 00 : Servo motor speed (#8V/max. speed)	
Mater extension	PC11 MO1	Analog monitor 1 offset		-999-99	9	3
Multi-perceder	PC10.0-1	Analyse monitor 3 outrait calention		00-1	n 01 : Torque or thrust (#8V/max, torque or max, thrust)	
Desitioning control	PC12 MO2	Analog monitor 2 offeat		.000.00	0	
Network	Stroke Inst function	Provey merror a entres	_			
Network	and the second second second					
Popooning extension	PC19.0 *	[AL. 099 Stroke limit warning] selection	1111	0	1 1 : Disabled	
	PD41.2 *	Limit switch enabled status selection		0-	g 9 2 Limit switch always enabled	2
	1041 1	Period in a rate d calculation			0 - Input from service amplifier (LSP / SN/DOC)	1

No.	Abbr.	Name	Setting
PD01.0-7	*DIA1	Input signal automatic ON selection 1	00000C00
PC19.0	*	[AL. 099 Stroke limit warning] selection	1: Disabled

7. Click the  $[\times]$  button at the top right of the MR Configurator2 window to close the window.

MELSOFT GX Workst - (Parameter Setti	ngi					- D ×					
Project View Pile Parameter Setting(2	) Parametar Tools Window Help										
Project # ×	Parameter Setting X										
E 0010	Station 1 + Hinni El Set To D	Station * + Time & Set To Defait System The Station Rev. 2 for more Car.									
In Station I, MR-15-GE-RD Standard	Post Plant As	Service Totorio constantino									
In Network Parameter	III III function dealer (List)	-									
	Common	10		Selected Deere 2010	Ans Writing						
	Absolute position detection system	No. Abbr.	Tiane	Unit Setting range	Stations						
	Position/speed/torque.control	Device setting			Setting						
	Positioning	P003.0-1 *	Device selection DE1	00-##		0A					
	00	PD04.0-1 *	Device selection DE2	00.89		08					
	Servo amplifier diagnosis	P005.0-1 *	Device selection DL3	0.47		22					
	Machine diagnosis	2018.0.1 *	Device selector DL4	00.00		30					
	Linear control	1018.0-1 *	Device selection D15	00.69		30					
	DD Motor control Fully closed loop control	DD Motor control Fully closed loop control	CD Motor control Fully closed loop control	CO Motor control	CO Motor control	PD07.0-1 *	Device selection DOI:	00-##		05	
				P008.0-1 *	Device selection DO2	00.49		04			
	Application function	PD09.0-1 *	Device selection DO3	00-##		03					
	In the Loss display	Device assignment.			Setting						
	Basic	P001.0-7 *CEA1	Input signal automatic ON selection 1	0000000-000007#0	C	000000.00					
	Gain/Viller	Shout filter									
	Extension	P011.0 *	Input signal filter selection	0.6	7 : 3.500mg						
	04	ALM OUTPLE				-					
	Extension 2	PD14.1 *	Warning occurrence - Dulput device selection	0-1	0 : WHIG signal turn ON						
	Extension 3	Analog Instead	Contraction of the second s		6 Contraction of the second seco	10 C					
	Option	Analog nonitor									
	Special	PC09.0-1	Analog monitor 1 output selection	00-1*	00 : Servo motor speed (Alti, Inax. speed)						
	Motor extension	PC11 MO1	Analog monitor 1 offset	-999-999		0					
	- Multi encoder	PC10.0-1	Analog manitor 2 output selection	00-15	01 : Tonque or Brust (ABV/max. torque or max, Brust)						
	Pesitioning central	PC12 HO2	Analog monitor 2 offset.	-499-499		0					
	Network	Stoke Init function			C						
	Positioning extension	Stroke Init function									
	a response timetric.	PC19.0 *	[AL. 099 Stroke limit warring] selection	0-1	1 : Disabled	-					
		P0412 *	Limit switch enabled status selection	0-1	0 ( Linit switch always erabled	-					
		PD413 *	Sensor input wethod selection	0-1	0 : 3rput from serve amplifier (LSP)LSN(DOG)						
200	-		and consection			and income the second second					

8. Click [Yes].


## Parameter settings (safety remote I/O module)

Save the parameters of the safety remote I/O module in the master station, and configure the parameters that are automatically set when connection or reconnection occurs as a result of safety remote I/O module power ON or other reason.

#### Operating procedure

- 1. Configure the detailed settings for the safety remote I/O module.
- [NZ2GNSS2-16DTE] ⇒ [Parameter Automatic Setting] ⇒ Double-click [<Detail Setting>]

Conr	hected, Disconnected N	todule De	etection	Detailed Disp	lav																
tode Set	tingi	Ordere	(Linicast Mode)		Assignment	Method:			-												
ydic Tra	namisaion Time (Min.):		20.00 us		Communicati	ion Period Int	erval (Min.):	125.00	US .												
	In Model Name	STAR	Challens Turne	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Parame	ter Automatic Setting	PDO Mapping	10 Address	Subnet	Default	Reserved/Error	Network Synchronous	Communication		Sta	ation Information	A Markester
	int interesting		ana	Station	Points	Pointa	Points	Points			Setting	1- 1400 CH1	Mak	Gateway	Invalid Station	Communication	Period Setting	Alas	Comment	Station-specific mode setting	HAR RETURNED
<b>.</b>	0 Host Station	0	Master Station	63					23	- Catal Fallence	-Dated Rations	192.168.3.253			No. Barrison	the second s	Party Barland			None in the Part of A	A distant and a
2	<ul> <li>NP104003, 10000</li> </ul>		Remote Station		15	16	1	-	R	(Detail Settion)	checki second >	107 168 3 5			No Setting	Asynchronous	Rasic Period			Hospin Hope (sarety)	A theolication (
ation 10 Nasta																					

#### 2. Click [OK].



3. Select [Parameter auto-setting] for [Method selection], and click [Copy "Initial Value" to "Write Value/Setting Value"].

Paramet	er of Device Station									- 6	× c
Target N	odule Information:	NZ2GNSS2-16DTE Start I/O No.:0010 - Station	n No.:2								Ŷ
Method :	Parameter	auto-setting	<ul> <li>Set the parameters that sup</li> </ul>	xport pi	arameter auto-se	tting.					Ŷ
Para	meter Information						Clear All "Read Val	ne.	Clea	r All "Write Value/Setting Value"	
	Select All	Cancel All Selectio				0	Copy "Initial Value" to "Write Valu	ue/Setting Value	Copy "Rear	d Value" to "Write Value/Setting !	Value"
	Name		Initial Value	Unit	Read Value	Unit	Write Value/Setting Value	Unit	Setting Range	Description	^
Sta	tion parameter										
	<ul> <li>Safety setting</li> <li>Transmission inter</li> </ul>	rval monitoring time	35	ms		ms		ms	4 to 1000	Set the transmission int	terval
	I/O LED indication	n setting on error condition	0: Hide abnormal occurrence points							Set the LED indication m	netho
	Safety authentica	ation code	0xFFFFFFF						0x00000000 to 0xFFF	FFFFF Set the safety authenti	cation
	Communication spee	ed setting	0: 1Gbps							Sets the communication	spee
Mo	dule parameter			_		_					
Ľ	Double input discrep	bancy auto recovery setting	0: Not used	-						The operation of error p	point
Ľ	Input dark test pulse	e OFF time setting	0: 400us	-						Set the width of the OF	Fput
K	Number of pulse out	tput for input dark test	0: 1 time	-		-		_		Set the number of OFF	pulse
<											>
FIG	ess option		T	iere is r	no option in the s	elected	process.				
The - For	value set in write value/s information on items not	setting value is set to device s t displayed on the screen, ple	tation automatically by Device Station Pr ase refer to the Operating Manual.	arameb	er Automatic Set	ting fun	ction.				Ô
6	able safety module when	n succeed to write parameter		_						Execute Parameter Processing	
	Import	Ехро	rt					Close with D	iscarding the Setting	Close with Reflecting the	Setting

#### 4. Click [Yes].



**5.** Set the transmission interval monitoring time. In this manual, the following value is set.

ab Mandala Takanan Mana										
ermooue miormabon:	NZ2GNSS2-16DTE Start I/O No.:0010 - Station	No.:2								
od selection: Parameter	r auto-setting	~ S	et the parameters that sup	port p	arameter auto-se	etting.				
Parameter Information							Clear All "Read Value"		Clear All "W	rite Value/Setting Value*
Select All	Cancel All Selections					C	py "Initial Value" to "Write Value/Settin	ng Value'	Copy "Read Value	" to "Write Value/Setting Value
Name		Initial Valu	je	Unit	Read Value	Unit	Write Value/Setting Value	Unit	Setting Range	Description
Station parameter					_			_	1	1
Transmission inte	acual monitorion time	25		me		me	21	me	4 to 1000	Set the transmission interva
Turanaaaan	ervermonitoring unic	35		ma		ing		1118	10 1000	Set the transmission multitude to
- Safety authentic	ation code	OXFEFFE	FF				0xFFFFFFF		0x00000000 to 0xFFFFFFFF	Set the safety authentication
Communication spen	ed setting	0: 1Gbps					0: 1Gbp			Sets the communication spe
Module parameter										
Double input discreption	pancy auto recovery setting	0: Not use	ed				0: Not used	5		The operation of error point
Input dark test puls	se OFF time setting	0: 400us					0: 400u	5		Set the width of the OFF pu
Number of pulse ou	tput for input dark test	0: 1 time					0: 1 time	:		Set the number of OFF pulse
Process Option			Th	ere is	no option in the s	elected	rocess.			
	setting value is set to device st t displayed on the screen, plea	ation automa se refer to t	atically by Device Station Pa he Operating Manual.	aramet	er Automatic Set	ting func	tion.			
The value set in write value/ - For information on items no									Execu	ute Parameter Processing
The value set in write value/ - For information on items no Enable safety module whe	en succeed to write parameter									
The value set in write value/ • For information on items no _ Enable safety module whe Import	en succeed to write parameter	t					Clos	e with Di	scarding the Setting	Close with Reflecting the Setti
The value set in write value/ For information on items no Enable safety module whe Import	en succeed to write parameter Expor	t					Clos	e with Di	scarding the Setting	Close with Reflecting the Setti

Transmission interval monitoring time<sup>\*1</sup> 35 (default)

\*1 For details of the transmission interval monitoring time, refer to " 🖙 Page 46 Monitoring time for safety communication."

#### **6.** Set the type of input wiring that is connected to the NZ2GNSS2-16DTE.

Parameter of Device Station			- 0 ×	Parameter of Device Station						- D ×
Target Hodule Information: IN220X652-36CHE Diart L/O No. 0010 - Station	eNe3			Target Mobile Information:	NZ30M512-34078 Dist U/O No. 10030 - Station	Ne.d				
Netvol selectors Parameter auto-setting	<ul> <li>Set the parameters that support parameter auto a</li> </ul>	etre .		Hetrod selectors Paramet	r s.to orbig	Set the parameter	es that support parameter auto se	me.		
Paravela Manadan Tanut Al	1	Care of Treat Teas" Capy Teals Inter Talke, Setting Teller" Capy Teals	Cear al "Virte Value,Setting Value" Read Value" to "Virte Value,Setting Value"	Faranatar Schematan Select Al	[]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]]			Core of Treat rais? Capy Total Take' to Tarte Value)	leting Volue" Copy 7	Sear All "Vorse value;Secting value" Asad value" to "Norse value;Secting value"
lane	Dital Value Unit Read Value	Unit Write Value,Setting Value Unit Setting Range	Description of	Name		2Hol Velve	Unit Read take	Unit Write Value/Setting Value	Unit Setting Range	Desciptor o
driving selection of reput     driving selection of reput XB     driving selection of reput XB     driving selection of reput XB	D: Not used O: Not used	2 Safety double wring (NCAC) 2 Safety double wring (NCAC)	Set the using method of rep Set the same value for X1 ar Set the same value for X1 ar	<ul> <li>vitring selection of</li> <li>diring selection</li> <li>filting selection</li> </ul>	input of reput X2 of reput X3	D: Not used D: Not used		3: General 3: General	ingle engle	Set the vierog method of righ Set the same value for X3 ar Set the same value for X3 ar
Popul response time 32     Popul response time 32     Popul response time 32     Double input discrepancy, detection setting 36(81)     Popul disk time discussion; detection time 30(81)     Popul disk time execution setting     C	Di Lõna Di Lõna Di Colma O Colmat 1 s a r	0 1.5m 0 1.5m 0.04m 1 k10ms 1 to 6000	Select a parameter longer th Select a parameter longer th Set vinether to detect double Set vinether to execute the Set vinether to execute the	Double response Double response Double result dans Double result dans Double result dans Paul dans test ex- e	time 32 time 33 spancy detection setting 32(32) pancy detection time 32(33) eculiari setting	0: 1.0me 0: 1.0me 0: Detect 1 1	13295	91 91 910 910	1.0me 1.0me etect 1.1 x 10me 1.1 to 6000 7	Select a parameter langer th Select a persenter longer th Set vinether to detect double Set the advances times for all Set site developments the selecter the
Process Option	There is no aption in the	sected proces.		Process Option			There is no option in the s	elected process.		
The value set in write value/betting value is set to device an -Par information on items not displayed on the screen, plan	ration automatically by Cerice Station Parameter Automatic Se ase refer to the Coerating Marcal.	ring function.		The value set in write value - For enformation on items in	Verting value is set to device at at displayed on the screen, plea	ation automatically by Devic as refer to the Operating H	e Station Parameter Automatic Sett Invali	ng Kection.		
Dividite safety madule when accord to write parameter.			Tabula Parameter Transming	City of the surface musical surface	et automit to write parameter.					Tatura Parameter Transmity
Inport Expo	rt	Once with Decarding the Sector	g Osee with Reflecting the Setting	Inport	Export	La: 1			Close with Decarding the Setting	One with Reflecting the Setting
Metad data Tar. Parameter sub-setting	In the assertion that ages tar state with In the assertion that ages tar state with In the assertion of the assertion that ages tar state In the assertion of the assertion of the assertion of the In the assertion of the	Core II from the first the set of	Con Afference Hausterieur Con Martine Hausterieur Con Martine Hausterieur Martine Hausteri							
Import Expor	<b>1</b>	Gase with Decarding the Setting	g Osse with Reflecting the Setting							
Name				Write Va	alue/Sett	ing Val	ue			
Wiring selection of i	input X0			1: Safety	double wi	ring (NC/	NC)			

Name	Write Value/Setting Value
Wiring selection of input X0	1: Safety double wiring (NC/NC)
Wiring selection of input X1	1: Safety double wiring (NC/NC)
Wiring selection of input X2	3: General single
Wiring selection of input X3	3: General single
Wiring selection of input X4	3: General single
Wiring selection of input X5	3: General single

#### 7. Click [Close with Reflecting the Setting].

Parameter	r of Device Station											
Target Mo	dule Information:	NZ2GNSS2-16DTE Start I/O No.:0010 - Station	No.:2									(
Method se	ection: Paramet	er auto-setting	~ Set	the parameters that supp	iort pai	ameter auto-si	etting.					
Paran	neter Information							Clear All "Read Value"		Clear	r All "Write Value/Setting Valu	2"
	Select All	Cancel All Selections					Co	py "Initial Value" to "Write Value/Setti	ng Value'	Copy "Read	d Value" to "Write Value/Settin	g Value"
	Name		Initial Value		Unit	Read Value	Unit	Write Value/Setting Value	Unit	Setting Range	Description	^
Mod S S S S S S S S S S S S S	ule parameter X4(AS Wring selection of Wring selection Wring selection Input response tim Input response Input response Double input discr Double input discr Double input discr ss Option	Frout 4 of riput X5 of riput X5 me k4 me k4 me k5 example attention setting X4/K5 example setting exultion setting	D: Not used D: Not used D: 1.0ms D: 1.0ms D: Detect 1	, The	x 10ms	o option in the s	×10ms selected p	3. General aing 3. General ang 6. J. D. 6. Detec 0. Detec 0. Detec 0. Detec	s s t 1 ×10ms	1 to 6000	Set the wining metho Set the same value f Set the same value f To prevent an input Select a parameter in Select a parameter in Set whether to deter Set the allowable to Set whether to exec	d of inpl or XS ar or XS ar error of inger th tt doubk a for sta tet the XS
The w	alue set in write value nformation on items n able safety module wh	s/setting value is set to device st ot displayed on the screen, plea	ation automation be refer to the	cally by Device Station Par- Operating Manual.	amete	r Automatic Set	ting funct	ion.				20
	Import	Export						Clo	e with D	iscarding the Setting	Close with Reflecting th	e Setting

#### 8. Click [Close with Reflecting the Setting].

Default Reserved.Error Treprovk Syndronous Communication Reserved.Error Station Information Authentication Cla Galaxies Jonald Station Communication Parced Setting Auto Comment Station-sector reduce setting No Setting Asyndronous Basic Parced Poton Node (Safeth.) Authentication Cla
Defluit: Reserved/branc Internets Synchronous Communication Authentication Communication Communication Communication Communication Reserved Entry Auto-Auto-Auto-Auto-Auto-Auto-Auto-Auto-
Default         Reserved/bran         Instance         Communication         Authentication (Communication)           Extensiv         Jmildit Station         Communication         Authentication (Communication)         Authentication)         Authentication (Communication)         Authentication (Communication)         Authentication)         Authentication (Communication)         Authentication)         Authentication)         Authentication)         Authentication)         Authentication)         Authentication)         Authentication)         Authentication)         Authentication) <t< th=""></t<>
Cateway Invalid Station Communication Period Setting Alas Comment Station-specific mode setting No Setting Asynchronous Basic Period Motion Mode (Safeth) Audhentication Cit
No Setting Asynchronous Basic Period Motion Hode (Safety) Authentication C
No Setting Asynchronous Basic Period Motion Mode (Safety) Authentication G
No setting Asynchronous Basic Period Authentication C
no setting asymptronous assocration a

## 9. If the window shown below appears, click [Yes].



# 2.6 Safety Communication Settings

Configure the settings necessary for safety communication.

#### Precautions

The settings introduced in this section are an example. When using with an actual system, give sufficient consideration to ensure that there are no problems with control in that system.

