

Personal Computer Embedded Type Servo System Controller

Motion Control Software SWM-G User's Manual (Startup)

-MR-SWMG16-U -MR-SWMG32-U -MR-SWMG64-U -MR-SWMG128-U

SAFETY PRECAUTIONS

(Read these precautions before using this product.)

Before using this product, please read this manual and the relevant manuals carefully and pay full attention to safety to handle the product correctly.

The precautions given in this manual are concerned with this product only.

In this manual, the safety precautions are classified into two levels: " /! WARNING" and " /! CAUTION".

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
Indicates that incorrect handling may cause hazardous conditions, resulting in minor or moderate injury or property damage.

Under some circumstances, failure to observe the precautions given under " A CAUTION" may lead to serious consequences.

Observe the precautions of both levels because they are important for personal and system safety. Make sure that the end users read this manual and then keep the manual in a safe place for future reference.

[Design Precautions]

- Configure external safety circuits to ensure that the entire system operates safely even when a fault occurs in the personal computer. Failure to do so may result in an accident due to an incorrect output or malfunction.
 - (1) Configure safety circuits externally, such as an emergency stop circuit, protection circuit, and protective interlock circuit for forward/reverse operation or upper/lower limit positioning.
 - (2) If an incorrect home position return direction is set, motion control may continue without deceleration. To prevent machine damage caused by this, configure an external interlock circuit.
 - (3) When this product detects an error, the motion slows down and stops or the motion rapidly stops, depending on the stop setting in parameter. Set the parameter to meet the specifications of the positioning control system. In addition, set the home position return parameter and positioning data within the specified setting range.
- For the operating status of each station after a communication failure, refer to manuals for the network used. Incorrect output or malfunction due to a communication failure may result in an accident.
- When modifying control while this product is running, configure an interlock in the program to ensure that the entire system always operates safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change (status control)), read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. Determine corrective actions to be taken by the system in case of a communication failure.
- Especially, when a remote system is controlled, immediate action cannot be taken if a problem occurs due to a communication failure. To prevent this, configure an interlock in the program, and determine corrective actions to be taken by the system in case of a communication failure.
- If a communication cable is disconnected, the network may be unstable, resulting in a communication failure of multiple stations. Configure an interlock in the program to ensure that the entire system will always operate safely even if communications fail. Failure to do so may result in an accident due to an incorrect output or malfunction.

- If safety standards (ex. robot safety rules, etc.) apply to the system using the servo amplifier and servomotor, make sure that the safety standards are satisfied.
- Construct a safety circuit external to each remote station if the abnormal operation of the remote stations to be connected to this product differs from the safety directive operation in the system.

[Design Precautions]

- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
- After the personal computer is powered on or rebooted, the time taken for the system to enter the RUN status varies depending on the system configuration and/or performance of the personal computer. Design circuits so that the entire system will always operate safely, regardless of the time.

[Security Precautions]

 To maintain the security (confidentiality, integrity, and availability) of the system against unauthorized access, denial-of-service (DoS) attacks, computer viruses, and other cyberattacks from external devices via the network, take appropriate measures such as firewalls, virtual private networks (VPNs), and antivirus solutions.

[Wiring Precautions]

- Ground the controllers in which this product is installed, servo amplifiers, and servo motors with a ground resistance of 100 ohm or less. Do not use a common grounding with other equipment.
- Do not install the control lines or communication cables together with the main circuit lines or power cables. Keep a distance of 100 mm or more between them. Failure to do so may result in malfunction due to noise.
- Place the cables in a duct or clamp them. If not, dangling cable may swing or inadvertently be pulled, resulting in damage to the cables or malfunction due to poor contact.
- Check the interface type and correctly connect the cable. Incorrect wiring (connecting the cable to an incorrect interface) may cause failure of the external device.
- When disconnecting the cable, do not pull the cable by the cable part. Pulling the cable may result in malfunction or damage to the cable.
- Prevent foreign matter such as dust or wire chips from entering the personal computer. Such foreign matter can cause a fire, failure, or malfunction.
- For Ethernet cables to be used in the system, select the ones that meet the specifications in the user's manual. If not, normal data transmission is not guaranteed.

- Shut off the external power supply (all phases) used in the system before cleaning. Failure to do so may result in electric shock or malfunction.
- Do not connect or disconnect any communication cable while power is on. Failure to do so may cause malfunction.

[Startup and Maintenance Precautions]

- When modifying control while this product is running, configure an interlock in the program to ensure that the entire system will always operate safely. For other forms of control (such as program modification, parameter change, forced output, or operating status change (status control)), read the relevant manuals carefully and ensure that the operation is safe before proceeding. Improper operation may damage machines or cause accidents. Determine corrective actions to be taken by the system in case of a communication failure.
- Especially, when a remote system is controlled, immediate action cannot be taken if a problem occurs due to a communication failure. To prevent this, configure an interlock in the program, and determine corrective actions to be taken by the system in case of a communication failure.
- Use any radio communication device such as a cellular phone or PHS (Personal Handy-phone System) more than 25 cm away in all directions from the personal computer. Failure to do so may cause malfunction.
- Maintenance must be performed by qualified maintenance personnel with knowledge.
- Before testing the operation, set a low speed value for the speed limit parameter so that the operation can be stopped immediately upon occurrence of a hazardous condition.
- Confirm and adjust the program and each parameter before operation. Unpredictable movements may occur depending on the machine.
- When using the absolute position system function, on starting up, and when the absolute position motor has been replaced, always perform a home position return.
- Before starting the operation, confirm the brake function.
- Do not perform a megger test (insulation resistance measurement) during inspection.
- After maintenance and inspections are completed, confirm that the position detection of the absolute position detection function is correct.
- Extreme adjustments and changes may lead to unstable operation, so never make them.

[Operating Precautions]

- When modifying control (such as data modification, program change, or operating status change (status control)), read relevant manuals carefully and ensure the safety before operation. Incorrect change or modification may cause system malfunction, damage to the machines, or accidents.
- Do not go near the machine during test operations. Doing so may lead to injuries.

CONDITIONS OF USE FOR THE PRODUCT

(1) Mitsubishi Motion Control Software ("the PRODUCT") shall be used in conditions;

i) where any problem, fault or failure occurring in the PRODUCT, if any, shall not lead to any major or serious accident; and

ii) where the backup and fail-safe function are systematically or automatically provided outside of the PRODUCT for the case of any problem, fault or failure occurring in the PRODUCT.

(2) The PRODUCT has been designed and manufactured for the purpose of being used in general industries. MITSUBISHI SHALL HAVE NO RESPONSIBILITY OR LIABILITY (INCLUDING, BUT NOT LIMITED TO ANY AND ALL RESPONSIBILITY OR LIABILITY BASED ON CONTRACT, WARRANTY, TORT, PRODUCT LIABILITY) FOR ANY INJURY OR DEATH TO PERSONS OR LOSS OR DAMAGE TO PROPERTY CAUSED BY the PRODUCT THAT ARE OPERATED OR USED IN APPLICATION NOT INTENDED OR EXCLUDED BY INSTRUCTIONS, PRECAUTIONS, OR WARNING CONTAINED IN MITSUBISHI'S USER, INSTRUCTION AND/OR SAFETY MANUALS, TECHNICAL BULLETINS AND GUIDELINES FOR the PRODUCT.

("Prohibited Application")

Prohibited Applications include, but not limited to, the use of the PRODUCT in;

- Nuclear Power Plants and any other power plants operated by Power companies, and/or any other cases in which the public could be affected if any problem or fault occurs in the PRODUCT.
- Railway companies or Public service purposes, and/or any other cases in which establishment of a special quality assurance system is required by the Purchaser or End User.
- Aircraft or Aerospace, Medical applications, Train equipment, transport equipment such as Elevator and Escalator, Incineration and Fuel devices, Vehicles, Manned transportation, Equipment for Recreation and Amusement, and Safety devices, handling of Nuclear or Hazardous Materials or Chemicals, Mining and Drilling, and/or other applications where there is a significant risk of injury to the public or property.

Notwithstanding the above restrictions, Mitsubishi may in its sole discretion, authorize use of the PRODUCT in one or more of the Prohibited Applications, provided that the usage of the PRODUCT is limited only for the specific applications agreed to by Mitsubishi and provided further that no special quality assurance or fail-safe, redundant or other safety features which exceed the general specifications of the PRODUCTs are required. For details, please contact the Mitsubishi representative in your region.

(3) We will not responsible for any problems on Motion Control Software and systems caused by DoS attacks, unauthorized accesses, computer viruses, and other cyber attacks.

INTRODUCTION

Thank you for purchasing Motion Control Software SWM-G.

This manual describes the required performance specifications, procedures before operation, and settings for using Motion Control Software SWM-G.

Before using this product, please read this manual and the relevant manuals carefully and develop familiarity with the functions and performance of the product to handle it correctly.

When applying program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.

Please make sure that the end users read this manual.

Applicable module

MR-SWMG16-U, MR-SWMG32-U, MR-SWMG64-U, MR-SWMG128-U

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RELEVANT MANUALS

Manual name [manual number]	Description	Available form
Motion Control Software SWM-G User's Manual (Startup) [IB-0300562ENG] (this manual)	Specifications, procedures before operation, and settings of Motion Control Software SWM-G.	PDF
Motion Control Software SWM-G User's Manual (Installation) [IB-0300561ENG]	Required procedures and settings for installing Motion Control Software SWM-G in a personal computer.	PDF
Motion Control Software SWM-G Operating Manual [IB-0300563ENG]	System configuration, parameter settings, and online function operations of Motion Control Software SWM-G.	PDF

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
I/O size	The number of I/O points. It is expressed in bytes.
MR Configurator2	The product name of the servo setup software.
MR-J5-G	An MR-J5-□G□(-RJ) servo amplifier.
MR-J5W-G	An MR-J5W□-□G servo amplifier.
NIC	A network interface card for Ethernet connection.
RTX	An extension function that operates Windows in real time, which is developed by IntervalZero.
RTX64	RTX64 is compatible with 64-bit natively.
SWM-G	A generic product name for Motion Control Software SWM-G.
SWM-G engine	A task on RTX64 that performs management of SWM-G modules, axis management, and API processing.
SWMOS	A generic product name for the engineering tool SWM-G Operating Station.
Device	An object for the communication between a user application and the SWM-G engine or each module.
Personal computer	A generic term for personal computers where Windows [®] operates.
Platform	A generic term for network connection functions to be loaded to RTX64. CC-Link IE TSN and a simulator are available as modules.
Module	A generic term for modules to be loaded to RTX64. A file with the extension "rtdll".
User unit	A unit of the position defined by the user (such as 1 mm and 1 μs). It is abbreviated as "U". The speed is expressed as "U/s", the acceleration is expressed as "U/s ² ", and the jerk is expressed as "U/s ³ " in user unit.

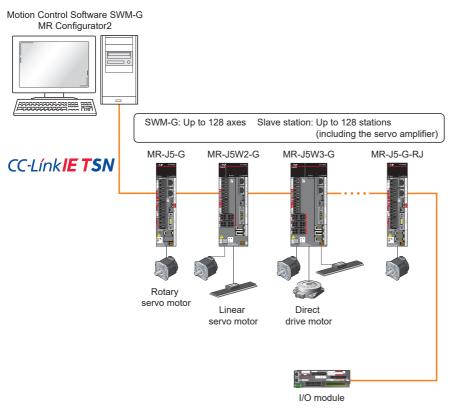
1 OVERVIEW

Motion Control Software SWM-G is software that is installed in a personal computer to perform motion control and network control. Connect the personal computer to servo amplifiers or remote stations such as a remote I/O using CC-Link IE TSN. Connect the personal computer in star topology or line topology using Ethernet cables. Star topology and line topology can be combined in a network.

In Motion Control Software SWM-G, up to 128 axes of servo motors can be controlled.

1.1 System Configuration

The following shows the SWM-G system configuration.



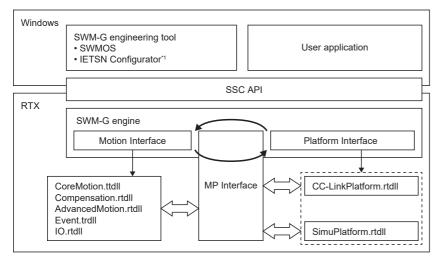
Point P

- · Connecting to the NIC port set at the time of installation is required.
- When using multi-axis servo amplifiers, the invalid axis setting cannot be used.

1.2 Architecture

All the functions of SWM-G have been implemented in "rtdll" and can be used by loading them.

The following shows the overall flow chart of data in the SWM-G architecture.



*1 For the versions that can be used, refer to the following.

Item	Description
SWM-G engineering tool	SWMOS: An integrated utility.
User application	A program created by the user.
SSC API	An interface library with SWM-G.
SWM-G engine	Performs the motion control and network management.
Motion Interface	A motion interface.
Platform Interface	A platform interface.
MP Interface	A motion-platform interface.
CoreMotion.rtdll	Performs the basic motion control.
Compensation.rtdll	Performs the compensation processing.
AdvancedMotion.rtdll	Performs the advanced motion control.
Event.rtdll	Performs the event processing.
IO.rtdll	Performs the I/O control.
CCLinkPlatform.rtdll	Communicates with the CC-Link IE TSN remote stations.
SimuPlatform.rtdll	Simulates the virtual axis.

2.1 Performance Specifications

The following shows the performance specifications of SWM-G.

ltem		MR-SWMG16-U	MR-SWMG32-U	MR-SWMG64-U	MR-SWMG128-U
Number of control	axes	16 axes	32 axes	64 axes	128 axes
Number of connect	cted stations	Up to 128 stations			
CC-Link IE TSN	Communication speed	1Gbps/100Mbps ^{*1*2}			
	Communication cycle	Standard 1 ms, Can be se	et to 0.125 ms to 8 ms by the	user	
	Other communication specifications	Mixture of class B, Hot Co	onnect, SDO communication,	IP communication	
	Transmission line type	Line topology, star topolog	gy, line + star topology		
I/O size		Input 8000 bytes, output 8	3000 bytes		
Positioning		Up to 128 axes simultane Override is possible	ously (absolute value comma	nd, relative value command)	
Acceleration/dece processing	leration	S-curve, jerk-limited adva trapezoidal, time accelera	nced-S, two velocity trapezoid tion S-curve, time acceleratio ed-S, constant deceleration, je	al, two velocity S-curve, two ve n jerk ratio, time acceleration p	age time, jerk-limited, jerk limited elocity jerk ratio, time acceleration parabolic, time acceleration sine, tio/fixed velocity-S, jerk-limited/
Interpolation funct	ion	2- to 4-axis linear interpol interpolation, PVT	ation (up to 128 axes), 2-axis	circular interpolation, 3-axis ci	rcular interpolation, 3-axis helical
Continuous path		Combination of linear and continuous path with rotat		nterpolation, pre-read speed a	utomatic control, linear/circular
Real-time control		Event, triggered motion, p	osition synchronous output		
Synchronous cont	trol		n of synchronization, multiple	ronous phase offset, synchron pairs (up to 64 pairs) of synch	
Electronic cam		Cam curves of eight syste	ems can be defined, cam curv	e per communication cycle, ph	ase operation, clutch
Home position ret	urn function ^{*3}		g the Z-phase (index pulse), hanical end, and gantry axis	home position sensor, limit ser can be performed.	isor, limit proximity sensor,
	nction		pensation, plane strain (straig		

*1 When there are two ports, 1Gbps devices and 100Mbps devices can be assigned to each port.

*2 When multiple CC-Link IE TSN classes are mixed, the functionality and performance of a part of the network or the entire network are equivalent to the lower CC-Link IE TSN class.

*3 It does not support the home position return mode of the servo amplifier.

The following shows the SWM-G functions.

Function		Description
Home position re	eturn	Aligns the axis coordinates with the physical machine coordinates.
Basic function	Position control	Moves the specified axis to the specified position.
	Speed control	Accelerates or decelerates the command axis to the target speed using the specified parameter and keeps it moving after it reaches the target speed. The control not including the position loop is performed on the command to the servo amplifier.
	Torque control	Maintains a constant torque in the specified direction. The control not including the position loop is performed on the command to the servo amplifier.
	JOG operation	Performs the JOG operation on the command axis using the specified parameter.
	Linear interpolation	Interpolates the axis so that is moves in a straight line in synchronization.
	Circular interpolation	Interpolates two axes onto a circular arc.
	3D circular interpolation	Interpolates three axes onto a circular arc in a 3D space.
	Helical interpolation	Moves three axes in spirals.
	Override	Overwrites the target value of the axis executing the command. Including the target position, every parameter of the motion command can be changed.
	Trigger motion	Delays the execution of the motion command until the specified trigger condition is satisfied.
	Synchronous control	If the command position of the master axis changes, the command position of the slave axis also changes by the same amount.
Advanced	Spline interpolation	Moves two to six axes along the path defined by a point sequence or other parameters.
function	PVT control	Commands the axis using a point cloud consisting of position, speed, and time. The axis passes the position of each point at the specified speed and at the specified time.
	Path interpolation	Two interpolation axes follow the defined path with either a single motion profile or different motion profiles for each segment.
	Rotation path interpolation	Rotates the entire path by adding the rotating axis to the path interpolation.
	Pre-read path interpolation	Specifies the speed limit and acceleration limit for each interpolation axis in addition to the path interpolation function. The interpolation speed and acceleration of each path segment are adjusted so that the path is completed in the shortest time within the axis limit.
	E-CAM	Controls the command position of the slave axis according to the position of the master axis. The command position of the slave axis is calculated from the position of the master axis using the point data defined in the E-CAM table.
Compensation function	Pitch error compensation	Compensates the physical irregularities of the axes by defining the offsets measured at the command positions at regular intervals of the axes.
	2D pitch error compensation	Calculates the pitch offset from the positions of two reference axes instead of one axis.
	Backlash compensation	Applies the offsets when the axis changes the movement direction.
Others	Touch probe	Latches the axis position. Two types of touch probes are available; A hardware touch probe and software touch probe.
	Position synchronous output	Used to set the output signal when a specific condition is satisfied.
	Planned speed override	Overwrites the speed of the axis executing the position command when a specific condition is satisfied.
	10	Performs the I/O module control.
	User memory	Performs the user memory control.
	Logging	Saves the data specified by the setting.
PM motion		Instead of sending the position, speed, or torque command to the servo drive for each cycle, the motion command is sent to the servo drive only when the PM motion module function is called.

4 PROCEDURES BEFORE OPERATION AND SETTING

This chapter describes the procedures before the operation of SWM-G.

1. Setup

Install Motion Control Software SWM-G in a personal computer.

For details, refer to the following.

Motion Control Software SWM-G User's Manual (Installation)

2. Wiring and connection of system configuration devices

Connect the personal computer and remote stations such as servo amplifiers with Ethernet cables.

 $\ensuremath{\boxtimes}$ Page 14 Wiring and Connection of System Configuration Devices

3. Startup and initial setting of the engineering tool (SWMOS)

Start the engineering tool (SWMOS) and set the CC-Link IE TSN platform.

Page 15 Startup and Initial Setting of the Engineering Tool (SWMOS)

4. Network configuration setting

Set the network configuration.

Page 18 Network Configuration Setting

5. Parameter setting of the servo amplifier

Set the parameters of the drive unit to be used.

Page 24 Parameter Setting of the Servo Amplifier

4.1 Wiring and Connection of System Configuration Devices

Connect the personal computer and remote stations such as servo amplifiers with Ethernet cables.

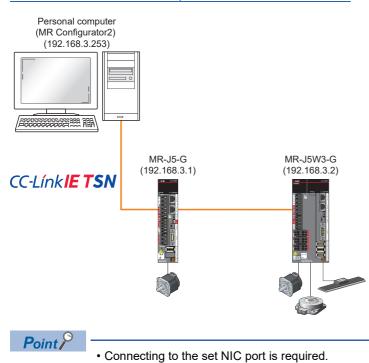
Set the rotary switches of the servo amplifiers.

In the initial state of the servo amplifiers, the rotary switches (SW1/SW2) correspond to the fourth octet of the IP address.

System configuration example

In the following system configuration example, the initial values of the IP addresses are used.

Applicable device	IP address
Personal computer (master)	192.168.3.253
MR-J5-G	192.168.3.1
MR-J5W3-G	192.168.3.2



When using multi-axis servo amplifiers, the invalid axis setting cannot be used.

4.2 Startup and Initial Setting of the Engineering Tool (SWMOS)

Start the engineering tool SWM-G Operating Station (SWMOS) and set the CC-Link IE TSN platform. This setting allows the communication with CC-Link IE TSN remote stations.

