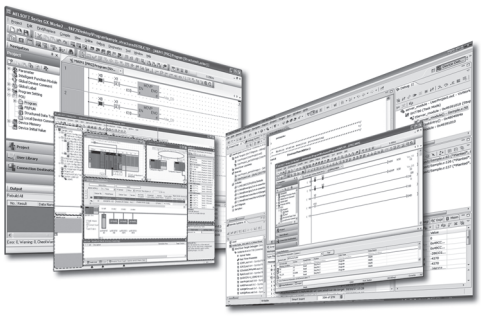
MELSOFT

MITSUBISHI ELECTRIC

Engineering Software

MELSOFT MX OPC Server UA Version 3 Operating Manual

-SW3DND-OPCUAS-E



SAFETY PRECAUTIONS

(Read these precautions before using this product.)

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

The precautions given in this manual are concerned with this product only. For the safety precautions for the programmable controller system, refer to the user's manual for the module used and MELSEC iQ-R Module Configuration Manual.

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

⚠ **WARNING**	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ **CAUTION**	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 "⚠ 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]

⚠ WARNING

- When data change or mode change is performed from a personal computer to a running module, create an interlock circuit outside the programmable controller, motion system, GOT, and robot to ensure that the whole system always operates safely.
  Furthermore, for the online operations performed from a personal computer to a module, the corrective actions against a communication error due to such as a cable connection fault should be predetermined as a system.

[Startup and Maintenance Precautions]

⚠ CAUTION

- The online operations performed from a personal computer to a running programmable controller CPU, motion CPU, and GOT (program change while a CPU module is in RUN state, operating status change such as RUN-STOP switching, and remote control operation) have to be executed after the manual has been carefully read and the safety has been ensured.

CONDITIONS OF USE FOR THE PRODUCT

(1) Mitsubishi programmable controller ("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.

INTRODUCTION

Thank you for purchasing the engineering software, MELSOFT series.

This manual describes the functions provided by MELSOFT MX OPC Server UA.

Before using MELSOFT MX OPC Server UA, please read this manual carefully, and develop familiarity with the functions and performance of this product to handle correctly.

CONTENTS

RELEVANT MANUALS

Manual name [manual number]	Description	Available form
MELSOFT MX OPC Server UA Version 3 Operating Manual [SH-081859ENG] (this manual)	Explains the system configurations, function descriptions, and usage of MELSOFT MX OPC Server UA.	e-Manual PDF

Point

e-Manual refers to the Mitsubishi Electric FA electronic book manuals that can be browsed using a dedicated tool.

e-Manual has the following features:

- Required information can be cross-searched in multiple manuals.
- Other manuals can be accessed from the links in the manual.
- Hardware specifications of each part can be found from the product figures.
- Pages that users often browse can be bookmarked.
- Sample programs can be copied to an engineering tool.

TERMS

Unless otherwise specified, this manual uses the following terms.

Term	Description
Address space	Data that contains information of an access target device, a group, and a tag.
cfg	The extension of a configuration file created in MX OPC Server UA Configuration Tool (version 2.04 or earlier).
cfg3	The extension of a configuration file created in MX OPC Server UA Configuration Tool (version 3.00 or later).
Clamping	Controlling values in the range of set upper and lower limit values.
Configuration Tool	An abbreviation for MELSOFT MX OPC Server UA Configuration Tool.
CPU module	A generic term for RCPUs, FX5CPUs, QCPUs, LCPUs, and FXCPUs.
CSP+ for machine	Data that stores information of devices.
Discovery Server	Server that manages the endpoint of each piece of MX OPC UA Server on a network.
EcoWebServer III	Refers to Energy Saving Data Collecting Server.
Endpoint	MX OPC UA Server installed on a personal computer connected at the end of network.
FXCPU	A generic term for MELSEC-F series CPU modules.
GOT	A generic term for Mitsubishi Graphic Operation Terminal GOT1000 series and GOT2000 series.
GX Works2	A generic product name for SWnDNC-GXW2 and SWnDND-GXW2. ('n' indicates its version.)
GX Works3	A generic product name for SWnDND-GXW3. ('n' indicates its version.)
LCPU	A generic term for MELSEC-L series CPU modules.
MELSOFT MX OPC Server UA Configuration Tool	The setting part of MX OPC Server UA.
Modbus device	A device connected by using the Modbus protocol.
Motion CPU	A generic term for R Motions and Q Motions.
MX device	A generic term for Mitsubishi FA devices (such as programmable controllers, NC devices) and MELSOFT simulator.
MX OPC Server UA	A product name for SW3DND-OPCUAS.
MX OPC UA Server	The communication part of MX OPC Server UA.
NCCPU	A generic term for M850WCPU, M830WCPU, M850SCPU, M830SCPU, M80CPU, and M80WCPU.
OPC	An abbreviation for OLE for Process Control. An interoperability standard for the secure and reliable exchange of data in an industrial automation field and in other industries.
OPC UA	An abbreviation for OPC Unified Architecture. Platform independent service-oriented architecture that integrates all the functionality of each OPC Classic specification into an extensible framework.
Q Motion	A generic term for Q172CPU, Q173CPU, Q172HCPU, Q173HCPU, Q172DCPU, Q173DCPU, Q172DSCPU, and Q173DSCPU.
QCPU	A generic term for MELSEC-Q series CPU modules.
R Motion	A generic term for R16MTCPU, R32MTCPU, and R64MTCPU.
R Safety	A generic term for R08SFCPU, R16SFCPU, R32SFCPU, and R120SFCPU.
RCPU	A generic term for MELSEC iQ-R series CPU modules.
Server	An abbreviation for MX OPC UA Server.
Tag	Information used for accessing device data of a CPU module on the host station or on a network from an OPC UA client application.

MEMO

PART 1 FUNDAMENTALS OF MX OPC Server UA

This part explains the overview of MX OPC Server UA.

1 FEATURES OF MX OPC Server UA

MX OPC Server UA consists of the following components:

- MX OPC UA Server
- MELSOFT MX OPC Server UA Configuration Tool

Features of MX OPC Server UA

MX OPC Server UA has the following features:

■Connection with various SLMP-supported Mitsubishi FA devices is available

MX OPC Server UA employs Mitsubishi EZ socket for communication. This allows data communication among various Mitsubishi FA devices such as programmable controllers, NC devices, and EcoWebServerIII.

■Connection with Mitsubishi simulator is available

Mitsubishi MELSOFT simulators (programmable controllers) can be connected.

By using 3D simulator and MELSOFT simulator together, devices can be verified without having an actual system.

■Tag setting effort can be reduced

By reading CSP+ for machine in Configuration Tool, tag information required for accessing device information from an upper application can easily be set.

MEMO

2 SPECIFICATIONS OF MX OPC Server UA

This chapter shows the specifications of MX OPC Server UA.

Item		Description	
Start as a process		Available	
Start as a service		Available	
Maximum number of connectable devices		10	
Maximum number of tags		100000	
OPC UA	URL (discovery Server)	opc.tcp://localhost:4840	
	Protocol	TCP	
Data type		BOOL	Digital, 1-bit
		INT	Signed 16-bit integer
		UINT	Unsigned 16-bit integer
		WORD	
		UCOUNTER*1	
		UTIMER*1	
		URTIMER*1	
		UDINT	Unsigned 32-bit integer
		DWORD	
		LCOUNTER*1	
		LTIMER*1	
		LRTIMER*1	
		DINT	Signed 32-bit integer
		LINT	Signed 64-bit integer
		ULINT	Unsigned 64-bit integer
		REAL	32-bit floating-point real number (IEEE 754)
		LREAL	64-bit floating-point real number (IEEE 754)
		Structure	Structure definition defined by a user
Advanced data type*2		BOOL array	Digital, 1-bit array
		INT array	Signed 16-bit integer array
		UINT array	Unsigned 16-bit integer array
		WORD array	
		UDINT array	Unsigned 32-bit integer array
		DWORD array	
		DINT array	Signed 32-bit integer array
		LINT array	Signed 64-bit integer array
		ULINT array	Unsigned 64-bit integer array
		REAL array	32-bit floating-point real number (IEEE 754) array
		LREAL array	64-bit floating-point real number (IEEE 754) array
		STRING	String
		WSTRING	String [Unicode]

*1 Can be used when assigning the device as follows:
·UCOUNTER: CN
·LCOUNTER: LCN
·UTIMER: TN
·LTIMER: LTN
·URTIMER: STN
·LRTIMER: LSTN

*2 Up to 65536 elements can be communicated for each data array (excluding STRING and WSTRING).

Supported modules

The following table shows the list of modules supported by MX OPC Server UA.

Series		Model name
MELSEC iQ-R series	RCPU	R00CPU, R01CPU, R02CPU, R04CPU, R08CPU, R16CPU, R32CPU, R120CPU, R04ENCPU, R08ENCPU, R16ENCPU, R32ENCPU, R120ENCPU, R08SFCPU, R16SFCPU, R32SFCPU, R120SFCPU, R08PCPU, R16PCPU, R32PCPU, R120PCPU, R08PSFCPU*1, R16PSFCPU*1, R32PSFCPU*1, R120PSFCPU*1
	Motion CPU	R16MTCPU, R32MTCPU, R64MTCPU
	C Controller module	R12CCPU-V
MELSEC iQ-F series	FX5CPU	FX5UCPU, FX5UCCPU
Q series	QCPU (Q mode)	Q00JCPU, Q00CPU, Q01CPU, Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q00UJCPU, Q00UCPU, Q01UCPU, Q02UCPU, Q03UDCPU, Q03UDECPU, Q04UDHCPU, Q04UDEHCPU, Q06UDHCPU, Q06UDEHCPU, Q10UDHCPU, Q10UDEHCPU, Q13UDHCPU, Q13UDEHCPU, Q20UDHCPU, Q20UDEHCPU, Q26UDHCPU, Q26UDEHCPU, Q50UDEHCPU, Q100UDEHCPU, Q03UDVCPU, Q04UDVCPU, Q06UDVCPU, Q13UDVCPU, Q26UDVCPU, Q02PHCPU, Q06PHCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q04UDPVCPU, Q06UDPVCPU, Q13UDPVCPU, Q26UDPVCPU
	C Controller CPU	Q12DCCPU-V, Q24DHCCPU-V
	Motion CPU	Q172CPU, Q173CPU, Q172HCPU, Q173HCPU, Q172DCPU, Q173DCPU, Q172DSCPU, Q173DSCPU
FX series	FX3CPU	FX3GCPU, FX3GCCPU, FX3GECPU, FX3SCPU, FX3UCPU, FX3UCCPU
	Ethernet interface block	FX3U-ENET, FX3U-ENET-ADP
L series	LCPU	L02CPU, L02CPU-P, L06CPU, L06CPU-P, L26CPU, L26CPU-P, L26CPU-BT, L26CPU-PBT, L02SCPU, L02SCPU-P
Computerized Numerical Controller (CNC)		M850W, M830W, M850S, M830S, M80 TypeA, M80 TypeB, M80W
Energy Saving Data Collecting Server		MES3-255C-EN, MES3-255C-DM-EN, MES3-255C-CN, MES3-255C-DM-CN

*1 Only for the redundant mode

Restriction

If a remote password is set, the connection with MX OPC UA Server cannot be established.

3 FUNCTION LIST OF MX OPC UA Server

This chapter shows the function list of MX OPC UA Server.