For details of the parameters, refer to the following manuals.

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

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

MR-J5-G/MR-J5W-G User's Manual (Parameters)

## Safety function setting

Set the safety I/O and the timing for executing the safety program (Safety Cycle Time).

#### Operating procedure

Navigation window ⇔ [Parameter] ⇔ [R16SFCPU] ⇔ [CPU Parameter] ⇔ [Safety Function Setting] ⇔ [Safety Cycle Time]

R16SFCPU CPU Parameter			×
Setting Item List	Setting Item		
Input the Setting Item to Search	Item           Safety Function Setting           Safety Cycle Time	Setting 10.0 ms	
Image: Section of the section of th	Explanation Set the safety functions. Check	Restore the Default Settings	Apply
ltom		Cotting	

Safety Cycle Time <sup>*1</sup>	10.0 ms (default)

\*1 Refer to the following for details of Safety Cycle Time.

# Safety communication settings

Set the safety connection and safety device transfer range that are necessary for safety communication.

#### Operating procedure

1. Display the module parameters.

Navigation window ⇔ [Parameter] ⇔ [Module Information] ⇔ [RD78G4] ⇔ Double-click [Module Parameter (Network)]
 ⇒ [Module Parameter] window ⇔ [Basic Settings] ⇔ [Safety Communication Setting]

0010:RD78G4 Module Parameter		×
Setting Item List	Setting Item	
Input the Setting Item to Search	Item      Network Configuration Settings      Refresh Settings	Setting
□         ■           ■         ■	Network Topology     Communication Period Setting     Connection Device Information     Device Station Setting     Safet Communication Setting	
Network Topology     Communication Period Setting     Connection Device Information     Device Station Setting	To Use or Not to Use the Safety Communication Setting Safety Communication Setting Explanation	Not to Use <detailed setting=""></detailed>
Item List Find Result	Set the Safety Communication. Check Restore the Default Settings	Ŷ
		Apply

2. Select [Use] for [To Use or Not to Use the Safety Communication Setting], then double-click [<Detailed Setting>]



3. A confirmation window appears. Click [OK].



4. The [Safety Communication Setting] window appears. Set the No. 1 communication destination to [Local Network].

Safety	Communication Se	etting					
	Cyclic Transmission	n Time(Minin	num value)	Communication	Period	Interval(Minimum	value)
		20.00 <b>us</b>			1	25.00 <b>us</b>	
			Net	work Configurat	ion		
No.	Destination	Network No.	Station No.	IP Addre	SS	Station Type	Model
1	~						
2							
3	Local Network						
4	×						

**5.** The devices which were set in the network configuration settings are displayed in the candidate fields. Check the checkbox of the device to use for safety communication and click [Add]. Here, check the checkboxes of all the remote stations.

Sele	ct the targe	t module i	for the S	afety Communicatio	n Setting					>	<
Sel (Ca - 1 - 1	lect the target i oution) The value will b Please set the l	module for ti be overwritte Network Con	he safety In if the se ifiguration	communication setting in t atting for the same IP add Settings to set safety com	he local network. ess and station 1 munication settir	No. have already existed. Ing for the local network.					
								Select All	Reset	t All(N)	
	Station No.	IP	Address	Station	Туре	Number of Connections		Model Nam	e 🛛		
	1	192.168.	3.1	Remote Station			1	MR-J5-G-RJ			
	2	192 . 168 .	3. 2	Remote Station			1	NZ2GNSS2-16DTE			
<u> </u>					_						
								Add	Car	ncel	
											1
											.i

6. Configure the [Safety Communication Setting] window as shown below.

Safet	y Comm	unicatio	n Sett	ting																													×
	Cyclic	Transmi	sion	Time(Mi	nimum v	alue)	Con	nmunic	cation	Period Inter	val(Mi	inimum value)						Settine	Method														
				25.00	us					125.0	us							Start/	End	~													_
		Network Configuration Configured Module Sen			Send	ling Interval	Safety Ret	resh					Safety [	lata Tran	sfer Dev	vice Set	ting				^												
No.	Com	nunicati	on	Network	Station	No	TP .	Addres	~~	Station 7	ine	Model Name	Communication	PLC	No	Open Syster	n Monit	toring Time	Monitoring	Time	Rece	eive Data	Storage	Device					Se	nd Data S	torage D	evice	Safety Authentication Code
			_	No.	Granos			- Maires		oracion	7 <b>P</b> ~	inder name	Destination	1.00				Umsj	Lmsj			Device I	Name	Points	Start	End	Device	e Name	Points	Start	End		
1	Local	Network	$\sim$		1	1	192.1	68. 3	3.1	Remote St	ation	MR-J5-G-RJ				Active 🔍	-	35.0		60.0	Destination Station->	SA¥X	$\sim$	32	00000	00001F	SA¥Y	$\sim$	3:	000000	00001	->Destination Station	FFFFFFF
2	Local	Network	$\sim$		1	2	192.1	68. 3	3.2	Remote St	ation	NZ2GNSS2-16DTE	×		$\sim$	Active 🔍	1	35.0		60.0	Destination Station->	SA¥X	$\sim$	16	00004	00004F	SA¥Y	~	10	000040	00004	->Destination Station	FFFFFFF
3			$\sim$														-				Destination Station*2		~					~				->Destination Station	
4			$\sim$										~		$\sim$	N 1	/				Destination Station->							~				->Destination Station	
5			$\sim$																		Destination Station->											->Destination Station	
6			$\sim$										~		~	N 1	/				Destination Station->							~				->Destination Station	
7			$\sim$										~				-				Destination Station->							~				->Destination Station	
8			$\sim$										~		~		/				Destination Station->							~				->Destination Station	
9			$\sim$										~		~		/				Destination Station->							~				->Destination Station	
10			~										~		~						Destination Station->							~				->Destination Station	×
	10     v </td <td></td> <td>Cancel</td>																			Cancel													

Item		Setting	
		No.1	No.2
Sending Interval Monitoring Time [ms]	1	35.0	35.0
Safety Refresh Monitoring Time [ms] <sup>*1</sup>		60.0	60.0
Receive Data Storage Device	Device Name	SA¥X	SA¥X
	Start	000000	000040
	End	00001F	00004F
Send Data Storage Device	Device Name	SA¥Y	SA¥Y
	Start	000000	000040
	End	00001F	00004F

\*1 For [Sending Interval Monitoring Time] and [Safety Refresh Monitoring Time], refer to " 🖙 Page 46 Monitoring time for safety communication."

#### 7. Click [Check].

Safet	y Commur	nication Se	rtting																											×
	Cyclic Tr	ansmissio	n Time(Mi	nimum va	alue)	Comm	inicatio	on P	Period Interval(Mir	nimum value)					Settine	Method														
			25.00	us					125.00 <b>us</b>						Start/	End ~														
					Netwo	irk Config	guratio	n		Cont	igured Module				Sending Internal	Safaty Batrach					Safety D	ata Tran	sfer Devic	ce Settie	ng					^
No.	Commi Dest	ination	Network.	Station	No	TP Add	tracc		Station Turne	Model Name	Communication	PLC No.	Open S	stem	Monitoring Time	Monitoring Time	Rec	eive Data S	itorage	Device					Ser	nd Data 3	Storage De	vice	Safety Authentication Code	
			No.	Station	140.	IF MOU	1622		Station Type	Muter Name	Destination	PLO NO.			[ms]	Lmsj		Device N	ame	Points	Start	End	Device	Name	Points	Start	End			
1	Local Ne	etwork 🧹	1	1	1 1	92.168.	. 3.	1 8	Remote Station	MR-J5-G-RJ			Active	$\sim$	35.0	60.0	Destination Station->	SA¥X	$\sim$	32	000000	00001F	SA¥Y	$\sim$	32	00000	00001F	->Destination Station	FFFFFFF	-
2	Local Ne	stwork 🤍	1	1	2 1	92.168.	. 3.	2 8	Remote Station	NZ2GNSS2-16DTE			Active	$\sim$	35.0	60.0	Destination Station->	SA¥X	$\sim$	16	000040	00004F	SA¥Y	$\sim$	16	00004	00004F	->Destination Station	FFFFFFF	-
3		~															Destination Station->											->Destination Station		
4		~									~	~					Destination Station->											->Destination Station		
5		~															Destination Station->											->Destination Station		
6		~									~	~					Destination Station->											->Destination Station		
7		~									~						Destination Station->											->Destination Station		
8		~									~	~					Destination Station->											->Destination Station		
9		~									~	~					Destination Station->											->Destination Station		
10		~									~	~					Destination Station->											->Destination Station		~
	Check_		Resto	e the De	fa <u>u</u> lt Se	ettinøs		Q	utput to File (for	Setting Confirmation	n)																	ОК	Cancel	

#### 8. Click [OK].



#### 9. Click [OK].

Safet	y Commu	inication !	Setting																									×
	Cyclic T	ransmiss	ion Time(	4inimum -	value)	Commu	nication	Period Interval(M	inimum value)					Settine	s Method													
			25.0	us				125.00 <b>us</b>						Start/	End ~													
					Netw	ork Confie	suration		Conf	igured Module			Sending I	interval	Safety Refresh				Safety	Data Tran	sfer Device	Setting						^
No.	Comm	unication tination	Netwo	k carain	a Ma	10 0.44		Casting Turns	Madel Name	Communication	PLC NH	Open Sys	em Monitorin	ę Time	Monitoring Time	Rece	ive Data Stor	age Devi	æ				Send D	ata Sto	rage Dev	ice	Safety Authentication Code	
			No.	31400	m NO.	1. 400	less	Station Type	model hame	Destination	FEG NO.		Lms	N.	[ms]		Device Nam	e Point	s Start	End	Device N	ame Poi	nts S	tart	End			
1	Local N	letwork -	~	1	1	192.168.	. 3. 1	Remote Station	MR-J5-G-RJ			Active	~	35.0	60.0	Destination Station->	SA¥X	~	32 00000	0 00001F	SA¥Y	~	32 00	00000	00001F	->Destination Station	FFFFFFF	
2	Local N	letwork -	~	1	2	192.168.	. 3. 2	Remote Station	NZ2GNSS2-16DTE	~	~	Active	~	35.0	60.0	Destination Station->	SA¥X	~	16 00004	0 00004F	SA¥Y	~	16 00	00040	00004F	->Destination Station	FFFFFFF	
3			~							~	~					Destination Station->		~								->Destination Station		1
4			~							~						Destination Station->		~								->Destination Station		11
5			~													Destination Station->		~								->Destination Station		1
6			~							~	~					Destination Station->		~								->Destination Station		1
7			~							~	~					Destination Station->		~								->Destination Station		1
8			~							~						Destination Station->		~								->Destination Station		11
9			~							~	~					Destination Station->		~								->Destination Station		1
10			~							~	~					Destination Station->		~								->Destination Station		~
	Check		Res	ore the D	iefa <u>u</u> it i	Settings		Qutput to File (for	Setting Confirmation	J																ОК	Cancel	]

#### 10. Click [Check].



#### 11. Click [OK].



#### **12.** Click [Apply]. Check that A disappears.



#### Precautions

The safety communication settings are deleted under the following conditions.

- Module information delete
- · Station type change
- · Parameter setting method change
- [To Use or Not to Use the Safety Communication Setting] is changed to [Not to Use].

#### Safety data transfer device setting

There is no setting on the servo amplifier side for selecting the device, such as selecting a B device or Y device. STO and other bits are allocated to the selected device.

Safet	y Commu	inication S	etting																									×
	Cyclic T	Fransmissi	on Time(M	nimum va	alue)	Comm	nunication	n Period Interval(M	nimum value)					Setting	Method													
			25.00	us				125.00 <b>us</b>						Start/I	End ~													
					Netw	ork Conf	liguration		Cont	igured Module				Conding Internal	Safatu Batrach				S	Safety Di	ata Trans	fer Device	Settin	t.				^
No.	Comm	nunication	Network	Casting	Ale.	10.0-		Casting Trees	Madel News	Communication	DLC No.	Open Sys	tem Ň	fonitoring Time	Monitoring Time	Rece	eive Data Sto	orage D	levice					Sen	d Data S	torage Dev	rice	Safety Authentication Code
			No.	Station	140.	IF M.	niess	Station Type	Muder Name	Destination	PLO NO			[ms]	[ms]		Device Nar	ne P	oints	Start	End	Device Na	ime I	Points	Start	End		
1	Local N	vetwork		1	1 1	92.168	1. 3.	1 Remote Station	MR-J5-G-RJ			Active	$\sim$	35.0	60.0	Destination Station->	SA¥X	~	32	000000	00001F	SA¥Y	$\sim$	32	000000	00001F	->Destination Station	FFFFFFF
2	Local N	Vetwork 🔍		1	2 1	92.168	1. 8.	2 Remote Station	NZ2GNSS2-16DTE			Active	$\sim$	35.0	60.0	Destination Station->	SA¥X		16	000040	00004F	SA¥Y	$\sim$	16	000040	00004F	->Destination Station	FFFFFFF
3		~								~						Destination Station->											->Destination Station	
4		1								~						Destination Station->											->Destination Station	
5		~								~						Destination Station->											->Destination Station	
6										~						Destination Station->											->Destination Station	
7		~								~						Destination Station->											->Destination Station	
8		~								~						Destination Station->											->Destination Station	
9		~								~						Destination Station->											->Destination Station	
10		~								~						Destination Station->											->Destination Station	¥
	Check	<u>.</u>	Resto	e the Det	fa <u>u</u> lt S	ettines		Qutput to File (for	Setting Confirmation	Ŋ																	OK	Cancel

The set safety data transfer device is assigned to the following servo amplifier signals.

#### - Master station $\rightarrow$ Servo amplifier

Servo amplifi	er input signals		Master station safety
Bit	Input command	Description	device
0	STO command	When the STO command is OFF, the servo amplifier STO function activates and the supply of energy is shut off.	SA¥Y0
1	SS1 command	When the SS1 command is OFF, the SS1 function activates.	SA¥Y1
2	SS2 command	When the SS2 command is OFF, the SS2 function activates.	SA¥Y2
3 to 4	Cannot be used		SA¥Y3 to SA¥Y4
5	SDIP command	When the SDIP command is OFF, the SDIP function activates.	SA¥Y5
6	SDIN command	When the SDIN command is OFF, the SDIN function activates.	SA¥Y6
7	Cannot be used		SA¥Y7
8	SLS1 command	When the SLS1 command is OFF, the SLS1 function activates.	SA¥Y8
9	SLS2 command	When the SLS2 command is OFF, the SLS2 function activates.	SA¥Y9
10	SLS3 command	When the SLS3 command is OFF, the SLS3 function activates.	SA¥YA
11	SLS4 command	When the SLS4 command is OFF, the SLS4 function activates.	SA¥YB
12 to 13	Cannot be used		SA¥YC to SA¥YD
14	SLI command	When the SLI command is OFF, the SLI function activates.	SA¥YE
15 to 23	Cannot be used		SA¥YF to SA¥Y17
24	SLT1 command	When the SLT1 command is OFF, the SLT1 function activates.	SA¥Y18
25	SLT2 command	When the SLT2 command is OFF, the SLT2 function activates.	SA¥Y19
26	SLT3 command	When the SLT3 command is OFF, the SLT3 function activates.	SA¥Y1A
27	SLT4 command	When the SLT4 command is OFF, the SLT4 function activates.	SA¥Y1B
28 to 31	Cannot be used		SA¥Y1C to SA¥Y1F

#### - Servo amplifier $\rightarrow$ Master station

Servo amplifie	er output signals		Master station safety
Bit	Function output	Description	device
0	STO output	Turns ON when the STO function activates and the energy supply is shut off.	SA¥X0
1	SSM output	Turns ON when the servo motor speed is at or below the set SSM speed.	SA¥X1
2	Cannot be used		SA¥X2
3	SOS output	Turns ON when the SS2 function activates the SOS function.	SA¥X3
4	Cannot be used		SA¥X4
5	SDIP output	Turns ON when the SDIP function activates.	SA¥X5
6	SDIN output	Turns ON when the SDIN function activates.	SA¥X6
7	Safety communication error 1	Turns ON when an error related to safety communication occurs.	SA¥X7
8	SLS1 output	Turns ON when the SLS1 function activates.	SA¥X8
9	SLS2 output	Turns ON when the SLS2 function activates.	SA¥X9
10	SLS3 output	Turns ON when the SLS3 function activates.	SA¥XA
11	SLS4 output	Turns ON when the SLS4 function activates.	SA¥XB
12	SS1 output	Turns ON when the SS1 function activates.	SA¥XC
13	SS2 output	Turns ON when the SS2 function activates.	SA¥XD
14	SLI output	Turns ON when the SLI function activates.	SA¥XE
15 to 16	Cannot be used		SA¥XF to SA¥X10
17	Safety communication error 2	Turns ON when a command signal for a safety sub-function that cannot be used is input.	SA¥X11
18	SBC output	Turns ON when the STO function activates and the supply of energy to the electromagnetic brake is shut off.	SA¥X12
19 to 23	Cannot be used		SA¥X13 to SA¥X17
24	SLT1 output	Turns ON when the SLT1 function activates.	SA¥X18
25	SLT2 output	Turns ON when the SLT2 function activates.	SA¥X19
26	SLT3 output	Turns ON when the SLT3 function activates.	SA¥X1A
27	SLT4 output	Turns ON when the SLT4 function activates.	SA¥X1B
28 to 31	Cannot be used		SA¥X1C to SA¥X1F

#### Monitoring time for safety communication

This section explains the monitoring time for safety communication.

Monitoring times are set for each safety connection. When each time exceeds the monitoring time, safety communication timeout is detected and safety communication stops.

Station where set	Item	Description	Station using the set time
Master station	Transmission interval monitoring time	<ul> <li>The device station monitors the interval at which safety data is sent by the master station.</li> <li>The master station sends this to the device station when safety communication starts.</li> <li>Monitoring is performed by comparing the sending time information that is added to the safety data received by the device station with the previous value.</li> </ul>	Device station
	Safety refresh monitoring time <sup>*1</sup>	The master station monitors the interval ② at which safety data is received from the device station.	Master station
		<ul> <li>The device station monitors the interval ③ at which safety data is received from the master station.</li> <li>The master station sends this to the device station when safety communication starts.</li> </ul>	Device station
Device station	Transmission interval monitoring time	<ul> <li>The master station monitors the interval  at which safety data is sent by the device station.</li> <li>The device station sends this to the master station when safety communication starts.</li> <li>Monitoring is performed by comparing the sending time information that is added to the safety data received by the master station with the previous value.</li> </ul>	Master station

\*1 Safety refresh monitoring time uses a common value at the master station and device station.