Starting SWMOS

1. Select [SWM-G] ⇒ [SWMOS] (1) from the Windows start menu.



For details of the SWM-G functions, select [SWM-G] ⇔ [Doc] from the Windows start menu and refer to the following manual stored in the Doc folder. SWM-G User Manual

2. When SWMOS is started, the "Getting started" screen and "SWMOS" screen appear. In the "Getting started" screen, the system version, license information, and others can be checked. Click the [Close] button to close the "Getting started" screen. ■"SWMOS" screen

SWMOS(SWM-G Operating Station	ation Analyzer Tools					-		Getting started		>
🖉 🦉 😵	🗞 💔 🔘 🖽 🗞	Position I/OStatus All Status]					-	Diagnostics ConfigureRT	ConfigureN
vigator 🏾 🗜							- ×	System Information		
SWMOS	Engine Information Module Setting		Platform Status				• ×	 System Overview SWMOS Version RealTime Support 	v1.0.0 Yes(RTX 64bit)	
- 🖾 License	Engine Status : Stopped	Engine Start Engine	Name	MasterNum	Version	Status		Engine Version	3.4.3	
- 🕂 Diagnostics	Comm Status : Stopped	Communication Start						Engine State	Running	
	Engine Version : 0.0.0.0	Licensed Axes Num : 0						Dongle Key Licensed Axis	128	
								License Code	ABCDEFGHUKLMNOF	ORSTUVWXV701
	IMLib Version : 0.0	Loaded Modules Count : 0	Devices Status-					Environment	Abeber of Ibiteliiitor	GIOTOTI AT LOT
	Set Comm Cycle Info :		ID Type	Nam	e	Status ^		HyperThreading	No	
	Platform Setting							✓ Hardware		
	Quick Setting	Common Setting						Network Adapter1	Intel I210 Copper-only	y Ethernet Control
		oad Save Message Level								
	Platform Setting 0 Mode Setting DIIName Enable	Warning ~ NumOfMaster Print Log								
	CC-Link IE TSN Cclinkplatform Enable	V 1 V NumOfInterrupt						Don't show this again		Close
	Platform Setting 1	1 ~								
	Mode Setting DIIName Enable	NumOfMaster Location								
	Simulation V simuplatform Disable	✓ 1 ✓ .\motion\ Get Engine Message								
	Platform Setting 2 Mode Setting DIIName Enable	Disable ~								
	None V Disable	Auto Close Device								
	Disable Disable	Enable								
	System Messages Messages 🕸 Infos: 04 🚸 Warnings: 00 🔇 Errors: 00						📮 📉 Clear log			
	> Time Information						^			
	P 2023-01-11 14:30:53 Version: v1.3.0									
		m Files\MotionSoftware\SWM-G\SWMOS								
	P 2023-01-11 14:30:55 Execute Path: C:\Progra P 2023-01-11 14:30:54 EngineState: Shutdown	III Files (Motionson wai 8/SWM-0/SWMOS								
	Enginebater bilatabilit						~			



If you select "Don't show this again" in the "Getting started" screen and click the [Close] button to close the screen, the "Getting started" screen will not be displayed at the next startup.

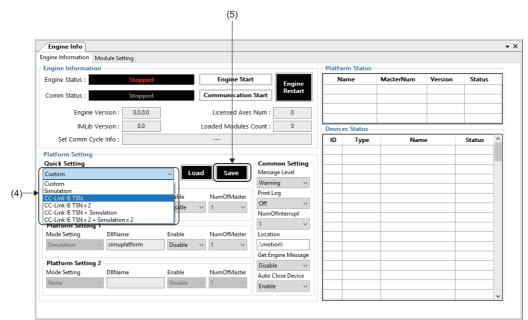
■"Getting started" screen

Checking and setting the platform

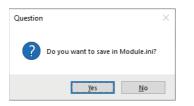
 Select [System] ⇒ [Engine] (1) in the navigation window on the "SWMOS" screen to display the Engine Info window. Select the [Engine Information] tab (2) and check the settings in [Platform Setting] (3).



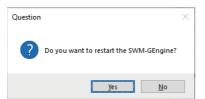
2. Select [Platform Setting] ⇒ [Quick Setting] (4), select "CC-Link IE TSN", and click the [Save] button (5).



3. When the message "Do you want to save in Module.ini?" appears, click the [Yes] button.



4. When the message "Do you want to restart the SWM-GEngine?" appears, click the [Yes] button to restart the engine.



5. When the engine is restarted, the status can be checked in [Engine Status] (6) in [Engine Information]. Update the status in order of "Stopped" → "Preparing" → "Running".
The network information is displayed in [Platform Status] (7).

The network information is displayed in [Platform Status] (7).

Engine Info										
ngine Information	Module Setting								+	
Engine Informatio	n 🖌				(Platfo	orm Status-			
Engine Status :	Running		Engine Stop	•	Engine		lame	MasterNum	Version	Status
Comm Status :	Stopped		Communication	Start	Restart	CC-I	ink IE TSN	1	3.4.2.1	Running
Engine \	/ersion : 3.4.3.1		Licensed Axes	Num :	16					
IMLib \	/ersion : 3.1		Loaded Modules	Count :	7	Devic	es Status			
Set Comm Cy	cle Info :	CC-Link I	E TSN CycleTime : 1	ms		ID	Туре	Nam	e	Status ^
Platform Setting						0	LowPriority	SWMOS-Pla	tform	0.033/15sec
Quick Setting				Comm	on Setting	1	LowPriority	SWMOS-M	otion	0.033/15sec
CC-Link IE TSN		~ Loa	d Save	Messag	je Level					
Platform Setting	0			Warnin	ig 🗸					
Mode Setting	DIIName	Enable	NumOfMaster	Print Lo	g					
CC-Link IE TSN	 cclinkplatform 	Enable	v 1 v	Off	~					
					fInterrupt					
Platform Setting				1	~					
Mode Setting	DIIName	Enable	NumOfMaster	Locatio						
Simulation	 simuplatform 	Disable	~ 1 ~	.\motic	-					
Platform Setting	-				jine Message					
Mode Setting	2 DIIName	Enable	NumOfMaster	Disable						
None	Diivame		Numonviaster	Auto C	lose Device					
INONE	~	Disable	× 1 ×	Enable	\sim					

6. With the above settings, the preparation for communicating with the CC-Link IE TSN remote stations has been completed. Since the engine will be stopped by closing the "SWMOS" screen, leave it in the execution state.

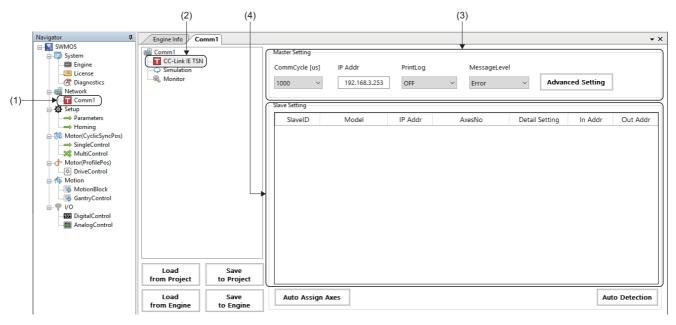
4.3 Network Configuration Setting

After setting the CC-Link IE TSN platform, set the network configuration.

This section describes the settings using the system configuration example in Section 4.1. (SP Page 14 System configuration example)

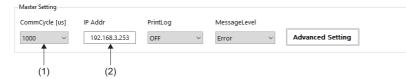
Displaying the CC-Link IE TSN setting screen

- **1.** Select [SWMOS] ⇔ [Network] ⇔ [Comm1] (1) in the navigation window on the "SWMOS" screen to display the Comm1 window.
- 2. Select [CC-Link IE TSN] (2) in the [Comm1] tree. [Master Setting] (3) and [Slave Setting] (4) are displayed.



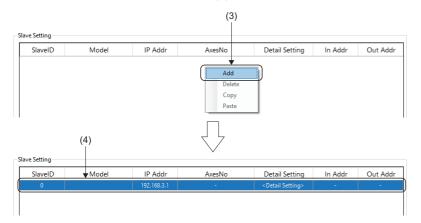
Master setting

- **1.** Set [Communication cycle (CommCycle)] (1) and [IP address (IP Addr)] (2) in [Master Setting]. (In the explanation of this section, the initial values are set.)
- Communication cycle: 1000[µs]
- IP address: 192.168.3.253

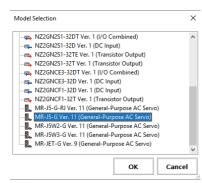


Slave setting

- **1.** Right-click the object list in the slave setting, and click [Add] (3) to add a line in the object list. Add lines for the number of remote stations to be connected.
- 2. Double-click a cell in the [Model] (4) column.



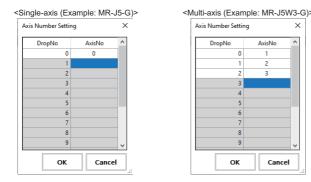
3. The "Model Selection" screen is displayed. Select a remote station to be added (example: MR-J5-G) from the list, and click the [OK] button.



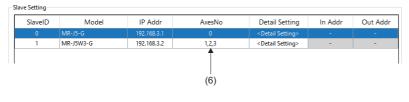
- 4. The selected remote station is displayed in the cell in the [Model] (4) column.
- 5. Set the IP address (5) of the remote station. (In the explanation of this section, the initial values are set.)
- 6. Double-click a cell in the [AxesNo] (6) column.

0 MR-J5-G 192.168.3.1 - <detail setting=""> -</detail>	-

7. The "Axis Number Setting" screen is displayed. Set the axis number for the drop number, and click the [OK] button. For a multi-axis, set axis numbers for the number of axes.



8. The axis numbers set in [AxesNo] (6) are displayed.



Point P

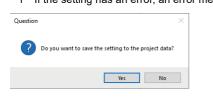
When setting axis numbers, click the [Auto Assign Axes] button to automatically assign axis numbers. For details of the Auto Assign Axes, refer to "Automatic assignment of axis numbers" in the following manual.

Saving the settings

1. Click the [Save to Project] (1) button.

Comm1	(Master Setting CommCycle [us	5] IP Addr	PrintLog	MessageLe	evel		
		1000	192.168.3.253	OFF	~ Error	~ Ad	dvanced Setting	
		Slave Setting						
		SlaveID	Model	IP Addr	AxesNo	Detail Settin	ng In Addr	Out Add
		0	MR-J5-G	192.168.3.1	0	< Detail Setting	g> -	-
		1	MR-J5W3-G	192.168.3.2	1,2,3	<detail setting<="" td=""><td>g> -</td><td>-</td></detail>	g> -	-
Load from Project	Save to Project							

2. The confirmation message "Do you want to save the setting to the project data?" appears. Click the [Yes] button.
*1 If the setting has an error, an error message appears. (SP Page 23 Network setting error information)



3. The "Folder browsing" screen appears.

<When saving the setting in a newly created folder>

• Enter the "Folder name" in the folder name entry column (2), and click the [New Folder] button (3). A folder (4) is created under "NETWORK". Select the created folder, and click the [OK] button.



<When saving the setting in an existing folder>

- · Select the save destination folder, and click the [OK] button.
- **4.** When the saving is completed, the completion message "Succeeded in saving the setting to the project data." appears. Click the [OK] button.

Informati	ion X
1	Succeeded in saving the setting to the project data.
	ОК

Point P

Save the master setting and slave setting as a setting file in the specified folder. Manage the setting files in the following folder.

<Storage destination folder>

C:\Program Files\MotionSoftware\SWM-G\SWMOS\SWMOSPack\Project\SWMOS\NETWORK

Precautions

• The settings are not applied to the SWM-G engine only by saving the setting file with the [Save to Project] button. Write the settings to the SWM-G engine with the [Save to Engine] button to apply the settings to the SWM-G engine.

Writing to the SWM-G engine

1. Click the [Save to Engine] button (1).

Engine Info Cor	mm1							
Comm1		Master Setting						
CC-Link IE TSN		CommCycle [us] IP Addr	PrintLog	MessageLev	el		
Nonitor		1000	192.168.3.253	OFF	 ✓ Error 	~ Advan	ced Setting	
		Slave Setting						
		SlaveID	Model	IP Addr	AxesNo	Detail Setting	In Addr	Out Addr
		0	MR-J5-G	192.168.3.1	0	<detail setting=""></detail>	-	-
		1	MR-J5W3-G	192.168.3.2	1,2,3	<detail setting=""></detail>	-	-
Load from Project	Save to Project							
Load from Engine	Save to Engine	Auto Assig	jn Axes				Au	to Detection
	1							
	(1)							

- 2. The confirmation message "Do you want to save setting to the engine?" appears. Click the [Yes] button.
- *1 If the setting has an error, an error message appears. (🖙 Page 23 Network setting error information)

Question		\times
?	Do you want to save setting to the engine?	
	Yes No	

3. When the loading is completed, the completion message "Succeeded in saving the setting to the engine." appears. Click the [OK] button to close the message.



Network setting error information

When the network setting file is saved with the [Save to Project] button or written to the SWM-G engine with the [Save to Engine] button, if the setting has an error, the following message appears.



Click the [OK] button to close the error message. The "Network Setting Error Information" screen appears. Check the displayed error details and eliminate the error. For details of the "Network Setting Error Information" screen, refer to the following.

Motion Control Software SWM-G Operating Manual

Network Setting Error	Information	×
No	Kind	Name
1	Critical	IP address duplication in master
CC-Link IE TSN(Co	ses for the following r	-
		v
No	Kind	Name
1	Critical	IP address duplication in master
2	Error	Axes map duplication in master
3	Error	Axes map duplication in communication
4	Critical	IP address duplication in the all communication
	Ignore	Error and Save Verification OK

4.4 Parameter Setting of the Servo Amplifier

Set the parameters of the drive unit to be used.

Set the servo amplifier (MR-J5-G) with MR Configurator2.

The following shows the procedure for setting the parameters of the servo amplifier as an example.

Parameter

No.	Name	Setting value
PA04.2	Servo forced stop selection	1: Disabled (The forced stop input EM1 and EM2 are not used)
PD01.2	Input signal automatic on selection	 Forward rotation stroke end (LSP) 1: Automatic on Reverse rotation stroke end (LSN) 1: Automatic on
PT01.1	Speed/acceleration/deceleration unit selection	1: (Speed: Command unit/s, acceleration/deceleration: Command unit/s ²) ^{*1}

*1 The command unit is fixed to pulse. Therefore, "pulse/s" is used as the speed unit instead of "r/min".

Precautions

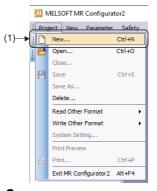
- In the parameter change example, the input signal of the servo amplifier is not used. Configure the settings according to the safety measures required for the customer's intended use.
- The parameters of the servo amplifier are not managed in SWM-G.
- When the servo parameter [PT01.1 (Speed/acceleration/deceleration unit selection)] is set to "1: (Speed: Command unit/s, acceleration/deceleration: command unit/s²)", the digits may overflow since the command unit is 32-bit. In that case, adjust it using the gear on the servo amplifier side.

Point P

- MR Configurator2 is software for servo parameter setting, graph measurement/display, test operation, and others. This section describes the procedure for connecting the servo amplifier to a personal computer where MR Configurator2 has been installed and starting up the servo amplifier. For details of how to use MR Configurator2, refer to the following.
- MR Configurator2 Help
- · Set the parameters for all the connected axes.

Parameter setting procedure

1. Start MR Configurator2. Select [Project] ⇒ [New] (1) from the menu and create a new project.



2. When a new project is created, the "New Project" screen appears. Click the [Switch to Multi-axis Project] button (2).

ew Project (Single	Axis)	×
lodel	MR-J5-G(-RJ)	~
Operation mode		×
Multi-ax. unification		
Station	00	~
Option unit	No Connection	~
Com. speed	AUTO	
Com. speed	AUTO	
Port No.	AUTO 😽	
Network/control	eed/port No. automatically	
The last-used project the application is res	t will be opened whenever tarted	
	OK Cancel	
Switch to Multi-axis	Project	
witch the window by clic o create multi-axis config	king this button when you war guration.	nt

3. The screen is switched to the "New Project" screen of the multi-axis project. Set each item. For how to set the items, refer to the following.

New Project (Multi-axis) 🛛 🛛 🔀
Connection Network: CC-Link IE TSN M
Via: None PC side L/F
Connection I/F ⓒ Ethernet
Protocol UDP V Time-out 1 🐑 s (1-15)
Retry 0 🐑 times (0-3)
Servo Amplifier Configuration Automatic Detection
Axis Model IP address
[1 MR-J5-G(-RJ)
* The copied/pasted/deleted data includes not only the model of the servo amplifier but also the set data (servo parameter, etc.).
The last-used project will be opened whenever the application is restarted.
Communication Test OK Cancel
Switch to Single Axis Project (Servo Amplifier Direct Connection)
For Multi-axis Project, the setting value (like parameter) of servo amplifier is not read. Execute reading from servo amplifier on each corresponding screen.

IP Page 51 MR Configurator2 communication setting using the IP communication

4. When the setting is completed, click the [OK] button. The created project appears.

5. Double click [Axis1:MR-J5-G(-RJ) Standard] ⇔ [Parameter] (3) in the project window to display the parameter setting window. Select the group of the parameters to be set in the display selection tree (4) and set the parameters.