Function		Description	Reference
Security	Certificate management	To manage certificates necessary for communication with OPC UA client applications.	Page 26 Certificate Management
	Security setting	To prevent MX OPC UA Server from being stolen, falsified, operated incorrectly, and executed improperly due to unauthorized access from a third party.	Page 30 Security Setting for MX OPC UA Server
Data access	Communication with devices and tags	To communicate with devices and tags. It can be selected whether to communicate with some devices and tags, or all devices and tags. Devices and tags to communicate with can be set in Configuration Tool. (☞ Page 137 TAG SETTING AND MONITORING)	Page 33 Communication with Devices and Tags
	Polling	To poll data based on a polling cycle. Polling cycles can be set in Configuration Tool. (☞ Page 174 Setting Polling Definitions)	Page 35 Starting or Stopping Polling
	Communication with a backup device	To acquire data from a backup device if data cannot be acquired from a primary device when communicating with an MX device. Communication is not performed for a primary device that failed to acquire data. This improves communication efficiency. A backup device can be set in Configuration Tool. (☞ Page 67 Advanced)	—
	Conversion	To convert device values and values in the engineering unit. Device values and values in the engineering unit are converted by specifying their ranges. Conversion definitions can be set in Configuration Tool. (☞ Page 172 Setting Conversion Definitions)	—

MEMO

4 FUNCTION LIST OF CONFIGURATION TOOL

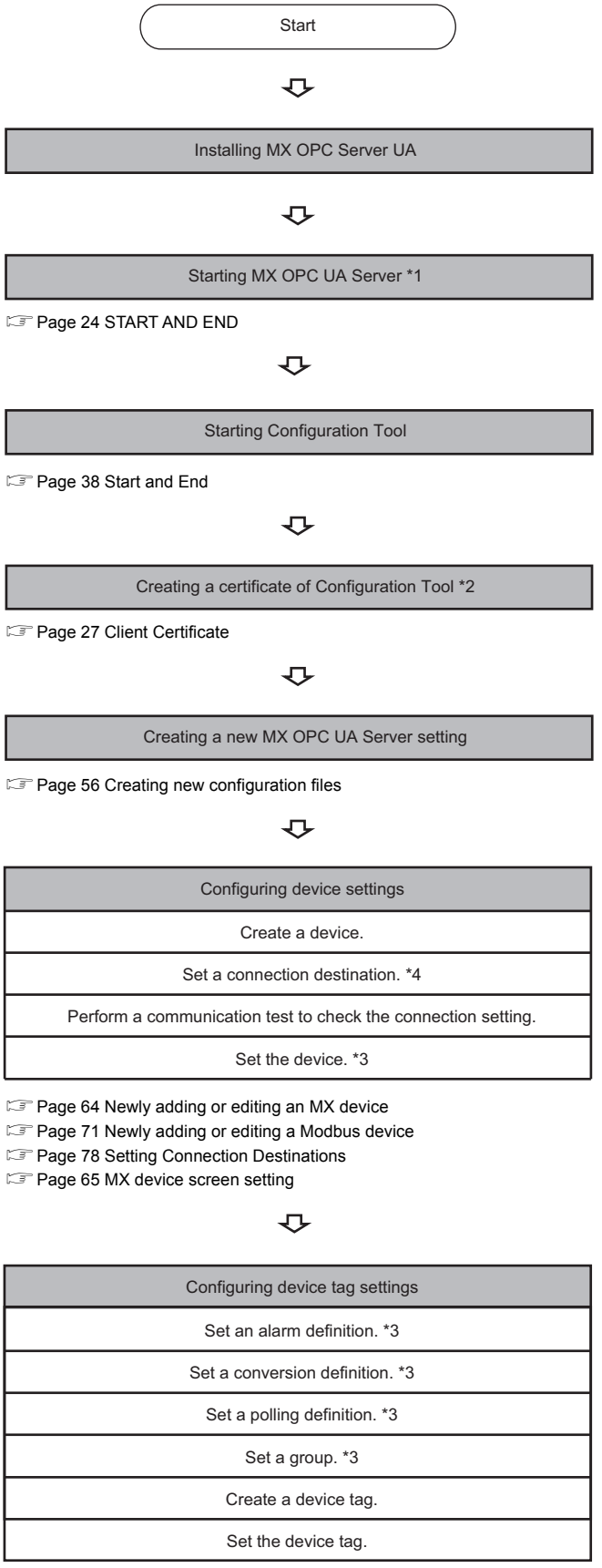
This chapter shows the function list of Configuration Tool.

Function	Description	Reference
Configuration file management	To manage settings of MX OPC UA Server.	Page 55 Configuration File Management
Connection setting with Server, and status check	To set the settings for MX OPC UA Server to connect to. The following statuses can be checked. • Operating status of MX OPC UA Server • Communication status between MX OPC UA Server and a connection destination device	Page 61 Connection Setting with Server
Device setting	To set devices accessed by MX OPC UA Server.	Page 64 DEVICE SETTING
Tag setting	To set tags accessed by MX OPC UA Server.	Page 137 TAG SETTING AND MONITORING
Tag monitoring	To monitor tag values set in Configuration Tool in the list view.	
Display of statistics information	To display statistics information of data in running MX OPC UA Server.	Page 164 DISPLAY OF STATISTICS INFORMATION
Various definitions (alarm, conversion, polling, structure)	To set alarm definitions, conversion definitions, polling definitions, and structure definitions.	Page 166 VARIOUS DEFINITIONS (ALARM, CONVERSION, POLLING, STRUCTURE)
Simulation	To simulate tag values in a personal computer without actually communicating with devices. Simulation signal definitions can be set.	Page 179 SIMULATION
Interaction with iQ Works	To connect with a workspace of MELSOFT iQ Works to link a tag registered in Configuration Tool with a system label registered in a workspace. When either of them is changed, one notifies the other of the change to synchronize.	Page 182 INTERACTION WITH iQ Works
Import of EcoWebServer III configuration files	To import EcoWebServer III configuration files to generate tags automatically.	Page 193 IMPORT OF EcoWebServer III CONFIGURATION FILES
Import of CSP+ for machine	To import CSP+ for machine to generate tags automatically.	Page 200 IMPORT OF CSP+ FOR MACHINE
Import of MX OPC Server DA settings	To import MX OPC Server DA settings to use them for MX OPC Server UA.	Page 204 IMPORT OF MX OPC Server DA SETTINGS
Import of global labels	To import global labels of GX Works3 to generate tags automatically.	Page 206 IMPORT OF GLOBAL LABELS
Import/export in a CSV file	To export server settings of MX OPC Server UA to a CSV file. Server settings of MX OPC Server UA can be used in the same version of MX OPC Server UA by importing them from a CSV file.	Page 215 IMPORT/EXPORT IN A CSV FILE

MEMO

5 OPERATING PROCEDURE

This chapter shows the operating procedure for starting MX OPC Server UA.



☞ Page 166 Setting Alarm Definitions
☞ Page 172 Setting Conversion Definitions
☞ Page 174 Setting Polling Definitions
☞ Page 151 Newly adding or editing groups
☞ Page 137 Address Space (Tag) Setting

Setting structure labels *3
Set a structure definition.
Create structure labels.

☞ Page 176 Setting Structure Definitions
☞ Page 153 Newly adding or editing structure labels

Saving settings to MX OPC UA Server

☞ Page 59 Saving to a file in Server

Checking the operation
Check the operation by monitoring the device.

☞ Page 162 Monitoring

Running the system

*1 When MX OPC Server UA is not installed as a service, start it manually.
*2 Only when starting Configuration Tool for the first time or the certificate is expired.
*3 Only when necessary.
*4 Only for an MX device.

MEMO

PART 2 SERVER FUNCTIONS

This part explains the functions of MX OPC UA Server.

6 START AND END

This chapter shows the operating procedures to start and end MX OPC UA Server as a process.
When installing MX OPC UA Server as a service, these operations are not required.

Start

Operating procedure

Select [MELSOFT] ⇨ [MX OPC UA][*2] ⇨ [MELSOFT MX OPC Server UA][*3] from Windows® Start[*1].
When Server is started, an icon ( ) is displayed on the task tray.

*1 Select [All apps] in the Start screen or [Start] ⇨ [All Programs]/[All apps].
*2 Does not appear in Windows® 8 or later.
*3 MELSOFT MX OPC Server UA is automatically added to the start menu after installed.

Precautions

When Windows® on which MX OPC UA Server is running is in any of the following states, an OPC UA client application cannot be connected to the Server.
If the personal computer has already been connected to Server, the connection will be disconnected.

- Sleep
- Hibernate
- Shutdown

A guest user cannot start it. Only a user with standard or higher authority can start it.

End

Operating procedure

Right-click the icon ( ) on the task tray, and select "Close MELSOFT MX OPC Server UA".

MEMO

7 SECURITY OF MX OPC Server UA

This chapter explains communication using certificates to prevent MX OPC UA Server from being stolen, falsified, operated incorrectly, and executed improperly due to unauthorized access from a third party.

7.1 Certificate Management

When performing communication using certificates, a certificate issued by an OPC UA client application must be recognized by MX OPC UA Server.

The following tables show the path and the name of a folder in which certificates are stored.

OS type	Path
32 bit	C:\Program Files\MELSOFT\MX OPC Server UA\PKI\CA
64 bit	C:\Program Files (x86)\MELSOFT\MX OPC Server UA\PKI\CA

Folder name	File to be stored
certs	A public key certificate authenticated by MX OPC UA Server
crl	Certificate revocation list
rejected	A public key certificate of an unknown OPC UA client application to which connection is not allowed

Certificate recognition

The following shows the procedure for enabling MX OPC UA Server to recognize a certificate of an OPC UA client application.

1. Connect to MX OPC UA Server from an OPC UA client application according to the connection setting for the MX OPC UA Server. (☞ Page 61 Connection Setting with Server)

The connection fails because the certificate of the OPC UA client application is not recognized by the MX OPC UA Server.

The certificate (.der) of the OPC UA client application is stored in the 'rejected' folder of the MX OPC Server UA.

2. Move the stored certificate (.der) to the 'certs' folder.

If another certificate with the same content exists, delete the older version of certificate.

Point

File name of a certificate can be changed.

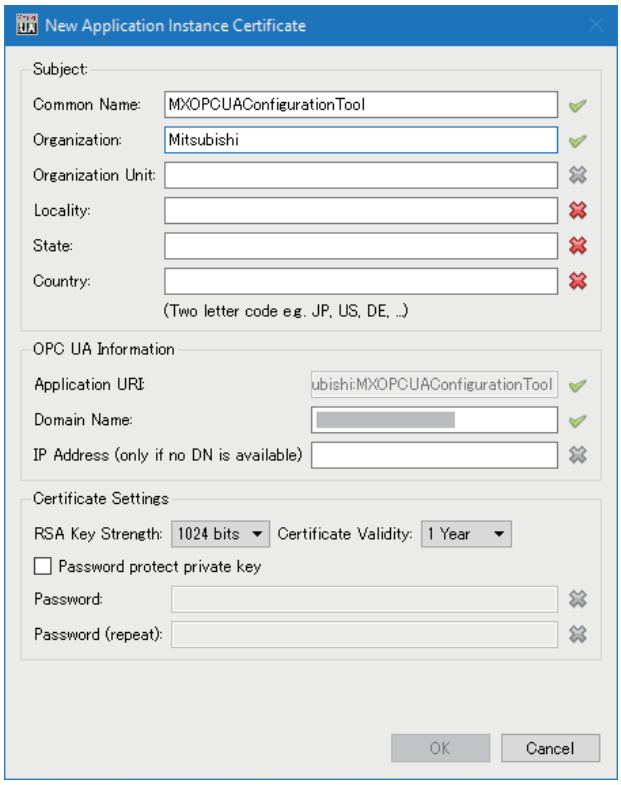
3. Connect to the MX OPC UA Server from the OPC UA client application again.