(1) Safety data sent from the master station to the device station

- (2) Safety data sent from the device station to the master station
- **∂**-**④**: Intervals at which safety data is sent and received

#### Transmission interval monitoring time

Refer to below for the method of calculating the transmission interval monitoring time that is set at the master station.

MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

Refer to below for the method of calculating the transmission interval monitoring time that is set at the servo amplifier.

Refer to below for the method of calculating the transmission interval monitoring time that is set at the safety remote I/O module.

CC-Link IE TSN Remote I/O Module (With Safety Functions) User's Manual

#### ■Safety refresh monitoring time

Safety refresh monitoring time is set at the active-side station.

Refer to below for the method of calculating the safety refresh monitoring time.

MELSEC iQ-R CC-Link IE TSN User's Manual (Application)

# 2.7 Extended Parameter Settings

Configure the settings related to axis operation other than the network settings, and perform label registration for the I/O data that is used in motion control.

Navigation window ⇔ [Parameter] ⇔ [Module Information] ⇔ [RD78G4] ⇔ Double-click [Module Extended Parameter]
 ⇒ [Motion Control Setting Function] window



For details of the settings, refer to the following manual.

Motion Control Setting Function

#### Point P

If motion control settings are not installed, download and install the motion control software from the Mitsubishi Electric FA Global Website.

#### Precautions

The settings introduced in this section are an example. When using with an actual system, give sufficient consideration to ensure that there are no problems with control in that system.

For details of the parameters, refer to the following manuals.

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

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

MR-J5-G/MR-J5W-G User's Manual (Parameters)

# Servo Amplifier

Set the MR-J5-G-RJ parameters.

#### Operating procedure

**1.** Create a new axis setting.

Navigation window ⇒ Right-click on [Axis]. ⇒ [New Data]

New Dete	
New Data	*
Basic Setting	
Data Type	🐖 Axis
(Data Name)	Axis0001
Detailed Setting	
Axis Information	
Axis No.	1
Axis Parameter Constant	
Station Address Setting	
Axis Type Setting	Real Drive Axis
Control Cycle Setting	Operate in the First Operation Cycle
	OK Cancel

**2.** Click [...] for Station Address Setting.

_			_
N	ew Data		×
	Basic Setting		
	Data Type	💓 Axis	-
	(Data Name)	Axis0001	
	Detailed Setting		
	Axis Information		
	Axis No.	1	
	Axis Parameter Constant		
	Station Address Setting		
	Axis Type Setting	Real Drive Axis	-
	Control Cycle Setting	Operate in the First Operation Cycle	-
			1
		OK Cancel	]

## **3.** Select [192.168.3.1] and click [OK].

Station Address S	etting			×
IP Address	Model Name	Alias		
192.168.3.1	MR-J5-G-RJ			
			ОК	Cancel

**4.** Check the contents of the Axis No. and Station Address, then click [OK].

New Data	×
Basic Setting	
Data Type	🐖 Axis 🔍
(Data Name)	Axis0001
Detailed Setting	
Axis Information	
Axis No.	1
Axis Parameter Constant	
Station Address Setting	192.168.3.1
Axis Type Setting	Real Drive Axis 🔽
Control Cycle Setting	Operate in the First Operation Cycle 👻
	OK Cancel
Item	

Item	Setting
Axis No.	1
Station Address Setting	192.168.3.1

#### 5. Set the Electronic Gear.

Encoder Resolution

🥎 [Real Drive Axis] ⇔ [Axis Parameters] ⇔ [Driver Unit Conversion Numerator] ⇔ [...]

Electronic Gear Setting Axis0001	×
Entry	
Select the machine components, and enter the machine data to automatically set the axis param (position command unit, driver unit conversion numerator and driver unit conversion denominat Machine Components : Rotary Table Position Command Unit Revolution One Revolution Reduction Ratio (NL/NM) = 1 / 1 Calculate reduction ratio by teeth or diameters Reduction Ratio Setting Encoder Resolution 67108864 [pulse/rev] Setting Range 1[pulse/rev] to 2147483647[pulse/rev]	eters or).
Calculation Result           Axis Parameters         Position Command Unit           Driver Unit Conversion Numerator         Driver Unit Conversion Denominator           "The electronic rear on driver side is calculated as 1:1	Movement Amount per Uniter Unit Command
As a result of calculation, no error occurs in the movement amount. Applying the calculation result above,	
the error for every 0.0 [mm] (movement amount) you perform is ab	out 0.0 [mm] Error Calculation
	OK Cancel
Item	Setting
Machine Components	Rotary Table
Position Command Unit	Revolution

6. Click [Calculate Axis Parameters] to calculate the Electronic Gear numerator and denominator. Click [OK].

67108864



#### 7. Click [Yes].



**8.** In this manual, because home position return is not used, it is set as shown below.

[Real Drive Axis] ⇒ [Axis Parameter] ⇒ [Homing Required or Not]

Axis Parameter Setting			×
Setting Item List		Setting Item	
Input the Setting Item to Search	孡	Select Folder Display All Data 🗸	
		Item	Axis0001
		Homing Required or Not	0.Homing Not Required 🗸 🗸
⊖-∰ Real Drive Axis	^	Jerk Limit Value	2147483647.0 Revolution/s <sup>3</sup>
Exis unormation		Operation Setting at Overrun	1:Immediate Stop
Axis Parameter Constant		Start Permission at Homing Uncompleted	0:Disabled
Axis Parameter		Deceleration at Stop	0.0 Revolution/s <sup>2</sup>
Acceleration Limit Value		Stop Selection at Deceleration to Stop	1:Recreate Deceleration Curve
Operation Selection at Start Acceleration/ Deceleration o		Stop Selection at Stop Cause Occurrence	3:Alternative Acceleration/Deceleration
Deceleration Limit Value		Stop Selection at H/W Stroke Limit Error Occurrence	1:Immediate Stop
Driver Unit Conversion Numerator		Process Selection at Servo OFF Command During Operation	0.Ignore V
Driver Unit Conversion Denominator		Explanation	
Exceed Stop Sizeal Himing Required or Not Operation Setting at Overrun		Axis.Pr.Homing, Required Set whether a homing is required or not. Set "OHoming Not Required if homing is not required. When "OHoming Not Required" is set, the homing request will not b	∽
Start Permission at Homing Uncompleted Deceleration at Stop Stop Selection at Deceleration to Stop		[Setting Range] 0.Homing Not Required 1.Homing Required	~
Item List Find Result	*	Restore the Default Settings With Selected Wr	te Variables Read Variables
			Apply

Item	Setting
Homing Required or Not	0: Homing Not Required

9. Set the following contents for [Position Command Unit] and [Velocity Command Unit], then click [Apply].

[Real Drive Axis] ⇒ [Axis Parameter] ⇒ [Position Command Unit] and [Velocity Command Unit]

Axis Parameter Setting		X
Setting Item List	Setting Item	
Input the Setting Item to Search		
	Item	Axis0001
E Ga	Software Stroke Limit Lower Value	-1000000000.0 Revolution
<ul> <li>Process Selection at Servo OFF Command During Operation</li> </ul>	Software Stroke Limit Target	- Itinvalid
Stop Selection at S/W Stroke Limit Error Occurrence	Software Stroke Limit Upper Value	1000000000.0 Revolution
Stop Sizeal	Position Command Unit	Revolution
Software Stroke Limit Lower Value	Position Command Unit String	
Software Stroke Limit Target	Velocity Command Unit	U/min 🗸
Software Stroke Limit Upper Value	<ul> <li>Negative Direction Velocity Limit Value</li> </ul>	2500000000.0 Revolution/min
Position Command Unit	<ul> <li>Operation Setting at Velocity Limit Value Exceeded</li> </ul>	0:Ignore
	Positive Direction Velocity Limit Value	2500000000.0 Revolution/min Y
	Explanation	
Negative Direction Velocity Limit Value	Axis.Pr.Unit Velocity	^ ^
Operation Setting at Velocity Limit Value Exceeded	Set the velocity command unit to use in motion control.	
Positive Direction Velocity Limit Value		
Withial Drive Avie		
How Without Encoder Axis		
Wirtual Linked Axis		~
	Besteve the Default Settings	With Mentables Devel Mentables
tem List Find Result	mestore the Detagit Settings With Selected	write variables
		Apply
Item	Setting	

Item	Setting
Position Command Unit	Revolution
Velocity Command Unit	U/min

# Safety remote I/O module

Set the parameters for the safety remote I/O module.

#### Operating procedure

- 1. Set network I/O.
- ♥ Navigation window ⇔ Double-click [Network I/O] ⇔ [Network I/O] window

Netw	Network I/O									
	No.	IP Address	Model Name	Device Label	Data Type	Labeling Target	Data Type	Label Name	Comment	
-	-1	192.168.3.1	MR-J5-G-RJ	MR_J5_G_RJ_001	Entire Device		-			
					RWw0		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_WatchdogCounterDI1	R\\\v0	
					RWw1		Word [Signed]	MR_J5_G_RJ_001_ModesOfOperation	R\Ww1	
					RWw2		Double Word [Signed]	MR_J5_G_RJ_001_TargetPosition	R\Ww2	
					RWw4		Double Word [Signed]	MR_J5_G_RJ_001_TargetVelocity	R\Ww4	
					RWw6		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_Controlword	R\\\w6	
					RWw7		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_PositiveTorqueLimitValue	R\\\v7	
					RWw8		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_NegativeTorqueLimitValue	R\\\v8	
					RWw9		Word [Signed]	MR_J5_G_RJ_001_TargetTorque	R\\\v9	
					RWwA		Double Word [Unsigned]/Bit String [32-bit]	MR_J5_G_RJ_001_VelocityLimitValue	RillwA	
					RWWC		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_ControlDI1	RillwC	
					RWWD		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_ControlDI2	RillwD	
					RWWE		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_ControlDI3	RillwE	
					RWwF		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_ControlDI4	RillwF	
					RWw10		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_ControlDI5	RNW 10	
					RWw11		Word [Signed]	MR_J5_G_RJ_001_RWw11_	R\Ww11	
					RWr0		Word [Unsigned]/Bit String [16-bit]	MR_J5_G_RJ_001_WatchdogCounterUI1	R/Wr0	
					RWr1		Word [Signed]	MR_J5_G_RJ_001_ModesOfOperationDisplay	RWF1	
Expla	nation							-		
Regi	sters t	he I/O data fo	or cyclic communicat	ion between the motion	module and device:	s under its manage	ement, as labels.			
Exec After	utine ' exect	Oreate Label' iting 'Oreate L	registers only 'Labeli .abel', you are unable	ng Target'data to the gi to restore the label reg	obal label list (NW- stration data befor	Global). e creation.				
Cont	ents e	dited in this w	indow are not saved	in the project and are o	nly kept while the p	project is open.	and to also disclosed data.			
MILLER	ue p	oject is re-uj	Jerieu, trie labei regis	tration data on the globa	in laber rist (NW#Cil	Joaly will be relied	teu in the displayed data.			
	_									
								Undete Network Configuration Infe	Oraște Label	
								Update Network Configuration Into	Greate Label	

2. Check the checkboxes of RX2 to RX5 for NZ2GNSS2-16DTE, then click [Create Label].

No.	IP Address	Model Name	Device Label	Data Type	Labeling Target	Data Type	Label Name	Com	ment
2	192.168.3.2	NZ2GNSS2-16DTE	NZ2GNSS2_16DTE_001	Entire Device		-			
				RX0		Bit	NZ2GNSS2_16DTE_001_RX0	External inp	out signa**
				RX1		Bit	NZ2GNSS2_16DTE_001_RX1	External inp	out signa**
				RX2		Bit	NZ2GNSS2_16DTE_001_RX2	External inp	out signa••
				RX(3		lit	NZ2GNSS2_16DTE_001_RX8	External inp	out signa••
				RX4		a	NZ2GNSS2 16DTE 001 BV4	External inc	out signa**
				RX5		at.	1422014002_10016_001_NOV	EXIGNIG	t siena**
				1010		Lit	NZ2GNSS2_16DTE_001_RX6	External i	t sienar
				RX7		Bit	NZ2GNSS2_16DTE_001_RX7	External i	t signarr
				RX8		Bit	NZ2GNSS2_16DTE_001_RX8_	RX8	
				RX9		Bit	NZ2GNSS2_16DTE_001_RX9_	RX9	
				RXA		Bit	NZ2GNSS2_16DTE_001_RXA_	RXA	
				RXB		Bit	NZ2GNSS2_16DTE_001_RXB_	RX(B	
				RXC		Bit	NZ2GNSS2_16DTE_001_RHC_	RXIG	
				RXD		Bit	NZ2GNSS2_16DTE_001_RXD_	RXD	
				RXE		Bit	NZ2GNSS2_16DTE_001_RXE_	RXE	
				RXF		Bit	NZ2GNSS2_16DTE_001_RXF_	RXIE	
				RY0		Bit	NZ2GNSS2_16DTE_001_RY0_	RY0	
lanation									
gisters	the I/O data fi	or cyclic communicati	on between the motion m	dule and devices	s under its manage	ement, as labels.			
	Second Labor	en el et en en la Maler De	. Towns data to the slab		0444				
ter exec	uting 'Create I	Label, you are unable	to restore the label regist	ration data before	e creation.				
ntente a	ulitad in this u	indow are not caused	in the project and are only	, kant while the r	voiect is open				
ter the p	vroject is re-o	pened, the label regist	ration data on the global	label list (NW+Glo	obal) will be reflec	ted in the displayed data.			
									-
									-

#### 3. In the confirmation window, click [Yes].



4. Set [Public Label] to [Enabled] in order to use the registered global labels in the sequence program.

Navigation window ⇔ [Label] ⇔ [Global Label] ⇔ Double-click [NW+Global1]

	Label Name	Data Type	Class	Initial	Constant	English(Display	/ Target)	Remark	Public Label	Motion Control Attribut
1	NZ2GNSS2_16DTE_001_RX2	Bit	VAR_GLOBAL			External input sig	nal X2		Enabled	READ (Motion =>): RX
2	NZ2GNSS2_16DTE_001_RX3	Bit	VAR_GLOBAL			External input sig	nal X3		Enabled	READ (Motion =>): RX
3	NZ2GNSS2_16DTE_001_RX4	Bit	VAR_GLOBAL			External input sig	nal X4		Enabled	READ (Motion =>): RX
4	NZ2GNSS2_16DTE_001_RX5	Bit	VAR_GLOBAL			External input sig	nal X5		Enabled	READ (Motion =>): RX
5										
Label Name				Data Type				Comment		Initial Value

No.	Label Name	Public Label
1	NZ2GNSS2_16DTE_001_RX2	Enabled
2	NZ2GNSS2_16DTE_001_RX3	Enabled
3	NZ2GNSS2_16DTE_001_RX4	Enabled
4	NZ2GNSS2_16DTE_001_RX5	Enabled

#### 5. Perform conversion.

#### ‴ [Convert] ⇒ [Rebuild All]

Con	vert	View	Online	Debug	Tool	V
P	Convert(B)				F4	
P	Reb	uild All		Shift+	Alt+F4	
	Wo	rksheet E	xecution (	Order Setti	ng	
	Setting					
	Pub	ıg				
	Reflect Public Labels					

#### 6. Click [OK].



7. The generated public label information is applied to the project on the CPU module side.

(Convert] ⇒ [Reflect Public Labels]



#### 8. Click [Yes].



#### 9. Click [OK].



#### **10.** Perform [Rebuild All] with GX Works3.

🠑 [Convert] ⇔ [Rebuild All]



#### **11.** Check that Label Assignment is [Reassignment], then click [OK].



Point P

If Label Assignment is [Retain], click [Options] and select [Yes] for [Reassign Labels in Executing Rebuild All].

Options			×
Project	Program Check		^
Program Editor	Execute Program Check after Build or Online Program Change	No	-
De Other Editor	Target the SET instruction for duplicated coil check	Yes	-
	Operational Setting		
do cuit	Use the Same Label Name in Global Label and Local Label	No	-
Find/Replace	Optimization of Number of Steps		
Parameter	Optimize the Number of Steps	Yes	-
👧 Monitor	Ontimize Level	Level 2	
State Online	Reassign Labels in Executing Rebuild All	Yes	-
R Convert	stop the Monitor in Executing Convert/Rebuild All	INO	
	Check the data type of instruction argument	Do Not Check Only BMOV(P)/FMOV(P)	-
Basic Setting	Language for Instruction Conversion of Character String Operation and Label Initial Value	User Locale	<b>- -</b>
Online Program Change	Reassign Labels in Executing Rebuild All		
Output Result	Select whether to reassign labels in executing Rebuild All.		
C Intelligent Function Module	Memory usage is optimized if [Yes] is selected. Unable to execute Online Program Change of	or write to PLC while PLC is running.	
June 2010			
IQ Works Interaction			
		Import	Export
Back to Default Back to User D	Default Set as User Default	ОК	Cancel

# Writing extended parameters

Write the contents which were set in the [Motion Control Setting Function] window to the RD78G4.