New project System Setting Avis1	Project 4 × Project 4 × Parameter Setting × System Setting × Parameter Set To Default System Setting × Parameter Set To Default Parameter Set To Default Parameter Setextom Inode Parameter Setextom Inode Parameter No. Absolute position No. Position/speed Set Parameter Position/speed Set Parameter Position/speed Set Parameter Position/speed Set Parameter Positioning Parameter Common VO Set Parameter Parameter Operation mode Parameter Parameter Parameter Operation mode Parameter Parameter Parameter Operation mode Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Parameter Pa	Project 4 × Project 4 × Parameter Setting × System Setting Axis1 Parameter Set To Default System Setting Axis1 Parameter Setto Default Parameter Setto Default Parameter Setto Default Parameter Axis1 Parameter Settop Parameter Settop Parameter Axis1 Point Table Settop Parameter Point Table Common Settop Parameter Axis1 Operation mode Operation mode Operation mode Operation mode Paol.1 4 Fully dosed loop operation mode selection 0-1 Paol.2 1 Regenerative option selection 0-1 Paol.3 Protection coordination esting 0-1 0: Shut off convertery Paol.4 *	MELSOFT MR Configurator2 Project View File Parame			sitioning-da	ta Monitor Diagnosis Test Mode Adjustment	Tools	Window Help	-	
New project System Setting Avis1	New project Axis Common Selected Jtems Write Axis System Setting Axis Set To Default Writing Read Set To Default Writing New project Parameter Setting Setting Setting Axis Axis Axis Axis Parameter Point Table Function disple Common Setting range Axis Axis Axis Axis Axis Common Axis Axis Common Axis Common Common Axis Common Axis Common	New project Axis1	i 🗅 🖻 💾 🔏 😰 i 🐯	🗟 🖉 🖾 🖪 🖏 🚧	🖬 🕫 🤉	🔊 📼 🐨	2				
System Setting AuslinkerS-Geter Setting Position/spect Position/spection coordnation - Fua	System Setting System Setting Set Al Parameter Parameter Selected Jens Write Axis Writing Parameter Point Table Function display Selected Jens Write Axis Writing Point Table Point Table Function display Operation mode Operation mode Operation mode Position/spect Servo adjustme Position/spect No. Abbr. No. No. Position/spect Servo adjustme Position/spect Position spect Operation mode Operation mode Operation mode Machine diagn No. Abbr. No. No. No. No. No. Position/spect Position/spect Position/spect No. Abbr. No.	System Setting System Setting Set As Parameter Parameter Selected Jens Write Axis UNite Parameter Point Table Function display Operation mode Point Table Point Table Function display Operation mode Point Table Point Table Function display Operation mode Point Table Point Table Common No. Abbr. No. Point Table Point Table Common Operation mode Operation mode Operation mode Point Table Point Table Common No. Abbr. No. No. No. Point Table Point Table Common Operation mode selection 0.0 0 Disabled (Semi du y) Point Table Point Table Point Table Point Table Operation mode selection 0.1 0 Disabled (Semi du y) Point Table Point Table Point Table Point Table Operation mode selection 0.1 0 Disabled (Semi du y) Point Table Point Table Point Table Point Table Point Table Point Table Poi	Project 4 ×	Parameter Settin	g X						4 ⊳
Network Paramet Common Selected Items Write Axis Writing Safety Paramet Absolute position No. Abbr. Name Unit Setting range Axis I Point Table Position/spect Servo adjustme Position/spect Operation mode	Common Selected Items Write Axis Writing Safety Parameter Absolute position/specific position/specif	Common Selected Items Write Axis Writing Safety Parameter Safety Parameter Absolute position / Special form mode Name Unit Setting range Axis I Operation mode Operation mode Operation mode Operation mode 0 : Standard control • Position / Special Position / Special Position / Special 0 : Standard control • Position / Special VO Servo adjustme Position is • Position / Special Operation mode selection 0 : Disabled (Semi dt • Machine diagr Machine diagr Basic Setting Position / Special Operation is • PO20-11 *** Regenerative option selection 00-ff 0 : Standard control • Position / Special PO20-11 *** Regenerative option selection 00-ff 0 : Campon is • Position / Positi	 System Setting	Dpen Pave As	ead 💽 Set	To Default	Verify 🗓 Parameter Copy 🖹 Parameter Block				
Safety Parameter No. Absolute positi Position/speed Axis1 Point Table Position/speed Operation mode 0: Standard control • 0: Standard control • Point Table Position/speed Servo adjustme Position/speed 0: Standard control • 0: Standard control • Point Table Point Table Point Table Point Table 0: Standard control • 0: Standard control • Point Table Position/speed Servo adjustme Position/speed 0: Standard control • 0: Standard control • Point Table Position/speed Fully dosed loop operation mode selection 0: 0: 0 0: Standard control • 0: Standard control • Point Table Point Table Point Table Point Table Point Table Point Table 0: Standard control • 0: Standard control • Point Table Point Tabl	Absolute positi Position/speed Position/spee	Absolute positi Position/speed Position/spee			Common				Selected Items Write	Axis Writing	
Deration mode Positioning Positio	Position specie Position mode Position Position mode Position	Position specie Operation mode Positioning Positioning Positioning Positioning UO Paol 1.4 *** Public display Positioning UO Sasc Component parts Setting Machine diagn Component parts Polo Motor control POP-F POU Motor control POP-F POU Motor control POP-F Polo Station fur Polo - 1 @ Control Polo Assistion fur Polo - 1 @ Control Polo - 1 @ Control mood 0-1 @ Control mood Polo - 1 @ Control mood 0-1 @ Control mood Polo - 1 @ Polo - 1 @ Polo - 1 @ Control mood 0000 - Col & Malting Assistion - Final esting Polo - 1 @ P		Absolute positi			Name	Unit	Setting range	Axis1	
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Multiple connections selective 0-10 0: Shut off converte • PC46.3 ** Protection coordination - Final end setting 0-10 0: Connect converte • PC46.3 ** Protection coordination - Final end setting 0-10 0: End setting disabl • V/O Extension 2 Protection coordination - Final end setting 0000 = 000 : CC-Link IE TSI • PO1.0 *** Po1.4 *** Po1.4 *** 0.4 0.* Network transcore <td>Positioning UO PA01.1 ** Operation mode selection 0.40 0: Standard control v PA01.4 ** Cully dosed loop operation mode selection 01 0: Disabled (Semi dc v PA0.1.4 ** Cully dosed loop operation mode selection 01 0: Disabled (Semi dc v Machine diagn Component parts Setting Machine diagn PA0.2.0-1 ** Regenerative option selection 0.0-FF 00: Regenerative option selection DD Motor control PD0.3 ** Encoder cable communication method selection 0-1 0: 2-wire V PO4.3 ** Encoder cable communication method selection 0-1 0: 2-wire V PO4.5 ** Protection coordination setting PC46.2 * Protection coordination - Multiple connections selective 0-1 0: Connect converter v PC46.2 * Protection coordination - Final end setting 0-1 0: Connect converter v PC46.3 * Protection coordination - Multiple connections selective 0-1 0: Connect converter v VO Extension 2 PN setwork protocol setting 0000 - 000 0000 : CC-Link IE TSI v Control mode Control mode 0-1 0: Network protocol setting 0.000 - 000 0000 : CC-Link IE TSI v</td><td>Provinciable</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td></td<>	Positioning UO PA01.1 *** Operation mode selection 0-8 0: Standard control • PA01.4 *** Fully closed loop operation mode selection 0-1 0: Disabled (Semi dc • Machine diagn Linear control DD Motor control Fully closed loc Component parts Setting PA02.0-1 *** Regenerative option selection 00-FF 00: Regen.option is • PA02.0-1 *** Regenerative option selection 0-10 0: Standard control • PA02.0-1 *** Regenerative option selection 00-FF 00: Regen.option is • PA02.0-1 *** Encoder cable communication method selection 0-10 0: 2-wire PO4.3 *** Encoder cable communication method selection 0-10 0: 2-wire PO4.5 *** Protection coordination - 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PA02.0-1 ** Regenerative option selection 00.74 00: Regen. option is DD Motor cont PC02 MBR Electromagnetic brake sequence output 0.1000 0 PC04 MBR Electromagnetic brake sequence output 0.1000 0 0 Application fur PC46.1 * Encoder cable communication method selection 0-1 0: Shut off converter Basic Gain/filter PC46.1 * Converter stop mode selection 0-1 0: Connect converter VO PC46.3 * Protection coordination - Funal end setting 0-1 0: End setting datal V/O Extension 2 PC13.0-3 ** Network protocol setting 00000-0004 0000: CC-Link IETSI	Linear control Di Motor cont Di Motor cont Di Motor cont PC02.0.1 ** Regenerative option selection 00.1 expension is v PC02.4 MR. Electromagnetic brake sequence output 0.1 0 · 2 wire v PC04.3 ** Encoder cable communication method selection 0.1 0 · 2 wire v PC46.1 * Converter stop mode selection 0.1 0 · 2 wire v PC46.2 * Protection coordination - Hultiple connections selective 0.1 0 · 2 mit v PC46.3 * Protection coordination - Hultiple connections selective 0.1 0 · 2 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 5 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 5 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 5 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 5 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 1 for setting display PC46.3 * Protection coordination - Final end setting 0.1 0 · 5 mit display PC46.3 * Protection coordination - Final end setting 0.1 0 · 1 for setting display PC40.3 · 3 ** Network protocol setting 0.1 0 · 1 for setting display PC40.1 ** Converting · 0.1 0 · 1 for setting display PC40.1 ** Convert is option of conv	Linear control DD Motor cont PDD Motor cont PDD Motor cont PC024, 3 ** Electromagnetic brake sequence output 0-1000 Application fur PC46, 1 * Converter stop mode selection 0-1 0: 2 wire PC46, 1 * Converter stop mode selection 0-1 0: Shut off converter PC46, 1 * Converter stop mode selection 0-1 0: Converter PC46, 1 * Converter stop mode selection 0-1 0: Shut off converter PC46, 3 * Protection coordination - Hultiple connections selecti 0-1 0: Converter to PC46, 3 * Protection coordination - Final end setting 0-1 0: End setting disals PC46, 3 * Protection coordination - Final end setting 0-1 0: End setting disals PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter to PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter to PC46, 3 * Protection coordination - Final end setting 0-1 0: Convert Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: Converter PC46, 3 * Protection coordination - Final end setting 0-1 0: All the protection coordination - Final end setting 0-1 0: All the protection coordination - Final end setting 0-1 0: All the protection coordination - Final end setting 0-1 0: All the protection coordination - Final end setting 0-1 0: All		Servo amplifier	Basic						
DD Motor cont F002 MBR Electromagnetic brake sequence output 0-1000 0 Application fur Fully closed loc PC04.3 ** Encoder cable communication method selection 0-1 0 1.2-wire v Basic Basic Sain/filter PC46.2 * Protection coordination - Multiple connections selectif 0-1 0 1.2-wire v PC46.2 * Protection coordination - Multiple connections selectif 0-1 0 1.2-wire v PC46.3 * Protection coordination - Multiple connections selectif 0-1 0 1.2-wire v PC46.3 * Protection coordination - Final end setting 0-1 0 Connect converts 0 0 1.2-wire v V/O PC46.3 * Protection coordination - Final end setting 0-1 0 End setting disable v V/O Extension 2 * Network protocol setting 00000-0004 0000 : CC-Link IE TSI v Control mode Control mode Control mode 0 0.1.Network etandaec/	DD Motor cont Fully closed loc Application fur PC02 MBR Electromagnetic brake sequence output 0-1000 0 Application fur PC04.3 *** Encoder cable communication method selection 0-1 0: 2-wire • Application fur PC46.1 * Converter stop mode selection 0-1 0: Shut off converter Basic PC46.2 * Protection coordination - Hultple connections selectiv 0-1 0: Connect converter VC46.3 * Protection coordination - Final end setting 0-1 0: Connect converter VC46.3 * Protection coordination - Final end setting 0-1 0: Connect converter V/O Extension 2 * Network protocol setting 0000-0004 0000 : CC-Link IE TSI Control mode - - - - - -	DD Motor cont Fully closed loc Application fur Basic PC02 MBR Electromagnetic brake sequence output 0-1000 0 Protection coordination setting PC04.1 ** Encoder cable communication method selection 0-1 0: 2-wire • Basic Gain/filter - Extension - UO PC46.2 * Protection coordination - Hultple connections selectio 0-1 0: Shut off converter • VO PC46.3 * Protection coordination - Final end setting 0-1 0: Connect converter • VO Extension 2 * Network protocol setting • 0000-0004 0000: CC-Link IE TSI Control mode • • • • • • •		Machine diagn	Componen	t parts					
Fully closed loc Application fur Basic PC04.3 ** Encoder cable communication method selection 0-1 0: 2-wire • Basic Protection coordination setting • • • • • • Basic Gain/filter PC46.3 * Protection coordination - Multiple connections selectiv 0-1 0: Shut off converter • PC46.3 * Protection coordination - Multiple connections selectiv 0-1 0: Converter • V/O PC46.3 * Protection coordination - Final end setting 0-1 0: Converter V/O PC46.3 * Protection coordination - Final end setting 0000-0004 0000: CC-Link IE TSI Converter * Network protocol setting • • • • VO PC10.10* * Network protocol setting • • • VO PC10.10* * Network protocol setting • • • •	Fully closed loc PC04.3 ** Encoder cable communication method selection 0-1 0: 2-wire Application fun PC04.3 ** Encoder cable communication method selection 0-1 0: Shut off converter Basic PC46.1 * Converter stop mode selection 0-1 0: Shut off converter Gain//filter PC46.3 * Protection coordination - Final end setting 0-1 0: Connect converter VO Extension 2 PN13.0.3 ** Network protocol setting 0000 - CC4.ink IE TSI Control mode - - - - - -	Fully closed loc PC04.3 ** Encoder cable communication method selection 0-1 0: 2 wire Application fur Protection coordination setting PC46.1 Pc046.3 Protection coordination - Final end setting PC46.3 Protection coordination - Final end setting Pc46.4 Pc46.5 Pc46.5				**			00-FF	00 : Regen. option is 🚽	
Application fur Protection coordination setting 0: Shut off converter Basic PC46.1 * Converter stop mode selection 0-1 0: Shut off converter Gain/filter PC46.3 * Protection coordination - Multiple connections selects 0-1 0: Converter Extension VO PC46.3 * Protection coordination - Final end setting 0-1 0: End setting disable VO Extension 2 PC10.53 ** Network protocol setting 0000-0004 0000: CC-Link IE TSI	Application fur Protection coordination setting Basic Converter stop mode selection 0-1 Gain/filter PC46.2 Protection coordination - Multiple connections selectiv 0-1 VO PC46.3 Protection coordination - Final end setting 0-1 VO Extension 2 Protection coordination - Final end setting 0000 PC46.3 Network protocol setting 0000 0000 VO Extension 2 Protocol setting 0000 0000 PC46.3 Network protocol setting 0000 0000 0000 CC-Unk IE TSI	Application fur Build display Protection coordination setting 0-1 0: Shut off converter PC46,1 Converter stop mode selection 0-1 0: Shut off converter Gain/filter Extension PC46,2 Protection coordination - Multiple connections selectiv 0-1 0: Shut off converter VO Extension 2 Protection coordination - Final end setting 0-1 0: Converter stop disable Control mode Point 2 Protection coordination - Final end setting 0-1 0: Converter setting VO Extension 2 Point 2 Point 2 Point 2 Point 2 Control mode Point 2 Point 2 Point 2 Point 2 Point 2	 •								
Ist display PC46.1 * Converter stop mode selection 0.1 0 : Shut off converter Basic Gain/filter - Ktension VO PC46.3 * Protection coordination - Final end setting 0.1 0 : Converter verter VO - Litension 2 VO Network protocol setting 00000-0004 0000 : CC-Link IE TSI verter Converter - Network protocol setting 00000-0004 0000 : CC-Link IE TSI verter Converter - On the base of t	Image: Converter stop mode selection 0-1 0: Shut off converter vector Basic Gain/filter PC46.1 * Converter stop mode selection 0-1 0: Shut off converter vector Gain/filter PC46.2 * Protection coordination - Multiple connections selectiv 0-1 0: Connect converter vector V/O PC46.3 * Protection coordination - Final end setting 0-1 0: End setting disable vector V/O Extension 2 W Network protocol setting 0000-0004 0000: CC4.link IE TSI vector Control mode Control mode Control mode Control mode Control mode	Image: Converter stop mode selection 0-1 0 : Shut off converter verter stop mode selection Basic PC46.1 * Converter stop mode selection 0-1 0 : Shut off converter verter verter verter stop mode selection Basic Gain/filter PC46.2 * Protection coordination - Multiple connections selective 0-1 0 : Connect converter verter ver							0-1	0:2-wire -	
Basic Gain/filer - Gain/filer Protection coordination - Final end setting 0.1 0 : Connect converts • - VO Protection coordination - Final end setting 0.1 0 : Connect converts • • UO Extension 2 Network protocol setting 00000-0004 0000 : CC-Link IE TSI • Control mode - Control mode - Control mode - Control mode - Control mode	Basic Potection coordination - Multiple connections selects 0-1 0: Connect converter Gain/filter Pc46.3 Protection coordination - Final end setting 0-1 0: Connect converter V0 Potection Protection coordination - Final end setting 0000 0: Connect converter V0 Potection Potection coordination - Final end setting 0000 0: Connect converter V0 Potection Potection coordination - Final end setting 0000 0: Connect converter V0 Potection Potection coordination - Final end setting 0000: CC-Link LE TSI Control mode Octoor ## Octoor ## Octoor ##	Basic Potection coordination - Multiple connections selectiv 0-1 0: Connect converter Gain/filter Pc46.3 Protection coordination - Final end setting 0-1 0: Connect converter V0 Potaction Protection coordination - Final end setting 0000-0004 0000: CC-Link IE TSI V0 Potaction coordination Network protocol setting 0000-0004 0000: CC-Link IE TSI Control mode Control mode Control mode Control mode Control mode								D . Chut off consumpts	
Gain/filter Chain/filter Extension V/O Extension 2 Control mode Control mode Co	Gain/filter - C46.3 * Protection coordination - Multiple connections selecting 0-1 0-1 Connections tells 0 - VC46.3 * Protection coordination - Final end setting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Final end setting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting disable - VC46.2 * Protection coordination - Multiple connections selecting 0-1 0 : End setting 0-1 0 : End setting 0-1 0 : End setting 0-1 0 : C4.1 kiter 1 = VC46.2 * VC46.2	Gain/filter - C46.3 * Protection coordination - Multiple connections selecting 0-1 0 - Connections relating 0-1 0 - End setting disable - VO - Extension 2 - VO - Extension 2 - Control mode 									
Extension PC46.63 * Protection coordination - Final end setting 0.1 0 End setting disable VO VO Network protocol setting 0000-0004 0000 : CC-Link IE TSI Control mode Control mode 0.1 0.1 0.1	Extension VO Extension 2 Control mode	Extension VO Extension 2 Control mode									
VO PN13.0-3 ** Network protocol setting 0000-0004 0000 : CC-Link IE TSI Control mode Control mode Control mode Control mode	VO PN13.0-3 *** Network protocol setting 0000-0004 0000 : CC-Link IE TSI v Control mode Control mode 0000-0004 0000 : CC-Link IE TSI v	VO PN13.0-3 ** Network protocol setting 0000-0004 0000 : CC-Link IE TSI v Extension 2 Control mode Control mode 0.1 Network etandarr.							0-1	0 : End setting disabl 👻	
Extension 2 Control mode	Extension 2 M Control mode	Extension 2 Control mode Image: Control mode Image: Control mode		_ I/O			Ĩ				
Anne a a i i i i i i i i i i i i i i i i i				Extension 2 👽			Network protocol setting		0000-0004		
					Control mo	de				0 . Notwork standars	
	Docking Help *	Uocking Help *									
			<								
			Ready	Servo amplifier o	onnection Et	harnat				OVR CAP	IIM SCDI

• Setting the servo parameter [PA04.2(Servo forced stop selection)]

Select [Function display (List)] \Rightarrow [Common] \Rightarrow [Basic] \Rightarrow [Forced stop] in the display selection tree and set [PA04.2(Servo forced stop selection)] (5) to "1: Disabled (The forced stop input EM1 and EM2 are not used)".

Parameter Settir	1g X						4 ۵ 🗸	
🔳 Axis1 🛛 💌 🕂 F	Read [🖉 Se	t To Default	Verify T Parameter Copy Parameter Block					
🕒 Open 💾 Save As 🛛	Copy	Paste 📉	Indo MRedo					
Eunction displate	Common				Selected Items Write	e Axi <u>s</u> Writing		
Absolute positi	No.	Abbr.	Name	Unit	Setting range	Axis1	<u>^</u>	
Position/speed	Network p	rotocol setti	ng					
Servo adjustme	PN13.0-3	**	Network protocol setting		0000-0004	0000 : CC-Link IE TSI	-	
Positioning	Control m	ode						
-1/0	PA01.0	**	Control mode selection		0-6	0 : Network standarc 🗸	-	
Servo amplifier	Rotation d	lirection				_		
- Machine diagn	PA14	*POL	Travel direction selection		0-1	0 : CCW or positive c	-	
- Linear control	PC29.3	*	Torque POL reflection selection		0-1	1 : Disabled	-	
DD Motor cont	PT55.1	*	Homing POL reflection selection		0-1	0 : Disabled	-	1
 Fully closed loc 	Zero spee	d				_	-	
Application fur	PC07	ZSP	Zero speed		0-10000	5	0	
🔜 🥅 List display	Forced sto	p qu						
Basic	PA04.2	*	Servo forced stop selection		0-1	1 : Disabled (The f		
Gain/filter	Forced sto	op decelerati	on function		1			
- Extension	PA04.3	*	Forced stop deceleration function selection		0-2	2 : Forced stop dece	·	
_ I/O	PC24	RSBR	Deceleration time constant at forced stop		0-20000	10	0	
	Vertical ax	is freefall pr	evention				×	

· Setting the servo parameter [PD01.2(Input signal automatic on selection)]

Select [Function display (List)] \Rightarrow [I/O] \Rightarrow [Digital I/O] \Rightarrow [Device assignment] \Rightarrow [PD01.0-7(Input signal automatic ON selection 1)] (6) in the display selection tree and click the [Setting] button. When the "Auto ON Setting" screen appears, set [LSP] and [LSN] to "ON" in [Auto ON assignment] (7) and click the [OK] button. Set "00000C00" in the setting column.

Parameter Settin	g ×						4 ۵ 🗸				
🔳 Axis1 🛛 🖌 📲	ead 🐻 Set	To Default	Verify 🖪 Parameter Copy 📄 Parameter Block								
🔁 Open 💾 Save As 🛛	Copy	aste 📺	Jndo 🕿 Redo								
- 🔠 Function displa							_	1			
- Common	I/O				Selected Items Write	Axis Writing				(7)	
Absolute positi	No.	Abbr.	Name	Unit	Setting range	Axis1	^			(1)	
Position/speed	Digital I/O										
- Servo adjustme	Device setti	ing				Setting			Auto ON Se	tting	
- Positioning	PD03.0-1	*	Device selection DI1		00-FF	(A		AULO ON SE	ung	
- I/O	PD04.0-1	*	Device selection DI2		00-FF		DB		Auto ON a	signment	
	PD05.0-1	*	Device selection DI3		00-FF		22				
Servo amplifier	PD51.0-1	*	Device selection DI3-2		00-7F		52		LSP	ON	OFF
Machine diagn	PD38.0-1	*	Device selection DI4		00-FF	:	2C		LSN	ON	OFF
 Linear control 	PD39.0-1	*	Device selection DI5		00-FF	:	2D		l	-	
DD Motor cont	PD07.0-1	*	Device selection DO1		00-FF)5				
 Fully closed loc 	PD08.0-1	*	Device selection DO2		00-FF		04				
Application fur	PD09.0-1	*	Device selection DO3		00-FF		03				
🖩 List display	Device assig	gnment				Setting					
Basic	PD01.0-7	*DIA1	Input signal automatic ON selection 1		000000-00000FF0	0000000		(6)			
Gain/filter	Input filter										
- Extension	PD11.0	*	Input signal filter selection		0-B	7:3.500ms	-				
_I/O	ALM output			1							OK Cancel
	PD14.1	*	Warning occurrence - Output device selection		0-1	0 : WNG signal turn (-	1			

· Setting the servo parameter [PT01.1(Speed/acceleration/deceleration unit selection)]

Select [List display] \Rightarrow [Positioning control] \Rightarrow [PT01 (Command mode selection)] (8) in the display selection tree and set "00000310" in the setting column.

Parameter Settin	g X						4 ▷ 🛨	
🔳 Axis1 🛛 🖌 🕂 R	ead 🚺 Se	et To Default	Verify 👖 Parameter Copy 📄 Parameter Block					
POpen PSave As	Сору	Paste 📩	Jndo MRedo					
 Linear control DD Motor cont 	Positioni	ng control		Selec	ted Items Write	Axi <u>s</u> Writing		
- Fully closed loc	No.	Abbr.	Name	Unit	Setting range	Axis1	~	
Application fur	PT01	**CTY	Command mode selection		0000000-00000310	0000 0310		
List display	PT02	*TOP1	Function selection T-1		00000001-10000001	0000 0001		
	PT03	*FTY	Feed function selection		0000000-00000300	0000 0000		
Basic	PT04		For manufacturer setting		0000000-0000000	0000 0000		
Gain/filter	PT05	ZRF	Homing speed	r/min mm/s	0.00-167772.15	100.00		
 Extension 	PT06	CRF	Creep speed	r/min mm/s	0.00-167772.15	10.00		
_I/O	PT07	ZST	Home position shift distance		.47483648-2147483647	0		
Extension 2	PT08	ZPS	Homing position data		.47483648-2147483647	0		
- Extension 3	PT09	DCT	Travel distance after proximity dog		0-2147483647	1000		
Option	PT10	ZTM	Stopper type homing - Stopping time	ms	5-1000	100		
	PT11	ZTT	Stopper type homing - Torque limit value	%	0.1-100.0	15.0		
- Special	PT12	CRP	Rough match output range		0-2147483647	0		
Motor extensio	PT13		For manufacturer setting		0000000-00000000	0000 0000		
Multi encoder	PT14	*BKC	For manufacturer setting		0-0	0		
- Positioning cor	PT15	LMP	Software position limit +		47483648-2147483647	0		
- Network	PT16		For manufacturer setting		0000000-00000000	0000 0000		
Positioning ext	PT17	LMN	Software position limit -		47483648-2147483647	0		
	PT18		For manufacturer setting		0000000-00000000	0000 0000		

Point P

The command unit is fixed to pulse. Therefore, "pulse/s" is used as the speed unit instead of "r/min".