The certificate issued by the OPC UA client application is recognized by the MX OPC UA Server, and the connection succeeds.

7.2 Client Certificate

A client certificate is generated when starting Configuration Tool for the first time.
Set necessary items in the following screen that appears when generating a certificate.

Window



Displayed items

Item		Description
Subject	Common Name	Set the name of MX OPC UA Server.
	Organization	Set the name of organization or company. (Example: Mitsubishi Electric)
	Organization Unit	Set the unit/department within the organization or company. (Example: Planning dept)
	Locality	Set the town or city where the company is located.
	State	Set the prefecture/state where the company is located.
	Country	Set the two-letter ISO 3166-1 code of the country where MX OPC UA Server is used. Example: Japan 'JP', United States 'US', United Kingdom 'GB', China 'CN', Germany 'DE', Italy 'IT'
OPC UA Information	Domain Name	Set the domain name of the personal computer where Configuration Tool is installed.
	IP Address	If no DNS name is available, enter the IP address of the personal computer where Configuration Tool is installed.
Certificate Settings	RSA Key Strength	Select the strength of a key to be generated. Larger numbers are stronger.
	Certificate Validity	Select the duration for which the certificate is valid.
	Password protect private key	Select the checkbox to protect the private key by a password. When connecting to another personal computer, set a password to enhance security.
	Password	Set the password for a private key.
	Password (repeat)	Enter the password for the private key again.

Password protection for a private key

Enabling the password protection for a private key prevents third parties from connecting to MX OPC UA Server on another personal computer without permission. (A password must be entered when starting Configuration Tool.)
To change a password for a private key set when a client certificate is generated, a new client certificate must be generated.
(☞ Page 28 Procedure for changing a password)

Precautions

When connecting to MX OPC UA Server on a same personal computer, password protection is not enabled because certificate recognition is not required.

■Procedure for changing a password

1. Exit Configuration Tool if it is running.

2. Delete the certificate (configtool.der).

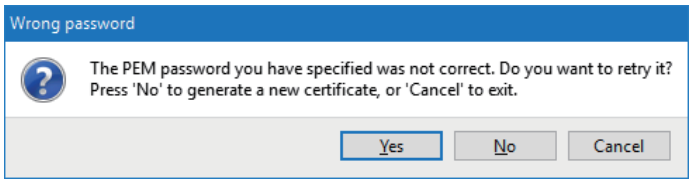
For the folders in which certificates are stored, refer to the following:
☞ Page 26 Certificate Management

3. Start Configuration Tool.

If a password for a private key is set for the certificate, the password must be entered. (Proceed to step 4.)
If a password for a private key is not set for the certificate, the client certificate screen appears. (Proceed to step 6.)

4. Click the [OK] button without entering a password.

The following screen appears.



5. Click the [No] button.

The client certificate screen appears.

6. Enter each item for a client certificate.

For details on a client certificate, refer to the following:
☞ Page 27 Client Certificate
Set a new password for a private key in this screen.

7. Click the [OK] button.

A new client certificate is generated.

Point

When MX OPC UA Server on another personal computer is connected, a newly generated client certificate must be recognized by the MX OPC UA Server.
For the procedure for enabling MX OPC UA Server to recognize a certificate of an OPC UA client application, refer to the following:
☞ Page 26 Certificate recognition

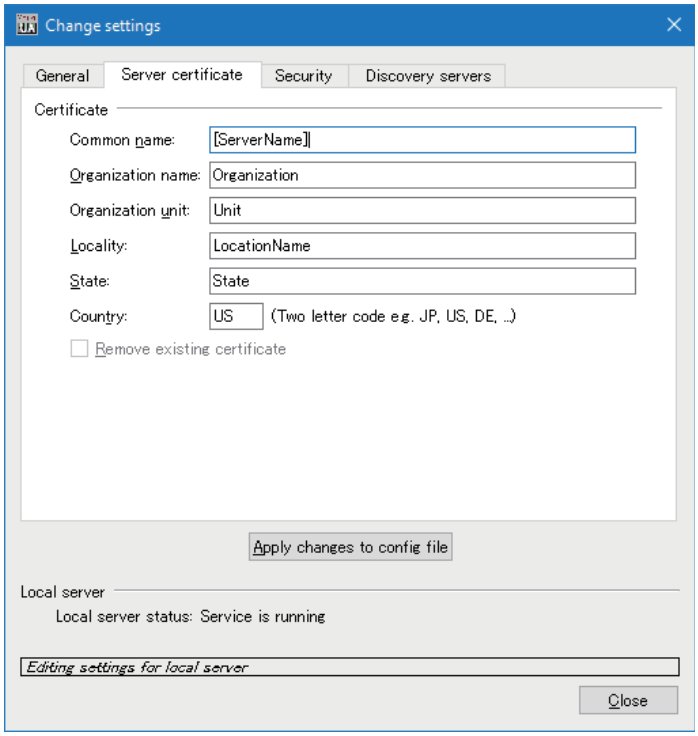
7.3 Server Certificate

The certificate of MX OPC UA Server is automatically generated when starting Server for the first time.
A generated certificate can be changed by the following procedure.

Window

1. Select [Tools] ⇨ [Options].
2. Click the [Change server settings] button in the [Server settings] tab in the "Options" screen.*1
3. Click the [Server certificate] tab in the "Change settings" screen.
4. Enter certificate information in "Certificate", and click the [Apply changes to config file] button.
5. If Server is already running, restart it.

*1 When the "User Account Control" screen appears, click the [Yes] button.



Displayed items

Item		Description
Certificate	Common name	Set the name of MX OPC UA Server. Combining the application name and computer name is recommended. (Example: OPCUAServer_PC1)
	Organization name	Set the name of organization or company. (Example: Mitsubishi Electric)
	Organization unit	Set the unit/department within the organization or company. (Example: Planning dept)
	Locality	Set the town or city where the company is located.
	State	Set the prefecture/state where the company is located.
	Country	Set the two-letter ISO 3166-1 code of the country where MX OPC UA Server is used. Example: Japan 'JP', United States 'US', United Kingdom 'GB', China 'CN', Germany 'DE', Italy 'IT'
	Remove existing certificate	A new certificate will not be created if one already exists. Select the checkbox to delete an existing certificate and create a new one. If not selecting the checkbox, exit MX OPC UA Server, delete a certificate manually, and then restart the Server. A newly created certificate must be manually copied to a computer to use. (☞ Page 26 Certificate Management)

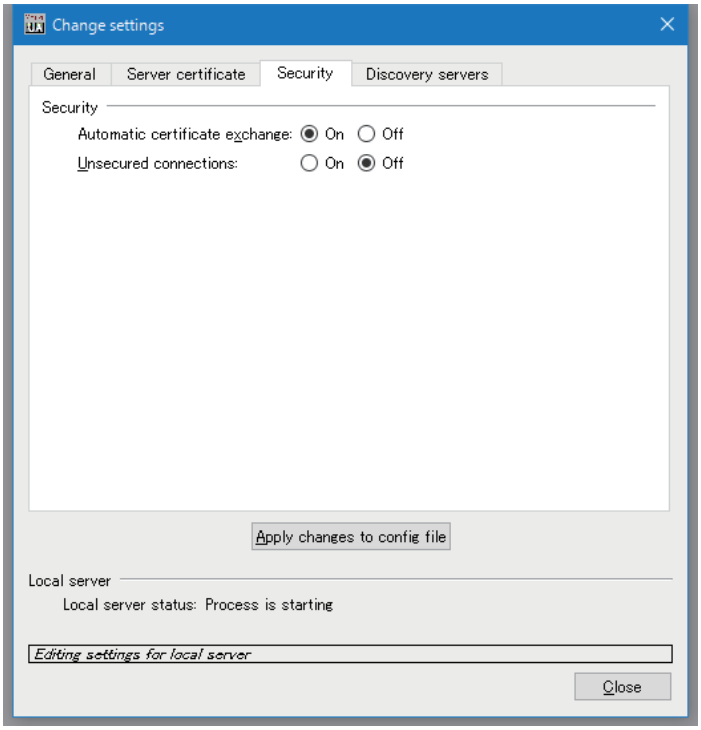
7.4 Security Setting for MX OPC UA Server

The security setting for MX OPC UA Server can be changed.

Window

1. Select [Tools] ⇨ [Options].
2. Click the [Change server settings] button in the [Server settings] tab in the "Options" screen.*1
3. Select the [Security] tab to set the following items.
4. Click the [Apply changes to config file] button.
5. If Server is already running, restart it.

*1 When the "User Account Control" screen appears, click the [Yes] button.