#### Operating procedure

**1.** Perform the following operations on the [Motion Control Setting Function] window.

(Online] ⇒ [Write to PLC] ⇒ [Online Data Operation] window

Online Data Operation								- 0	×
Display Setting Related Functions									
Write Write Read	<b>_</b>	1	Verify	- 🔜 🧳	Delete				
Parameter + Program(F) Select All	Legend			E co M		. The discount of the state of the			
Open/Close All(T) Deselect All(N)	• CPU1	ount-inme	mory	SU M	eniory card	Intelligent Punction Module	1		
Module Name/Data Name	*		6	Detail	Title	Last Change	Size (Byte)		^
🔳 🚹 Sample									
🖨 🛃 Parameter									
System Parameter/CPU Parameter (						2024/01/18 15:33:35	Not Calculated		
Module Parameter (Standard/Safety)						2024/01/18 15:33:35	Not Calculated		
Module Extended Parameter:0010:R						2024/01/18 15:33:35	Not Calculated		
Memory Card Parameter						2020/09/22 10:39:46	Not Calculated		
Remote Password						2020/09/22 10:41:03	Not Calculated		
🖨 🛃 CC-Link IE TSN Configuration									
Device Station Setting (Safety)				Detail	]	-	Not Calculated		
😑 🏦 Global Label									
Global Label Setting						2024/01/18 15:33:33	Not Calculated		
Safety Global Label Setting						2021/01/08 11:21:11	Not Calculated		~
					1		1		
Display Memory Capacity									
							Execute	Clo	50

2. Select the file to write and click [Execute]. Here, click [Select All].

[Select All] ⇒ [Execute]

line Data Operation								-	-	
play Setting Related Functions		1	Veri	y 🖳 🤇	Delete					
Open/Close All(T) Deselect All(N)	· CPU	Built-inMe	mory	<b>I</b> 50	Memory Card 🛛 🚺	Intelligent Function Module				
Module Name/Data Name			ch.	Detail	Title	Last Change	Size	te)		^
🖬 🐴 Sample	R									
🖨 🛃 Parameter										
System Parameter/CPU Parameter (	2					2024/01/18 15:33:35	Not C	ulated		
Module Parameter (Standard/Safety)			-			2024/01/18 15:33:35	Not C	ulated		
Module Extended Parameter:0010:R			2			2024/01/18 15:33:35	Not C	ulated		15
Memory Card Parameter						2020/09/22 10:39:46	Not	ulated		
Remote Password						2020/09/22 10:41:03	Not C	ulated		
😑 🛃 CC-Link IE TSN Configuration										
Device Station Setting (Safety)				Detail		- C	Not C	ulated		
🗄 🏦 Global Label	R									
Global Label Setting	2					2024/01/18 15:33:33	Not C	ulated		
Safety Global Label Setting	2				1	2021/01/08 11:21:11	Not C	ulated		- L

#### **3.** After writing is completed, click [Close].

Write to PLC	
	22/22
	100/100%
Program File(MC): Writing Completed Safety, Program File(SAFETY) Writing Completed File consistency check: Completed FB File(SIbFFile): Writing Completed FB File(File): Writing Completed Device Memory(MAIX): Writing Completed File Register(MAIX): Writing Completed Common Device Comment: Writing Completed Common Device Writing Completed Local Label Initial Value(MC): Writing Completed Local Label Initial Value(MC): Writing Completed Write to PLC : End	<b>^</b>
The window is automatically closed when the operat	tion is completed
Close	

#### 4. Click [Close].



# 2.8 Safety Function Cancel Program

When performing safety sub-function control using a network, it is necessary to create a program that cancels the safety functions in advance.

The safety function can be canceled by turning the corresponding assigned bit ON.

Bit assignments are the contents set in " Page 39 Safety Communication Settings."

Create an operation program such as the following.

For program details, refer to " Page 95 Sample Program."



Point P

In this program, the safety functions are enabled/disabled by turning the assigned label device ON/OFF.

#### Canceling the safety functions

The conditions when each safety function has been canceled are shown below.



Because each bit is ON, the safety functions are not activated.

#### **Enabling safety functions**

The conditions when the safety functions are enabled are shown below.

Read Mntr								
1	itle]Com	imand	 	 	 	 		
		Cm STOC						STOC
2	(0)	-						SAVYO
-			 	 	 	 	 	
								$\frown$
		Cm_SS1C						SS1C
3	(20)							SA¥Y1
		/	 	 			 	-
								-
		Cm_SS2C						S\$20
4	(23)							SATY2
		3.00						ľ
		Cm SDIPC						SELEC
5	(26)							SACE
	1007		 	 	 	 	 	
_								
		Cm_SDINC						SDINC
6	(29)							SA(Y6
								P
		0= 81 810						81010
	()	OIILOLOTO						0.000
·	(32)		 	 	 		 	3/10
		-						ľ
		Cm_SLS2C						SLS2C
8	(35)							SACY9
								1

When Cm\_SS1C is turned ON, SA¥Y1 turns OFF and the SS1 function is activated.

# 2.9 Program Writing

Write the settings that have been made using GX Works3 so far to the CPU module.

#### Point P

- Stop the CPU module.
- Connect the CPU module and PC using the USB cable.
- Set the GX Works3 connection destination setting to USB.

#### Operating procedure

#### 1. Perform [Rebuild All].

[Convert] ⇒ [Rebuild All]

Con	vert	View	Online	Debug	Recordin				
P	Con	Convert(B) F4							
4	Onli	Online Program Change Shift+F4							
<b>P</b>	Reb	uild All		Shift+	Alt+F4				
	Che	ck Synta	x		•				
	Prog	gram File	e Setting						
	Worksheet Execution Order Setting								
	Setting								

2. Check that Label Assignment is [Reassignment], then click [OK].



Point P

If Label Assignment is [Retain], click [Options] and select [Yes] for [Reassign Labels in Executing Rebuild All].

Options			×
Project	Program Check		^
Program Editor	Execute Program Check after Build or Online Program Change	No 🔻	
Other Editor	Target the SET instruction for duplicated coil check	Yes 🔻	
V Edit	Operational Setting		
	Use the Same Label Name in Global Label and Local Label	No	
Find/Replace	Optimization of Number of Steps		
Parameter	Optimize the Number of Steps	Yes 👻	
Monitor	Ontimize Level	Level 2	
P Online	Reassign Labels in Executing Rebuild All	Yes 🔻	
R Convert	stop the Wohlton in Executing Convert/Rebuild All	NO	
	Check the data type of instruction argument	Do Not Check Only BMOV(P)/FMOV(P)	
Basic Setting	Language for Instruction Conversion of Character String Operation and Label Initial Value	User Locale	~
Online Program Change	Reassign Labels in Executing Rebuild All		
Output Result	Select whether to reassign labels in executing Rebuild All.		
C Intelligent Function Module	Memory usage is optimized if [Yes] is selected. Unable to execute Online Program Change of	or write to PLC while PLC is running.	
I Simulation			
iO Works Interaction			
		Import Export	
Back to Default Back to User D	efault Set as User Default	OK Cancel	

- 3. Display the [Online Data Operation] window.
- ∑ [Online] ⇒ [Write to PLC] ⇒ [Online Data Operation] window

Online Data Operation								-		×
Display Setting Related Functions										
Write Write Read	9	1	Verify	🖳 🎸	Deleo	e				
Parameter + Program(F)         Select All           Open/Close All(T)         Deselect All(N)	Legend CPU I	Built-in Me	mory	SD M	lemory Card	Intelligent Function Mod	ule			
Module Name/Data Name		5		Detail	Title	Last Change	Size (Byte)			^
🗐 📲 Sample										
🗆 😰 Parameter										
System Parameter/CPU Parameter (						2024/01/18 15:33:3	5 Not Calculate	ed .		
Module Parameter (Standard/Safety)						2024/01/18 15:33:3	5 Not Calculate	d		
Module Extended Parameter:0010:R						2024/01/18 15:33:3	5 Not Calculate	ed .		
Memory Card Parameter						2020/09/22 10:39:4	5 Not Calculate	d		
Remote Password						2020/09/22 10:41:0	3 Not Calculate	ed		
🗄 🛃 CC-Link IE TSN Configuration										
Device Station Setting (Safety)				Detail			Not Calculate	ed		
😑 🏥 Global Label										
Global Label Setting						2024/01/18 15:33:3	3 Not Calculate	d		
Safety Global Label Setting						2021/01/08 11:21:1	1 Not Calculate	ed		$\sim$
Display Memory Capacity 😵										
Size Calculation								Free		
								1253/1280Kt	•	
Legend Data Memory								Free		
Used								18280/20488	81B	
Increased Device/Label Memory (File Stor	age Area) -							Free		
Decreased								1874/1938K8	1	
Free: 5% or Less SD Memory Card								Free		
								0/0KB		
							Execute		Close	,

4. Execute writing to the programmable controller.

[Select All] ⇒ [Execute]

				<b></b>	SMD LOU	· 🔤 🗸						
Parameter + Program(F)	Sele	ct All	<ul> <li>Colle</li> </ul>	ullt-In Ma	mon	II so a	amon Card	The late	linest Exection Module			
Open/Close All(T)	Desel	All(N)		- and a state of the	alevery		initially care	Can and	any since si			
odule Name/Data Name				8	i dh	Detai	Title		Last Change	Size (Byte)		-1
Sample			۲	_	_							
😑 🛃 Parameter		_										
- System Para	ameter/CPU	aneter (	2						2024/01/18 15:33:35	Not Calculate	d	-1
- Module Para	meter (Star	rd/Safety)	M						2024/01/18 15:33:35	Not Calculate	d	-1
Module Exte	nded Paran	#:0010:R					-		2024/01/18 15:33:35	Not Calculate	d	-1
Memory Car	d Paramete							2	2020/09/22 10:39:46	Not Calculate	d	_
Remote Pas	sword		2			_	-	3	2020/09/22 10:41:03	Not Calculate	d	-
GC-Link IE T	SN Conti	ration										
Device Stati	on Setting (	ety)	8			Detai			-	Not Calculate	d	-1
😑 🛅 Global Label												
Global Label	Setting	_					-		2024/01/18 15:33:33	Not Calculate	d	-1
Safety Glob	al Label Sett	£	2		_				2021/01/08 11:21:11	Not Calculate	d	- 1
Display Memory Capacity	(8)											
ory Capacity		_										
Size Calculation	Program Ner	<u>e</u>									Free	
		_									1253/1280KB	
end	Data Memory										Free	
Used											18280/20488KB	
Increased	Device/Label	nory (File Store)	pe Area) —								Free	
Decreased											1874/1938KB	
Free: 5% or Less	SD Memory (										Free	
											0/0KB	
										Execute		Close

If a user authentication message is displayed, follow the instructions on the screen.

5. When writing to the programmable controller is completed, click [Close].



6. A writing completed window appears. Check the checkboxes of [Confirmation 1] and [Confirmation 2], then click [Close].

MELSOFT GX	Works3		
<b>(</b> )	Safety program and before switching to s	parameters were written. Please confirm the followings safety mode.	
	[Confirmation 1]	Test the program thoroughly under the appropriate application environment.	
	[Confirmation 2]	Please follow the instruction manual to read the safety program and parameters ☐ from the target module to write, visually check whether they are consistent with the ones of setting contents.	
Do not show	w this message from ne	at time.	

**7.** Each time that writing to the safety programmable controller is performed, the e-Manual Viewer launches and an explanation about switching safety operation mode is displayed.

Select whether to operate normally as a safety system (SAFETY MODE) or whether to change the safety program, safety parameters, or other elements (TEST MODE).

This function was installed based on instructions from the certification agency. Here you can leave it in TEST MODE. Close the e-Manual Viewer window.



#### 8. Click [Close].

Online Data Operation								-		×
Display Setting Related Functions										
	d 🖳	1	Verify	· 🖳 🎸	Dele	te				
Parameter + Program(F)         Select All           Open/Close All(T)         Deselect All(N)	Legend CPU E	Built-in Me	mory	SD M	lemory Card	💼 Intelligent Function Mod	ule			
Module Name/Data Name	*	-	6	Detail	Title	Last Change	Size (Byte)			^
∎-¶ Sample										
🚊 🛃 Parameter										
System Parameter/CPU Parameter (	V					2024/01/18 15:33:3	5 Not Calculat	ed		
Module Parameter (Standard/Safety)	•					2024/01/18 15:33:3	5 Not Calculat	ed		
Module Extended Parameter:0010:R						2024/01/18 15:33:3	5 Not Calculat	ed		
Memory Card Parameter						2020/09/22 10:39:4	5 Not Calculat	ed		
Remote Password						2020/09/22 10:41:0	3 Not Calculat	ed		
😑 🛃 CC-Link IE TSN Configuration	<ul><li>✓</li></ul>									
Device Station Setting (Safety)	•			Detail		-	Not Calculat	ed		
😑 🏠 Global Label										
Global Label Setting	V					2024/01/18 15:33:3	3 Not Calculat	ed		
Safety Global Label Setting	•					2021/01/08 11:21:1	1 Not Calculat	ed		~
Direku Mamaa Caacia										
Dispay Henory Capabily										
Program Memory								Free		
Size Calculation								1253/1280KB	3	
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Device/Label Memory / Ele Sto	con Ama)							Erro		
Increased Device Laber Meriory (The So								1874/1938KE	3	
Decreased 5D Memory Cod								Enne		
Free: 5% or Less SD Memory Card								0/068		
								0,000		
							Execute		Clos	e
								_		
$\bigcirc$										

Point *P* 

After writing is completed, turn the power to the overall system OFF and back ON.

# 2.10 Safety Parameter Settings Using MR Configurator2

# Setting the servo amplifier safety parameters

Use MR Configurator2 and set the servo amplifier safety parameters.

Here, set the following items. The setting contents are explained beginning from step 7.

#### Precautions

The settings introduced in this section are an example. When using with an actual system, give sufficient consideration to ensure that there are no problems with control in that system.

For details of the parameters, refer to the following manuals.

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

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

MR-J5-G/MR-J5W-G User's Manual (Parameters)



Parameter No.	Name
PSA01.0	Safety sub-function activation setting
PSA01.1	Input mode selection
PSA02.1	Position/Speed monitor setting
PSC01	Transmission interval monitor time
PSA03	SS1/SS2 deceleration monitor time
PSA07	SLS deceleration monitor time 1
PSA11	SLS speed 1

#### Operating procedure

- 1. Connect the servo amplifier and PC by USB.
- 2. Start MR Configurator2.
- 3. Create a project.
- [Project] ⇒ [New Project]
- 4. If a project close confirmation window appears, click [Yes].

MELSOFT	F MR Configurator2	×
	Is it OK to close the project?	
	Yes No	

5. In the [New Project] window, set the model of the servo amplifier and click [OK].

ew Project (Sing	le Axis)	2
Model	MR-J5-G(-RJ)	×
Operation mode		~
Multi-ax. unificati	on	~
Station	00	~
Option unit	No Conne tion	~
Connection setting		
<ul> <li>Servo amplifi</li> </ul>	er connection JSB	
- O Servo amplifi	er connection (S-422 (R	S-232C) -
Com, speed	AUTO	×
Port No.	AUTO	~
Search com.	speed/port N . automa	tically
O Network/con	troller	
The last-used pro	oject will be op ned whe	never
	ОК	Cancel
Switch to Multi-a	xis Project	
Switch the window by	clicking this button whe	n you want
to create multi-axis co	onfiguration.	
om		
em		

Item	Setting
Model	MR-J5-G(-RJ)

6. A window confirming reading of parameters from the servo amplifier appears. Click [No].



2

#### 7. Enable [Safety sub-function].

[Safety] ⇔ [Safety Parameter Setting] ⇔ [Function display (List)] ⇔ [Safety sub-function]

Safety Parameter Setting X								
🔳 Axist 🖌 Serial No			+ Read 🕐 Set To Defa	At Soverfy D Farance	er Coos.			
POpen Paseve As	v./Pease	Undo /	Witch .					
Function display (List)		_						
Safety sub function					Write Single Axis Vinite			
a mark book beophany	No.	Abbr.	Name	Unit Setting race	Axis1			
Safety sub function 1	Safety ma	b-function as	tvation setting			1		
- Safety sub function 2	Cartino	nrad ra			Cattion	_		
Network	PSA01.0	**	Safety sub-function activation setting	0-	1: Enabled			
Safety I/O device	COLUMN AND							
Extension	Basic							
Excellenter.	PSA01.1	-	Input mode selection	0-	0 : Safety observation function control by input device	•		
	P5402.1		Position/Speed monitor setting	0.	0 : Do not perform position/speed monitoring	-		
			Republic dearbox on Deard dearbox on		0 : CCW or positive dr. during find, pis, input, CW or negative dr. during rev. pis, input	1		
	10000	100	(Rolation or econ service or econ ser	v-				
	percent	++cur	Transmission infantal months fina	16-100				
	1001	340	The sings of more received and	35-200		- 34		
	PS403	TRAM	551,852 deceleration monitor time	0-6000		1000		
	552/505							
	PSAGO	Tagere	SS1/SS2 deceleration monitor time	0-6000		1000		
	PSA04	##SSS	Safety sub-function - Stop speed	0-1000		50		
	PSA05	***550P	SOS permosible travel distance	0-200		3		
	PSA06.0		SOS permissible travel distance unit sel.	0-	0:1[rev]	-		
	PSAIS	**SLST	Safety sub-function - Speed detection delay time	5-200		10		
	PSA17	**SOSPT	Safety sub-function - Position detection delay time	0-200		0		
	PSA24	**SSTC	SS1/SS2 deceleration monitor time constant	0-2000		100		
	PSA25	**SSOF	S\$1/S\$2 deceleration monitor speed offset	0-1000		0		
	PSA26	**\$\$07	SS1/SS2 deceleration monitor delay time	0-6000		100		
	SLS.							
	P5407	**SLSOT L	SLS deceleration monitor time 1	0-6000		1000		
	PSAGE	***SLSOT2	SLS deceleration monitor time 2	0-6000		1000		
	PSA09	"SLSDT3	SLS deceleration monitor time 3	0-6000		1000		
	PSA10	SLSDT4	SLS deceration monitor time 4	0-6000		1000		
	[PBAII	36551	SY9 IDeed 1	0-1000		50		