6. When the parameter setting is completed, click the [Axis Writing] button (9).

Parameter Setting	J X						4 ▷ ▾
🔳 Axis1 🛛 💌 🕂 Re	ad [🖉 Se	t To Default	Verify 🔲 Parameter Copy 📄 Parameter Block				
🖻 Open 💾 Save As 🛛 👔	Сору	Paste 📩	Indo MRedo	·			
- Linear control 🔝							
DD Motor cont	Positionin	-		Selec	ted Items Write	Axi <u>s</u> Writing	
- Fully closed loc	No.	Abbr.	Name	Unit	Setting range	Axis 1	<u>^</u>
	PT01	**CTY	Command mode selection		0000000-00000310	0000 0310	
E Ist display	PT02	*TOP1	Function selection T-1		00000001-10000001	0000 0001	
	PT03	*FTY	Feed function selection		0000000-00000300	0000 0000	
- Basic	PT04		For manufacturer setting		0000000-00000000	0000 0000	
— Gain/filter	PT05	ZRF	Homing speed	r/min mm/s	0.00-167772.15	100.00	
 Extension 	PT06	CRF	Creep speed	r/min mm/s	0.00-167772.15	10.00	
_I/O	PT07	ZST	Home position shift distance		.47483648-2147483647	0	
- Extension 2	PT08	ZPS	Homing position data		.47483648-2147483647	0	
- Extension 3	PT09	DCT	Travel distance after proximity dog		0-2147483647	1000	
Option	PT 10	ZTM	Stopper type homing - Stopping time	ms	5-1000	100	
	PT11	ZTT	Stopper type homing - Torque limit value	%	0.1-100.0	15.0	
- Special	PT12	CRP	Rough match output range		0-2147483647	0	
Motor extensio	PT13		For manufacturer setting		0000000-00000000	0000 0000	
– Multi encoder	PT14	*BKC	For manufacturer setting		0-0	0	
Positioning cor	PT15	LMP	Software position limit +		.47483648-2147483647	0	
Network	PT16		For manufacturer setting		0000000-00000000	0000 0000	
Positioning ext	PT17	LMN	Software position limit -		.47483648-2147483647	0	
	PT 18		For manufacturer setting		00000000-00000000	0000 0000	

7. When the message "Execute writing. Continue?" appears, click the [Yes] button.



8. Writing of the servo parameters is started and all the parameters are written to the servo amplifier.

Accessing Amplifier	X
Access to amplifier. Please wait for a moment.	
Axis1: PV Group writing	50%
Avis 1: PV Group writing is completed, Avis 1: PU Group writing is completed, Avis 1: PU Group writing is completed, Avis 1: PT Group writing is completed, Avis 1: PL Group writing is completed, Avis 1: PL Group writing is completed, Avis 1: PD Group writing is completed, Avis 1: PD Group writing is completed.	

9. When the writing is completed successfully, the message "Writing is completed. Please switch the power supply of the servo amplifier off and on again." appears. Click the [OK] button.



10. Turn on the control power supply of the servo amplifier again or click the [Software reset] icon (10) to reset the servo amplifier. (Servo parameters marked with * or ** in their abbreviations are enabled by turning on the control power supply again or clicking the [Software Reset] icon.)

	(10)							
MELSOFT MR Configurator2 Ne	ew project - [Parameter Setting]						- 0	×
Project View File Parameter !	Setting(2) Parameter Safety Po	sitio <u>n</u> ing-da	ta <u>M</u> onito	r <u>D</u> iagnosis T <u>e</u> st Mode Adjustment <u>T</u> ools	Window Help			_ @ ×
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Project	Parameter Setting X		_					4 0 -
New project		Set To Defa	ult 🌄 Verif	🛿 🖣 Parameter Copy 📄 Parameter Block				
Axis1:MR-J5-G(-RJ) Star	Den PSave As Copy	Paste	OUndo 🍙	Redo				
Parameter Network Parameter	DD Motor control Fully closed loop control	Positionin	ng control		Sele	cted Items Write A	xi <u>s</u> Writing	
Safety Parameter	Application function	No.	Abbr.	Name	Unit	Setting range	Axis1	^
R Point Table	E Ist display	PT01	**CTY	Command mode selection		0000000-00000310	0000 0310	
in the lable	Basic	PT02	*TOP1	Function selection T-1		0000001-10000001	0000 0001	
/		PT03	*FTY	Feed function selection		0000000-00000300	0000 0000	
/	- Gain/filter	PT04		For manufacturer setting		0000000-00000000	0000 0000	
/	- Extension	PT05	ZRF	Homing speed	r/min mm/s	0.00-167772.15	100.00	
/	I/O	PT06	CRF	Creep speed	r/min mm/s	0.00-167772.15	10.00	
/	- Extension 2	PT07	ZST	Home position shift distance		.47483648-2147483647	0	
/	Extension 3	PT08	ZPS	Homing position data		.47483648-2147483647	0	
	Option	PT09	DCT	Travel distance after proximity dog		0-2147483647	1000	
/	- Special	PT10	ZTM	Stopper type homing - Stopping time	ms	5-1000	100	
/		PT11	ZTT	Stopper type homing - Torque limit value	%	0.1-100.0	15.0	
/	Motor extension	PT12	CRP	Rough match output range		0-2147483647	0	
/	- Multi encoder	PT13		For manufacturer setting		0000000-00000000	0000 0000	
	 Positioning control 	PT14	*BKC	For manufacturer setting		0-0	0	
	Network	PT15	LMP	Software position limit +		.47483648-2147483647	0	
	Positioning extension 🥃	PT 16		For manufacturer setting		0000000-00000000	0000 0000	
		PT17	LMN	Software position limit -		.47483648-2147483647	0	

5 OPERATION EXAMPLE

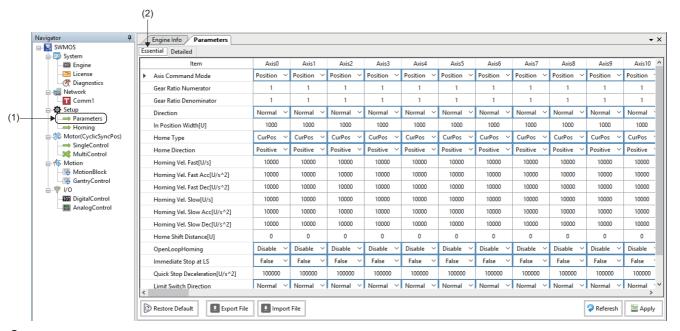
5.1 Operation Check with Tool

This section describes the procedure for performing the JOG operation using an engineering tool.

1. Start SWMOS.

For how to start SWMOS, refer to the following.

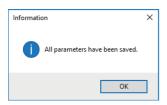
2. Select [Setup] ⇒ [Parameters] (1) in the navigation window to display the Parameters window. Select the [Essential] tab (2) and display the parameters of each axis. (The default values are displayed for the parameters.)



- **3.** Change the axis parameters. The following shows an example of changing the parameters of axis 1 (Axis0). • Gear ratio numerator (Gear Ratio Numerator): 67108864
 - Gear ratio denominator (Gear Ratio Denominator): 1000
- 4. When the parameters are changed, click the [Apply] button (3).

ltem	Axis0	Axis1	Axis2	Axis3	Axis4	Axis5	Axis6	Axis7	Axis8	Axis9	Axis10 ^
Axis Command Mode	Position ~	Position 🗸	Position `								
Gear Ratio Numerator	67108864	1	1	1	1	1	1	1	1	1	1
Gear Ratio Denominator	1000	1	1	1	1	1	1	1	1	1	1
Direction	Normal ~	Normal 🗸	Normal `								
In Position Width[U]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Home Type	CurPos ~	CurPos 🗸	CurPos `								
Home Direction	Positive 🗸	Positive 🗸	Positive 🗠	Positive 🗠	Positive 🗸	Positive `					
Homing Vel. Fast[U/s]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Homing Vel. Fast Acc[U/s^2]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Homing Vel. Fast Dec[U/s^2]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Homing Vel. Slow[U/s]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Homing Vel. Slow Acc[U/s^2]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Homing Vel. Slow Dec[U/s^2]	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Home Shift Distance[U]	0	0	0	0	0	0	0	0	0	0	0
OpenLoopHoming	Disable 🗸	Disable 🗠	Disable 🗠	Disable 🗠	Disable 🗠	Disable 🗸	Disable `				
Immediate Stop at LS	False 🗸	False `									
Quick Stop Deceleration[U/s^2]	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000	100000
Limit Switch Direction	Normal ~	Normal 🗸	Normal 🗸	Normal 🗸	Normal 🗸	Normal ~	Normal 🗸	Normal 🗸	Normal 🗸	Normal 🗸	Normal Y

5. When the writing is completed, the message "All parameters have been saved." appears and the changes are applied to the engine immediately.

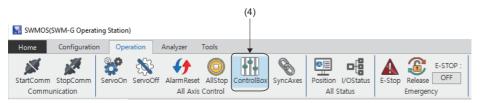


Point P

To set the changed parameters with the same settings at the next startup, save the parameters to a file with the [Export File] button, and read the file in which the parameters are saved with the [Import File] button at the next startup. For details of the operations, refer to the following.

×

6. Control the axes. Click [Operation] ⇒ [Control Box] (4) in the ribbon.



- **7.** The "Axes Control Box" screen appears. Operating each button on the "Axes Control Box" screen starts or stops the communication and performs servo ON/OFF for the axis.
 - [Online]/[Offline] button: Starts/stops the communication.
 - · [All Servo On] button: Performs servo ON for all axes.
 - [All Servo Off] button: Performs servo OFF for all axes.

■Offline screen

■Online screen (All Servo OFF)

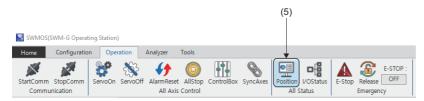
Axes	Control	Вох					×	Axes	Control	Box
On	line	E-Stop	All Servo On	All Servo Off	Ala Ala Cle	ll rm ar	000~031 032~063 064~095 096~127	Ofi	fline	E-Sto
- 000	~007—			016 ۲ ۲	~023—			L_000	~007—	
000	SvOff	Home	Alarm	016	SvOff	Home	Alarm	000	SvOff	F
001	SvOff	Home	Alarm	017	SvOff	Home	Alarm	001	SvOff	F
002	SvOff	Home	Alarm	018	SvOff	Home	Alarm	002	SvOff	F
003	SvOff	Home	Alarm	019	SvOff	Home	Alarm	003	SvOff	ŀ
004	SvOff	Home	Alarm	020	SvOff	Home	Alarm	004	SvOff	F
005	SvOff	Home	Alarm	021	SvOff	Home	Alarm	005	SvOff	F
006	SvOff	Home	Alarm	022	SvOff	Home	Alarm	006	SvOff	F
007	SvOff	Home	Alarm	023	SvOff	Home	Alarm	007	SvOff	ŀ
- 008	~015—				~031—			-008	~015—	
800	SvOff	Home	Alarm	024	SvOff	Home	Alarm	800	SvOff	F
009	SvOff	Home	Alarm	025	SvOff	Home	Alarm	009	SvOff	ŀ
010	SvOff	Home	Alarm	026	SvOff	Home	Alarm	010	SvOff	ŀ
011	SvOff	Home	Alarm	027	SvOff	Home	Alarm	0 11	SvOff	ŀ
012	SvOff	Home	Alarm	028	SvOff	Home	Alarm	012	SvOff	ŀ
013	SvOff	Home	Alarm	029	SvOff	Home	Alarm	013	SvOff	F
014	SvOff	Home	Alarm	030	SvOff	Home	Alarm	014	SvOff	ŀ
015	SvOff	Home	Alarm	031	SvOff	Home	Alarm	015	SvOff	F

		E-Stop	All Servo On	:	All Servo Off	Al Alar Cle	i 📄	000~031 032~063 064~095 096~127
- 000	~007—			1	° ⁰¹⁶	~023—		
000	SvOff	Home	Alarm		016	SvOff	Home	Alarm
001	SvOff	Home	Alarm		017	SvOff	Home	Alarm
002	SvOff	Home	Alarm		018	SvOff	Home	Alarm
003	SvOff	Home	Alarm		019	SvOff	Home	Alarm
004	SvOff	Home	Alarm		020	SvOff	Home	Alarm
005	SvOff	Home	Alarm		021	SvOff	Home	Alarm
006	SvOff	Home	Alarm		022	SvOff	Home	Alarm
007	SvOff	Home	Alarm		023	SvOff	Home	Alarm
- 008	~015—			7	024	~031 —		
800	SvOff	Home	Alarm		024	SvOff	Home	Alarm
009	SvOff	Home	Alarm		025	SvOff	Home	Alarm
010	SvOff	Home	Alarm		026	SvOff	Home	Alarm
011	SvOff	Home	Alarm		027	SvOff	Home	Alarm
012	SvOff	Home	Alarm		028	SvOff	Home	Alarm
013	SvOff	Home	Alarm		029	SvOff	Home	Alarm
014	SvOff	Home	Alarm		030	SvOff	Home	Alarm
015	SvOff	Home	Alarm		031	SvOff	Home	Alarm

■Online screen (All Servo ON)

Axes	Control B	lox					×
Off	iline E	-Stop	All Servo On	All Servo Off	Al Alar Cle	i m ar	000~031 032~063 064~095 096~127
- 000	~007—			~016 -	023		
000	SvOn	Home	Alarm	016	SvOff	Home	Alarm
001	SvOff	Home	Alarm	017	SvOff	Home	Alarm
002	SvOff	Home	Alarm	018	SvOff	Home	Alarm
003	SvOff	Home	Alarm	019	SvOff	Home	Alarm
004	SvOff	Home	Alarm	020	SvOff	Home	Alarm
005	SvOff	Home	Alarm	021	SvOff	Home	Alarm
006	SvOff	Home	Alarm	022	SvOff	Home	Alarm
007	SvOff	Home	Alarm	023	SvOff	Home	Alarm
- 008	~015—			- 024	031 —		
800	SvOff	Home	Alarm	024	SvOff	Home	Alarm
009	SvOff	Home	Alarm	025	SvOff	Home	Alarm
010	SvOff	Home	Alarm	026	SvOff	Home	Alarm
011	SvOff	Home	Alarm	027	SvOff	Home	Alarm
012	SvOff	Home	Alarm	028	SvOff	Home	Alarm
013	SvOff	Home	Alarm	029	SvOff	Home	Alarm
014	SvOff	Home	Alarm	030	SvOff	Home	Alarm
015	SvOff	Home	Alarm	031	SvOff	Home	Alarm

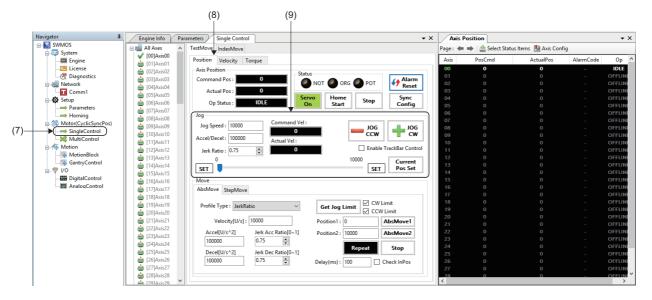
8. Check the axis status. Click [Operation] ⇔ [Position] (5) in the ribbon.



9. The [Axis Position] tab (6) appears. The axis status can be checked.

Engine Info Parameters					• ×	Axis	Position			•
sential Detailed						Page: 🔶	= 🔿 🖄 Select State	us Items	fig	
ltem	Axis0	Axis1	Axis2	Axis3	Ax ^	Axis	PosCmd	ActualPos	AlarmCode	Ор
Axis Command Mode	Position ~	Position 🗸	Position 🗸	Position 🗸	Positic	00	0	0		IDLE
Gear Ratio Numerator	67108864	1	1	1	1	01 02				OFFLINE
Gear Ratio Denominator	1000	1	1	1	1	03				OFFLINE
						04				OFFLINE
Direction	Normal ~	Normal ~	Normal ~	Normal ~	Norm	05				OFFLINE
In Position Width[U]	1000	1000	1000	1000	10	06				OFFLINE
Home Type	CurPos ~	CurPos ~	CurPos 🗸	CurPos ~	CurPe	07				OFFLINE
	Desitive M	Positive 🗸	Positive 🗸	Positive 🗸	Positiv	08 09				OFFLINE
Home Direction	Positive ~					10				OFFLINE
Homing Vel. Fast[U/s]	10000	10000	10000	10000	100	10	0	0		OFFLINE
Homing Vel. Fast Acc[U/s^2]	10000	10000	10000	10000	100	12				OFFLINE
Homing Vel. Fast Dec[U/s^2]	10000	10000	10000	10000	100	13				OFFLINE
2						14				OFFLINE
Homing Vel. Slow[U/s]	10000	10000	10000	10000	100	15				OFFLINE
Homing Vel. Slow Acc[U/s^2]	10000	10000	10000	10000	100	16				OFFLINE
Homing Vel. Slow Dec[U/s^2]	10000	10000	10000	10000	100	17				OFFLINE
					100	18 19				OFFLINE
Home Shift Distance[U]	0	0	0	0	C	20				OFFLINE
OpenLoopHoming	Disable 🗸	Disable 🗸	Disable 🗸	Disable 🗸	Disab	21				OFFLINE
Immediate Stop at LS	False 🗸	False 🗸	False 🗸	False 🗸	False	22				OFFLINE
0.10 0.1 0.100	100000	100000	100000	100000	100	23				OFFLINE
Quick Stop Deceleration[U/s^2]						24				OFFLINE
Limit Switch Direction	Normal ~	Normal ~	Normal ~	Normal ~	Norm Y	25				OFFLINE
					>	26 27				OFFLINE

10. Select [Motor(CyclicSyncPos)] ⇔ [SingleControl] (7) in the navigation window to display the Single Control window. Select the [TestMove] tab ⇔ [Position] tab (8). Set the parameters (Jog Speed, Accel/Decel, Jerk Ratio) in "Jog" (9), and perform the JOG operation with the [JOG CCW] button or [JOG CW] button.





Press the [JOG CCW] button to perform operation in the address decreasing direction, and the [JOG CW] button to perform operation in the address increasing direction. For details of the JOG operation, refer to the following.

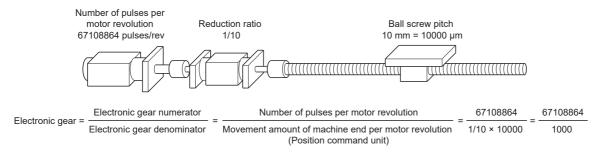
Motion Control Software SWM-G Operating Manual

5.2 Operation Check with Sample Project

This section describes the programming procedure and basic programs.

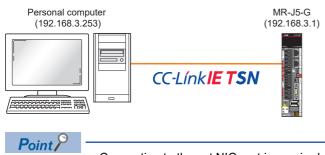
When applying program examples provided in this manual to an actual system, ensure the applicability and confirm that it will not cause system control problems.

This section describes an example of a 1-axis system using a ball screw.



System configuration

This example uses the system configuration below.



· Connecting to the set NIC port is required.

Specifications

Item	Description
Ball screw lead (PB)	10000[µm] (= 10[mm])
Reduction ratio (NL/NM)	1/10 (load side [NL]/motor side [NM]) When the motor rotates 10 times, the ball screw on the load side rotates once.
Encoder resolution	67108864 [pulse]
Servo amplifier	MR-J5-G series
Position command unit (user unit)	μm
Speed command unit	μm/s
Control cycle	1.0[ms]

Servo parameter (axis 1)

For how to set the servo parameters, refer to the following.

Page 24 Parameter Setting of the Servo Amplifier

No.	Name	Setting value
PA04.2	Servo forced stop selection	1: Disabled (The forced stop input EM1 and EM2 are not used)
PD01.2	Input signal automatic on selection	 Forward rotation stroke end (LSP) 1: Automatic on Reverse rotation stroke end (LSN) 1: Automatic on
PT01.1	Speed/acceleration/deceleration unit selection	1: (Speed: Command unit/s, acceleration/deceleration: Command unit/s ²)

Program-side parameter (Axis0)

Parameter name	Setting value
Gear ratio Numerator	67108864
Gear ratio Denominator	1000

Sample program operations

The sample program is executed in the following processing order.

Processing order	Description	Details
1	Device creation	A device is an object of the SSCApi class that opened the communication channel with the SWM-G engine. Applications using the SWM-G library call the CreateDevice function at the start.
2	Communication start	The communication with the platform where the engine is operating is started with the StartCommunication function.
3	Servo ON	Many motion functions are arranged in the CoreMotion module. The SetServoOn function in the CoreMotion module is called to perform the servo ON.
4	Home position return	The home position return parameter is read with GetHomeParam. The home position return type is changed to the current position (CurrentPos), and the home position return parameter is set with the SetHomeParam function. The home position return is performed with the StartHome function.
5	Positioning operation ^{*1}	The motion profile is specified to perform the positioning operation with the StartMov function. The motion profile determines the movement speed from the current position to the target position, acceleration, and jerk shape.
6	Servo OFF	The servo OFF is performed with the SetServoOn function.
7	Communication stop	When the communication is started with StartCommunication, the device must be closed after the communication is stopped with StopCommunication.
8	Device closing	The application calls the CloseDevice function before the end.

*1 The settings of the positioning operation are as follows.