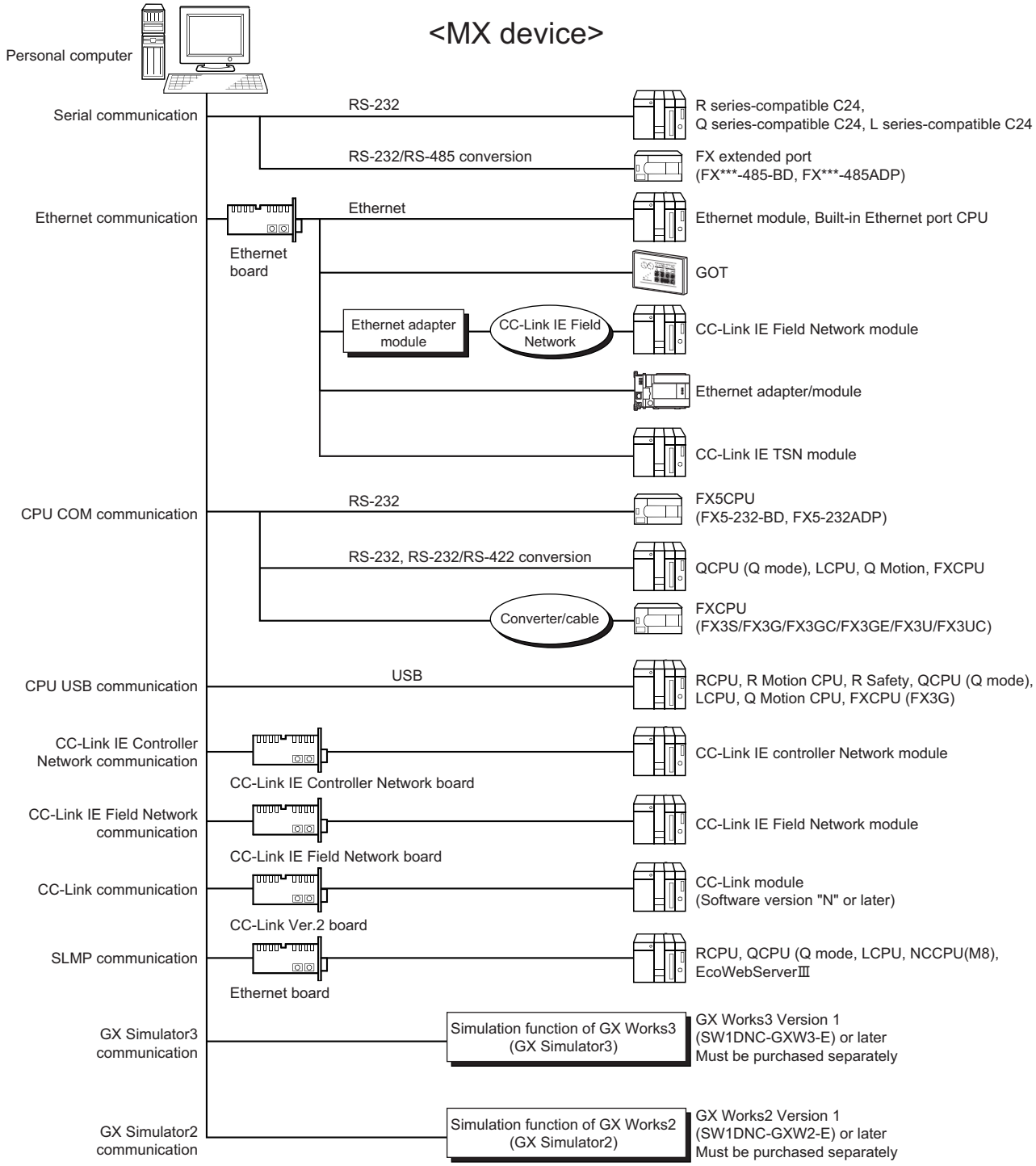


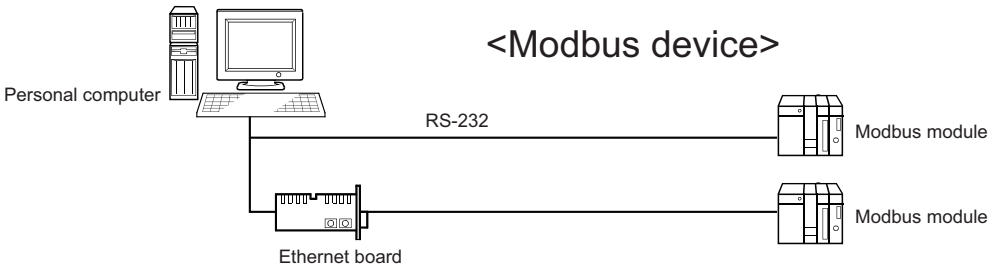
Displayed items

Item		Description
Security	Automatic certificate exchange	When "On" is selected, Server exchanges certificate details with the Windows® certificate store. • On: The certificate of MX OPC UA Server is registered in discovery Server. MX OPC UA Server can be searched by other OPC UA client applications via discovery Server. • Off: The certificate of MX OPC UA Server is not registered in discovery Server. MX OPC UA Server cannot be searched by other OPC UA client applications via discovery Server. A certificate of an OPC UA client application must be recognized by MX OPC UA Server to connect to the MX OPC UA Server from the OPC UA client application regardless of this setting. (☞ Page 26 Certificate recognition)
	Unsecured connections	Set whether to accept or reject connections which are not protected by any security. • On: Connections without encryption are allowed. • Off: Connections without encryption and connections with encryption strength less than 128 bits are not allowed.

8 SYSTEM CONFIGURATION

This chapter shows the system configuration for each communication method when using MX OPC UA Server.




<Modbus device>
Personal computer
RS-232
Modbus module
Modbus module
Ethernet board

9 COMMUNICATION FUNCTION

This chapter explains the communication function of MX OPC UA Server.

9.1 Communication with Devices and Tags

MX OPC UA Server communicates with devices and tags set in Configuration Tool.
It is possible to enable or disable communication for each device or tag, and prevent errors in unconnected devices from being displayed when starting the system.

Enabling communication with a device

The following shows the procedures for enabling communication with a device.
For setting an MX device and a Modbus device, refer to the following:
☞ Page 64 Address Space (Access Target Device) Setting

MX device

The following shows the procedure for enabling communication with an MX device.

Operating procedure

1. Double-click an MX device in the tree view of Configuration Tool.
The "Device Properties" screen appears.

2. Select the checkbox of "Enable Device" in "Primary Device" in the [Advanced] tab.

3. When enabling communication with a backup device, select the checkbox of "Enable Device" in "Backup Device".

4. Click the [Save] button.

Modbus device

The following shows the procedure for enabling communication with a Modbus device.

Operating procedure

1. Double-click a Modbus device in the tree view of Configuration Tool.
The "Device properties" screen appears.

2. Select the checkbox of "Enable" in the [Basic] tab.

3. Click the [Save] button.

Enabling communication with a tag

The following shows the procedure for enabling communication with a tag.

For setting an MX device tag and a Modbus device tag, refer to the following:

☞ Page 137 Address Space (Tag) Setting

MX device tag

The following shows the procedure for enabling communication with an MX device tag.

Operating procedure

1. Double-click an MX device tag in the list view of Configuration Tool.

The "Tag Properties" screen appears.

2. Select the checkbox of "Enable Tag" in the [Advanced] tab.

3. Click the [Save] button.

Modbus device tag

The following shows the procedure for enabling communication with a Modbus device tag.

Operating procedure

1. Double-click a Modbus device tag in the list view of Configuration Tool.

The "Data item properties" screen appears.

2. Select the checkbox of "Enable Tag" in the [Advanced] tab.

3. Click the [Save] button.

9.2 Starting or Stopping Polling

This section shows the procedure for starting or stopping polling a new MX device, Modbus device, or tag defined in Configuration Tool.

By starting polling, communication with a device and tag starts.

For monitoring data collected by MX OPC UA Server in Configuration Tool, refer to the following:

☞ Page 162 Monitoring

Start

Selected devices or tags

The following shows the procedure for starting polling a selected device or tag.

Operating procedure

1. Select a device or a tag in the tree view or the list view of Configuration Tool.
2. Right-click it and select [Start selected device(s)].

Point

Click ▶ on the toolbar to start polling.

All devices

The following shows the procedure for starting polling all devices.

Operating procedure

Click ▶ on the toolbar.

Stop

Selected devices or tags

The following shows the procedure for stopping polling a selected device or tag.

Operating procedure

1. Select a device or a tag in the tree view or the list view of Configuration Tool.
2. Right-click it and select [Stop selected device(s)].

Point

Click ■ on the toolbar to stop polling.

All devices

The following shows the procedure for stopping polling all devices.

Operating procedure

Click ■ on the toolbar.

Precautions

Do not change the date and time of the personal computer while MX OPC UA Server is acquiring data in a device.
If changing the date and time to one out of the range of 49 days before and after the current date and time, MX OPC UA Server may stop.
To change it, stop MX OPC UA Server.
Time stamps and data values may be updated at shorter intervals than usual in the screen of a client application.
In this case, perform any of the following operations:

- Reopen the screen being monitored.
- Select [View] ⇨ [Refresh] to update the screen of Configuration Tool.
- Restart MX OPC UA Server.

PART 3 CONFIGURATION TOOL FUNCTIONS

This part explains the functions of MELSOFT MX OPC Server UA Configuration Tool.

10 SCREEN CONFIGURATION AND BASIC OPERATIONS

This chapter explains the screen configuration and operation methods of Configuration Tool.

10.1 Start and End

This section shows the procedure for starting and ending Configuration Tool.

Start

Operating procedure

1. Select [MELSOFT] ⇨ [MX OPC UA][*2] ⇨ [MELSOFT MX OPC Server UA Configuration Tool] from Windows® Start[*1].
2. When starting Configuration Tool for the first time, set each item in the "New Application Instance Certificate" screen and click the [OK] button. (☞ Page 27 Client Certificate)

*1 Select [All apps] in the Start screen or [Start] ⇨ [All Programs]/[All apps].
*2 Does not appear in Windows® 8 or later.

Precautions

- A guest user cannot start it. Only a user with standard or higher authority can start it.
- The name of a program folder may differ depending on local settings (such as a language setting).

Point

Operations when starting Configuration Tool can be set in the option setting. (☞ Page 45 Option Settings)

End

Operating procedure

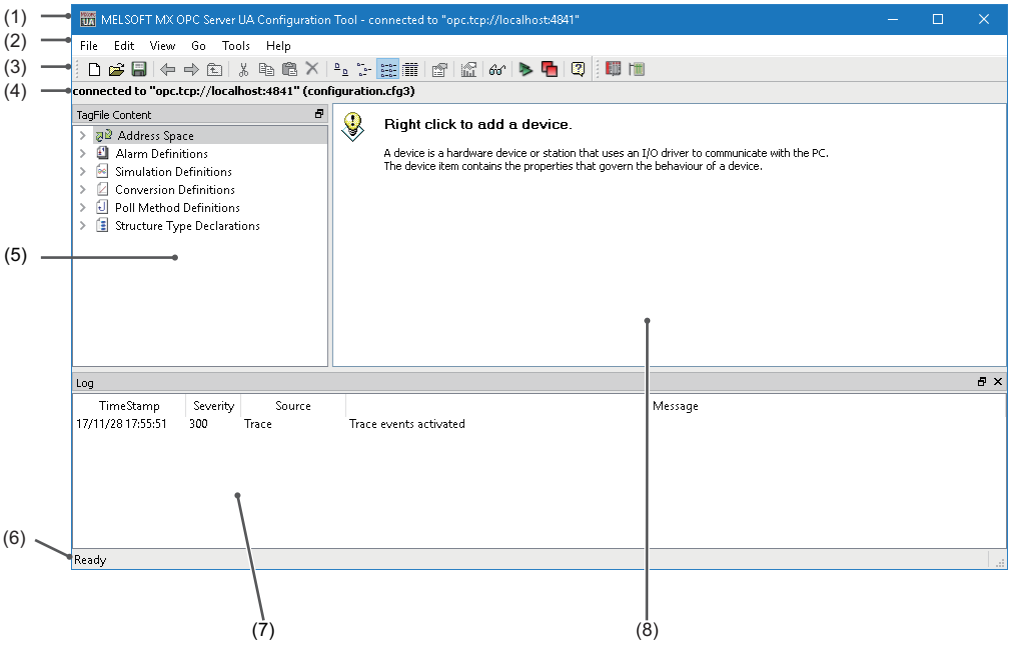
Select [File] ⇨ [Exit].

10.2 Screen Configuration

This section explains the screen configuration when starting Configuration Tool.

Main frame

The main frame configuration is shown below.



Name	Description
(1) Title bar	When connecting to Server, the endpoint URL of Server is displayed. When a local configuration file is open, its path is displayed. If a setting change is not saved, '*' (asterisk) is displayed at the end of each character string.
(2) Menu bar	Menus are displayed.
(3) Toolbar	The following toolbars are displayed: • Standard button • Data manipulation button
(4) Database bar	The endpoint URL of connected Server or the path of an open configuration file is displayed.
(5) Tree view	Address space information and each definition are displayed in a tree.
(6) Status bar	The description of each menu is displayed.
(7) Log view	Operation results and errors of Configuration Tool are displayed. Communication event logs between MX OPC UA Server and Configuration Tool are displayed (up to 500 logs). If 500 or more events occur, an old log is deleted in chronological order.
(8) List view	A child item of an item selected in the tree view is displayed in a list.

10.3 Menu List

The following tables show the menu lists of Configuration Tool.