Item	Setting
Safety sub-function activation setting	1: Enabled

8. Configure the settings related to the safety sub-function.

Concerning and a second large second and a second large second and a second large second la	4 0 -
Conce         Direct As Instruction         Direct As Instruction <thdirect as<br="">Instruction         <thdirect as<br="">Ins</thdirect></thdirect>	
Bernard display     Control     Contrel     Control     Control     Contro     Control     Contrel	
Marcol         Name         Out         Category and and signify           - Marcol         Name         Unit         Category and and signify         Add 1           - Marcol         Name         Unit         Category and and signify         Add 1           - Marcol         Name         Unit         Category and and signify         Add 1           - Marcol         Setting and and signify         Add 1         Setting and and and and add 1         Add 1           - Marcol         Setting and and signify and and and add 1         Unit         Category and and add 1         Setting and add 1         Add 1           - Marcol         Setting and add 1         Setting and add 1         Setting and add 1         Setting add 1         Setting add 1         Setting add 1           - Marcol         Setting add 1         Pack and an add 1         Setting add 1	
Selfs yob (uncline)     No.     Add.     No.     Add.       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)       Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)     Selfs yob (uncline)	
Series gab function 1         Series gab function 1         Series gab function 1           Series gab function 1         Series gab function 1         Series gab function 1         Series gab function 1           Series gab function 2         Series gab function 2         I 1 Sealed         Series gab function 2           Series gab function 2         Figure and provide series and provide series gab function and series on series on series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series and provide series gab function 2         I 1 Sealed           Series gab function 2         Figure and provide series gab function 2         Figure and provide series gab function 2           Series gab function 2         Figure and provide series gab function 2         Figure and provide series gab function 2           Series gab function 2         Figure and provide series gab function 2         Figure and pr	
Subtry (U) Genice         Status         Status         Status           Status         Status         Status         Status	
Network Servicy (of arrive Extension)         OwnLut # (of arrive ar	
Setty (1) Claricity         Payl, mole selection         Payl, mole	
Extension         9-21 1: Safety observation multicas costrol by assistence           PA0.1 **         ***         Page mode selection         0-21 1: Safety observation multicas costrol by assistence           PA0.2 ***         ****         Page mode selection         0-21 1: Safety observation multicas costrol by assistence           PA0.2 ***         ****         Page mode selection selec	
PAID.1         Image: Control (peer function setting)         6-32         1 is Perform parallely organ monitoring by using functional setting conversion/ling exercises           Station (peer function and the setting)	1.00
Sci20.0         **         Sci20.0         **           Selection Section	a motor
Safety communitation         U           94(53)         "#SC         Tail commodute refer viail encode time         34-2000           95(4)         "#SC         55(5)(2) decider ation monitor time         34-2000           95(4)         "#SC         55(3)(2) decider ation monitor time         34-2000           95(4)         "#SC         55(2) decider ation monitor time         34-2000           95(4)         "#SC         55(2) decider ation monitor time         34-2000           95(4)         "#SC         55(3) decider ation monitor time         34-2000           95(4)         "#SC         55(3) decider ation monitor time constant         0-20000           95(4)         "#SC         55(3) decider ation monitor time constatit	
PGC0         "SPC         Transmission interval monitor time         14-1000           Stat         "Stat         Stat	
Stat         ***ST         Status         ***ST           FA403         ***ST         Status         ***ST         Status           FA404         ***ST         Status         ***ST         Status           FA405         ***ST         Status         ***ST         Status         ***ST           FA405         ***ST         Status         ***ST         Status         ***ST         Status         ***ST           FA405         ***ST         Status         ***ST         Status         ***ST         Status         ***ST           FA405         ***ST         Status         ***ST         Status         ***ST         Status         ***ST	32
PA403         ***371         551/262         deciseration months there         0-40000           PA403         ***301         551/262         deciseration months there         0-40000           PA404         ***301         551/262         deciseration months there         0-40000           PA404         **502         Stafety multi-Anction - Stop gened         0-40000           Pa404         **502         Stafety multi-Anction - Stop gened         0-40000           Pa404         **502         Stafety multi-Anction - Stop generation deciseration         0-4000           Pa404         **502         Stafety multi-Anction - Staget defection deciseration         0-4000           Pa404         **5127         Stafety multi-Anction - Staget defection deciseration         0-4000           Pa404         **5175         Stafety multi-Anction - Staget defection deciseration         0-40000           Pa404         **5175         Stafety advanction months are defatified.         0-40000           Pa404         **5175         Stafety advanction months are defatified.         0-40000	1000
553,000         ***507         551,552,9500/entetion marker time         0-40000           553,404         ***505         2544947         ab-factors         359 speed         0-40000           553,404         ***505         2544947         ab-factors         359 speed         0-40000           553,404         ***505         254497         ab-factors         359 speed         0-40000           553,405         ***500         sectors         500         19424         ***517         51459         sectors         -5000           F43,42         ***517         5145,21         decestration marking sectors         0-2000         0-2000           F42,42         ***517         514,512         decestration marking sectors         0-2000           F42,42         ***517         514,512         decestration marking sectors         0-2000	1000
PAG0         "VST         S5/02-0 decide atom namos time         0 40000           PAG44         "VSDF         S5/02-0 decide atom namos time         0 40000           PAG42         "VSDF         S5/02-0 decide atom namos time         0 40000           PAG42         "VSDF         S5/02-0 decide atom namos time         0 4000           PAG42         "VSDF         S5/02-0 decide atom namos time         0 4000           PAG43         "VSDF         S5/02-0 decide atom namos time         0 4000           PAG43         "VSDF         S5/02-0 decide atom namos time         0 4000           PAG43         "VSTF         S5/02-0 decide atom namos time constant         0 -0000           PAG44         "VSTF         S5/02-0 decide atom namos time decide atom         0 -0000           PAG42         "VSTF         S5/02-0 decide namos time constant         0 -0000	
PEAD         ***55         Safety au/Anction - Stop speed         0-1000           PEADS         ****         500 permissible tweed dataman         0-1000           PEADS         ****         500 permissible tweed dataman         0-2000           PEADS         ************************************	1000
PAG0         **500         EOD permittable travel distance         0-1000           PAG0.0         **500         -500 permittable travel distance units of         0-2011 [Per]           PAG1.1         **50.17         Edler ju ab Arction - Special distance delay time         5-2000           PAG1.4         **50.75         Edler ju ab Arction - Special distance delay time         5-2000           PAG4.4         **50.75         Edler ju ab Arction - Special distance delay time         0-2000           PAG4.4         **50.75         Edler ju ab Arction - Special distance delay time         0-2000           PAG4.4         **50.75         Edler ju ab Arction - Special distance montrial grade diffet         0-2000	50
PALS         ***         SSO generalisable trand distance unit stel.         0-2/01 [Per]           SALIS         ***100         SSO generalisable trand distance unit stel.         0-2000           PALS         ***100         SSO generalisable trand distance distance unit stel.         0-2000           PALS         ***100         SSO generalisable trand distance dista	3
PALIS         ***81.57         Selety to & Anctom - Speed detection delay time         5-2000           PALIS         ***81.57         Selety to & Anctom - Speed detection delay time         0-2000           PALIA         ***817         SEL832         detection time constant         0-2000           PALIA         ***817         SEL832         detection time constant         0-2000           PALIA         ***817         SEL832         detection monitor ages defat:         0-2000	-
PAL1         "SDDPT         Ender yu A-Acton - Pation detection delay time         0-2000           PAL4         "SDDPT         S18/32 doublet non-minimum operation         0-2000           PAL5         "SDDPT         S18/32 doublet non-minimum operation         0-2000           PAL5         "SDDPT         S18/32 doublet non-minimum operation         0-2000	20
P6A24 "1STC 551/S52 deceleration montry time constant 0-20000 P6A25 "150/DF S51/S52 deceleration montry speed office: 0-20000	0
PSA25 ***S50F S51,852 decaleration monitor speed offset 0-2000	100
TOTATION DESCRIPTION OF A DESCRIPTIONO OF A DESCRIPTION O	0
Lavas agri astigas deses agri munu desi ane descritori	100
<b>95</b>	
PSA07 **SLSDT1 SLS deceleration monitor time 1 0+60000	1000
PSA08 "SLSDT2 SLS deceleration mention time 2 0-60000	1000
PSAGe "TaLADT3 ISA decembran monto tine 3 040000	1000
20.01 20.001 9 0.000 00 000 00 00 0 0 0 0 0 0 0 0 0	1000
12341 24304 342 3060 1 010000	50 M

Item	Setting
Input mode selection	1: Safety observation function control by network
Position/Speed monitor setting	1: Perform position/speed monitoring by using functional safety corresponding servo motor



In the safety sub-function settings, the recommended parameter settings and achievable safety level vary depending on the system configuration.

#### 9. Set the transmission interval monitor time.

For information about the transmission interval monitor time, refer to "IP Page 46 Monitoring time for safety communication."

🔳 Axist 🛛 🛩 Serial No. —			+] Read 🕐 Set To Defau	IL Sig V	eify D Farmels	er Cooxy	
Open MSeve As	(Syste	Mundo /	MREAL				
Function display (List)	Safety su	le function			Selected Items	Write Single Axis Write	
III List display	No.	Abbr.	Name	Unit	Setting range	Axis1	
Safety sub function 1	Safety 64	b-function a	ctivation setting				
Safety sub function 2	Startup pr	ocedure				Setting	
Network	PSA01.0	**	Safety sub-function activation setting		0-1	-1 1 : Enabled	
Safety 1/D device	Safety sub						
Extension	Basic						
Excellent the second se	PSA01.1		Input mode selection		0-2	1: Safety observation function control by network	
	PSA02.1		Position/Speed monitor setting		0-3	1 : Perform position/speed monitoring by using functional safety corresponding servo motor	
	P5C03.0	***	Rotation direction sel./travel direction sel.		0-1	0 : CCW or positive dr. during field, pis. input, CW or negative dr. during rev. pis. input	
	Safety cor	munication					
	PSC01	**SNC	Transmission interval monitor time		26-1000		
	551	1 Contraction					
	P5A03	**SST	551/552 deceleration monitor time		0-60000	1	
	\$\$2,505						
	P5403	**557	551/552 deceleration monitor time		0-60000	1	
	PSA04	**\$\$\$\$	Safety sub-function - Stop speed		0-10000		
	PSA05	**SSDP	SOS permissible travel distance		0-1000		
	PSA06.0	**	SOS permissible travel distance unit sel.		0-2	o::Ned	
	P5A15	**\$L5T	Safety sub-function - Speed detection delay time		5-2000		
	PSA17	**SOSPT	Safety sub-function - Position detection delay time		0-2000		
	PSA24	**SSTC	\$\$1/\$\$2 deceleration monitor time constant		0-20000		
	PSA25	**\$50F	SS1/SS2 deceleration monitor speed offset		0-10000		
	PSA26	**SSDT	S51/552 deceleration monitor delay time		0-60000		
	8.9	1					
	10407	2,5011	3LS deceleration monitor time 1		0-60000		
	115,408	TSLSDT2	SLS deceleration monitor time 2		0-60000	1	
	PORCH 10	- SLSDTJ	als decentration monitor time 3		0-60000		
	000.11	and 641	Discourse and including the 4		0-80000		
	P5412	++0 CC2	0 Central 2		0-10000		
	10.000	2.441					

Item	Setting
Transmission interval monitor time	32 (default)

**10.** In this manual, because the SS1 function is used, set the deceleration monitor time for the SS1 function.

arist 🛩 Serial No.			+] Read 🕐 Set To Defa.	AL BRIN	erfy Cl Farancier Co	209
pen Miseve As	er (Tyrate	Undo /	WResky			
Function display (List)	Safety su	b function			Selected Stems With	e Secte Ava Vinte
savery sub-tune tion	No	Abbr	Nama	THE .	Catton ranna	Ave 1
List dispusy	Colon no	Frank In	Theshop particula	unit.	acceding to the	PART
Safety sub function T	Startup or	ocedure		_		Settion
safety sub function 2	010430		Calaty as hull portion activation patient		0-1 1-1	Enabled
Network	Eafaily out	Anthon	and the second second second	-		
Safety I/O device	Basic			-	a constant of the second s	
Extension	P5A01.1		Input node selection		0-2 1:5	Safety observation function control by network
	PSA02.1	84.	Position/Speed monitor setting		0-2 1:1	Perform position/speed monitoring by using functional safety corresponding servo motor
	PSC03.0	44.0	Ontation direction sel Jiravel direction sel		0.1.010	CCW or positive dr. during find, pis. input, CW or negative dr. during rev. pis. input
	Safety m	non-mination				
	PSC01	**SNC	Transmission interval monitor time		26-2000	
	551	1 CONTRACT				
	P5A03	**SST	551/552 deceleration monitor time	-	0-60000	10
	\$\$2,505					
	PSA03	**557	551/552 deceleration monitor time		0-60000	100
	PSAD4	**555	Safety sub-function - Stop speed		0-10000	1
	PSA05	**SSDP	SOS permissible travel distance		0-1000	
	PSA06.0	**	505 permissible travel distance unit sel.		0-2 011	1 Ped
	PSA15	**\$1.57	Safety sub-function - Speed detection delay time		5-2000	and a
	PSA17	**SOSPT	Safety sub-function - Position detection delay time		0-2000	
	PSA24	**SSTC	\$\$1/\$\$2 deceleration monitor time constant		0-20000	
	PSA25	**\$50F	SS1/SS2 deceleration monitor speed offset		0-10000	
	PSA26	***SSDT	\$51/552 deceleration monitor delay time		0-60000	1
	8.9					
	PSA07	***SLSOT1	SLS deceleration monitor time 1		0-60000	100
	PSA08	**SLSDT2	SLS deceleration monitor time 2		0.60000	10
	PSA09	***\$L\$DT3	BLS deceleration monitor time 3		0-60000	10
	P5A10	-3LSDT4	SLS deceleration monitor time 4		0-60000	10
	PSA11	***51.581	SLS speed 1		0-10000	
	100432		UNUX STORED X		11+30000	

Item	Setting
SS1/SS2 deceleration monitor time	1000 (default)

Point P

Because the SS1 function is used when an error was found as a result of self-diagnosis, be sure to set the SS1 function parameters.

#### **11.** In this manual, because the SLS function is used, configure the settings for the SLS function.

Safety Parameter Setting X					4					
Axist	Serial No			+ Read 🕐 Set To Defau	IL SIN V	eify D Farancia	er Coop			
Doen Mise	we As Chicage	Tyrate	Undo /	Witch,						
Stery of	display (List) b function	Safety su	b function			Selected Items	Write Single Axis Write			
a m List displa	y	No.	Abbr.	Name	Unit	Setting range	Axis1			
Safety sui	b function T	2.5	1		_					
-Safety sul	b function 2	PSAQ7		SLS deceleration monitor time 1	-	0-60000		1000		
Network	Concerned and	PSAUB	SLSD12		-					
Safety VC	device	PSA09	**SLS013	SLS deceleration monitor time 3		0-60000		1000		
Extension		ULACY	SLADIA	PRODUCT PRODUCTION CONTRACTOR OF						
Excel (page		PSA11	51.551	SLS speed 1		0-30000		200		
		11ACM	10226	A.3 (600 1		A 18888				
	1	PORIJ	- 26.203	Ska speed a	_	0-30000				
		POA15	94,504	3.5 Spect 4 Particle on the American Proved defaultion defaultions		5.2000		30		
	1	12813	3,51	salety sub-runcoun - speed detection deay time		3,2000				
		50110	which and	(MM mand		0.10000		-		
	1	PEANS	***CENART	Non speed		0-10000				
		SUL	1.000000	and the set most .		0-20000				
		05404	******	Cafety sub-Arrotion - Stop mead		0.10000		en .		
		PSA15	eng st	Safety sub-function - Speed detection delay time		5-2000		20		
		PGA77	**SOUTP	The notifue direction monitor delay time		0.40000		1000		
		PSA28	**SOEDTN	SDI negative direction monitor delay time		0-60000		1000		
	1	9.1								
	1	PSA17	***505PT	Safety sub-function - Position detection delay time		0-2000		0		
		01000		G Loaminshia traval dataona , Unit salaction 1		0.2	0:1 frev1	-1		
	1	25801	***0 1001	El transmisia traval detacca - Boettra deactors 1		0-1000				
		DEBAG	100 TOR/1	B Longitudia travel detance - Popular director 1		0.1000				
		9.7	- Aprila	and permanent of the open of the permit of the of the		0-2000		1		
		00810	##Q TD1	O T two a upper linit value 1		+1000.0-1000.0		15.0		
		P5811	mag TP2	SLT torque upper limit value 2		+1000.0-1000.0		15.0		
		P5812	**9,TP3	SLT torque upper limit value 3		-1000.0-1000.0		15.0		
		PS813	**STP4	S.T torque upper limit value 4		-1000.0-1000.0		15.0		
		PS814	**SLTN1	SLT torque lower limit value 1		+1000.0-1000.0		-15.0		

Item	Setting
SLS deceleration monitor time 1	1000 (default)
SLS speed 1	200

# Writing the safety parameter settings

Write the parameters that have been set using MR Configurator2 so far to the servo amplifier.

- There are two writing methods: [Single Axis Write] and [Selected Items Write].
- Single Axis Write: All parameters are written for the selected axis.
- · Selected Items Write: Parameters are written only for the selected items.

Here we explain the procedure for [Selected Items Write].

#### Operating procedure

Repeatedly execute steps 1 to 5 and write the next parameters to the servo amplifier. However perform writing of the safety sub-function activation setting last.