Item	Description
Motion profile	Trapezoid
Axis number	Axis0
Target position	100000[μm]
Target speed	25000[μm/s]
Acceleration	100000[μm/s ²]
Deceleration	100000[μm/s ²]

Opening the sample program

The sample project is stored in the following folder.

Copy the sample program to a location where it can be edited.

· Default storage destination folder at installation

Storage destination folder

C:\Program Files\MotionSoftware\SWM-G\Samples

The following example uses a sample program that is used to perform the basic operation of the servo axis.

1. Open the following solution file (03_MotorControl.sln) in the sample folder (Samples).

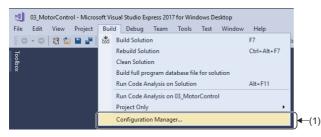
Solution file storage location

\Samples\Cpp\VSDDDD\1_BasicMotion\03_MotorControl\03_MotorControl.sIn

- *1 DDD= Indicates the version of Visual Studio to be used. Select according to the version of Visual Studio to be used.
- *2 This explanation uses Visual Studio 2017.

جا File	03_MotorControl - Edit View Pr - ◯ │ 🏠 😩 💾	oject Build	Debug Team	Tools Test	Window H	Help Windows Debugger 👻	<i>p</i> ⁼ _₹	7	7 ₽	Quick Launch (Ctrl+C	2) 👂	Sign in	×
Toolbox									G G Search	n Explorer Carl Solution Explorer (Ctrl+ clution '03_MotorControl 03_MotorControl	:)		+ × • م
									Properties 03_MotorControl Project Properties			~ 1	¥ ب ب
													- 1
C	Dutput							Ψ×	⊡ Miso (Nar		03_MotorContr	-1	-
	Show output from:				- @ E	a 🖉 🐉				ect Dependencies	05_WotorContr	01	_
	Show output norm					-		_		ect File	C:\Users\Meide	n\Documen	ts\Sai
										t Namespace	CppAPISample	5	-
									(Name Specifi	e) es the project name.			
🗇 Re	ady										↑ Add to Sour	ce Control 🔺	

2. Select [Build] ⇒ [Configuration Manager] (1) from the menu.



3. The "Configuration Manager" screen appears. Set "x64" (2) for [Active solution platform] and click the [Close] button to close the "Configuration Manager" screen.

Configuration Manager			? ×
Active solution configuration	n:	Active solution platform:	
Debug ~		✓ x64	~)
Project contexts (check the p	project configurations to build o	r dep Win32	
Project	Configuration	<new></new>	
03_MotorControl	Debug	<edit></edit>	

4. Click [03_MotorControl] ⇒ [Source Files] and double-click [03_MotorControl.cpp] (3) in the Solution Explorer window. A source code opens, and the processing descriptions described in the sample program operation descriptions can be referred to.

03_MotorControl.cpp * × (Global Scope) * 1 //* FILE : MotorControl.cpp */ 3 /* DESCRIPTION : Sample from device creation to motor operation to device */ 4 /* close */ 5 /************************************	Solution Explorer • # × • Solution Explorer (Ctil+:) • • • # × • Search Solution 02_MotorControl (1 project) • • • • • • • • • • • • • • •	
27 /**/ 28 目前t_tmain(int argc, _TCHAR* argv[]) 29 { 30 { SSCApi sscLib; 100 % ~ (▲	• • • • • •	

Parameter, positioning data setting

The sample project is designed to operate with the default parameters. Therefore, modify the gear setting and positioning data according to the program example setting.

Gear setting

Enter the following code.

If the gear setting fails, the message appears and the processing continues without setting.

```
double encoderPulsesPerRevolution = 67108864;
double encoderUserUnitsPerRevolution = 1000;
int err;
```

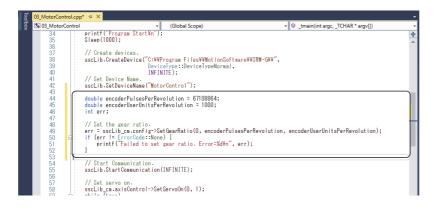
// Set the gear ratio.

err = sscLib_cm.config->SetGearRatio(0, encoderPulsesPerRevolution, encoderUserUnitsPerRevolution);

if (err != ErrorCode::None) {

printf("Failed to set gear ratio. Error=%d\n", err);

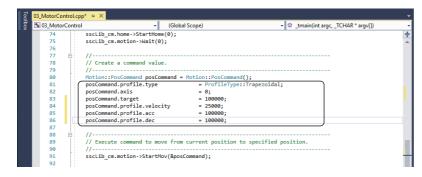
}



Positioning data modification

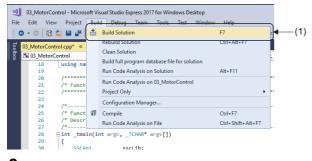
Modify the codes as follows.

// Create a command value.
// Create a command posCommand = Motion::PosCommand();
posCommand.profile.type = ProfileType::Trapezoidal;
posCommand.axis = 0;
posCommand.target = 100000;
posCommand.profile.velocity = 25000;
posCommand.profile.acc = 100000;
posCommand.profile.dec = 100000;

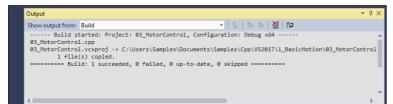


Build execution

1. Select [Build] ⇒ [Build Solution] (1) from the menu to execute the build.

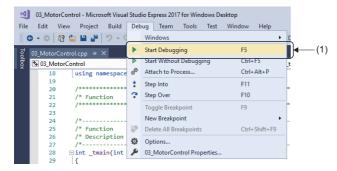


2. When the build is completed, the output results are displayed in the output window.



Program execution

1. Select [Debug] ⇒ [Start Debugging] (1) to execute the program.



6 TROUBLESHOOTING

This section describes errors that may occur in SWM-G and actions to be taken.

Description	Cause	Action
The tool does not start.	 The setup has not been completed. The license has not been registered. 	Run the installer and set up the incomplete items. For details, refer to the following. CJMotion Control Software SWM-G User's Manual (Installation)
The communication is not established.	The network configuration setting is incorrect.	Check the master setting and the advanced setting of the network setting again, and rewrite the information to the engine.
	 The CUI file is incorrect. The PDO information is insufficient. 	 Check the slave setting and the detail setting of the network setting again, and rewrite the information to the engine. Recreate the CUI file with CC-Link IE TSN Configurator.
	The definition of the NIC to be used for the communication is incorrect.	Check the NIC setting again. (If an NIC other than I210 is used, convert I210 for RTX again.)
	The NIC has not been converted for RTX64.	Check Device Manager and check that the NIC to be used for the communication has been converted for RTX64.
	The HAL timer interval setting and PC performance are not good enough for the communication cycle setting and the number of control axes.	 Check if unnecessary simulation axes are operating. When the communication cycle is short, change the HAL timer interval from "100us" to "50us" or "20us". Adjust the time slot.
The screen turns blue, and cannot be executed.	Memory access violations of RTX have occurred.	 Disable the following Windows settings. Windows Memory Diagnostic Hyper-V Device Guard and Credential Guard (for Windows 10 Enterprise) For details, refer to the following. SWM-G User Manual
The axis operation is unstable.	"Hyper-Threading" of the CPU is enabled.	Disable "Hyper-Threading" of the CPU. For details, refer to the following. CaMotion Control Software SWM-G User's Manual (Installation)
The sample program or created program cannot be built.	The project setting of Visual Studio is incorrect.	Open the property page of the Visual Studio project and check the following settings. • Additional include directory setting for general C/C++ • Additional library directory setting for general linker • Post-build event setting after build events For details, refer to "Configuring a new C++ project" in the following manual.
The following message appears, and SWMOS does not start.	The versions of Windows and RTX are mismatched. (The version "2004 or later" of Windows10 and the version "3.7.2 or earlier" of RTX are used.)	Update RTX referring to "Applying the RTX update file" in the following manual. DMotion Control Software SWM-G User's Manual (Installation)
RTX Subsystem is in Exception state. Please check the RTX system. Do you want to open RTX Control Panel? (This program will be terminated) Yes No	A function that is not supported by RTX is enabled.	Disable the X2APIC function in the BIOS setting.

6

APPENDIX

Appendix 1 SWM-G Setting Example by Application

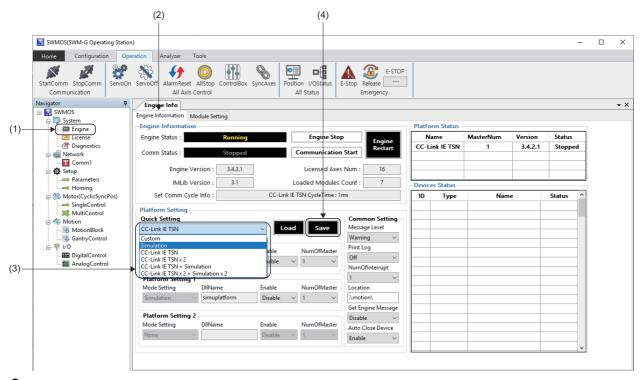
Using the virtual axis

The virtual axis can be simulated by using the simulator platform (SimuPlatform).

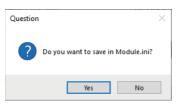
The virtual axis can be used as an amplifier-less simulator, or as a synchronization master by using it with the real axis. Note that if the virtual axis is used with the real axis, the axis number is common to them.

Setting the virtual axis

- 1. Select [System] ⇒ [Engine] (1) in the navigation window on the "SWMOS" screen to display the Engine Info window.
- **2.** Select the [Engine Information] tab (2). In [Quick Setting] (3) under [Platform Setting], select the following, and click the [Save] button (4).
- Simulation
- CC-Link IE TSN+Simulation
- CC-Link IE TSN×2+Simulation×2



3. When the message "Do you want to save in Module.ini?" appears, click the [Yes] button.

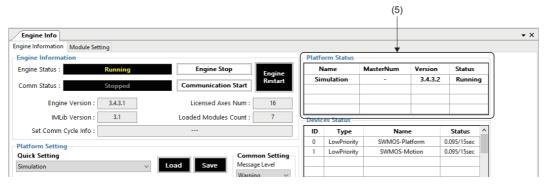


4. When the message "Do you want to restart the SWM-GEngine?" appears, click the [Yes] button to restart the engine.



40

- **5.** After the engine is restarted, "Simulation" is displayed in [Platform Status] (5). It can be operated in the same way as a normal axis.
- When "Simulation" is set



• When "CC-Link IE TSN + Simulation" is set

Engine Info									
ngine Information Module Set	tting					•			
Engine Information				Platf	orm Status-				
Engine Status :	Running	Engine Sto	P Engine	N	lame	MasterNum	Version	Status	
Comm Chatura	c	Communication	Rectart	CC-I	ink IE TSN	1	3.4.2.1	Runnin	g
Comm Status :	Stopped	Communication	Start	Si	mulation	-	3.4.3.2	Runnin	g
Engine Version :	3.4.3.1	Licensed Axes	5 Num : 16						_
IMLib Version :	3.1	Loaded Modules	Count : 7	Devic	es Status				
Set Comm Cycle Info :		CC-Link IE TSN CycleTime : 1	ms	ID	Туре	Nam	e	Status	^
Platform Setting				0	LowPriority	SWMOS-PI	atform	0.080/15sec	
Quick Setting			Common Setting	1	LowPriority	SWMOS-N	lotion	0.096/15sec	
CC-Link IE TSN + Simulation		Load Save	Message Level						
CC-Ellik le 15N + Simulation			Warning ~						

• When "CC-Link IE TSN \times 2 + Simulation \times 2" is set

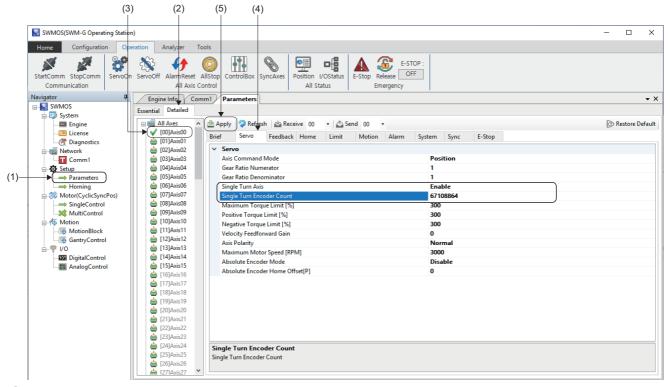
Engine Information Module Setting Engine Information Engine Status: Engine Status: Stopped Comm Status: Stopped Communication Start Interview Communication Start Engine Version: 3.4.3.1 Licensed Axes Num: 16 IMLib Version: 3.1 Loaded Modules Count: 7 Set Comm Cycle Info: CC-Link IE TSN CycleTime: 1ms, 1ms Platform Setting Common Setting Quick Setting Common Setting	Engine Info									
Engine Status : Running Engine Stop Comm Status : Stopped Communication Start Engine Version : 3.4.3.1 Licensed Axes Num : IMLib Version : 3.1 Loaded Modules Count : Set Comm Cycle Info : CC-Link IE TSN CycleTime : 1ms, 1ms		tting								
Comm Status : Stopped Communication Start Engine Version : 3.43.1 Licensed Axes Num : IMLib Version : 3.1 Loaded Modules Count : 7 Set Comm Cycle Info : CC-Link IE TSN CycleTime : 1ms, 1ms Platform Setting 0	Engine Information				Platfo	orm Status	•			
Comm Status : Stopped Communication Statu Restart Engine Version : 3.4.3.1 Licensed Axes Num : 16 IMLib Version : 3.1 Loaded Modules Count : 7 Set Comm Cycle Info : CC-Link IE TSN CycleTime : 1ms, 1ms Platform Setting 0 LowPriority	Engine Status :	Running	Engine Stop	Engine	N	lame	MasterNum	Version	Status	
Engine Version : 3.4.3.1 Licensed Axes Num : 16 IMLib Version : 3.1 Loaded Modules Count : 7 Set Comm Cycle Info : CC-Link IETSN CycleTime : 1ms, 1ms Platform Setting	Comm Chattan	c. 1	Commission	Restart	CC-L	ink IE TSN	2	3.4.2.1	Runnin	g
IMLib Version : 3.1 Loaded Modules Count : 7 Set Comm Cycle Info : CC-Link/IE TSN CycleTime : 1ms, 1ms ID Type Name Platform Setting 0 LowPriority SWMOS-Platform 0.048/15sec	Comm Status :	Stopped	Communication	Start	Sir	nulation	-	3.4.3.2	Runnin	9
Devices Status Set Comm Cycle Info : CC-Link IE TSN CycleTime : 1ms, 1ms ID Type Name Status O LowPriority SWMOS-Platform 0.048/15sec Platform Setting Stitus Name Status	Engine Version :	3.4.3.1	Licensed Axes	Num : 16						-
Platform Setting 0 LowPriority SWMOS-Platform 0.048/15sec	IMLib Version :	3.1	Loaded Modules C	Count : 7	Devic	es Status				_
Platform Setting	Set Comm Cycle Info :	(CC-Link IE TSN CycleTime : 1ms,	1ms	ID	Туре	Nam	e	Status	^
1 LowPriority SWMOS-Motion 0.033/15rec	Distform Catting				0	LowPriority	SWMOS-Pla	atform	0.048/15sec	
				Common Setting	1	LowPriority	SWMOS-M	lotion	0.033/15sec	
CC-Link IF TSN x 2 + Simulation x 2 V Load Save Message Level	CO Entre Fort X E + Simulatio			Warning V			1			

Single turn (Unlimited length feeding)

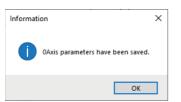
Some axes, such as a rotating axis, do not have a linear movement range and can rotate in any direction indefinitely. Therefore, the position command of this axis can be excessive after rotating in one direction for a long time. To avoid this case, configure the position command as a "Single Turn Mode axis" so that it stays within a specific position range.

Setting procedure

- 1. Select [Setup] ⇒ [Parameters] (1) in the navigation window to display the Parameters window.
- **2.** Select the [Detailed] tab (2). Select the target axis (example: [00]Axis00) (3) in the axis tree and select the [Servo] tab (4).
- 3. Select "Enable" for [Single Turn Axis] and set a count value to [Single Turn Encoder Count].



- 4. When the setting is completed, click the [Apply] button (5).
- **5.** When the writing is completed, the message "0Axis parameters have been saved." appears.



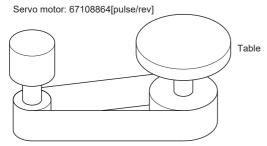
Setting example

The following shows a setting example when the Single Turn Mode axis is configured with one rotation of 360[degree].

Item	Setting value
Gear Ratio Numerator (gear numerator)	67108864
Gear Ratio Denominator (gear denominator)	360
Single Turn Axis	Enable
Single Turn Encoder Count	67108864

Example of a table mechanism with reducer

For the table mechanism with a reducer such as a timing belt or gear, rounding off the gear numerator setting value is required in addition to the electronic gear setting of SWM-G and an error may occur during the unlimited length feeding. In that case, the electronic gear setting can be configured without error by using the electronic gear of the servo amplifier.



Timing belt: 625/12544

Item	Setting value
Table	360[degree/rev]
Reduction ratio	625/12544
Servo motor encoder resolution	67108864[pulse/rev]

Setting procedure

Follow the setting procedure below.

- 1. Determine the "Command unit per pulse" of the servo pulse command. (Example: Set "0.000001[degree]" per pulse.)
- **2.** Calculate the electronic gear numerator (CMX) and electronic gear denominator (CDV) of the servo amplifier (MR-J5(W)-G).
- Electronic gear numerator (CMX) = 67108864 × 12544 = 841813590016
- Reduce CMX and CDV to "2147483647" or less. (Example: Reduce by "512".)
- Electronic gear numerator (CMX) = 841813590016 ÷ 512 = 1644167168
- Electronic gear denominator (CDV) = 225000000000 ÷ 512 = 439453125

Set the electronic gear numerator (CMX) to 1644167168 and the electronic gear denominator (CDV) to 439453125 for the servo amplifier (MR-J5(W)-G).

- Set the electronic gear of SWM-G in a single turn.
- Gear numerator = 360000000[pulse] (360 ÷ 0.000001[degree]^{*1})
- Gear denominator = 360[degree]
- *1 Command unit per pulse

Point P

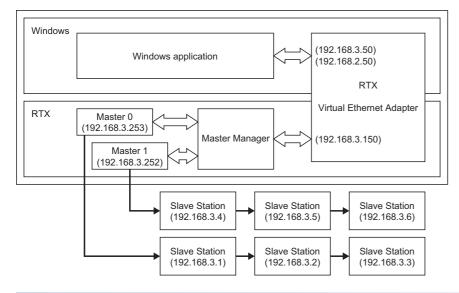
When the electronic gear numerator (CMX) or electronic gear denominator (CDV) cannot be reduced to "2147483647" or less, reduce them by adjusting the command unit per pulse. If they cannot be reduced even after adjusting the command unit per pulse, set the approximate values. In that case, an error occurs in the unlimited length feeding.

Appendix 2 How to Use the IP Communication

IP communication setting procedure

The IP communication mixed function enables communications between applications that operate in the Windows space or RTX space and devices in the CC-Link IE TSN network via the SWM-G engine.

The IP communication mixed function can be used when SWM-G is in the communication state.



Setting procedure

To use the IP communication mixed function, configure the following settings.

(1) Enable Virtual NIC of RTX. (SP Page 44 Enabling Virtual NIC of RTX)

(2) Set the IP address of Virtual NIC seen from the Windows side. (Free Page 47 Setting the IP address of Virtual NIC seen from the Windows side)

(3) Set the IP communication mixed function in SWM-G. (Frage 49 Setting the IP communication mixed function in SWM-G)

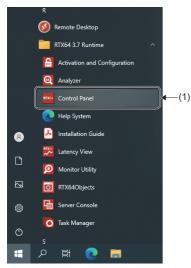
(4) Start RT-TCP/IP Stack. (SP Page 50 Starting RT-TCP/IP Stack)

The network address of the LAN used to connect the master or remote station is set to "192.168.3.0".

Read the IP addresses as necessary to prevent the duplication of them considering the operating environment.