[File]		
⇨ [New]	To create a new setting of MX OPC UA Server.	Page 56 Creating new configuration files
⇨ [Open File]	To open a configuration file (local) of MX OPC UA Server.	Page 57 Local file
⇨ [Open Server]	To open a configuration file (Server) of MX OPC UA Server.	Page 57 Server
⇨ [Save]	To save a setting of MX OPC UA Server. • Save destination when connecting to MX OPC UA Server: MX OPC UA Server • Save destination when not connecting to MX OPC UA Server: Configuration file (local)	Page 58 Overwriting and saving
⇨ [Save to file]	To save a setting of MX OPC UA Server to a configuration file (local).	Page 58 Saving to a local file
⇨ [Save to server]	To save a setting of MX OPC UA Server to MX OPC UA Server.	Page 59 Saving to a file in Server
⇨ [Delete from server]	To delete a setting from MX OPC UA Server.	Page 60 Deleting configuration files
⇨ [Close]	To close the connection with MX OPC UA Server.	—
⇨ [iQ Works workspace actions] ⇨ [Open workspace]	To open a workspace of iQ Works and connect with Configuration Tool.	Page 184 Connection to a Workspace
⇨ [iQ Works workspace actions] ⇨ [Close workspace]	To disconnect Configuration Tool from a workspace of iQ Works.	Page 185 Disconnection from a Workspace
⇨ [iQ Works workspace actions] ⇨ [Delete unused projects]	To delete an unused MX OPC Server UA project from a workspace of iQ Works.	Page 192 Unused project deletion
⇨ [iQ Works project actions] ⇨ [Show changes]	To display the change contents when a system label in a workspace of iQ Works is edited.	Page 189 Checking for the Change of a System Label
⇨ [iQ Works project actions] ⇨ [Synchronize]	To synchronize a tag in Configuration Tool and a system label in a workspace of iQ Works.	Page 190 System Label Synchronization
⇨ [iQ Works project actions] ⇨ [Import GX Works project]	To import a GX Works2 or GX Works3 project registered in a workspace of iQ Works to Configuration Tool as an MX device.	Page 186 Import
⇨ [iQ Works project actions] ⇨ [Export devices to GX Works]	To export a setting of an MX device or tag created in Configuration Tool to a GX Works2 or GX Works3 project in a workspace of iQ Works.	Page 188 Export
⇨ [iQ Works project actions] ⇨ [Unlink device]	To unlink a GX Works2 or GX Works3 project in a workspace of iQ Works for each MX device.	Page 190 Unlinking of an MX Device
⇨ [iQ Works project actions] ⇨ [Delete OPC project]	To delete a connected MX OPC Server UA project from a workspace of iQ Works.	Page 192 Connected project deletion
⇨ [iQ Works project actions] ⇨ [Import CSV]	To connect to a workspace of iQ Works by importing a setting (MXCSV file) provided by MC Works64.	Page 191 Import of MXCSV Files
⇨ [EcoWebServerIII configuration file actions] ⇨ [Import EcoWebServerIII configuration file]	To import a setting in a configuration file of EcoWebServer III.	Page 193 Automatic Generation of EcoWebServer III Tags
⇨ [CSP+ for machine actions] ⇨ [Import CSP+ for machine]	To import a setting of CSP+ for machine.	Page 200 Automatic Generation of Tags by Importing CSP+ for Machine
⇨ [Import/Export] ⇨ [Import MX OPC DA configuration]	To import a setting of MX OPC Server DA.	Page 204 Using Server Settings of MX OPC Server DA
⇨ [Import/Export] ⇨ [Import GX Works3 Global Label]	To import a global label of GX Works3.	Page 206 IMPORT OF GLOBAL LABELS
⇨ [Import/Export] ⇨ [Import CSV]	To import a server setting of MX OPC Server UA from a CSV file.	Page 215 Importing Settings
⇨ [Import/Export] ⇨ [Export CSV]	To export a server setting of MX OPC Server UA to a CSV file.	Page 216 Exporting Settings
⇨ [Exit]	To exit Configuration Tool.	Page 38 End

[Edit] (Available menus for Address Space)		
⇨ [New MX Device]	To create a new MX device.	Page 64 Newly adding or editing an MX device
⇨ [New Modbus Device]	To create a new Modbus device.	Page 71 Newly adding or editing a Modbus device
⇨ [New Group]	To create a new group.	Page 151 Newly adding or editing groups
⇨ [New Data Tag]	To create a new MX device tag or Modbus device tag.	Page 137 Address Space (Tag) Setting
⇨ [New Structure]	To create a new structure label.	Page 153 Newly adding or editing structure labels
⇨ [Cut]	To cut a selected MX device, Modbus device, group, MX device tag, or Modbus device tag.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy an MX device or Modbus device.	
⇨ [Paste]	To paste a copied or cut MX device, Modbus device, group, MX device tag, or Modbus device tag.	
⇨ [Select All]	To select all MX devices, Modbus devices, groups, MX device tags, or Modbus device tags in the list view.	—
⇨ [Invert Selection]	To unselect a selected MX device, Modbus device, group, MX device tag, or Modbus device tag, and select an unselected one in the list view.	
⇨ [Delete]	To delete a selected MX device, Modbus device, group, MX device tag, or Modbus device tag.	
⇨ [Properties]	To display the properties of a selected item.	—

[Edit] (Available menus for Alarm Definitions)		
⇨ [New Limit Alarm Definition]	To create a new limit alarm definition.	Page 166 New
⇨ [New Digital Alarm Definition]	To create a new digital alarm definition.	Page 169 New
⇨ [Cut]	To cut a selected limit alarm definition or digital alarm definition.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy a selected limit alarm definition or digital alarm definition.	
⇨ [Paste]	To paste a copied or cut limit alarm definition or digital alarm definition.	
⇨ [Select All]	To select all limit alarm definitions or digital alarm definitions in the list view.	—
⇨ [Invert Selection]	To unselect a selected limit alarm definition or digital alarm definition, and select an unselected one in the list view.	—
⇨ [Delete]	To delete a selected limit alarm definition or digital alarm definition.	Page 171 Deleting alarm definitions
⇨ [Properties]	To display the property screen of a selected limit alarm definition or digital alarm definition.	—

[Edit] (Available menus for Simulation Definitions)		
⇨ [New Simulation Signal]	To create a new simulation definition.	Page 179 New
⇨ [Cut]	To cut a selected simulation definition.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy a selected simulation definition.	
⇨ [Paste]	To paste a copied or cut simulation definition.	
⇨ [Select All]	To select all simulation definitions in the list view.	—
⇨ [Invert Selection]	To unselect a selected simulation definition, and select an unselected one in the list view.	—
⇨ [Delete]	To delete a selected simulation definition.	Page 181 Deleting a simulation signal definition
⇨ [Properties]	To display the property screen of a selected simulation definition.	—

[Edit] (Available menus for Conversion Definitions)		
⇨ [New Conversion]	To create a new conversion definition.	Page 172 New
⇨ [Cut]	To cut a selected conversion definition.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy a selected conversion definition.	
⇨ [Paste]	To paste a copied or cut conversion definition.	
⇨ [Select All]	To select all conversion definitions in the list view.	—
⇨ [Invert Selection]	To unselect a selected conversion definition, and select an unselected one in the list view.	—
⇨ [Delete]	To delete a selected conversion definition.	Page 173 Deleting conversion definitions
⇨ [Properties]	To display the property screen of a selected conversion definition.	—
[Edit] (Available menus for Poll Method Definitions)		
⇨ [New Polling Method]	To create a new polling definition.	Page 174 New
⇨ [Cut]	To cut a selected polling definition.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy a selected polling definition.	
⇨ [Paste]	To paste a copied or cut polling definition.	
⇨ [Select All]	To select all polling definitions in the list view.	—
⇨ [Invert Selection]	To unselect a selected polling definition, and select an unselected one in the list view.	—
⇨ [Delete]	To delete a selected polling definition.	Page 175 Deleting polling definitions
⇨ [Properties]	To display the property screen of a selected polling definition.	—
[Edit] (Available menus for Structure Type Declarations)		
⇨ [New StructureType]	To create a new structure definition.	Page 176 New
⇨ [Cut]	To cut a selected structure definition.	Page 44 Cut, Copy, and Paste
⇨ [Copy]	To copy a selected structure definition.	
⇨ [Paste]	To paste a copied or cut structure definition.	
⇨ [Select All]	To select all structure definitions in the list view.	—
⇨ [Invert Selection]	To unselect a selected structure definition, and select an unselected one in the list view.	—
⇨ [Delete]	To delete a selected structure definition.	Page 178 Deleting structure definitions
⇨ [Properties]	To display the property screen of a selected structure definition.	—
[View]		
⇨ [Toolbars] ⇨ [Standard Buttons]	To show or hide the standard buttons.	—
⇨ [Toolbars] ⇨ [Data Manipulation Buttons]	To show or hide the data manipulation buttons.	
⇨ [Database bar]	To show or hide the database bar.	
⇨ [Status Bar]	To show or hide the status bar.	
⇨ [Log]	To show or hide the log.	
⇨ [Large Icons]	To display items in the list view in large icons.	
⇨ [Small Icons]	To display items in the list view in small icons.	
⇨ [List]	To display items in the list view in a list.	
⇨ [Details]	To display items in the list view in detail.	
⇨ [Statistics]	To display the statistics screen.	Page 164 Display Method
⇨ [Monitor view]	To start or stop monitoring.	Page 162 Monitoring
⇨ [Diagnostics]	To display the screen of the connected Server status.	Page 63 Status of connected Server
⇨ [Sort by]	To sort items displayed in the list view. Items that can be sorted differ depending on an item selected in the tree view.	—
⇨ [Show/hide columns]	To select a column to display in the list view when displaying an item in detail. Items that can be shown or hidden differ depending on an item selected in the tree view.	—
⇨ [Refresh]	To update the screen.	—

[Go]		
⇨ [Back]	To go back to the previously selected item.	—
⇨ [Forward]	To cancel the [Back] operation.	
⇨ [Up one level]	To move up one level in the tree view.	
⇨ [Next Item]	To move to the next item in the tree view.	
⇨ [Previous Item]	To move to the previous item in the tree view.	
⇨ [Expand Item]	To expand a selected item in the tree view.	
⇨ [Collapse Item]	To collapse a selected item in the tree view.	
⇨ [Page Up]	To scroll up the page in the tree view.	
⇨ [Page Down]	To scroll down the page in the tree view.	
⇨ [Home]	To move up to the top item in the tree view.	
⇨ [End]	To move down to the bottom item in the tree view.	
⇨ [Next Pane]	To switch the focus to the next pane.	
⇨ [Previous Pane]	To switch the focus to the previous pane.	
[Tools]		
⇨ [Options]	To display the option screen.	Page 45 Option Settings
⇨ [Connection settings]	To display connection settings.	Page 61 Setting a connection with Server
[Help]		
⇨ [Help Topics]	To start e-Manual Viewer and display the manual.	Page 54 Displaying Help
⇨ [About Application]	To display the version information screen.	Page 54 Checking the version of Configuration Tool

10.4 Unavailable Characters

The following table shows the characters that cannot be used in MX OPC Server UA.

No.	Item	First character	Second character or later
1	MX device name Group name Tag name	0, 1, 2, 3, 4, 5, 6, 7, 8, 9 Space, !, ", #, $, %, &, ', (,), ^, \, @, [, ;, :,], ,, ., /, =, ~, |, `, {, +, *, }, <, >, ?	Space, !, ", #, $, %, &, ', ^, \, @, [, ;, :,], ,, ., /, =, ~, |, `, {, +, *, }, <, >, ?
2	Other than No.1	\	\

10.5 Cut, Copy, and Paste

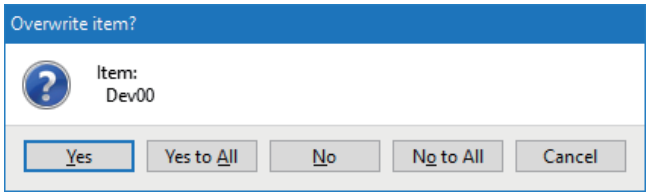
This section shows the procedure for cutting, copying, and pasting an item (tag, group, or structure).

Operating procedure

1. Select an item on the tree view or the list view.
2. Select [Edit] ⇨ [Cut] or [Copy].
3. Select the parent item of an item to paste in the tree view.
   For the list view, click in the view.
4. Select [Edit] ⇨ [Paste].

Window

The following screen appears if another item with the same name exists when pasting an item.



Displayed items

Item	Description
[Yes] button	A target item is overwritten.
[Yes to All] button	A target item and all the subsequent ones are overwritten.
[No] button	A target item is not overwritten.
[No to All] button	A target item and all the subsequent ones are not overwritten.
[Cancel] button	Any items are not overwritten. (Overwriting items to which the [Yes] button is clicked is canceled.)