Parameter No.	Name
PSA01.0	Safety sub-function activation setting
PSA01.1	Input mode selection
PSA02.1	Position/Speed monitor setting
PSC01	Transmission interval monitor time
PSA03	SS1/SS2 deceleration monitor time
PSA07	SLS deceleration monitor time 1
PSA11	SLS speed 1

#### **1.** Select the parameter to write.

Safety Parameter Set	ting x					41	
Axist Seriel No	-		+ Read 🕐 Set To Defa	AL BRAN	eify B talanci	er Coox	-
Open Mave As	y. (Tyrate	Mundo /	Winter,				
Function display (List)	Safety su	b function			Selected Items	Write Secie Avo Write	
Servery sub-function	No.	Abbr.	Name	Line :	Setting range	Avel	16
Safety sub function 1	SIGN 62	-function a	divation sections				0
	Startup or	Startup procedure				Settra	ŧ
- Safety sub function 2	25401.0	44	Calaty as hull portion activation patient		0.1	1-Enabled	1
Network	Safety 64	-finction	and the second second	-			
safety VO device	Basic						81
extension	P5A01.1		Input node selection		0-2	1: Safety observation function control by network	t:
	PSA02.1	##.C	Position/Speed monitor setting		0-3	1 : Perform position/speed monitoring by using functional safety corresponding servo motor	13
	PSC03.0	HE	Rotaton directon sel./travel direction sel.		0-1	0 : CCW or positive dr. during fiel. pla. input, CW or negative dr. during rev. pls. input	1
	Safety cor	munication					1
	PSC01	**SNC	Transmission interval monitor time		26-1000	32	
	551						
	P5A03	**SST	551/552 deceleration monitor time		0-60000	100	
	\$\$2,505						
	P5403	**\$57	551/552 deceleration monitor time		0-60000	1000	
	PSA04	**\$\$\$	Safety sub-function - Stop speed		0-10000	50	
	PSA05	**SSOP	SOS permissible travel distance		0-1000		8
	PSA06.0	**	SOS permissible travel distance unit sel.		0-3	e:thed	
	PSA15	**\$157	Safety sub-function - Speed detection delay time		5-2000	1	
	P\$A17	**SOSPT	Safety sub-function - Position detection delay time		0-2000		
	PSA24	**SSTC	\$\$1/\$\$2 deceleration monitor time constant		0-20000	100	
	PSA25	**\$50P	SS1/SS2 deceleration monitor speed offset		0-10000		
	PSA26		SS1/SS2 deceleration monitor delay time		0-60000	100	
	9.5	I and share					
	00407	##D CDT1	C 5 deceleration menter time 2		0.40000	1000	
	DCA00	**************************************	SLS deceleration monitor time 2		0.60000	100	
	85410	***0 5013	C C develop allow more than all C		0-60000	100	
	PEATI	ang 651	S S seed 1		0-10000		
	and a lot of the lot o		A STATE OF A		0-20000		144

#### 2. Click [Selected Items Write].

Safety Parameter Setting ×	4 Þ 🗸
Axis1 Serial No	📢 Read 🗟 Set To Default 🙀 Verify 📲 Parameter Copy
Dopen Pase As Copy Paste Undo ARedo	
Safety sub function	Selected Items Write Single Axis Write

3. A confirmation window appears. Click [Yes]. (The window below is an example.)



4. A password authentication window appears. Enter the password and click [OK].

Password Authentication				
Please input the password and click [OK] button.				
Password:	•••••			
OK Cancel				

## Point P

The password "000000" is set on the hardware side (MR-J5-10G-RJ) at the time of factory shipment. The password authentication window appears at first start, or when password authentication has not yet been completed.

5. A write completion window appears. Click [OK].



After writing of all parameters is completed, turn the power to the overall system OFF and back ON.
# 2.11 Enabling the Safety Settings (Safety Remote I/O Module)

Perform the safety module enable process with GX Works3.

Execute the process in the order shown below.

[Start of checking the module position]

 $\downarrow$ 

[Stop of checking the module position] ↓ [Error history clear request] ↓

[Safety module validation]

## Start of checking the module position

#### Operating procedure

1. Display the [Module Parameter] window.

∑ Navigation window ⇔ [Parameter] ⇔ [Module Information] ⇔ [RD78G4] ⇔ Double-click [Module Parameter (Network)]

0010:RD78G4 Module Parameter		x
Setting Item List	Setting Item	
Input the Setting Item to Search	Item	Setting
<b>m</b>	Station Type	Manter Station
	Network No.	master station
E D=	Generation No./IP Address Setting	
Application Settings		
	Explanation	
	Set the station type.	^
		~
Item List Find Result	Check Restore	the Default Settings
		Apply

2. Display the CC-Link IE TSN configuration window.

(Basic Settings) ⇒ [Network Configuration Settings] ⇒ Double-click [Detailed Setting]

0010:RD78G4 Module Parameter		×
Setting Item List	Setting Item	
Insuit the Setting Rem to Search	Item	Setting 🔨
	Network Configuration Settings	
	Network Configuration Settings	<detailed setting=""></detailed>
Required Settings	Communication Period Set	
😑 💽 Basic Settings		
Network Configuration Settings	Device Station Setting	
- Network Topology	Safety Communication Setting	
Communication Period Setting		
Connection Device Information	Explanation	
- Device Station Setting	Set parameters of device stations (the number of points and assignment of lin station.	nk devices) in the master 🛛 🔨
Application Settings		
Item List Find Result	Check_ Restore the Default Settings	
Item List Find room		
		Apply

#### 3. Display the [Command Execution of Device Station] window.

Right-click on [NZ2GNSS2-16DTE]. 
 ⇔ [Online] 
 ⇔ [Command Execution of Device Station]

ß	CC-Lin	k IE TS	N Configuratio	n (Start I/O	: 0010)							
i c	C-Link I	E TSN	Configuration	Edit V	iew Close	with Discarding the S	Setting Clos	e with Refle	ecting the Set	ting		
	C	onneo	ted/Disconnecte	d Module De	tection	Detailed Displ	ау					
	Mode	Settin	g:	Online (	Unicast Mode	.) ~	Assignment	Method:			$\sim$	
	Cyclic	Trans	mission Time (Min	.): 2	0.00 us		Communicat	ion Period In	terval (Min.):	125.00	us	
		No.	Model Name	STA#	Station Tv	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Parame	eter Automatic Setting
						Station	Points	Points	Points	Points		
		0	MD-15-C-D1	0	Master Statio	ion 🔽			24	20		Detail Setting >
	iis Ma	2	NZ2GNSS2-160	DTE 2	Remote Stat	ion 🗹	16	16	4	4		<detail setting=""></detail>
			STA#1	STA#2	Del Par	lete rameter of Device Sta	tion					
Hos	t Station		· 📩 -		Op	en System Configura	tion	•				
			E.		On	line		•	Connected/	Disconnected	Module	Detection
ST	TA#0 M	aster S	st 🖳	740 ( <mark>1</mark> 111111)	Cha	ange Transm			Command E	xecution of D	evice Sta	ation(L)
Te	tal STA	#:2			Pro	operties						
	ie/Star		MR-J5-G-RJ	NZ2GNSS2 16DTE	2-							
			۲									

4. Select [Start of checking the module position] for [Method selection], then click [Execute].

Command Execution of Device Station		×
Target Module Information: NZ2GNSS2-16DTE Start I/O No.:0010 - St	ation No.:2	^ ~
Method selection: Start of checking the m	The flashing of the target module LED is started. Visually check that the LED of the target module for the parameter setting flychion.	g is 🗸
Command Setting	re is no command setting in the selected process.	
Execution Result		
	re is no execution result in the selected process.	
-The refreshed device values of remote 1/O or remote -Accesses the PLC CPU by using the current connection -Processis executed according to the parameters with -For information on items not displayed on the screen,	paters may be overwritten. estimation. Please check if there is any problem with the connection destination. In the PLC CPL rase refer to the Operating Manual.	^
L	Exe	ecute
Save in the CSV file	a	lose

5. An execution confirmation window for the selected process appears. Click [Yes].



6. A user authentication window appears. Enter the password and click [OK].

User Authenticat	on (PLC) X
Log on to PLC. Please enter the	Jser Name registered in PLC.
User Name:	melsec
Password:	•••••
Log on a	s a GUEST OK Cancel

7. A process execution completion window appears. Click [OK].

MELSOF	FGX Works3	×
1	The execution of the process "Start of checking the module position" is completed.	
	ОК	

**8.** Check that SAFETY.LED on the main unit is flashing.



Point P

- If the NZ2GNSS2-16DTE SAFETY.LED is not flashing, check the following.
- Is the module power ON?
- Is the module IP address setting (rotary switch) correct?
- Is the Ethernet cable connected correctly?

## Stop of checking the module position

#### Operating procedure

1. Select [Stop of checking the module position] for [Method selection], then click [Execute].

Command Execution of Devi	ce Station			>
Farget Module Information:	NZ2GNSS2-16DTE Start I/O No.:001	0 - Station No.:2		$\hat{}$
Method selection:	Stop of checking t	ne module position $\sim$	The target module LED is turned off. Visually check that the LED of the target module for the parameter setting is off. Note that the LED does not turn off by even time this command during safety.	Ŷ
Command Setting		There is no command settin	g in the selected process.	
Execution Result		There is no execution result	in the selected process.	
-The refreshed device valu -Accesses the PLC CPU by -Process is executed accor -For information on items n	ues of remote I/O or m using the current con rding to the parameter not displayed on the so	ote registers may be overwrit tion destination. Please check mitten in the PLC CPU, en, please refer to the Opera	ten. If there is any problem with the connection destination. ting Manual.	
			Execute	
Save in the CS	V file		Close	

2. An execution confirmation window for the selected process appears. Click [Yes].



3. A process execution completion window appears. Click [OK].



## Error history clear request

#### Operating procedure

1. Select [Error history clear request] for [Method selection], then click [Execute].

Command Execution of Device	Station			×
Target Module Information:	NZ2GNSS2-16DTE Start I/O No.:001	0 - Station No.:2		< ~
Method selection:	Error history dear	request ~	The error history of the target module is cleared.	Ŷ
Command Setting		There is no command setting in	the selected process.	
Execution Result		There is no execution result in	the selected process.	
-The refreshed device values -Accesses the PLC CPU by us -Process is executed accordi -For information on items not	s of remote I/O or n sing the current con ng to the parameter t displayed on the s	ote registers may be overwritter tion destination. Please check i vritten in the PLC CPU. en, please refer to the Operatin	t. There is any problem with the connection destination. g Manual.	^ v
				Execute
Save in the CSV f	ile			Close

2. An execution confirmation window for the selected process appears. Click [Yes].



3. A process execution completion window appears. Click [OK].



#### Safety module validation

#### Operating procedure

1. Select [Safety module validation] for [Method selection], then click [Execute].



2. A confirmation window appears. Click [Yes].



3. An execution confirmation window for the selected process appears. Click [Yes].



#### 4. A process execution completion window appears. Click [OK].



### 5. Click [Close].

Command Execution of Device	e Station	×
Target Module Information:	NZ2GNSS2-16DTE Start T/O No.:0010 - Station No.:2	^ ~
Method selection:	Safety module validation	I. After the execution, restart the module.
Command Setting	There is no command setting in the selected process.	
Execution Result	There is no execution result in the selected process.	
-The refreshed device value -Accesses the PLC CPU by u -Process is executed accord -For information on items no	is of remote I/O or remote registers may be overwritten. sing the current connection destination. Please check if there is any problem with the conr ing to the parameters written in the PLC CPU. It displayed on the screen, please refer to the Operating Manual.	nection destination.
Save in the CSV	fie	Execute

6. Click [Close with Reflecting the Setting] on the [CC-Link IE TSN Configuration] window to apply the configuration.

_													
ß	CC-	Link	IE TSI	N Configuration (S	tart I/O	: 0010)					_		
8.)	CC-Li	nk IE	TSN	Configuration E	idit \	fiew Close	with Discarding the	Setting Clos	e with Refle	cting the Set	ting		
		Co	nnect	ed/Disconnected Ma	odule De	tection	Detailed Displ	ay					
	Mo	ode S	etting	:	Online	Unicast Mode	) ~	Assignment	Method:			$\sim$	
	C)	(dic T	ransm	ission Time (Min.):	1	10.00 us		Communicat	ion Period In	terval (Min.):	125.00	us	
			Ne	Madel News	CT 4 #	Challen Tur	Motion Control	RX Setting	RY Setting	RWr Setting	RWw Setting	Param	eter Automatic Setting
	11		NO.	Model Name	SIM#	Station Typ	Station	Points	Points	Points	Points		
V	1		0	Host Station	0	Master Static	n						
	- D		1	MR-J5-G-RJ	1	Remote Stat	ion 🗹			24	20	$\square$	<detail setting=""></detail>
	1	-	2	NZ2GNSS2-16DTE	2	Remote Stat	ion 🗹	16	16	4	4	$\checkmark$	<detail setting=""></detail>
Γ				STA#1	STA#2								
Ho	st Sta STA#( ation Total S .ine/S	tion ) Mar STA# tar	ster Si :2	MR-J5-G-RJ N	Z2GNSS	2-							
					16DTE								
				<									

2

## 7. If the window shown below appears, click [Yes].



After the [Safety module validation] process is completed, turn the power to the overall system OFF and back ON.

# **3** Operation Check

# 3.1 Communication with the Safety Remote I/O Module

Check the status of communication with the safety remote I/O module.



- **1** "D LINK" illuminates when the network configuration is written.
- **2** "SAFETY" illuminates when safety systems are enabled.

# 3.2 Checking that Safety Communication Settings were Completed Correctly

When the safety communication settings are written correctly, the servo amplifier display (3-digit, 7-segment LED) shows the normal display.



- "b": Indicates ready-off, servo-off status.
- **2** "c": Indicates ready-on, servo-off status.
- 3 "d": Indicates ready-on, servo-on status.
- The segments of the last two digits indicate the station number.

3

# **3.3** Safety Monitoring Operation Check

Check the operating status of safety speed monitoring (SLS1), safety rotation direction monitoring (SDI), and safety torque cut-off (STO).

#### Preparation for operation check

#### ■Creating a program

The explanation here uses an example of a sample program.

For information about the sample example, refer to " I Page 95 Sample Program."

Open the sample program with GX Works3 and write it to the programmable controller. User authentication is required when launching the sample program. Enter the user name and password listed below. For details of the writing procedure, refer to " Page 60 Program Writing."

User authentication

User name: melsec

Password: melsec

Point P

When a user creates a program, it is necessary to register an FB library in advance. For information about library registration, refer to " Page 93 Library Registration."

#### Checking the switch wiring

Check whether wiring has been connected to the switches on the safety remote I/O module.

#### Checking the USB connection

Check whether the R16SFCPU and MR-J5-G-RJ have been connected to the PC by USB.

### **Monitor start**

Monitoring is performed by both GX Works3 and MR Configurator2.

Point P

Check that the CPU module is running.

#### ■GX Works3 monitor start

(Online] ⇒ [Monitor] ⇒ [Start Monitoring (All Windows)]

8 B 8 9 9 9	·	10 01		2 4 3	= 局銀川		R 101				88%	-		
ject Edit Find/Replace Conve	nt View Online	Debug	Recording	Diagnostics	Tool V	Wedow 1	4elp							1010
			語るな	20	184° - 4	040.90			Gr. 1	0 1 0	014		ak.: 1.008r	ns =
品有認合者 三甲甲酸盐	おおおおは	54 編 28	Will als als	新國家	1223	33	多節為	過信号	1 花花。	9 <i>8</i> • <b>a</b>	열엽길	No R	2 6	Ť,
elon	● × ⊕ safety0	(PRG) (LD	Monitoring	×							-			
°⊂ <b>\$</b> ₩ +	Read Mntr			2	3		5		7			10		12
oject		itle]Out	put		-									
Provem		10.55	STOS											Mo_STOS
i initial	2	(59)	SAVXO	_										1000
Scan														1
Fixed Scan			SSMS											Mo.SSMS
safety01	3	(78)	SAVXI											1642275448
Local Label			-		-		-		-	1	-	_	_	-
ProgramBody		-												
Command	100	2273	SOSS											M6_SOSS
Linergency Stop	· · ·	(81)	EXANS											
END														1
Event .			SDIPS											Mo_SDIPS
No Execution Type	5	(84)	SAVIS											101000010
Unregistered Program												_		-0-
			COINC.											MA OF INC
Label		1021	CAVVE											NO_ODINO
Parameter	-	10/1		_	_				_			_		-0-
		- I	SNERR											Mo_SNERR
	7	(90)	SAVX7											
					1		1	11		1		_		
	1000	-												

## ■MR Configurator2 monitor start

∑ [Monitor] ⇔ [Display All]

	Display All × Alarm Display		
Font	10pt 🔹 Line height 15 🔹 🐯 Clear 🖉	ORestart	Setting Setting
No.	Item	Unit	Axis1
1	Cumulative feedback pulses	pulse	124443
2	Servo motor speed	r/min mm/s	0
3	Droop pulse	pulse	8
4	Cumulative cmd. pulses	pulse	-3187
5	Command pulse frequency	kpulse/s	0
6	Regenerative load ratio	%	0
7	Effective load ratio	%	0
8	Peak load ratio	%	0
9	Torque/Instantaneous torque	%	0
10	Within one-revolution position	pulse	3012173
11	ABS counter	rev	-26023
12	Load inertia moment ratio	times	3.34
13	Bus voltage	V	275
14	Load side encoder cumulative F/B pulses	pulse	0
15	Load side droop pulses	pulse	0
16	Load side encoder information 1		3012173
17	Load side encoder information 2		-26023
18	Servo motor thermistor temperature	°C	9999
19	Cumulative feedback pulses (Motor unit)	pulse	124443
20	Electrical angle	pulse	3012158
21	Servo motor/load side position difference	pulse	0
22	Servo motor/load side speed difference	r/min	0
23	Internal temperature of encoder	°C	49

#### ‴ [Diagnosis] ⇔ [Alarm Display]

Disp	lay All	Alarm Display 🗙						• ۹ ۵
E Axis1	~							
No.	Name			Occurrence time			_	
	Not gene	rated						
Additiona	l information:	(Alarm reset disable)						
Alarm hist	tory		Alarm Occurre	ence Data Display	Causes Again	Occurred Alarm Reset		
	Number		Name		Power-on time [h]	Time		
New 1	582.2	Safety	communication error 2 (safety sul	b-function)	23	12/23/2023 4:26:25 PM	=	
2								
3								
5								
6						Class		
				Alar	m/Warning List	Clear		

#### Safety speed monitoring (SLS1) operation check

If the servo motor speed reaches 200 or higher while the SLS1 function is operating, the STO function activates and stops the motor.

#### Operating procedure

**1.** Press the forward switch (X2).

When the forward switch (X2) turns ON, safety speed monitoring (SLS1) and safety rotation direction monitoring (SDI) are enabled.

The servo motor rotates in the forward direction.

Checking the SLS1 command (GX Works3)

∑ Navigation window ⇒ [Program] ⇒ [Fixed Scan] ⇒ [SAFETY] ⇒ [safety01] ⇒ [ProgramBody] ⇒ [Command]

	Cm_SLS1C	SLS1C
(26)		SA¥Y8

· Checking the operation status of the SOS function (GX Works3)

∑ Navigation window ⇒ [Program] ⇒ [Fixed Scan] ⇒ [SAFETY] ⇒ [safety01] ⇒ [ProgramBody] ⇒ [Output]

	SOSS				Mo_SOSS
(70)	SA¥X3				

· Checking the servo motor speed (MR Configurator2)

Check that the servo motor speed is "100."