Enabling Virtual NIC of RTX

- **1.** Select [RTX64 ### Runtime] ^{*1} ⇒ [Control Panel] (1) from the Windows start menu.
- *1 ### = RTX version



44

- **2.** The "RTX64 ### Control Panel" screen^{*1} appears. Click [Configure the RT-TCP/IP Stack] (2).
- *1 ### = RTX version

First Steps Activate purchased components	Assign system processors Current: 1 RTSS / 1 Windows	RTX64 components: RTX64 3.7 Subsystem RTX64 3.7 RT-TCP/IP Stack	
Manage user permissions Subsystem Configure the RTSS Subsystem Manage RTX64 devices	Start/Stop the Subsystem The subsystem is started. (monitoring disabled)	Runtime Information IntervalZero RTX64 3.7 Edition: Solo Version: 3.7.0 Build Number: 4983	Copyright © 2010-2019 IntervalZero, Inc. All rights reserved.
RT-TCP/IP Stack and Drivers	Start/Stop the RT-TCP/IP Stack The RT-TCP/IP stack is stopped.	-	

3. The "Configure the RT-TCP/IP Stack" screen appears. Click [Manage Interfaces and Filters] (3).

RTX64 3.7 Control Panel	–
Configure the RT-TCP/IP Stack	Q
RTX64 Home > Configure the RT-TCP/IP Stack	
Configure RT-TCP/IP Stack behavior	
Configure RT-TCP/IP Stack performance	
Manage interfaces and filters	
Technical Support RTX64 Downloads ?	IntervalZero

4. The "Manage Interfaces and Filters" screen appears. Select the existing "RTX64 Virtual Network Interface (Interface name: RtVirtualNic)" (4) and click the [×] button (5) to delete. Click the [+] button (6).

	nage Interfaces ar	nd Filters tack > Manage Interfaces and Filters		٩	
Interface	Status	Properties for RtVirtualNic			
RtVirtualNic	Enabled ~	Property	Value		
		Device	RTX64 Virtual Net	work Interface	
		Driver name	RtVirtualNic.Rtdll		
		IPv4 configuration	Address	Netmask	
			192.168.100.50	255.255.255.0)
		Gateway	0.0.0.0		
		Location	0;0;0		
		Interrupt thread priority	64		
<	>	Interrupt processor	Default		
→(+)(X)	Convert Devices	Maximum Transmission Unit (MTU)	1500		
↑		lpv6 address	Auto		
		Ipv6 prefix	64		
		Receive thread priority	63		
		Receive thread ideal processor	Default		
		Number of receive buffers	256		
		Number of transmit buffers	256		
		Interrupt type	MSI-X		
		Filter status	Disabled		
					F

5. The "Add Interface" screen appears. Set each item and click the [OK] button.

Item	Description
Device Name:	Select "RTX64 Virtual Network Interface".
Driver Name:	Select "C:\Program Files\MotionSoftware\SWM-G\Platform\CCLink\RtVirtualNic_SSS.rtdll". *: Click the [] button (7) to display the "Open" screen. Select a file from the folder and click [Open] button to select.
Friendly Name:	Enter an arbitrary name. <example> RtVN_SSS</example>
lpv4 address:	Set an arbitrary IP address. <example> 192.168.3.150</example>

Add Interface	-	o x	
Add Interface Device Name:	RTX64 Virtual Network Interface	1	
Driver Name:	oftware¥SWM-G¥Platform¥CCLink¥RtVirtualNic_SSS.rtdll		—(7)
Friendly Name:	RtVN_SSS]	
lpv4 address:	192.168.3.150]	
Netmask:	255.255.255.0]	
Location:	0;0;0		
	Ok	Cancel	

6. The screen returns to the "Manage Interfaces and Filters" screen. The name "RTX64 Virtual Network Interface (Interface name: RtVN_SSS)" entered in "Friendly Name" is added. Set [Status] (8) of the added "RTX64 Virtual Network Interface (Interface name: RtVN_SSS)" to "Enable".

When the setting is completed, click the $[\times]$ button in the upper right of the screen to close the "Manage Interfaces and Filters" screen.

Ma	anage Interfaces and	d Filters		Q	
TX64 Home > Con	figure the RT-TCP/IP Sta	ck > Manage Interfaces and Filters Properties for RtVN_SSS			
RtVN_SSS	Enabled ~	Property	Value		
		Device	RTX64 Virtual Net	twork Interface	
		Driver name	C:¥Program Files	¥MotionSoftware¥SWM-G¥Platfo	rm¥CCLink¥RtVirtual
		IPv4 configuration	Address	Netmask	
			192.168.3.150	255.255.255.0)
		Gateway	0.0.0.0		
		Location	0;0;0		
		Interrupt thread priority	64		
<	>	Interrupt processor	Default		
+ X	Convert Devices	Maximum Transmission Unit (MTU)	1500		
		lpv6 address	Auto		
		lpv6 prefix	64		
		Receive thread priority	63		
		Receive thread ideal processor	Default		
		Number of receive buffers	256		
		Number of transmit buffers	256		
		Interrupt type	MSI-X		
		Filter status	Disabled		

Setting the IP address of Virtual NIC seen from the Windows side

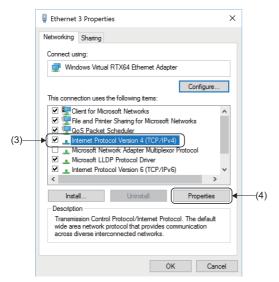
Set the IP address of Virtual NIC on the Windows side.

Set an IP address different from the one set in "Enabling Virtual NIC of RTX" (Page 44 Enabling Virtual NIC of RTX).

- **1.** Select [Windows System] ⇒ [Control Panel] ⇒ [Network and Internet] ⇒ [View network status and tasks] ⇒ [Change adapter settings] from the Windows start menu to display the "Network Connections" screen.
- **2.** Right-click the network device whose device name is "Windows Virtual RTX64 Ethernet Adapter" (1) and select [Properties] (2).

$ \underbrace{ \blacksquare } \mathbb{P} \mathbb{P} \mathbb{P} \mathbb{P} \mathbb{P} \mathbb{P} \mathbb{P} $		vork and Internet > Network Co	onnections	~ Ū	Search Network Con	Inections	× P
Organize 🔻	Enable this network device	Diagnose this connection	Rename this conn	ection »		-	?
	met ielco.co.jp (R) Ethernet Connection (2) I	Ethernet 3 Create Shortco Create Shortco Delete Rename Properties	ut				
2 items 1 ite	m selected						

3. The "Properties" screen appears. Select "Internet Protocol Version 4 (TCP/IPv4)" (3) and click the [Properties] (4) button.



4. The "Internet Protocol Version 4 (TCP/IPv4) Properties" screen appears. Select "Use the following IP address" and set "IP address" and "Subnet mask".

<Example> IP address: 192.168.3.50, Subnet mask: 255.255.255.0

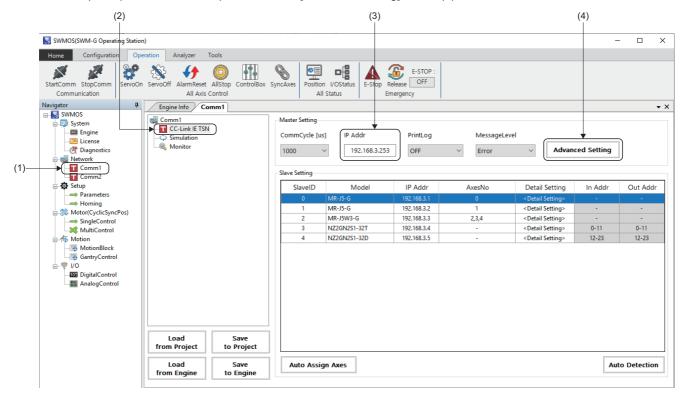
Internet Protocol Version 4 (TCP/IPv4)	Properties	\times
General		
You can get IP settings assigned auton this capability. Otherwise, you need to for the appropriate IP settings.		
Obtain an IP address automatical	у	
Use the following IP address:		[۱
IP address:	192.168.3.50	
Subnet mask:	255.255.255.0	
Default gateway:		
Obtain DNS server address autom	natically	
• Use the following DNS server add	resses:	
Preferred DNS server:		
Alternate DNS server:		
Validate settings upon exit	Advanced	
	OK Cancel	

5. When the setting is completed, click the [OK] button, close the "Internet Protocol Version 4 (TCP/IPv4) Properties" screen, and close all the screens to end the setting.

Setting the IP communication mixed function in SWM-G

Enable the IP communication mixed function. Set it with VNTx defined in the network.

- **1.** Select [SWMOS] ⇔ [Network] ⇔ [Comm1] (1) in the navigation window on the "SWMOS" screen to display the Comm1 window.
- 2. Select [CC-Link IE TSN] (2) in the [Comm1] tree. Select [Master Setting] ⇒ [IP address (IP Addr)] (3) to set the IP address (example: 192.168.3.253), and click the [Advanced Setting] button (4).



3. The "Master Advanced Setting" screen appears. Select "VNTx" (5).

In addition, change the time slot setting as necessary. Since the IP communication is performed only in the time slot "TSLT0", the IP packet does not compress the communications of other time slots. When expanding the IP communication bandwidth, increase the ratio of "TSLT0" as long as the bandwidths of other time slots can be secured sufficiency.

Set them in TSLT (6) defined in the network. (Example: 0: 0.25, 1: 0.5, 2: 0.25)

4. When the setting is completed, click the [OK] button to close the "Master Advanced Setting" screen.

Master Advanced Setting			×	
Advanced Setting				
Time Sync Protocol : IEEE8	02.1AS ~	TSLT: 0: 0.25 1: 0	0.5 2 : 0.25	—(6
BroadcastMsFrame	CyclicSsMeasure	UselPAsAxisIndex	PPMode VNTx	—(5
MasterOpWaitTime :	10000	AnnouncePeriod :	0	
PriorityWaitTime :	100	PdelayPeriod :	0	
SlaveScanWaitTime :	100	PdelayTimeout :	-3	
NetworkConfigWaitTime :	2000	SyncFailCount :	3	
SlaveConfigWaitTime :	100	SyncFailDiff :	4096	
CyclicConfigWaitTime :	100	DatalinkErrorPeriod :	3	
InaccessCount :	3	SlavelnitThread :	16	
TransmitTimeout :	30	CycleMode :	1	
SyncPeriod :	-3			
		Default	OK Cancel	

5. Return to the Comm1 window. Click the [Save to Project] button to save the setting file.

For the saving operation of the setting file, refer to the following.

Page 20 Saving the settings

6. Click the [Save to Engine] button to write the set information to the SWM-G engine.

For the writing operation to the SWM-G engine, refer to the following.

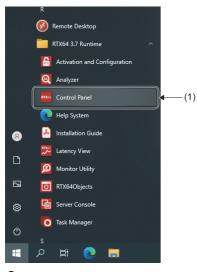
Page 22 Writing to the SWM-G engine

7. The definition file is loaded and used when the next communication starts.

■ Starting RT-TCP/IP Stack

To use the IP communication mixed function, starting RT-TCP/IP Stack from RTX Control Panel is required.

- **1.** Select [RTX64 ### Runtime] ^{*1} ⇒ [Control Panel] (1) from the Windows start menu.
- *1 ### = RTX version



- 2. The "RTX64 ### Control Panel" screen^{*1} appears. Click the [▶] button (2) in "Start/Stop the RT-TCP/IP Stack" to start RT-TCP/IP Stack. When RT-TCP/IP Stack starts, the [▶] button changes to a [■] button. Click the [■] button to stop RT-TCP/IP Stack.
- *1 ### = RTX version

First Steps Activate purchased components	Assign system processors Current: 1 RTSS / 1 Windows	RTX64 components: RTX64 3.7 Subsystem RTX64 3.7 RT-TCP/IP Stack	
Manage user permissions Subsystem Configure the RTSS Subsystem	Start/Stop the Subsystem The subsystem is started. (monitoring disabled)	Runtime Information IntervalZero RTX64 3.7 Edition: Solo Version: 3.7.0 Build Number: 4983	Copyright © 2010-2019 IntervalZero, Inc. All rights reserved.
Manage RTX64 devices RT-TCP/IP Stack and Drivers RT Configure the RT-TCP/IP Stack	Start/Stop the RT-TCP/IP Stack The RT-TCP/IP stack is stopped.	-	
System Diagnostics		-	

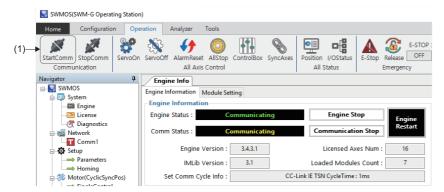
3. When the setting is completed, click the [×] button in the upper right of the screen to close the "Manage Interfaces and Filters" screen.

MR Configurator2 communication setting using the IP communication

This section describes how to connect MR Configurator2 to the servo amplifier using the IP communication function. The IP communication function enables communications with devices in the CC-Link IE TSN network via the SWM-G engine. The servo parameters can be set via the CC-Link IE TSN network.

Connection procedure

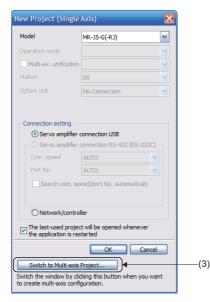
1. In SWMOS, click [Operation] ⇒ [StartComm] (1) in the ribbon to start the communication.



2. Start MR Configurator2. Select [Project] ⇒ [New] (2) from the menu to create a new project.

<u>-</u>	MELSOFT MR Configura	tor2 New pr
: Pro	ject View Parameter	Safety
(2)	New	Ctrl+N
· P	Open	Ctrl+O
	Close	
	Save	Ctrl+S
	Save As	
	Delete	
	Read Other Format	۰.
	Write Other Format	•
	System Setting	
:	Print Preview	
- 2	Print	Ctrl+P
-	Exit MR Configurator2	Alt+F4

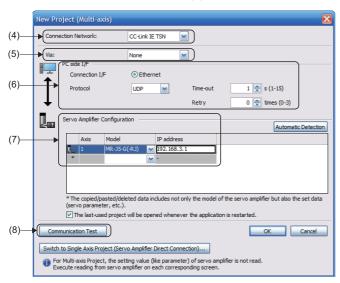
3. When a new project is created, the "New Project" screen appears. Click the [Switch to Multi-axis Project] button (3).



4. The screen is switched to the "New Project" screen of the multi-axis project. Set each item. (Example) Set the following items.

	Item		Setting value
(4)	Connection Network		CC-link IE TSN
(5)	Via		None
(6)	PC side I/F	Connection I/F	Ethernet
		Protocol	UDP
		Time-out	1
		Retry	0
(7)	Servo Amplifier	Model	MR-J5-G(-RJ)
	Configuration	IP address	192.168.3.1

5. When the setting is completed, turn on the control circuit power supply of the servo amplifier and click the [Communication Test] button (8).



6. When the communication is succeeded, the message "The connection succeeded" appears. Click the [OK] button.



7. The screen returns to the "New Project" screen. Click the [OK] button to close the screen. With the above settings, MR Configurator2 can be connected to the servo amplifier using the IP communication function.

Transmission line type

■ Star topology/line topology

Connect the personal computer in star topology or line topology using Ethernet cables.

Star topology and line topology can be combined in a network.

CC-Link IE TSN Class

Select either of the following items according to the devices to be connected.

Connected device information	System configuration	Switching hub	Supported standard
CC-Link IE TSN Class B only	Select this if the system is to be configured without connecting CC-Link IE TSN Class A devices.	TSN hub (CC-Link IE TSN Class B switching hub)	IEEE802.1AS
Mixture of CC-Link IE TSN Class B/A or CC-Link IE TSN Class A only	Select this if a CC-Link IE TSN Class A device or Ethernet device is connected to the configuration of CC-Link IE TSN Class B devices only.	General-purpose hub (CC-Link IE TSN Class A switching hub)	IEEE1588

Appendix 4 Absolute Position Detection System

Setting the servo amplifier

When using the absolute position detection system in the servo amplifier (MR-J5(W)-B), set the following servo parameters.

Servo parameter

No.	Name	Setting value
PA03.0	Absolute position detection system selection	1: Enabled (Absolute position detection system)
PC29.5	[AL.0E3 Absolute position counter warning] selection	0: Disabled
PC41.0	[AL.090.1 Homing incomplete] detection selection	1: Disabled

Since SWM-G does not manage the parameters of the servo amplifier, setting "Absolute position detection system selection" to "1: Enabled" causes the following servo alarms/warnings.

When [AL.025 Absolute position erased] occurs, turn on the control circuit power supply of the servo amplifier and clear the warning.

- [AL.025 Absolute position erased]
- [AL.090 Homing incomplete warning]
- [AL.0E3 Absolute position counter warning]

Restoring the current value

The absolute encoder parameter assumes that the axis moves within the range between $-(2^{31})$ and $2^{31}-1$ [pulse] (before applying the gear ratio).

When the axis moves at or below $-(2^{31})$ [pulse] or beyond $2^{31}-1$ [pulse], the absolute encoder parameter cannot apply the home position correctly. When the axis moves at or below $-(2^{31})$ [pulse] or beyond $2^{31}-1$ [pulse], the current position is required to be manually restored.

The following describes how to restore the current position manually using a sample program.

The sample program is stored in the following folder.

Sample program (default)

C:\Program Files\MotionSoftware\SWM-G\Samples\Extra\AbsoluteEncoder

Processing descriptions

Before stopping the SWM-G engine, save the following current value restoration data in a file, and restore the current value based on the saved current value restoration data, ABS counter acquired from the servo amplifier, and Encoder Command at the startup at the next startup of the SWM-G engine.

The sample program can execute the processing before stopping the engine and the processing after starting the engine.

Current value restoration data

Data	Description
Encoder Command	Encoder Command in the axis state (32-bit integral command position to be sent to the servo)
Encoder Command(64bit)	ABS counter (Obj.2B0Dh) of the servo amplifier and encoder value (64 bits) generated in Encoder Command
Pos Cmd	Pos Cmd in the axis state (axis command position)
Absolute Encoder Home Offset	The value of the absolute encoder home position offset of the axis parameter

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Descriptions of the sample program

The sample program is a project of Visual Studio.

The sample program outputs files such as current value restoration data. "C:\Temp" is specified as the output destination

folder of the file in the program. Change it as necessary.

Execute the sample program with the SWM-G engine running.

When the program AbsoluteEncoder is executed, the following console menu is displayed.

Enter the processing number (0 to 2) and press Enter.

- 0:Execution of processing before stopping.
- 1:Execution of processing after starting.
- 2:End Program

The processing when the processing number (0 to 2) is selected is as follows.

- [0]: The processing before stopping the SWM-G engine is executed. The current value restoration data is saved.
- [1]: The processing after starting the SWM-G engine is executed. The current value is restored.
- [2]: The program is ended.

Function list

The following shows the list of functions. For other details, check the descriptions of the program.

No.	Function name	Name	Description
1	_tmain()	Main processing	 Executes each processing by entering numerical values. (Target axes: 0 axis) 0: Executes the processing before stopping the SWM-G engine. 1: Executes the processing after starting the SWM-G engine. 2: Ends the program. The following is the menu for debug. 100: Parameter export 101: Parameter import 102: Acquired data display The code for debug is enabled by defining "DEBUG_CODE".
2	ProcessingBeforeEngineStop()	Processing before stopping the SWM-G engine	Saves the current value restoration data.
3	ProcessingAafterEngineStart()	Processing after starting the SWM-G engine	Restores the current value from the current value restoration data.
4	ReadAbsCounter()	ABS counter reading	Reads the ABS counter (Obj.2B0Dh) from the servo amplifier.
5	ExportData()	Current value restoration data saving	Saves the current value restoration data.
6	ImportData()	Current value restoration data reading	Reads the current value restoration data.
7	Make64bitEncoderCommand()	Encoder Command (64-bit) generation	Generates the Encoder Command (64-bit) value from Encode Command and the ABS counter.
8	MakeMovementAndTurnAmount()	Movement amount/turn amount calculation	Calculates the movement amount (encoder value) and turn amount with the values before and after stopping the engine.
9	RestoreAbsoluteEncoderHomeOffset()	Current value restoration (when the single turn is enabled)	Restores the current value when the single turn is enabled.
10	GetAndExportAll()	Parameter export	Exports the parameters to a file. (For debag)
11	ImportAndSetAll()	Parameter import	Imports the parameters to a file. (For debag)

Appendix 5 How to Create a New Program

This section describes how to create a C++ project using the SWM-G library.

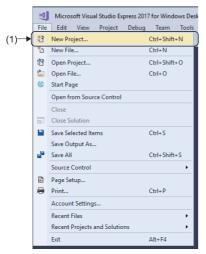


For details of the languages and versions supporting the SWM-G library, refer to the following.

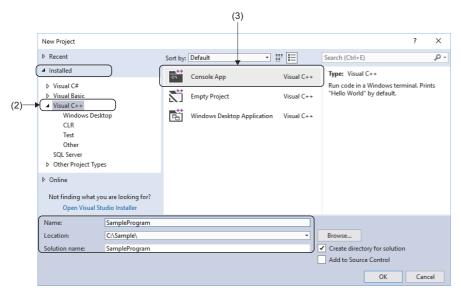
Creation procedure

The following describes how to create a Visual C++ project using Visual Studio 2017 as an example.

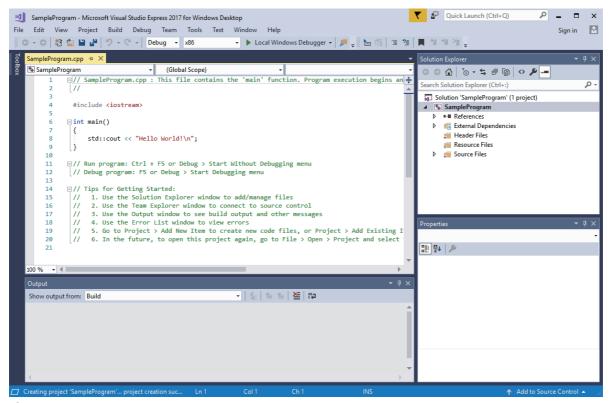
1. Select [File] ⇒ [New Project] (1) from the menu.



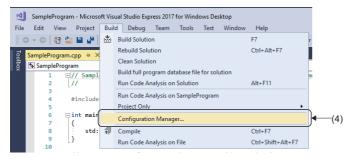
2. The "New Project" screen appears. Select [Installed] ⇒ [Visual C++] (2) to display the templates that can be used in Visual C++. Select [Console App] (3), enter the project name, storage location, and solution name, and click the [OK] button.



3. Create a Visual C++ project.



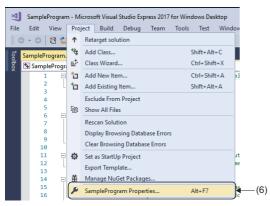
4. Select [Build] ⇒ [Configuration Manager] (4) from the menu.