Precautions

- Paste a cut or copied item to data in a supported configuration file.
- When copying a tag or structure, other associated definitions (such as a simulation signal definition, alarm definition, or structure type declaration) are also copied.
- When copying a structure label to another configuration file, match the structure definition between a copy source and copy destination.
- When pasting an item copied from a hierarchy to the same hierarchy, the same item information is pasted. Select and paste another MX device or group. A tag can be duplicated in the [Multiply] tab in the "Tag Properties" screen or the "Data item properties" screen. (☞ Page 137 Newly adding or editing MX device tags, Page 146 Newly adding or editing Modbus device tags)

Point

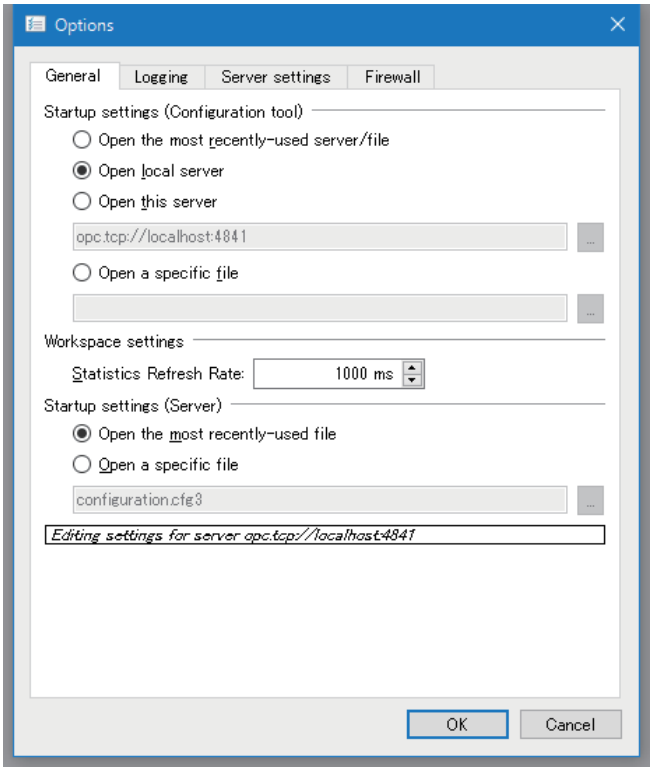
When copying an item to another configuration file, start multiple pieces of Configuration Tool.

10.6 Option Settings

This section shows the option settings of Configuration Tool and MX OPC UA Server.

Window

[Tools] ⇨ [Options]



The "Options" screen consists of the following tabs:

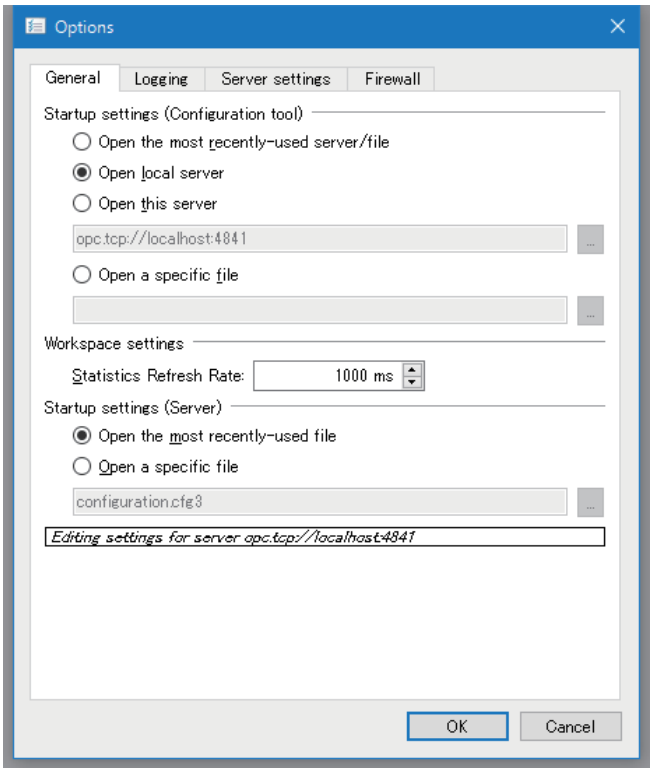
Item	Description
General	Set the operation when starting Configuration Tool and MX OPC UA Server.
Logging	Set the settings for a log output while MX OPC UA Server is in communication.
Server settings	The current server settings are displayed. Server settings can be changed.
Firewall	The firewall status is displayed. A firewall setting can be changed.

A destination for which items in each tab are set is displayed in the area indicated by (1) in the screen above.

- For the setting for MX OPC UA Server to be connected: "Editing settings for server (endpoint URL)"
- For a local Server setting: "Editing settings for local server"

General settings

Set the operation when starting Configuration Tool and MX OPC UA Server.

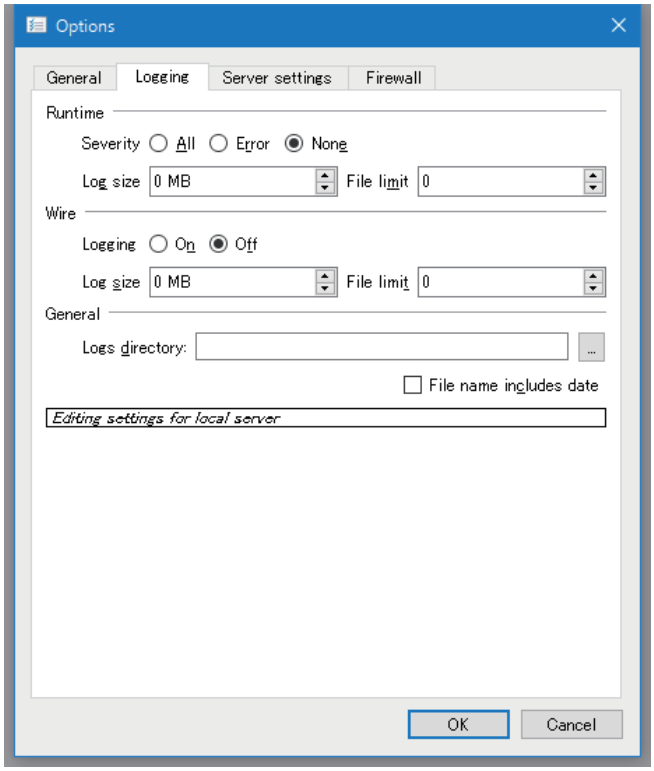


Item		Description
Startup settings (Configuration Tool)		Select an operation when starting Configuration Tool. • Open the most recently-used server/file • Open local server • Open this server • Open a specific file
Workspace settings	Statistics Refresh Rate	Set an update frequency of an item in the "Statistics" screen. (In milliseconds)
Startup settings (Server)*1		Select an operation when starting Server. • Open the most recently-used file • Open a specific file

*1 Can be set when connecting to Server.

Logging

Set the settings for a log output while MX OPC UA Server is in communication.
There are two types of logs: a server log for trace information of server processing and a communication log for trace information of communication.
All log files are output in XML format.
Therefore, log files can be displayed in Internet Explorer®.

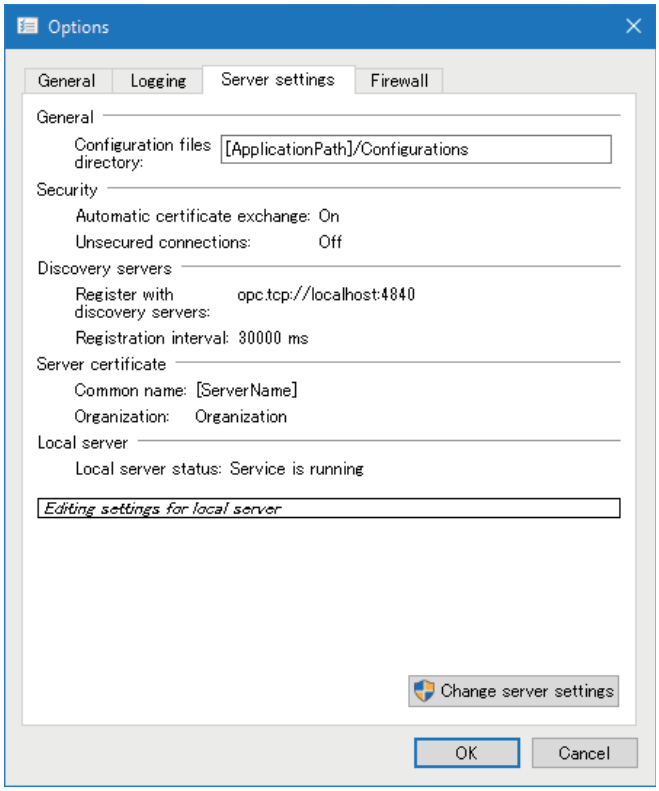


Displayed items

Item		Description
Runtime	Severity	Select the severity of a server log. • All: All trace information is output. • Error: A log is output when an error occurs in processing that affects an operation of a program. • None: A log is not collected.
	Log size	Set the maximum size of a log file. (MB) When setting '0', the size is not limited.
	File limit	Set the maximum number of log files. If the maximum number is exceeded, the oldest log file will be deleted. When setting '0', the number of files is not limited.
Wire	Logging	Select "On" to enable communication log output, "Off" not to log.
	Log size	Set the maximum size of a log file. (MB) When setting '0', the size is not limited.
	File limit	Set the maximum number of log files. If the maximum number is exceeded, the oldest log file will be deleted. When setting '0', the number of files is not limited.
General	Logs directory	Set a directory to output a log file. Click the [...] button to browse a directory.
	File name includes date	Select the checkbox to add a date to the end of a log file name in the format of 'yyyymmdd'.

Server settings

A setting currently applied to Server is displayed.



Displayed items

Item		Description
General	Configuration files directory	A directory to store a configuration file is displayed. An invalid path is displayed in red.
Security	Automatic certificate exchange	"On" is displayed when the certificate of MX OPC UA Server is automatically registered in discovery Server; otherwise, "Off" is displayed.
	Unsecured connections	"On" is displayed when Server approves an unencrypted connection; otherwise, "Off" is displayed.
Discovery servers	Register with discovery servers	MX OPC UA Server is registered in each piece of Server in this list.
	Registration interval	An interval to register Server in local discovery Server is displayed. (In milliseconds)
Server certificate	Common name	An OPC UA Server name used for an X509 certificate that is automatically created is displayed.
	Organization	An organization name (such as company name) used for an X509 certificate is displayed.
Local server	Local server status	The status of MX OPC UA Server is displayed.
[Change server settings] button		Click this to change Server settings. (☞ Page 49 Changing Server settings)

Precautions

When Server setting is changed, Server may need to be restarted.

Make sure to save the change before restarting Server.