	Display All ×		
Font 1	.0pt 💽 Line height 15 📑 🐯 Clear 🖓 R	estart 🗗 Pause	Setting Setting
No.	Item	Unit	Axis1
1	Cumulative feedback pulses	pulse	937300945
2	Servo motor speed	r/min mm/s	100
3	Droop pulse	pulse	0
4	Cumulative cmd. pulses	pulse	5873
5	Command pulse frequency	kpulse/s	0

#### **2.** Press the accelerate switch (X4).

The motor speed increases by 40 each time the accelerate switch (X4) is pressed.

· Checking the servo motor speed (MR Configurator2)

Check that the servo motor speed increases.

	Display All 🗙							
Font 1	.0pt 👻 Lin	e height 15	🗯 🐯 Clear 🔊	Restart 🏧 Pause	Setting			
No. Item Unit Axis1								
1	Cumulative fee	dback pulses		pulse	51063061			
2	Servo motor sp	beed		r/min mm/s	140			
3	Droop pulse			pulse	C			
4	Cumulative cm	d. pulses		pulse	5873			
5	Command puls	e frequency		kpulse/s	C			
			ŧ					
	Display All X		ł					
Font 1	Display All ×	e height 15	Clear	Restart Pause	Setting			
Font 1 No.	Display All ×	e height 15 Item	Clear 🖓	Restart IPPause	ESSEtting Axis1			
Font 1 No.	Display All × Opt Lin Cumulative fee	e height 15 Item dback pulses	Clear 🕬	Restart Pause Unit pulse	El Setting Axis1 208153847			
Font 1 No. 1 2	Display All × Opt Lin Cumulative fee Servo motor sp	e height 15 Item dback pulses beed	다. Ry Clear 문가	Restart Pause Unit pulse r/min mm/s	Setting           Axis1           208153847           180			
Font 1 No. 1 2 3	Display All × Opt • Lin Cumulative fee Servo motor sp Droop pulse	e height 15 Item dback pulses beed	: BClear	Vinit pulse r/min mm/s pulse	Episetting           Axis1           208153847           180			
Font 1 No. 1 2 3 4	Display All × Opt I in Cumulative fee Servo motor sp Droop pulse Cumulative cm	e height 15 Item dback pulses beed d. pulses	Clear P	Restart Pause Unit pulse r/min mm/s pulse pulse	Setting     Axis1     208153847     180     0     5873			

#### **3.** Activation of the STO function

If the servo motor speed reaches 200 or higher, the STO function activates due to excessive SLS1 speed.

In the program, the STO status (SA¥X0) contact is ON, so the STO function is activated<sup>\*1</sup>.

- \*1 SSM (within SSM speed) and SNERR (safety communication error) also occur.
  - · SSM: Output that turns ON when within the specified speed
- SNERR: Output that turns ON when a communication error occurs (It may also turn ON when a servo amplifier alarm occurs.)
- · Checking the operation status of the STO function (GX Works3)

#### 🥎 Navigation window ⇔ [Program] ⇔ [Fixed Scan] ⇔ [SAFETY] ⇔ [safety1] ⇔ [ProgramBody] ⇔ [Output]

	STOS				Mo_STOS
(53)	SA¥X0				

#### 4. An alarm (AL.561.2) occurs at the servo amplifier.

The LEDs are indicated as shown below.



(MR-J5-10G-RJ)

#### 5. Checking the alarm details (MR Configurator2)

🏹 [Diagnosis] ⇔ [Alarm Display]



**6.** Press the reset switch (X5) to cancel the alarm.

3.3 Safety Monitoring Operation Check

### Safety direction monitoring (SDI) operation check

IF the servo motor rotates in the reverse direction for a certain period of time<sup>\*1</sup> while the SDI function is operating, the STO function activates and stops the motor.

\*1 This is determined by Pr. PSA28, the SDI reverse direction monitoring delay time. Here it is set to 1000 ms (default).

#### Operating procedure

**1.** Press the reverse switch (X3).

When the reverse switch (X3) is ON, safety direction monitoring (SDI) is enabled.

The servo motor rotates in the reverse direction.

#### Point P

With the current parameter settings, the servo motor rotates in the reverse direction for approximately 1 second.

· Checking the SDIN command (GX Works3)

```
X Navigation window ⇔ [Program] ⇔ [Fixed Scan] ⇔ [SAFETY] ⇔ [safety01] ⇔ [ProgramBody] ⇔ [Command]
```

	Cm_SDINC				SDINC
(23)					SA¥Y6

#### · Checking the SDIN output (GX Works3)

#### Y Navigation window ⇒ [Program] ⇒ [Fixed Scan] ⇒ [SAFETY] ⇒ [safety01] ⇒ [ProgramBody] ⇒ [Output]

	SDINS					Mo_SDINS
(76)	SA¥X6					

• Checking the servo motor speed (MR Configurator2)

Check that the servo motor speed is "-100."

	Display All 🗙		
Font 1	0pt 🔹 Line height 15 🔹 🐯 Clear 🕬 R	estart 🗗 Pause	Setting
No.	Item	Unit	Axis1
1	Cumulative feedback pulses	pulse	197992965
2	Servo motor speed	r/min mm/s	-100
3	Droop pulse	pulse	0
4	Cumulative cmd. pulses	pulse	6512
5	Command pulse frequency	kpulse/s	0

#### 2. Activation of the STO function

When the motor rotates in the reverse direction for 1 second or longer, safety direction monitoring activates the STO function.

In the program, the STO status (SA¥X0) contact is ON, so the STO function is activated<sup>\*1</sup>.

- \*1 SSMS (SSM output) and SNERR (safety communication error) also occur.
  - SSMS: Output that turns ON when within the specified speed
- SNERR: Output that turns ON when a communication error occurs (It may also turn ON when a servo amplifier alarm occurs.)
  Checking the operation status of the STO function (GX Works3)

#### The set of the set of

	Cm_STOC					STOC
(0)						SA¥Y0

3. An alarm (AL.565.3) occurs at the servo amplifier.

The LEDs are indicated as shown below.



Servo amplifier (MR-J5-10G-RJ)

#### 4. Checking the alarm details (MR Configurator2)

🏹 [Diagnosis] ⇔ [Alarm Display]



5. Press the reset switch to cancel the alarm.

### Safety deceleration monitor (SS1)

If the servo motor speed drops below the stop speed<sup>\*1</sup> while the SS1 function is operating, the STO function activates and stops the motor.

\*1 This is determined by the setting of Pr. PSA04, safety sub-function stop speed. Here it is set to 50 (default).

#### Operating procedure

#### 1. Press the forward switch (X2).

When the forward switch (X2) is ON, safety deceleration monitoring (SS1) is enabled.

The servo motor rotates in the forward direction.

• Checking the SS1 command (GX Works3)

Y Navigation window ⇒ [Program] ⇒ [Fixed Scan] ⇒ [SAFETY] ⇒ [safety01] ⇒ [ProgramBody] ⇒ [Command]

	Cm_SS1C					SS1C
(14)						SA¥Y1

· Checking the operation status of the SS1 function (GX Works3)

∑ Navigation window ⇒ [Program] ⇒ [Fixed Scan] ⇒ [SAFETY] ⇒ [safety01] ⇒ [ProgramBody] ⇒ [Output]

	SS1S				Mo_SS1S
(94)	SA¥XOC				

#### Checking the servo motor speed (MR Configurator2)

Check that the servo motor speed is "100."

	Display All 🗙				
Font 10pt - Line height 15 💠 💀 Clear 🖓 Restart 🏧 Pause 🕏 Setting					
No.	Item	Unit	Axis1		
1	Cumulative feedback pulses	pulse	937300945		
2	Servo motor speed	r/min mm/s	100		
3	Droop pulse	pulse	0		
4	Cumulative cmd. pulses	pulse	5873		
5	Command pulse frequency	kpulse/s	0		

#### 2. Press the emergency stop switch.

3. Activation of the STO function

When the emergency stop switch is pressed and the servo motor speed drops to 50 or less, the safety deceleration monitor activates the STO function. In the program, the STO status (SA¥X0) contact is ON, so the STO function is activated<sup>\*1</sup>.

- \*1 SSMS (SSM output) also occurs.
  - SSMS: Output that turns ON when within the specified speed
- Checking the operation status of the STO function (GX Works3)

X Navigation window ⇔ [Program] ⇔ [Fixed Scan] ⇔ [SAFETY] ⇔ [safety1] ⇔ [ProgramBody] ⇔ [Output]

	Cm_STOC					STOC
(0)						SA¥YO

4. An alarm (AL.596.1) occurs at the servo amplifier.

The LEDs are indicated as shown below.



Servo amplifier (MR-J5-10G-RJ)

### 5. Checking the alarm details (MR Configurator2)

🏹 [Diagnosis] ⇔ [Alarm Display]



6. Press the reset switch (X5) to cancel the alarm.

3

# **4** Troubleshooting

# 4.1 Segment LED Displays and Contents

The servo amplifier communication status, IP address, and errors can be checked on the servo amplifier display (3-digit, 7-segment LED).

## **Display flow**

The following explains the flow from after the servo amplifier power supply is turned ON until the 7-segment LED is displayed. After systems check is completed and the servo amplifier starts, the network connection status is displayed.



\*1 The segments of the last two digits indicate the IP address. For details of the connection status display, refer to " 🖙 Page 89 When connected to a network."

### Alarm display

When an alarm or warning occurs, the network connection status is displayed, followed by the status of alarm occurrence. The following is an example when [AL.032.2 Overcurrent] occurred.



#### When connected to a network

The network connection status is displayed as shown below. The decimal point indicates the servo amplifier status.



#### Servo amplifier status

OFF: Indicates ready-off, servo-off status.

Flashing: Indicates ready-on, servo-off status.

Lit: Indicates ready-on, servo-on status.

The last two digits indicate the address for that network.

Network	Address
CC-Link IE TSN	The IP address is indicated in hexadecimal notation.

#### **Display contents**

- - - - - - - -

#### The display contents are shown below.

LED display	Status	Description
R	Initializing	Controller not connected
b E F	Initializing	Data link not performed: Performing initial CC-Link IE TSN communication
H	Initializing	Cyclic communication in progress: Pre-Operational status in the NMT state machine status transition diagram
	Initializing	Cyclic communication in progress: Safe-Operational status in the NMT state machine status transition diagram
L L	Initializing	Cyclic communication stopped: Reserved station status
	Servo-off, ready-off	Controller connecting
· · · · · · · · · · · · · · · · · · ·	Servo-off, ready-on	The servo-off command was received from the controller.
<b>□</b>	Servo-on	The servo-on command was received from the controller.
n	Alarm occurring	An alarm or warning has occurred at the servo amplifier.
n 8888	Alarm and warning	The occurred alarm number and warning number are displayed.
888	CPU error	A CPU module watchdog error has occurred.
	Test operation mode <sup>*2</sup>	This is set for jog operation, positioning operation, program operation, output signal (DO) forced output, or operation without motor.

\*1 The "01" following the r is the last two digits of the IP address.

\*2 MR Configurator2 is required.

# 4.2 Errors and Corrective Actions

The causes and corrective actions for alarms that occurred at the servo amplifier are shown below.

For alarms other than those listed below, refer to the following.

MR-J5 User's Manual (Troubleshooting)

No.	Name	Cause	Corrective action
AL. 537.1	Parameter setting range error A (safety sub-function)	There is a functional safety parameter that was set outside the setting range.	Check the parameter error number on the MR Configurator2 alarm display window or elsewhere, and review the setting of the functional safety parameter.
AL. 537.2	Parameter combination error A (safety sub-function)	A servo parameter or functional safety parameter is not set correctly.	Check the parameter error number on the MR Configurator2 alarm display window or elsewhere, and review the setting of the servo parameter or functional safety parameter. Refer to "Parameter combinations that trigger [AL. 537.2 Parameter combination error A (safety sub-function)]" in the following manual.
AL. 537.3	Parameter setting error A (safety sub-function)	A functional safety parameter could not be set correctly.	Check the parameter error number on the MR Configurator2 alarm display window or elsewhere, and review the setting of the functional safety parameter.
AL. 537.A	Parameter combination error B (safety sub-function)	There is an error in the functional safety parameter setting.	Check the parameter where there is an error on MR Configurator2, and set the parameter correctly.
AL. 581.1	Safety communication error 1 Received data error A1 (safety sub-function)	The safety communication settings of the safety master station are not set correctly. There is an error on the safety master station side.	Review the safety communication settings. Refer to "Safety sub-function control by network" in the following manual. MR-J5 User's Manual (Function) Check whether an alarm has occurred at the safety master station.
AL. 5E2.1	Safety communication not connected warning A (safety sub- function)	Not connected to the controller. The safety communication settings are not set correctly. The IP address was changed after the controller was connected.	Check the cable connections. Review the GX Works3 and MR Configurator2 safety communication settings. Turn the power to the overall system OFF and back ON.
AL. 0E6.1	Forced stop warning	EM2/EM1 turned OFF.	Review the setting of PA04.2, servo forced stop selection.

# **5** Switching Safety Operation Mode

# 5.1 Safety operation mode

The Safety CPU has two main operation modes: SAFETY MODE and TEST MODE.

Change the mode for operation during debugging work and for actual operation.

Safety operation mode	Description
SAFETY MODE	<ul> <li>This is a mode for operating the safety system controlled by the Safety CPU.</li> <li>In this mode, Safety CPU safety programs and safety parameters cannot be changed. Only device data values in safety programs can be changed.</li> </ul>
TEST MODE	<ul> <li>This is a mode for performing maintenance (such as setting changes and tests) of the safety system controlled by the Safety CPU.</li> <li>In this mode, Safety CPU safety programs and safety parameters can be changed. Device data can be changed by performing a device test.</li> </ul>

Refer to the following for details.

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

# 5.2 How to switch safety operation mode

The safety programmable controller has two control modes: TEST MODE and SAFETY MODE. Select TEST MODE when making adjustments to enable editing of the safety program and safety parameters, device tests, and other changes.

#### Precautions

Be sure to change to SAFETY MODE for actual operation.



Stop the CPU module in advance.

### Operating procedure

1. Use GX Works3 to switch safety operation mode.

[Online] ⇒ [Safety PLC Operation] ⇒ [Switch Safety Operation Mode]

2. The [Switch Safety Operation Mode] window appears. Click [Switch].

Switch Safety Operation Mode		×
Current Operation Mode	Test Mode	
Switch	Close	

**3.** A window appears to confirm the change to SAFETY MODE. Check the checkboxes of [Confirmation 1] and [Confirmation 2], then click [Yes].



If a user authentication message is displayed, follow the instructions on the screen.

#### 4. A SAFETY MODE change completion window appears. Click [OK].



If the operation mode cannot be changed, perform the following.

- · Change the operating status of the CPU module to STOP.
- Execute again after completing file writing to the CPU module.
- Disable automatic restore.

# **5.3** Checking After Switching Safety Operation Mode

#### Check with the R6SFM LED TEST.

Immediately after changing, LED TEST flashes (SAFETY MODE (wait-for-restart)).



After the operation mode was changed at the CPU module, turn the CPU module power supply OFF to ON or else reset the CPU module.

# Appendix

# Appendix 1 Library Registration

- This explains the procedure for registering an FB library. This operation is not required when downloading a sample program.
- 1. Please obtain the motion control FB library (PLCopen Motion Control FB) from Mitsubishi Electric.
- **2.** Uncompress the downloaded archive file (.zip).
- 3. The element selection is displayed in GX Works3.



4. From the [Library] tab in the [Element Selection] window, click [Register Library].

lement Selection	μ×
(Find POU)	44 44 (名
🗣 😡 🚳 😒 🔤 X 📷	
Register User Library	~
Register Library	
⊕ Library	
19hmm	
Library	

**5.** Click [OK].



6. Select the uncompressed file "MotionControl\_\*\*\*\*.mslm" and click [Open].



7. The loaded FB is displayed in the [Element Selection] window.

## Point P

Refer to the following in order to upgrade the version of the FB library.

# Appendix 2 Sample Program

This explains the sample program ladder and label contents.

### **Creating data**

#### Creating a program

∑ Navigation window ⇒ Right-click on [Program]. ⇒ Click [New Data] and create the following program data.



#### main01 (ladder for drive control)

Item	Setting
Category	General
Data type	Program block
Data name	main01
Program language	Ladder
Execution type	Scan
Add destination program file	MAIN

#### mc\_fb (FB used for drive control)

Item	Setting
Category	General
Data type	Program block
Data name	mc_fb
Program language	Ladder
Execution type	Scan
Add destination program file	MC

#### safety01 (ladder for safety control)

Item	Setting
Category	Safety
Data type	Program block
Data name	safety01
Program language	Ladder
Execution type	Fixed Scan
Add destination program file	SAFETY

#### ■Global label

 $\sim$  Navigation window  $\Rightarrow$  [Label]  $\Rightarrow$  Right-click on [Global Label].  $\Rightarrow$  Click [New Data] and create the following label.