5. The "Configuration Manager" screen appears. Set "x64" (5) for [Active solution platform] and click the [Close] button to close the "Configuration Manager" screen.

active solution configuration		Active solution platform:		
Debug ~			~	
roject contexts (check the p	roject configurations to build	or dep oc		⊢ (5
Project	Configuration	<new></new>		. (0
SampleProgram	Debug	<edit></edit>	_	

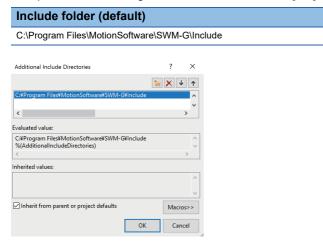
- **6.** Next, open the property page of the project. Select [Project] ⇒ [□□□ Properties] (6) from the menu.
- *1 DDD= Indicates the created project name.



7. The "Property Pages" screen appears. Select [Configuration Properties] ⇔ [C/C++] ⇔ [General] (7) to display the items under [General]. Select [Additional Include Directories], click the [♥] button (8), and select [<Edit...>] (9).

Configuration: Active(Debug)	 Platform: x64 		 Configuration Manager
Configuration Properties	Additional Include Directories		(
General	Additional #using Directories	<edit></edit>	<u> </u>
Debugging	Debug Information Format	FIDITATI DALADASE TOT EUIL AND	onunue (/ZI)
VC++ Directories	Support Just My Code Debugging	Yes (/JMC)	
▲ C/C++	Common Language RunTime Support		
General	Consume Windows Runtime Extension		
Optimization	Suppress Startup Banner	Yes (/nologo)	
Preprocessor Code Generation	Warning Level	Level3 (/W3)	
	Treat Warnings As Errors	No (/WX-)	
Language Precompiled Headers	Warning Version		
Output Files	Diagnostics Format	Classic (/diagnostics:classic)	
Browse Information	SDL checks	Yes (/sdl)	
Advanced	Multi-processor Compilation		
All Options			
Command Line			
Linker			
Manifest Tool			
XML Document Generator			
Browse Information			
Build Events			
Custom Build Step			
Code Analysis			
	Additional Include Directories		
	Specifies one or more directories to add to the	e include nath: senarate with semi-c	olons if more than one

8. The "Additional Include Directories" screen appears. Add the include folder in the SWM-G installation folder. Enter the path of the following include folder and click the [OK] button.



9. The screen returns to the "Property Pages" screen. The entered include folder is displayed.

SampleProgram Property Pages		? ×
Configuration: Active(Debug)	✓ Platform: x64	 Configuration Manager
Configuration Properties	Additional Include Directories	C:¥Program Files¥MotionSoftware¥SWM-G¥Include;%(Addit
General	Additional #using Directories	
Debugging	Debug Information Format	Program Database for Edit And Continue (/ZI)
VC++ Directories	Support Just My Code Debugging	Yes (/JMC)
▲ C/C++	Common Language RunTime Support	
General	Consume Windows Runtime Extension	
Optimization	Suppress Startup Banner	Yes (/nologo)

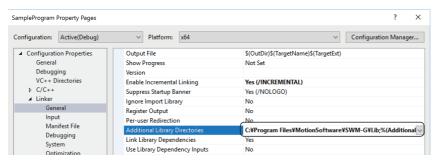
10. Select [Configuration Properties] ⇒ [Linker] ⇒ [General] (10) to display the items under [General]. Select [Additional Library Directories], click the [♥] button (11), and select [<Edit...>] (12).

Configuration: Active(Debug)	✓ Platform: x64	 ✓ Cor 	figuration Manager
Configuration: Active(Debug) Configuration Properties General Debugging VC++ Directories > C/C++ Cinker General Input Manifest File Debugging System Optimization Embedded IDL Windows Metadata Advanced All Options Command Line > Manifest Tool > XML Document Generator > Browse Information > Build Events > Custom Build Step > Coutom Build Step > Coutom Build Step	Version Enable Incremental Linking Suppress Startup Banner Ignore Import Library Register Output Per-user Redirection Additional Library Directories Link Library Dependencies Use Library Dependencies Use Library Dependency Inputs Link Status Prevent DIB Binding Treat Linker Warning As Errors Force File Output Create Hot Patchable Image Specify Section Attributes	<pre>Cor S(OutDir)S(TargetName)S(TargetExt) Not Set Yes (/INCREMENTAL) Yes (/NOLOGO) No No No </pre>	figuration Manager
<	Additional Library Directories Allows the user to override the environme	ntal library path. (/LIBPATH:folder)	

11. The "Additional Library Directories" screen appears. Add the library folder in the SWM-G installation folder. Enter the path of the following library folder and click the [OK] button.

Library folder (default	t)	
C:\Program Files\MotionSoftw	/are∖SWM-	G\Lib
Additional Library Directories	?	×
	1 × ×	· 1
C:¥Program Files¥MotionSoftware¥SWM-G¥Lib		^
<		>
Evaluated value:		-
C:#Program Files#MotionSoftware#SWM-G#Lib		^
%(AdditionalLibraryDirectories)		~
<		>
Inherited values:		^
		~
Inherit from parent or project defaults	Macro)S>>
	OK Can	cel
40 -		//

12. The screen returns to the "Property Pages" screen. The entered library folder is displayed.



13. Select [Configuration Properties] ⇔ [Linker] ⇔ [Input] (13) to display the items under [Input]. Select [Additional Dependencies], click the []] button (14), and select [<Edit...>] (15).

Configuration: Active(Debug)	✓ Platform: x64	Configuration Manager
Active(Debug)	· Flationit. X04	Configuration Manager
 Configuration Properties 	Additional Dependencies .lib;uuid.lib;odbc32.lib;odbccp32.l	ib;%(AdditionalDependencies
General	Ignore All Default Libraries	
Debugging	Ignore Specific Default Libraries	
VC++ Directories	Module Definition File	
▶ C/C++	Add Module to Assembly	
(Linker	Embed Managed Resource File	
General	Force Symbol References	
Manifest File	Delay Loaded Dlls	
Debugging	Assembly Link Resource	
System		
Optimization		
Embedded IDL		
Windows Metadata		
Advanced		
All Options		
Command Line		
Manifest Tool		
XML Document Generator		
Browse Information		
Build Events		
 Custom Build Step Code Analysis 		
Code Analysis		
	Additional Dependencies	
	Specifies additional items to add to the link command line. [i.e. kernel32.lib]	
< >		

14. The "Additional Dependencies" screen appears. Add the libraries. Enter the following libraries and click the [OK] button.

Library
AdvancedMotionApi.lib
CompensationApi.lib
CoreMotionApi.lib
EventApi.lib
IMDII.lib
IOApi.lib
LogApi.lib
UserMemoryApi.lib
SSCApi.lib
legacy_stdio_definitions.lib *1
legacy_stdio_wide_specifiers.lib *1

*1 Add this library only when Visual Studio 2015 or later is used.

Additional Dependencies		?	×
AdvancedMotionApi.lib CompensationApi.lib CoreMotionApi.lib			^
<			>
Evaluated value:			
AdvancedMotionApi.lib CompensationApi.lib			^
CoreMotionApi.lib <			>
Inherited values:			
kernel32.lib user32.lib gdi32.lib			^
winspool.lib			~
Inherit from parent or project defaults		Macro	os>>
	ОК	Can	cel

15. The screen returns to the "Property Pages" screen. The entered library is displayed.

SampleProgram Property Pages		? ×
Configuration: Active(Debug)	✓ Platform: x64	 ✓ Configuration Manager
 Configuration Properties 	Additional Dependencies	AdvancedMotionApi.lib;CompensationApi.lib;CoreMotionApi.l 🔾
General	Ignore All Default Libraries	
Debugging	Ignore Specific Default Libraries	
VC++ Directories	Module Definition File	
▷ C/C++	Add Module to Assembly	
▲ Linker	Embed Managed Resource File	
General	Force Symbol References	
Input	Delay Loaded Dlls	
Manifest File Debugging	Assembly Link Resource	

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16. Windows applications created by using the SWM-G library do not operate unless "IMDII.dll" exists in the application directory. Define this DLL in the build event so that the DLL is automatically copied to the application directory every time the application compiles it.

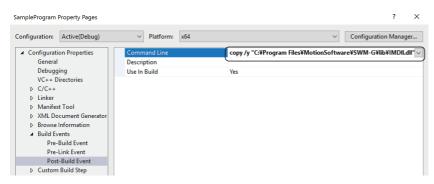
Select [Configuration Properties] \Rightarrow [Build Events] \Rightarrow [Post-Build Event] (16) to display the items under [Post-Build Event]. Select [Command Line], click the [\checkmark] button (17), and select [<Edit...>] (18).

	SampleProgram Property Pages				?	×	
(16)—	SampleProgram Property Pages Configuration: Active(Debug) Configuration Properties General Debugging VC++ Directories b C/C++ b Linker b Manifest Tool b XML Document Generator b Browse Information Build Events Pre-Build Event Pre-Link Event Cost-Build Event b Custom Build Step b Code Analysis	Platform: x64 Command Line Description Use In Build	<edit></edit>		? Configuration Mana		(17) (18)
	٢ >	Command Line Specifies a command line for the post-bi	uild event tool to run.				
				OK	Cancel A	pply	

17. The "Command Line" screen appears. Add a command line. Enter the following command line and click the [OK] button.

Command line				
oftware\SWM-G\lib\IMD	ll.dll" "\$(OutDir)"			
? ×				
MDII.dll" "\$(OutDir)"				
>				
MDII.dll" "C:\Sample\				
>				
Macros>>				
OK Cancel				
	MDII.dll "S(OutDir)"			

18. The screen returns to the "Property Pages" screen. The entered command line is displayed. Click the [OK] button to apply the settings and close the "Property Pages" screen.



19. The C++ application using the SWM-G library needs to include the header files supporting the library to be used. For the files including the main routine, add the following header files.

Header file #include "AdvancedMotionApi.h" #include "CompensationApi.h" #include "CoreMotionApi.h" #include "EventApi.h" #include "IOApi.h" #include "LogApi.h" #include "UserMemoryApi.h" #include "SSCApi.h"

20. The configuration of the C++ project has been completed.

Point P

For details of how to use the SWM-G library, refer to the following.

Appendix 6 Network Configuration Setting with IETSN Configurator

Use IETSN Configurator, which is the CC-Link IE TSN network management tool. This section describes how to set the network configuration by using IETSN Configurator. This section describes the settings using the system configuration example in Section 4.1. (SP Page 14 System configuration example)

Precautions

- IETSN Configurator configures the same network setting as the SWMOS network setting, but they are not compatible.
 When the network setting is configured using SWMOS, do not configure the setting with IETSN Configurator. If the network setting is configured using IETSN Configurator, it is recommended to switch to the SWMOS network setting.
- When using a SWM-G version that is "1.001B" or later, the network setting can be configured with IETSN Configurator. When using a SWM-G version that is "1.004E" or later, it is recommended to configure the network setting with SWMOS. For the checking method of the SWMOS version, refer to "SWMOS About" in the following manual.
 Motion Control Software SWM-G Operating Manual

Installing IETSN Configurator

- **1.** Unzip the download module in a place and double-click "IETSNConfigurator_Setup.exe" in the "sw1dnn-swmg-m_****^{*1}" folder ⇔ "IETSNConfigurator" folder.
- *1 ****=SWM-G version
- **2.** The IETSN configurator installation window appears. Select or enter the required information according to the instructions on the screen.

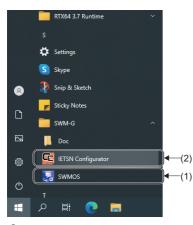
Uninstalling IETSN Configurator

Uninstall IETSN Configurator from Control Panel on Windows. For details, refer to "Uninstallation Procedure" in the following manual.

Motion Control Software SWM-G User's Manual (Installation)

Starting SWMOS and IETSN Configurator

- **1.** Select [SWM-G] \Rightarrow [SWMOS] (1) from the Windows start menu to start SWMOS.
- **2.** Select [SWM-G] ⇒ [IETSN Configurator] (2) from the Windows start menu.



3. After starting IETSN Configurator, the "CC-Link IE Network Configurator" screen appears.

CC-Link IE TSN Network Configurator	- 🗆 ×
Main Advanced Funcs CUI Editor Help	
Scan Hotconnect Image: Configuration of the configura	
Master (Offline)	System Status
Cycle Time (us) : 1000 IP Address : 192.168.3.253	Interrupt Interval :
Cyclic Frames Num : 0 MAC Address :	Communication :
Tx PDO Size (Byte): 0 Cyclic Count : 0	Cycle Process :
Rx PDO Size (Byte) : 0	Motion Process :
	Command Process :
Communication Status	Feedback Process :
Sync	
Count : 0 Count :	Packet Timeout :
Min (ns) : Min (ns) :	
Avg (ns) : 0 Avg (ns) :	0
Max (ns) : Max (ns) :	0
PDelay Request Receive PDelay Request Follow Count : 0 Min (ns) : 0	0 0
Avg (ns) : Avg (ns) :	0
Max (ns) : 0 Max (ns) :	0 Reset
[2021/01/28 12:22:17:208] Network changed.	
[2021/01/28 12:22:17:208] Network changed. [2021/01/28 12:22:11:113] Create Device succeeded.	
Copyright(C) 2	2020 MITSUBISHI ELECTRIC CORPORATION



Since IETSN Configurator uses the SWM-G engine, SWMOS must be started in advance. IETSN Configurator will not operate normally if SWMOS is started after IETSN Configurator is started.

Loading CSP+ (CC-Link Family System Profile Plus)

1. Click [Main] ⇒ [CSP+ Reload] (1) in the ribbon.



2. The "CSP+ Reload" screen appears. The CSP+ information loaded at the startup can be checked. The selection columns of the loaded files are displayed in gray.

By clicking the [Reload] button, the files displayed in the CSP+ list will be reloaded and the list will be updated.

Check	File Name	Description	,
	NZ2GN2B1-32D Ver. 0	DC Input	
\checkmark	NZ2GN2B1-32DT Ver. 0	I/O Combined	
\checkmark	NZ2GN2B1-32DTE Ver. 0	I/O Combined	
\checkmark	NZ2GN2B1-32T Ver. 0	Transistor Output	
\checkmark	NZ2GN2B1-32TE Ver. 0	Transistor Output	
\checkmark	NZ2GN2B-60AD4 Ver. 0	Analog Input	
\checkmark	NZ2GN2B-60DA4 Ver. 0	Analog Output	
\checkmark	NZ2GN2S1-32D Ver. 0	DC Input	
\checkmark	NZ2GN2S1-32DT Ver. 0	I/O Combined	
\checkmark	NZ2GN2S1-32DTE Ver. 0	I/O Combined	
\checkmark	NZ2GN2S1-32T Ver. 0	Transistor Output	
\checkmark	NZ2GN2S1-32TE Ver. 0	Transistor Output	
\checkmark	NZ2GN2S-60AD4 Ver. 0	Analog Input	

3. After checking the displayed contents, click the [×] button in the upper right of the screen to close the "CSP+ Reload" screen.

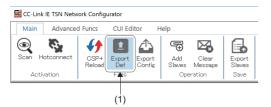


If no CSP+ files are displayed in the list, add CSP+ files. For details of how to add and update the CSP+ files, refer to the following.

Motion Control Software SWM-G Operating Manual

Master setting

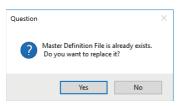
1. Click [Main] ⇒ [Export Def] (1) in the ribbon.



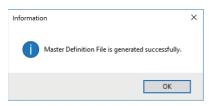
- The "Master Settings" screen appears. Initial values are displayed for each parameter. Set [CommCycle] (2) and [IPAddr] (3) in "Basic Setting" and click the [Save] button. (In the explanation of this section, the initial values are set.)
 - Communication cycle: 1000[μs]
 - IP address: 192.168.3.253

Master Settings	
Aaster Setting Basic Setting CommCycle : 1000 V Time Sync Protocol : EEEB02.1AS V	Slave Setting Extracted Slave Information VendorCode ModelCode ExModelCode DeviceVer MACAddr IPAddr
3) → PAddr: 192 . 168 . 3 . 253 TSLT: 0:0.25 1:05 2:0.25 ✓ PrintLog CyclicSsMeasure UserDef HaltOnNetworkDiff □ BroadcastMsFrame UserPAsAxishdex ✓ VNTx □ PPMode	Axes Map Axes Map ID Axis New Axis
Advanced Setting MasterOpWaitTime : 10000 PriorityWaitTime : 100 PdelayPeriod : 0 SlaveScanWaitTime : 100 PdelayTimeout : -3 NetworkConfigWaitTime : 2000 SlaveScanWaitTime : 2000 SlaveConfigWaitTime : 2000 SlaveConfigWaitTime : 100 SlaveConfigWaitTime : 100 DatalinkErrorPeriod : 3 InaccessCount : 3 SlaveInitThread : 16 TransmitTimeout : 30 SyncPeriod : -3	I/O Map I/O Map ID InAddr InSize OutAddr OutSize
	Load Default Save

3. If the definition file has already existed, the message "Master Definition File is already exists. Do you want to replace it?" appears. Click the [Yes] button.



4. When the setting is updated, the message "Master Definition File is generated successfully." appears. Click the [OK] button.



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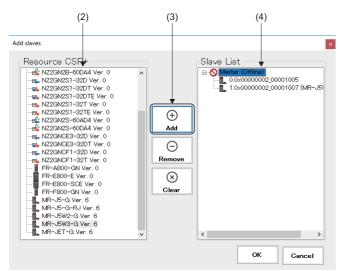
5. When the setting is completed, click the [×] button in the upper right of the screen to close the "Master Settings" screen. The definition file is loaded and used when the next communication starts.

Adding remote stations

1. Click [Main] ⇒ [Add Slaves] (1) in the ribbon.



- 2. The "Add slaves" screen appears. Select the remote stations to be connected in [Resource CSP+] (2) and click the [Add] button (3) to add them to [Slave List] (4). After the slave devices have been added to the slave list, click the [OK] button. (In the explanation of this section, the CSP+ files of "MR-J5-G" and "MR-J5W3-G" are added.)
 - *: If there are multiple same remote stations, select only one CSP+ file to add, and there is no need to add multiple CSP + files.



3. The remote stations (5) are added in the tree on the "CC-Link IE Network Configurator" screen.

	CC-Link IE TSN Network Configurator		- 🗆 ×
	Main Advanced Funcs CUI Editor	Help	
	Scan Hotconnect CSP4 Export Expo Activation Files		
	Master Master (Offline)	Information	System Status
(5)—	0.0×00000002_00001005 (MR-J5-G)	Cycle Time (us) : 1000 IP Address : 192.168.3.253	Interrupt Interval :
(-)	1.0×00000002_00001007 (MR-J5W3-G)	Cyclic Frames Num : 0 MAC Address :	Communication :
		Tx PDO Size (Byte) : 0 Cyclic Count : 0	Cycle Process :
		Rx PDO Size (Byte) : 0	
			Motion Process :
			Command Process :
			Feedback Process :
		Communication Status	
		Sync Propagation Delay Count : 0 Count : Count	Packet Timeout :
		Min (ns) : 0 Min (ns) :	
		Avg (ns) : 0 Avg (ns) :	0
		Max (ns) : 0 Max (ns) :	0
		PDelay Request ReceivePDelay Request Follow	-up
		Count : 0 Count :	0
		Min (ns) : 0 Min (ns) : Avg (ns) : 0 Avg (ns) :	
		Avg (ns) . 0 Avg (ns) . Max (ns) : 0 Max (ns) :	0 Reset
		······································	
		2021/01/28 1222:17:208] Network changed. 2021/01/28 1222:11:118] Create Device succeeded.	
		Copyright(C) 2	020 MITSUBISHI ELECTRIC CORPORATION
		17 3 47	

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CC-Link Unit Information (CUI) setting

Create a CUI file to be used to initialize and set the remote stations at the start of communication.

The CUI file can be manually created. However, it is basically recommended that the CUI file is created by loading the CSP+ files into "IETSN Configurator" and editing the PDO.

Set the CUI file for each remote station. The setting is loaded and used when the next communication with the remote stations starts.

■ For MR-J5-G

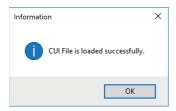
 Select the added remote station in the tree on the "CC-Link IE Network Configurator" screen and click [CUI Editor] ⇒ [Load] (1) in the ribbon.

(1)			
🔤 CC-Link IE TSN Network	< Configurator		
Main 🚽 Advanced F	uncs CUI Editor	Help	
Save Load Open	Assist Object List Advanced	Ex Model Code Device Ver Files	
Master Master (Offline) Master (Offline)	101005 (MR-J5-G) 101007 (MR-J5W3-G)	PDO Type : O R Axis Numbe	0

2. The "Please select a CUI file." screen appears. When the name of an existing setting file is displayed, click the [Open] button.