Changing Server settings

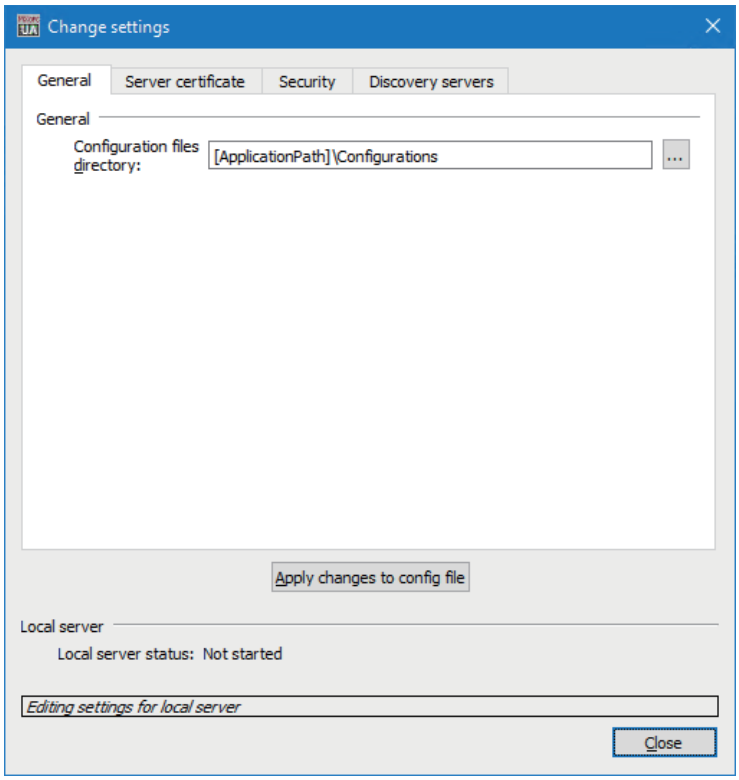
Change settings used in Server.

Window

1. Select [Tools] ⇨ [Options].

2. Click the [Change server settings] button in the [Server settings] tab in the "Options" screen.*1

*1 When the "User Account Control" screen appears, click the [Yes] button.



The "Change settings" screen consists of the following tabs:

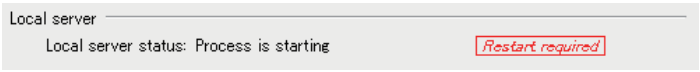
- [General] tab
- [Server certificate] tab
- [Security] tab
- [Discovery servers] tab

Click the [Apply changes to config file] button to save a setting after changing it on any of the tabs.

To enable a changed setting, restart MX OPC UA Server.

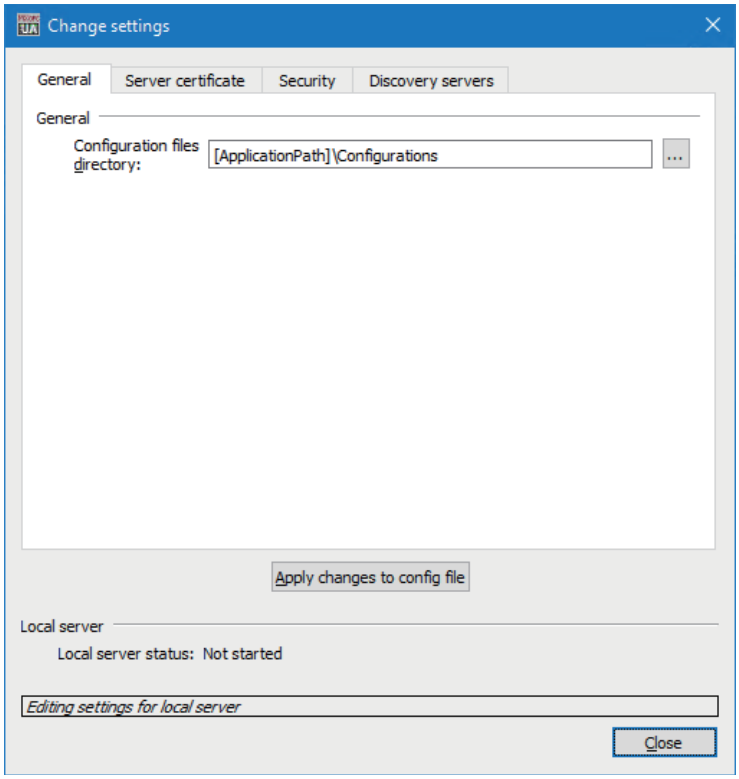
The status of MX OPC UA Server is displayed in "Local server" at the bottom in the screen.

If not restarting Server after applying a setting change to a file, a warning is displayed as shown below.



■General setting

A directory to save a configuration file can be changed.



Displayed items

Item		Description
General	Configuration files directory	Set a directory to save a configuration file. Enter a directory directly, or click the [...] button to select a directory.

■Server certificate

Details of a certificate used when creating an X509 certificate can be changed.

For details, refer to the following:

☞ Page 29 Server Certificate

■Security

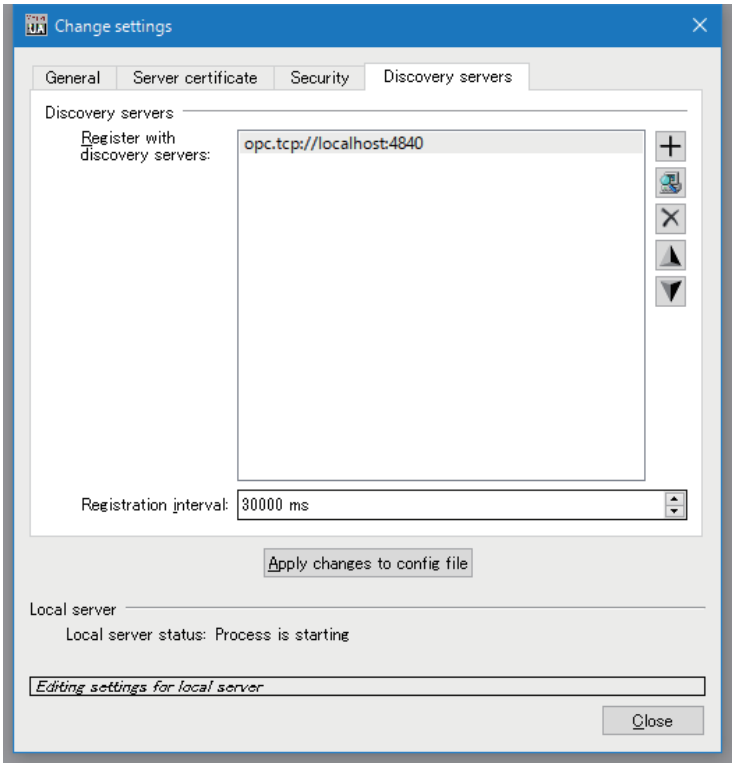
Security settings can be changed.

For details, refer to the following:

☞ Page 30 Security Setting for MX OPC UA Server

■Discovery Server

Local discovery Server settings can be changed.

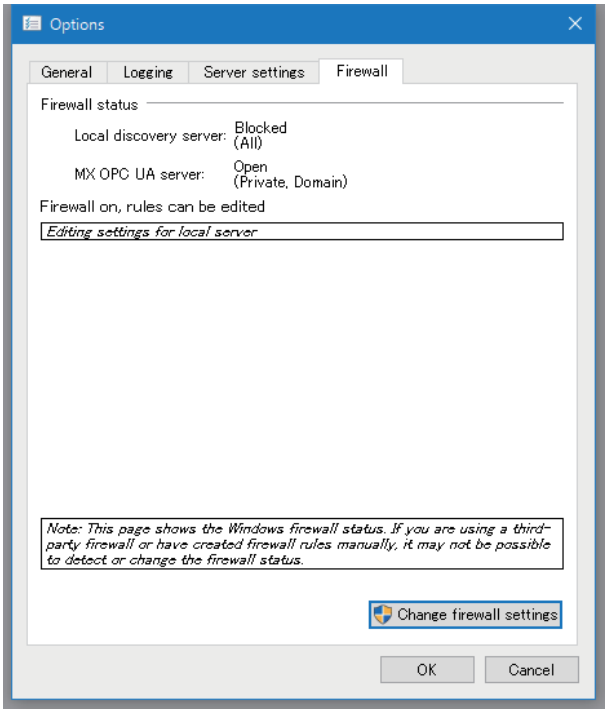


Displayed items

Item		Description
Discovery servers	Register with discovery servers	The URL of local discovery Server to register Server is displayed. • Double-click the URL of discovery Server in the list to change it. • To add discovery Server, click the [Add discovery server] ( ) button, set Server name or an IP address, and press the Enter key. • The display order of discovery Server can be changed by selecting Server and clicking the [Move up] ( ) button or the [Move down] ( ) button. • To delete discovery Server, select one and click the [Remove discovery server] ( ) button. • To search a local network for a computer, click the [Browse for discovery servers] ( ) button. The list of computer names on the local network is displayed. Whether discovery Server is running or not is not checked.
	Registration interval	Set an interval to register Server in local discovery Server. (In milliseconds)

Firewall

The firewall status of MX OPC UA Server on a local computer is displayed.



Displayed items

Item	Description
Firewall status	The connection availability to local discovery Server and MX OPC UA Server is displayed. When connection is allowed in multiple profiles, "Open (Private, Domain)" is displayed. Available profiles are listed below. • Private: A default profile used when not connected to the domain • Domain: A profile used when connected to the domain • Public: Public networks such as Wi-Fi hotspots
Current status of the firewall	Whether the firewall is ON or OFF, and whether firewall rule changes are valid or not are displayed. If firewall rule changes are not valid, the status will be displayed in red. (For example, if the firewall exception is not allowed or group policy settings prevent firewall changes.)
[Change firewall settings] button	Click this to change firewall settings. (☞ Page 53 Change of firewall settings)

Firewall rules cannot be edited in the [Firewall] tab.

To edit rules, click the [Change firewall settings] button.

Precautions

"Firewall status" appears only when using the standard Windows firewall.

The firewall status may not be detected and changed when a third party firewall is used or the firewall rules are created manually.

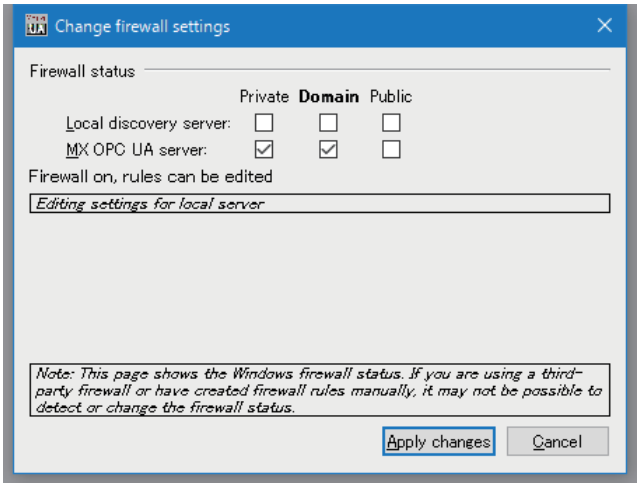
Change of firewall settings

Firewall settings for MX OPC UA Server and local discovery Server can be changed.

Window

1. Select [Tools] ⇨ [Options].
2. Click the [Change firewall settings] button in the [Firewall] tab in the "Options" screen. *1

*1 When the "User Account Control" screen appears, click the [Yes] button.



Displayed items

Item		Description
Firewall status	Local discovery server	Available profiles and whether the rule for the profile is enabled are displayed. Select the checkbox of a profile to enable the rule. Valid profiles are displayed in bold. Available profiles are listed below. • Private: A default profile used when not connected to the domain • Domain: A profile used when connected to the domain • Public: Public networks such as Wi-Fi hotspots
	MX OPC UA server	

Precautions

If firewall rule changes are not valid, the status will be displayed in red. (For example, if the firewall exception is not allowed or group policy settings prevent firewall changes.)

"Firewall status" appears only when using the standard Windows firewall.

The firewall status may not be detected and changed when a third party firewall is used or the firewall rules are created manually.

10.7 Learning Operation Methods of Configuration Tool

This section explains the operation methods of Configuration Tool.

Displaying Help

Use Help to learn about operations and functions, and check error codes.

Operating procedure

Select [Help] ⇨ [Help Topics] ( ).
e-Manual Viewer starts and the manual appears.