General (label used for drive control)

Item	Setting
Category	General
Data type	Global label
Data name	General

General\_FB (label used for FB)

Item	Setting
Category	General
Data type	Global label
Data name	General_FB

#### Safety (label used for safety control)

Item	Setting
Category	Safety
Data type	Global label
Data name	Safety

Common (label used for drive control and safety control)

Item	Setting
Category	Common for General/Safety
Data type	Global label
Data name	Common

Initial	Settings							
	RUN1 ScanOFF							Sequencer_l
(0)	SM403							Y10
	RD78_Ready							Ib_Power_R
까누				 	 	 		
						MOVP	K1	Axis0001 A
	-						<u> </u>	
						MOVP	KI	AxisUUU1.S
	-						<b></b>	
							E1 00	II MovVI S
						 EDMOVP		
								-
						EDMOUR	E1 000000	II_MovVI_A
	-			 	 	 EDIMOVP		
						EDMOVP	E1 000000	II_Mo√VI_E
	_			 			. <u> </u>	
ľ						<b></b>		71.14 . 1.0
						EDMOVP	10	TUNDAALS
							K1	Iw_MovVI
				 		 MOVP		
						MOV/P	KO	Iw_MovVI_B
	-			 				u
						DMOVP	КО	Id_Mo√Vl_
	-			 			<u> </u>	
							F1	II Ovr V
	_					EDMOVP		
						50,400,60	EO	II_Ovr_A
	-			 		 EDMOVP		
						EDMOVP	EO	II_Ovr_J
	-			 	 	 	<u> </u>	
Ì							KO	Tel Conflict
						DMOVP	NO	IU_Errest_
						1		
							КО	Id_ErrRst_0
				 		 DMOVP		
 vC	Control							
	Ob_Power_ReadyStatus	Err_OC						Ib_Power
/		/		 	 	 		
era	ation Control							
orw Ia	ard start ****							
J.	DTE_001_RX2	Err_OC	OPR					OPF
-		/		 		 	-	0
	OPF							
						MOVP	К1	Iw_Mov∨
ŀ				 				
Ť	OPF	Ob_MovVI_Done	Err_OC					Ib_Mo√VI_
D	<b>i</b>	/ <i>t</i>						
ſ		- <b>&gt;</b> -	*	 	 	 		_~~
	Ib_MovVI_Cmd							

Ladder for drive control

****	* Revi	erse start ****										
		RD78_0010.NZ2GNSS2_16 DTE_001_RX3	Err_OC	OPF								OPR
	(221)		/									0
		OPR									K2	Jw MouA/L Dir
										MOVP		100101201
		OPR	Oh MaxVI Dane	Err OC								Ih MovVI Gmd
	(264)											
		111										
		Ib_MovVI_Cmd										
****	* Ope	rating **** OPF										OP
	(275)								 			
		OPR										-
***	* Sner	ed change ****										
	0,00	OP	RD78_001 0.NZ2GNSS2_1 DTE_001_RX4	6	SP_OVR	E3	]			SP_OVR	E0.4	SP_OVR
	(306)			ED<			<u></u>		 ED+P			
											SD ()/D	II Over Vol
										EDMOV	01_04K	11_0 vi_vai
												Ib Ovr Cmd
	(363)	OP								EDMOV	E1	SP_OVR
<b>FT 11 1</b>	0.0											
LINIE	Sate	OP										Cm_SLS1C
	(371)							_	 			
												Cm SDINC
												~ 
	(401)	EmargencyPBI										Cm_SSIC
		EmargencyPB2										
		/T										

[Title]	í itle] Error Processing											
****	www.Error occurred www.											
(	407)	Ob_Power_Err										Err_OC
		i										
		Ob_MovVI_Err										
		Ob_Ovr_Err										
		Ob_ErrRst_Err										
****	Erm	r reset жжж		I	i	i	i	I	i	I	i	<u>i</u>
		RD78_0010.NZ2GNSS2_16 DTE_001_RX5	Ob_ErrRst_Done									Ib_ErrRst_Cmd
(-	473)		11									0
		117	<b>V</b>									0
		Ib_ErrRst_Cmd										
		RD78_0010.NZ2GNSS2_16 DTE 001 RX5	Ob_ErrRst_Done_M									Ib_ErrRst_Cmd_M
()	509)	1.4.1										_
		Ib_ErrRst_Cmd_M										
(	518)											
												(END )

## FB used for drive control

Title]Serv	D ON		r				
(0)			MC_Power_Ax (MC_Power)				
			Servo ON Proc	essing (Axis 1)			
		Axis0001					
			DUT: Axis	Axis :DUT -			
	Ib_Power_Ready					Ob_Power_Status	
			B; Enable	Status :B-			
						Oh Power Readu	
	Ib_Power_ON					Status	
			B: ServoON	ReadyStatus :B-		0	
						Ob_Power_Busy	
				Busy B			
				-			
						Ob_Power_Err	
				Error :B		O	
					O., B.,		
				ErmrID : I M	ErrNo		
		•					
l itle] Posi	tioning processing (Speed conti		MC_MoveVI_Ax (N	MC_MoveVelocity)			
(64)			Positioning processi	ng <speed control=""></speed>			
		Axis0001	DUT: Axis	Axis :DUT -			
	The MassAll Canad					Oh MaxAll Dama	
	TP_MPAAFOUN					Opiwovalipone	
			B: Execute	InVelocity :B-		0	
	Ib_MovVI_ContiUp					Ob_MovVI_Run	
			B:ContinuousUpdate	Busy :B-			
						0	
		II_MovVI_S peed				OD_MDVVI_AGL	
			L: Velocity	Active :B-		0	
		II MovVI A				Ob_MovVI_CmdAb	
			L: Acceleration	CommandAborted :B-			
						-	
		II_MovVI_D ece				Ub_MovVI_Err	
			L: Deceleration	Error :B-		O	
		II MovAL.I					
		erk	L: Jerk	ErrorID :UW-	ErrNo		
		Iw_MovVI_ Dir					
			W: Direction				
		Tw. MoxA/I					
		BuffMod	W: BufferMode				
		Id_MovVI_ Ont					
		[ ]	UD: Options				
		1	-			1	



# Ladder for safety control

[Title]Comma	nd	
	Cm_STOC	STOC
(0)		SA¥YO
		0
	Cm_SS1C	SS1C
(20)		SA¥Y1
	Cm_SS2C	SS2C
(23)		SA¥Y2
	*	V
	Cm_SDIPC	SDIPC
(26)		SA¥Y5
		Y
()	Cm_SDINC	SDINC
(29)		
(20)	Cm_SLS1C	SLS1C SA¥Y8
(32)		Ő
	0 m RI 200	
(35)		SLS20 SA¥Y9
(00)		O
	Cm SLS30	SLS3C
(38)		SA¥YOA
		O
	Cm SLS4C	SLS4C
(41)		SA¥YOB
		O
	Cm_SLIC	SLIC
(44)		SA¥YOE
		0
	Cm_SLT1C	SLT1C
(47)		SA¥Y18
	Cm_SLT2C	SLT2C
(50)		SA¥Y19
	× 1	Ŭ
	Cm_SLT3C	SLT3C
(53)		
(50)	Cm_SLT4C	SLT4C
(56)	/	
Title] Output		
	STOS	Mo_STOS
(59)	SA¥X0	
	SSMS	Mo_SSMS
(78)	SA¥X1	
		V
	SOSS	Mo_SOSS
(81)	SA¥X3	
		Ŭ
	SDIPS	Mo_SDIPS
(84)		O
(07)	SDINS	Mo_SDINS
(87)		0
(90)	SINERR SA¥X7	Mo_SNERR
(00)		O
	51515	MA 01010
(93)	SA¥X8	WU_3L313
		O

	SLS2S					Mo_SLS2S
(96)	SA¥X9					~
	1 [					
	SLS3S					Mo_SLS3S
(99)	SA¥XOA				 	
	I I					
	SLS4S					Mo_SLS4S
(102)	SA¥XOB		 		 	
						Y
(1.47)	SS1S					Mo_SS1S
(105)			 	 	 	O
(1.09)	SS2S SA¥XOD					Mo_SS2S
(100)			 			
	el te					Mo CLIP
(111)	SA¥XOE					MU_3LL3
	SNERR2					Mo SNERR2
(114)	SA¥X11					
						0
	SBCS					Mo_SBCS
(117)	SA¥X12					~
	SLT1S					Mo_SLT1S
(120)	SA¥X18				 	
	I I					V
	SLT2S					Mo_SLT2S
(123)			 			O
(106)	SLT3S SA¥X1A					Mo_SLT3S
(120)	I		 		 	
	SLITAS					Mo SLT4S
(129)	SA¥X1B					100_01140
	SLIS					Mo_SLIS
(132)	SA¥X0E					
						0
[Title] Emerg	ency Stop					
(135)	Emargencyl SA¥X40					EmargencyPB1
(100)	┝───┤ ┝───		 			
	Emarganov/2					EmarganovPB2
(162)	SA¥X41					Liningstroyt DL
	┝───┤ ┝───					
(165)						
					1	{END }

## Label used for drive control

	Label name	Data type	Class	Allocation (device/label)			
1	AlwaysON	Bit	VAR_GLOBAL	SM400			
2	RUN1ScanON	Bit	VAR_GLOBAL	SM402			
3	RUN1ScanOFF	Bit	VAR_GLOBAL	SM403			
4	Sequencer_Ready	Bit	VAR_GLOBAL	Y10			
5	RD78_Ready	Bit	VAR_GLOBAL	X10			
6	OP	Bit	VAR_GLOBAL				
7	OPF	Bit	VAR_GLOBAL				
8	OPR	Bit	VAR_GLOBAL				
9	SP_OVR	Double-precision real number	VAR_GLOBAL				
10	Err_OC	Bit	VAR_GLOBAL				

## Label used for FB

	Label name	Data type	Class	Allocation (device/label)
1	Axis0001	AXIS_REF	VAR_GLOBAL	<detailed setting=""></detailed>
2	MC_Power_Ax	MC_Power	VAR_GLOBAL	
3	MC_MoveVI_Ax	MC_MoveVelocity	VAR_GLOBAL	
4	MC_SetOverride_Ax	MC_SetOverride	VAR_GLOBAL	
5	MC_Reset_Ax	MC_Reset	VAR_GLOBAL	
6	MCv_MotionErrReset	MCv_MotionErrorReset	VAR_GLOBAL	
7	lb_Power_Ready	Bit	VAR_GLOBAL	
8	lb_Power_ON	Bit	VAR_GLOBAL	
9	Ob_Power_Status	Bit	VAR_GLOBAL	
10	Ob_Power_ReadyStatus	Bit	VAR_GLOBAL	
11	Ob_Power_Busy	Bit	VAR_GLOBAL	
12	Ob_Power_Err	Bit	VAR_GLOBAL	
13	Ow_Power_ErrNo	Word [Unsigned]/Bit string [16-bit]	VAR_GLOBAL	
14	lb_MovVI_Cmd	Bit	VAR_GLOBAL	
15	Ob_MovVI_Run	Bit	VAR_GLOBAL	
16	Ob_MovVI_Act	Bit	VAR_GLOBAL	
17	Ob_MovVI_CmdAb	Bit	VAR_GLOBAL	
18	Ob_MovVI_Done	Bit	VAR_GLOBAL	
19	Ob_MovVI_Err	Bit	VAR_GLOBAL	
20	Ow_MovVI_ErrNo	Word [Unsigned]/Bit string [16-bit]	VAR_GLOBAL	
21	II_MovVI_Speed	Double-precision real number	VAR_GLOBAL	
22	lw_MovVI_Dir	Word [Unsigned]/Bit string [16-bit] (015)	VAR_GLOBAL	
23	lb_MovVI_ContiUp	Bit	VAR_GLOBAL	
24	II_MovVI_Acce	Double-precision real number	VAR_GLOBAL	
25	II_MovVI_Dece	Double-precision real number	VAR_GLOBAL	
26	II_MovVI_Jerk	Double-precision real number	VAR_GLOBAL	
27	lw_MovVI_BuffMod	Word [Signed]	VAR_GLOBAL	
28	ld_MovVI_Opt	Double word [Signed]	VAR_GLOBAL	
29	lb_Ovr_Cmd	Bit	VAR_GLOBAL	
30	II_Ovr_Val	Double-precision real number	VAR_GLOBAL	
31	II_Ovr_Acce	Double-precision real number	VAR_GLOBAL	
32	II_Ovr_Jerk	Double-precision real number	VAR_GLOBAL	
33	Ob_Ovr_Busy	Bit	VAR_GLOBAL	
34	Ob_Ovr_Act	Bit	VAR_GLOBAL	
35	Ob_Ovr_Err	Bit	VAR_GLOBAL	
36	Ob_Ovr_ErrNo	Word [Unsigned]/Bit string [16-bit]	VAR_GLOBAL	
37	lb_ErrRst_Cmd	Bit	VAR_GLOBAL	

	Label name	Data type	Class	Allocation (device/label)
38	ld_ErrRst_Opt	Double word [Signed]	VAR_GLOBAL	
39	Ob_ErrRst_Done	Bit	VAR_GLOBAL	
40	Ob_ErrRst_Busy	Bit	VAR_GLOBAL	
41	Ob_ErrRst_ComAb	Bit	VAR_GLOBAL	
42	Ob_ErrRst_Err	Bit	VAR_GLOBAL	
43	Ob_ErrRst_ErrNo	Word [Unsigned]/Bit string [16-bit]	VAR_GLOBAL	
44	lb_ErrRst_Cmd_M	Bit	VAR_GLOBAL	
45	ld_ErrRst_Opt_M	Double word [Signed]	VAR_GLOBAL	
46	Ob_ErrRst_Done_M	Bit	VAR_GLOBAL	
47	Ob_ErrRst_Busy_M	Bit	VAR_GLOBAL	
48	Ob_ErrRst_ComAb_M	Bit	VAR_GLOBAL	
49	Ob_ErrRst_Err_M	Bit	VAR_GLOBAL	
50	Ob_ErrRst_ErrNo_M	Word [Unsigned]/Bit string [16-bit]	VAR_GLOBAL	

# Label used for safety control

	Label name	Data type	Class	Allocation (device/label)
1	STOC	Bit	VAR_GLOBAL	SA¥Y0
2	SS1C	Bit	VAR_GLOBAL	SA¥Y1
3	SS2C	Bit	VAR_GLOBAL	SA¥Y2
4	SDIPC	Bit	VAR_GLOBAL	SA¥Y5
5	SDINC	Bit	VAR_GLOBAL	SA¥Y6
6	SLS1C	Bit	VAR_GLOBAL	SA¥Y8
7	SLS2C	Bit	VAR_GLOBAL	SA¥Y9
8	SLS3C	Bit	VAR_GLOBAL	SA¥Y0A
9	SLS4C	Bit	VAR_GLOBAL	SA¥Y0B
10	SLIC	Bit	VAR_GLOBAL	SA¥Y0E
11	SLT1C	Bit	VAR_GLOBAL	SA¥Y18
12	SLT2C	Bit	VAR_GLOBAL	SA¥Y19
13	SLT3C	Bit	VAR_GLOBAL	SA¥Y1A
14	SLT4C	Bit	VAR_GLOBAL	SA¥Y1B
15	STOS	Bit	VAR_GLOBAL	SA¥X0
16	SSMS	Bit	VAR_GLOBAL	SA¥X1
17	SOSS	Bit	VAR_GLOBAL	SA¥X3
18	SDIPS	Bit	VAR_GLOBAL	SA¥X5
19	SDINS	Bit	VAR_GLOBAL	SA¥X6
20	SNERR	Bit	VAR_GLOBAL	SA¥X7
21	SLS1S	Bit	VAR_GLOBAL	SA¥X8
22	SLS2S	Bit	VAR_GLOBAL	SA¥X9
23	SLS3S	Bit	VAR_GLOBAL	SA¥X0A
24	SLS4S	Bit	VAR_GLOBAL	SA¥X0B
25	SS1S	Bit	VAR_GLOBAL	SA¥X0C
26	SS2S	Bit	VAR_GLOBAL	SA¥X0D
27	SLIS	Bit	VAR_GLOBAL	SA¥X0E
28	SNERR2	Bit	VAR_GLOBAL	SA¥X11
29	SBCS	Bit	VAR_GLOBAL	SA¥X12
30	SLT1S	Bit	VAR_GLOBAL	SA¥X18
31	SLT2S	Bit	VAR_GLOBAL	SA¥X19
32	SLT3S	Bit	VAR_GLOBAL	SA¥X1A
33	SLT4S	Bit	VAR_GLOBAL	SA¥X1B
34	Emargency1	Bit	VAR_GLOBAL	SA¥X40
35	Emargency2	Bit	VAR_GLOBAL	SA¥X41

Label used for drive control and safety control							
	Label name	Data type	Class	Allocation (device/label)			
1	Cm_STOC	Bit	VAR_GLOBAL				
2	Cm_SS1C	Bit	VAR_GLOBAL				
3	Cm_SS2C	Bit	VAR_GLOBAL				
4	Cm_SDIPC	Bit	VAR_GLOBAL				
5	Cm_SDINC	Bit	VAR_GLOBAL				
6	Cm_SLS1C	Bit	VAR_GLOBAL				
7	Cm_SLS2C	Bit	VAR_GLOBAL				
8	Cm_SLS3C	Bit	VAR_GLOBAL				
9	Cm_SLS4C	Bit	VAR_GLOBAL				
10	Cm_SLIC	Bit	VAR_GLOBAL				
11	Cm_SLT1C	Bit	VAR_GLOBAL				
12	Cm_SLT2C	Bit	VAR_GLOBAL				
13	Cm_SLT3C	Bit	VAR_GLOBAL				
14	Cm_SLT4C	Bit	VAR_GLOBAL				
15	Mo_STOS	Bit	VAR_GLOBAL				
16	Mo_SSMS	Bit	VAR_GLOBAL				
17	Mo_SOSS	Bit	VAR_GLOBAL				
18	Mo_SDIPS	Bit	VAR_GLOBAL				
19	Mo_SDINS	Bit	VAR_GLOBAL				
20	Mo_SNERR	Bit	VAR_GLOBAL				
21	Mo_SLS1S	Bit	VAR_GLOBAL				
22	Mo_SLS2S	Bit	VAR_GLOBAL				
23	Mo_SLS3S	Bit	VAR_GLOBAL				
24	Mo_SLS4S	Bit	VAR_GLOBAL				
25	Mo_SS1S	Bit	VAR_GLOBAL				
26	Mo_SS2S	Bit	VAR_GLOBAL				
27	Mo_SLIS	Bit	VAR_GLOBAL				
28	Mo_SNERR2	Bit	VAR_GLOBAL				
29	Mo_SBCS	Bit	VAR_GLOBAL				
30	Mo_SLT1S	Bit	VAR_GLOBAL				
31	Mo_SLT2S	Bit	VAR_GLOBAL				
32	Mo_SLT3S	Bit	VAR_GLOBAL				
33	Mo_SLT4S	Bit	VAR_GLOBAL				
34	EmargencyPB1	Bit	VAR_GLOBAL				
35	EmargencyPB2	Bit	VAR_GLOBAL				
## REVISIONS

Revision date	Version	Description
April 2024	A	First edition

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