→ · ↑ 📑 ·	This F	C → Windows (C:) → cui		✓ [™] Search cui		۶
ganize 🔻 🛛 New fo	older					
This PC	^	Name	Date modified	Туре	Size	
Desktop		00000000_5fff0c14.txt	12/7/2020 7:22 PM	Text Document	1 KB	
Documents		0000000_5fff0c94.txt	12/7/2020 7:22 PM	Text Document	1 KB	
Downloads		0000000_5fff0012.txt	9/30/2020 3:18 PM	Text Document	1 KB	
		0000000_5fff0092.txt	11/2/2020 12:06 PM	Text Document	1 KB	
Music		0000000_5fff0192.txt	12/7/2020 7:22 PM	Text Document	1 KB	
Pictures		0000000_5fff0412.txt	12/7/2020 7:22 PM	Text Document	1 KB	
Videos		0000000_5fff0492.txt	12/7/2020 7:22 PM	Text Document	1 KB	
🏪 Windows (C:)		0000000_5fff0810.txt	9/30/2020 3:18 PM	Text Document	1 KB	
🔒 cui		00000000_5fff0814.txt	9/30/2020 3:18 PM	Text Document	1 KB	
	~	0000000 \$440000 ***	11/0/0000 10.06 DM	T+ D+	1 1/10	
Fil	e nam	e: 00000002 00001005.txt		 txt files (*.t 	xt)	

3. When the loading is completed, the message "CUI File is loaded successfully." appears. Click the [OK] button.



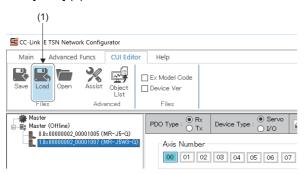
- **4.** When the loading is completed successfully, the set PDO object list and PDO entry list appear. For a single-axis servo amplifier, set only the axis number [00].
- 5. In "PDO Type" (2), switch "Rx" or "Tx" and set the PDO object list for "Rx" and "Tx". In the initial value setting, "1st Receive PDO Mapping" is set for Rx and "1st Transmit PDO Mapping" is set for Tx. When the setting is changed, click the [Save] button (3) to update the CUI file.
- *1 For the PDO object list, set only one object each for Rx and Tx.

(3)	(2)				_	пх
	1					
Main Advanced Funcs CUI Editor	Help					
	Ex Model Code Device Ver Files					
Master ⊡≣≱ Master (Offline)		vice Type : 🔘 Servo	Receive 0 V	🛆 Sen	1 0 ~	
0.0x0000002_00001005 (MR-J5-G)		010				
1.0×00000002_00001007 (MR-J5W3-G)	Axis Number					
	00 01 02 0	3 04 05 06 0	07 08 09 10 11 12	13 14 1	5	
	-PDO Object List					
		dex	Name	•		^
	✓ 0×160) 1st Receiv	e PDO Mapping			
	0×160	2nd Receiv	e PDO Mapping			
	0~160	3rd Receiv	e PDO Menning			*
	PDO Entry List					
		lex Sub	Name	Size	Offset	Туре
	✓ 0×1 D0		Watchdog counter DL 1	2.0 (16bit)	0	USHORT
	✓ 0×606		Modes of operation	1.0 (8bit)	2	CHAR
	✓ 0×607		Target position	4.0 (32bit)	3	INT
	✓ 0×60F		Target velocity	4.0 (32bit)	7	INT
	☑ 0×604		Controlword	2.0 (16bit)	11	USHORT
	✓ 0×60E		Positive torque limit value		13	USHORT
			Negative torque limit val		15	USHORT
	✓ 0×607	1 0×00	Target torque	2.0 (16bit)	17	SHORT
	Size : 19 / 80 [Byte]		Add F	DO Entry	Delete	PDO Entry
	[2021/01/28 12:22:17:208] Ne [2021/01/28 12:22:11:118] Cr					

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For MR-J5W3-G

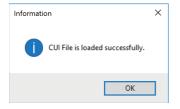
 Select the added remote station in the tree on the "CC-Link IE Network Configurator" screen and click [CUI Editor] ⇒ [Load] (1) in the ribbon.



2. The "Please select a CUI file." screen appears. When the name of an existing setting file is displayed, click the [Open] button.

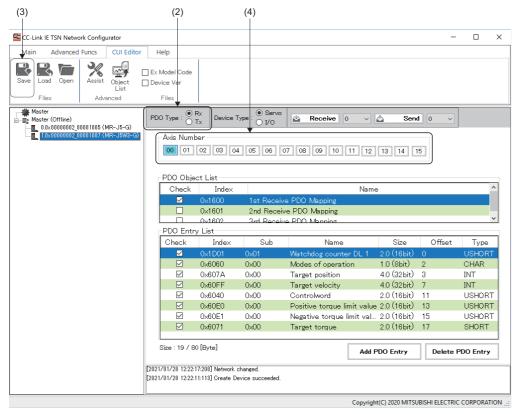
→ ` ↑ 📙 > Th	is PC → Windows (C:) → cui		✓ [™] Search cui	
rganize 🔻 New folde	er			
This PC	Name	Date modified	Туре	Size
Desktop	00000000_5fff0c14.txt	12/7/2020 7:22 PM	Text Document	1 KB
Documents	0000000_5fff0c94.txt	12/7/2020 7:22 PM	Text Document	1 KB
Downloads	0000000_5fff0012.txt	9/30/2020 3:18 PM	Text Document	1 KB
	0000000_5fff0092.txt	11/2/2020 12:06 PM	Text Document	1 KB
J Music	0000000_5fff0192.txt	12/7/2020 7:22 PM	Text Document	1 KB
Pictures	0000000_5fff0412.txt	12/7/2020 7:22 PM	Text Document	1 KB
Videos	0000000_5fff0492.txt	12/7/2020 7:22 PM	Text Document	1 KB
🏪 Windows (C:)	0000000_5fff0810.txt	9/30/2020 3:18 PM	Text Document	1 KB
📙 cui	0000000_5fff0814.txt	9/30/2020 3:18 PM	Text Document	1 KB
-	■ 0000000 £440000 b.t	11/0/0000 10.06 DMA	T+ D+	1 1/0
File n	ame: 00000002 00001007.txt		✓ txt files (*.:	txt)

3. When the loading is completed, the message "CUI File is loaded successfully." appears. Click the [OK] button.



- 4. When the loading is completed successfully, the set PDO object list and PDO entry list appear.
- 5. In "PDO Type" (2), switch "Rx" or "Tx" and set the PDO object list for "Rx" and "Tx". In the initial value setting, "1st Receive PDO Mapping" is set for Rx and "1st Transmit PDO Mapping" is set for Tx. When the setting is changed, click the [Save] button (3) to update the CUI file. For a 3-axis servo amplifier, click the [00] to [02] buttons (4) of the axis number, and switch to the axis to be set and set the axis numbers for multiple axes. The axis numbers are as follows. [00]: A-axis, [01]: B-axis, [02]: C-axis

*1 For the PDO object list, set only one object each for Rx and Tx.



Point P

For details of the mapping change, refer to the following.

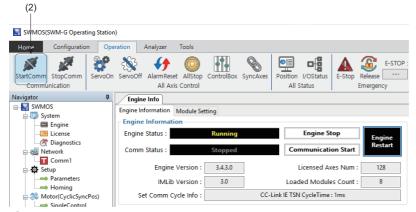
A

Connection check with the servo amplifier

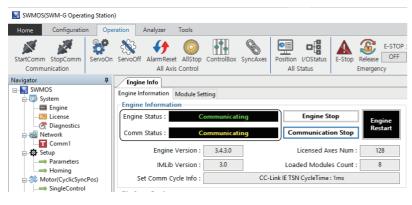
- 1. Turn on the control circuit power supply of the servo amplifier.
- 2. Click [Main] ⇔ [Scan] (1) in the ribbon. The connected servo amplifiers are displayed in the tree on the "CC-Link IE Network Configurator" screen.

C Curk IE TSN Network Configurator - - × Image: Source of the configurator - - × Image: Source of the configurator Image: Source of the configurator - × Image: Source of the configurator Image: Source of the configurator - × Image: Source of the configurator Image: Source of the configurator - × Image: Source of the configurator Image: Source of the configurator - × Image: Source of the configurator Image: Source of the configurator - - × Image: Source of the configurator Image: Source of the configurator - <th>(1)</th> <th></th> <th></th>	(1)		
Openation Openation <t< th=""><th>CC-Link IE TSN Network Configurator</th><th></th><th>- 🗆 X</th></t<>	CC-Link IE TSN Network Configurator		- 🗆 X
Stan Hotconnect CSP+ Export Export<	Main Advanced Funcs CUI Editor	Help	
International point of the definition of the definiti	Scan Hotconnect CSP+ Export Expor Reload Def Confi	t Add Clear Export s Slaves Message Slaves	
Image: 10211A:00000002_00001007 (MR-J5W3- Image: COTTINE) Oycle Time (us) : 1000 IP Address : 192.168.3.253 Oycle Time (us) : 1000 MAC Address : 1000 Image: Communication : 1000 Tx PDO Size (Byte) : 0 Cycle Count : 0 Oycle Process : 1000 Rx PDO Size (Byte) : 0 Cycle Time (us) : 1000 P Address : 1000 Oycle Process : 1000 Communication Status Sync Image: Count : 0 Oycle Timeou : 0 Min (ns) : 0 Max (ns) : 0 Max (ns) : 0 Max (ns) : 0 PDelay Request Receive PDelay Request Receive PDelay Request Receive PDelay Request Follow-up Min (ns) : 0 Max (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Max (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Max (ns) : 0 Min (ns) : 0		Information	System Status
0.0x0000002_00001005 (MR-J5-G) Cyclic Frames Num : 0 MAC Address : Communication : Cyclic Process : Tx PDO Size (Byte) : 0 Cyclic Count : 0 Cyclic Process : Motion Process : Rx PDO Size (Byte) : 0 Communication Status Communication Process : Motion Process : Communication Status Sync 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Max (ns) : 0 Min (ns) : 0 Max (ns) : 0 PDelay Request Receive PDelay Request Follow-up Count : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 Min (ns) : 0 PDelay Request Receive 0 Min (ns) : 0 Min	[02]1.0×00000002_00001007 (MR-J5W3-	Cycle Time (us) : 1000 IP Address : 192.168.3.253	Interrupt Interval :
Communication Status Communication Status Propagation Delay Packet Timeout : Count : 0 Min (ns) : 0 Max (ns) : 0 Max (ns) : 0 PDelay Request Receive PDelay Request Follow-up 0 Min (ns) : 0 Min (ns) : 0 Max (ns) : 0 Min (ns) : 0 PDelay Request Receive PDelay Request Follow-up 0 Min (ns) : 0 Min (ns) : 0 Max (ns) : 0 Min (ns) : 0			Communication :
Kx PDO Size (Byte): 0 Motion Process: Command Process: Communication Status Feedback Process: Sync 0 Min (ns): 0 Avg (ns): 0 Max (ns): 0 Min (ns): 0 Max (ns): 0			Cycle Process :
Communication Status Feedback Process : Sync Propagation Delay Packet Timeout : Ount : 0 Min (na) : 0 Avg (na) : 0 Max (na) : 0 PDelay Request Receive PDelay Request Follow-up Count : 0 Min (na) : 0 Max (na) (na) : 0 <td></td> <td>Rx PDO Size (Byte) : 0</td> <td></td>		Rx PDO Size (Byte) : 0	
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Min (ns): 0 Min (ns): 0 Avg (ns): 0 Max (ns): 0 Max (ns): 0 Max (ns): 0 PDelay Request Receive PDelay Request Follow-up Count: 0 Min (ns): 0 Max (ns): 0			
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Count : 0 Count : 0 Min (ns) : 0 Min (ns) : 0 Avg (ns) : 0 Avg (ns) : 0 Max (ns) : 0 Max (ns) : 0 [2021/01/28 122217:208] Network changed. Reset		- PDelay Request Receive	
Avg (ns): 0 Avg (ns): 0 Max (ns): 0 Max (ns): 0 [2021/701/28 122217:208] Network changed.			
Max (ns) : O Max (ns) : O Reset [2021/701/28 122217:208] Network changed.		Min (ns) : 0 Min (ns) :	0
Max (ns) : 0 Max (ns) : 0 [2021/01/28 12:22:17:208] Network changed.		Avg (ns) : 0 Avg (ns) :	
		Max (ns) : 0 Max (ns) :	0 Reset

3. Switch to the "SWMOS" screen and click [Operation] ⇔ [StartComm] (2) in the ribbon to start the communication.



4. When the communication is started, the display of [Engine Status] and [Comm Status] in the [Engine Information] tab on the Engine Info window is switched to "Communicating".

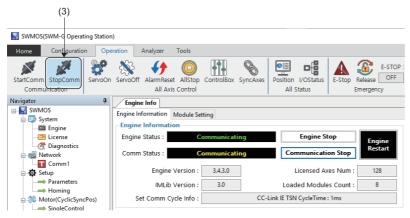


APPX

5. Switch to the "CC-Link IE Network Configurator" screen, and select [Main] in the ribbon to check the connection status. When the communication with the servo amplifier is established, the display color of the tree changes from gray to black. The system status, communication status, and others can be checked.

CC-Link IE TSN Network Configurator -		×
Main Advanced Funcs CUI Editor Help		
Image: Scan Hotconnect Image: Scan H		
Master Information System Status System Status		
Cycle Time (us): 1000 JP Address: 192.168.3.253		
Image: Master (00Hine) Cyclic Frames Num : 94 MAC Address : Communication : 0.0x0000002,00001005 (MR-J5-G) Cyclic Frames Num : 94 MAC Address : Communication : 1 0.0x0000002,00001005 (MR-J5-G) Cyclic Frames Num : 94 MAC Address : Communication :		
Rx PDO Size (Byte) : 52 Cycle Process :		
Motion Process :		
Command Process :		
Feedback Process :		
Communication Status		_
Sync Propagation Delay Packet Time	ut :	
Count : 159 Count : 20	0	
Min (ns) : 124900448 Min (ns) : 23512 Avg (ns) : 125000051 Avg (ns) : 75822		
Max (ns) : 12500001 Avg (ns) : 73622 Max (ns) : 125020688 Max (ns) : 816824		
PDelay Request Receive PDelay Request Follow-up Count : 19 Count : 19		
Min (ns): 999999312 Min (ns): 999999640		
Avg (ns) : 1000423319 Avg (ns) : 1000418872	_	
Max (ns) : 1002725144 Max (ns) : 1001934784 Rese	t	
[2021/01/29 10:40:24:084] Network changed. [2021/01/29 10:40:21:787] Create Device succeeded.		
Copyright(C) 2020 MITSUBISHI ELECTRIC (ORPORA	

6. After checking the communication status, switch to the "SWMOS" screen and click [Operation] ⇒ [StopComm] (3) in the ribbon to end the communication.



7. When the communication is ended, the display of [Engine Status] is switched to "Running" and the display of [Comm Status] is switched to "Stopped" in the [Engine Information] tab on the Engine Info window.

🔜 SWMOS(SWM-G Operati	ng Station)									
Home Configuration	Оре	ration	Analyzer	Tools							
StartComm StopComm Communication	ServoOn	ServoOff	AlarmReset All Axis	AllStop Control	ControlBox	SyncAxes		I/OStatus	E-Stop	Release Emergen	E-STOP
Navigator	ņ	Engine									
System		Engine Int	formation N	1odule Se	tting						
Engine		Engine	Informatio	n			_				
		Engine	Status :		Running			Engine St	ор	Eng	ine
⊡ – 🥳 Diagnostics ⊡ – 😹 Network		Comm	Status :		Stopped		Con	nmunicati	on Start	Res	
⊡ 🔂 Comm1 ⊡ 🙀 Setup			Engine V	ersion :	3.4.3.0		L	icensed Ax	es Num	12	8
Parameters			IMLib V	ersion :	3.0	1	Load	ed Module	es Count	8	
Homing	Pos)	Se	t Comm Cyc	le Info :		CC-I	Link IE TSN	CycleTime	: 1ms		
SingleControl											

8. When the communication is ended and the servo amplifier is disconnected, turn off the control circuit power supply of the servo amplifier.

Appendix 7 How to Set the MR Configurator2 Alarm Occurrence Time

This section describes how to correct the alarm occurrence times in the alarm history displayed on the "alarm display" of MR Configurator2 when the times do not match with the Windows "Current date and time" (Japan Standard Time).

Setting procedure (for Japan time zone)

This setting is necessary for sending commands to the remote station. Commands directly edit the CUI (CC-Link Unit Information) file for each device.

Precautions

- This setting requires directly editing the CUI file.
- CUI files cannot be opened during communication. Edit the CUI file after stopping communication.
- When the network configuration setting is updated (a CUI file is updated) in SWMOS or IETSN Configurator, the command must be set again.

Network configuration setting with SWMOS

1. Start Windows Explorer, and open the following folder.

CUI file storage dest	tination
-----------------------	----------

C:\CUI

2. Select the file of the remote station for which the time will be set, and open it with a text editor.

👻 🛧 📙 > This PC > Wi	ndows (C:) → cui		ע פֿע גע Search פ	:ui	
This PC	^	Name	Date modified	Туре	Size
3D Objects		swmos-192168003001	1/11/2023 4:36 PM	Text Document	2 KB
Desktop		swmos-192168003002	1/11/2023 4:36 PM	Text Document	4 KB
Documents		swmos-192168003003	1/11/2023 4:36 PM	Text Document	3 KB
Downloads		📄 swmos-192168003010	1/11/2023 4:36 PM	Text Document	2 KB
Music		📄 swmos-192168003011	1/11/2023 4:36 PM	Text Document	2 KB
Pictures		swmos-192168003004	11/29/2022 1:35 PM	Text Document	1 KB
Videos		swmos-192168003005	11/29/2022 1:35 PM	Text Document	1 KB
Windows (C:)					
cui					
Intel					
Melservo					

3. The CUI file of the selected remote station is displayed.

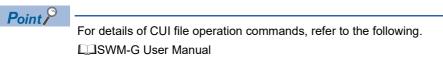
an swmos-192168003001 - Notepad	-	×
File Edit Format View Help		
[init2preop]		1
[preop2init]		
[preop2safeop]		- 1
SDODownload: 0,0x1600,0x1,4,0x1d010110,1		- 1
SDODownload: 0,0x1600,0x2,4,0x60600008,1		- 1
SDODownload: 0,0x1600,0x3,4,0x607a0020,1		- 1
SDODownload: 0,0x1600,0x4,4,0x60ff0020,1		- 1
SDODownload: 0,0x1600,0x5,4,0x60400010,1		
SDODownload: 0,0x1600,0x6,4,0x60e00010,1		
CDOD1J. 0 0.4C00 07 4 0C0.40040 4		

4. Add a command to the [preop2safeop] section of the CUI file.

The contents of the command specify the time difference between UTC and Japan in minutes. (Example: 9 hours \times 60 minutes = 540 minutes)

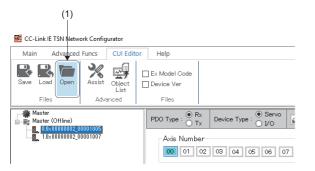
Command added to the CUI file	
SImpSend: 0,0x3062, 0x00, 0, 0, 540, 0	
swmos-192168003001 - Notepad File Edit Format View Help	 X
[init2preop] [preop2init]	^
[preop2safeop] SlmpSend: 0,0x3062, 0x00, 0, 0, 540, 0 SDDDownload: 0,0x1600,0x1,4,0x1d010110,1 SDDDownload: 0,0x1600,0x2,4,0x60600008,1 SDDDownload: 0,0x1600,0x3,4,0x607a0020,1 SDDDownload: 0,0x1600,0x4,4,0x60ff0020,1	

5. When the command has been added to the CUI file, save the CUI file and close it.



Network configuration setting with IETSN Configurator

- 1. Select [SWM-G] ⇒ [IETSN Configurator] from the Windows start menu to start IETSN Configurator.
- 2. The "CC-Link IE Network Configurator" screen appears. Select the remote station for which the time will be set from the tree on the "CC-Link IE Network Configurator" screen and click [CUI Editor] ⇔ [Open] (1) in the ribbon.



3. The CUI file of the selected remote station is displayed.



4. Add a command to the [preop2safeop] section of the CUI file. The contents of the command specify the time difference between UTC and Japan in minutes. (Example: 9 hours x 60 minutes = 540 minutes)

Command added to the CUI file		
SImpSend: 0,0x3062, 0x00, 0, 0, 540, 0		
*0000002_00001005 - Notepad	-	×
File Edit Format View Help		
[preop2init]		
[preop2safeop] SlmpSend: 0,0x3062, 0x00, 0, 0, 540, 0		
SDDDownload: 0,0x1600,0x1,4,0x1d010110,1 SDDDownload: 0,0x1600,0x2,4,0x60600008,1		
SDODownload: 0,0x1600,0x2,4,0x607a0020,1		
SDODownload: 0,0x1600,0x4,4,0x60ff0020,1		
SDODownload: 0,0x1600,0x5,4,0x60400010,1		
SDODownload: 0,0x1600,0x6,4,0x60e00010,1 SDODownload: 0,0x1600,0x7,4,0x60e10010,1		

5. When the command has been added to the CUI file, save the CUI file and close it.



For details of CUI file operation commands, refer to the following.

REVISIONS

The manual number is given on the bottom left of the back cover.				
Revision date	*Manual number	Description		
February 2021	IB(NA)-0300562ENG-A	First edition		
November 2021	IB(NA)-0300562ENG-B	■Added or modified parts Chapter 6		
June 2022	IB(NA)-0300562ENG-C	■Added or modified parts Appendix 6		
February 2023	IB(NA)-0300562ENG-D	■Added or modified parts Chapter 1, 4, 6, Section 1.2, 2.1, 4.1, 4.2, 4.3, Appendix 1, 2, 3, 5, 6, 7		
May 2023	IB(NA)-0300562ENG-E	■Added or modified parts Section 1.1, 4.1, 4.4, Appendix 1, 2, 4,		

al number is dive the bottom left of the back

Japanese manual number: IB-0300559-E

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[Gratis Warranty Term]

For terms of warranty, please contact your original place of purchase.

[Gratis Warranty Range]

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- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
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 - 2. Failure caused by unapproved modifications, etc., to the product by the user.
 - 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 - 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 - 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
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