Checking the version of Configuration Tool

Information such as the software version of Configuration Tool is displayed.

Operating procedure

Select [Help] ⇨ [About Application].

11 SERVER CONNECTION

This chapter explains connections between Configuration Tool and MX OPC UA Server.

11.1 Configuration File Management

Settings of MX OPC UA Server are saved in a configuration file.

Configuration file extension and Configuration Tool version

The following table shows the correspondence between an extension of a configuration file and a version of Configuration Tool.

Configuration file extension	Configuration Tool version
cfg	2.0.4 or earlier
cfg3	3.0.0 or later

File management method and Configuration Tool status

The following explains the method for managing configuration files and the status of Configuration Tool in which a file is used.

Configuration file management method

There are two methods for managing configuration files.

Management method	Description
In a local computer	To manage configuration files on a local computer. The settings can be written to Server later, and used for communication. Tags cannot be monitored.
In Server	To connect to MX OPC UA Server and edit files in Server. Tags can be monitored and the values can be edited.

Precautions

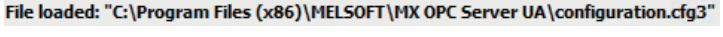
Configuration Tool can neither open multiple configuration files at the same time nor be connected with multiple pieces of Server.

However, multiple configuration files can be opened by starting multiple pieces of Configuration Tool.

In this case, data can be copied and pasted between Configuration Tool. (☞ Page 44 Cut, Copy, and Paste)

Configuration Tool status

The current status of Configuration Tool (such as the status of a configuration file and the connection status with Server) is displayed in the database bar as follows:

Status	Database bar
No configuration file is opened.	
A created configuration file is not saved yet.	
A configuration file on the local computer is being opened.	
A configuration file is being opened with Server connected.	

Precautions

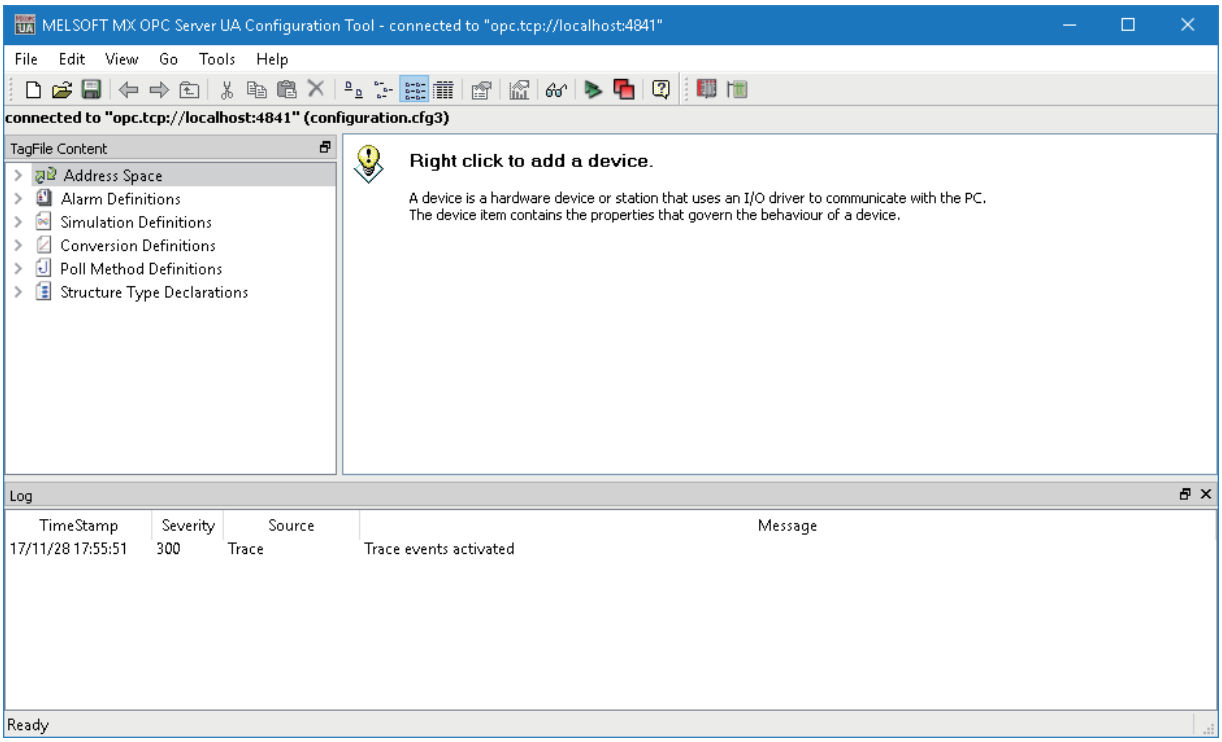
The database bar may not be displayed when a configuration file is changed by another client application while connecting to Server.

Creating new configuration files

Create a new configuration file.

Operating procedure

Select [File] ⇨ [New] or click on the toolbar.



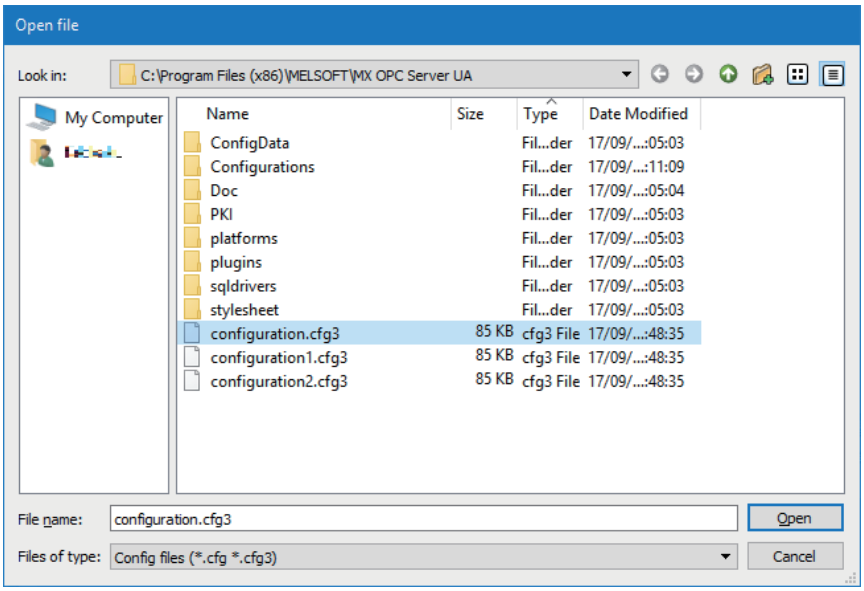
Opening configuration files

Read a saved configuration file from a local computer or Server.

Local file

Operating procedure

1. Select [File] ⇨ [Open File].
2. Select a configuration file (*.cfg3 or *.cf), and click the [Open] button.

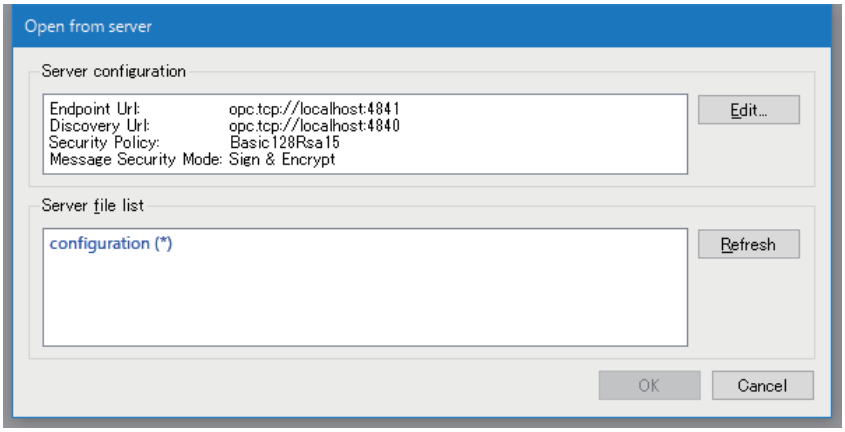


Server

Operating procedure

1. Select [File] ⇨ [Open Server].
2. The server information to open the setting is displayed in "Server configuration". To open a setting on another server, click the [Edit] button, and select Server on the "Connection settings" screen. For details, refer to the following section.

☞ Page 61 Setting a connection with Server



3. To change Server to be connected, click the [Refresh] button to update the configuration name list.
4. Select a setting to open from the configuration name list, and click the [OK] button.

Saving configuration files

Save a setting being edited to a configuration file in a local computer or Server.

Overwriting and saving

Operating procedure

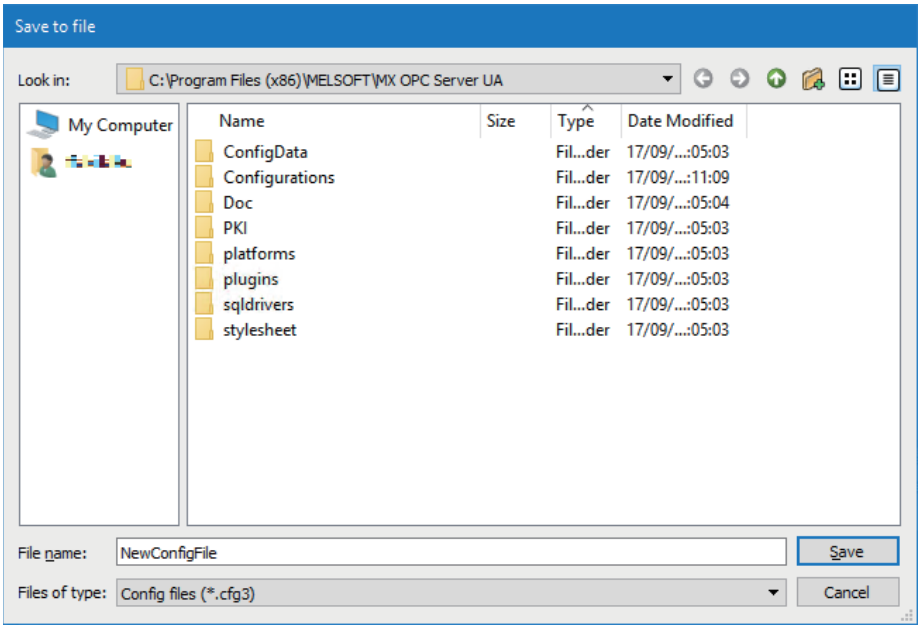
Select [File] ⇨ [Save] or click on the toolbar.

Saving with a name

■Saving to a local file

Operating procedure

1. Select [File] ⇨ [Save to file].
2. Select a directory to save the file, and enter a name. Then, click the [Save] button.

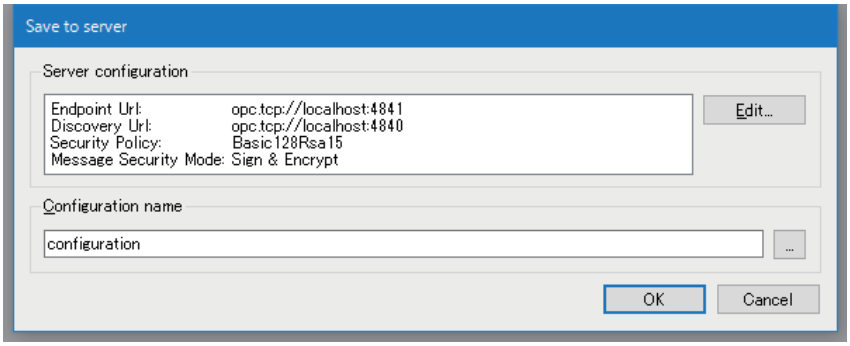


■Saving to a file in Server

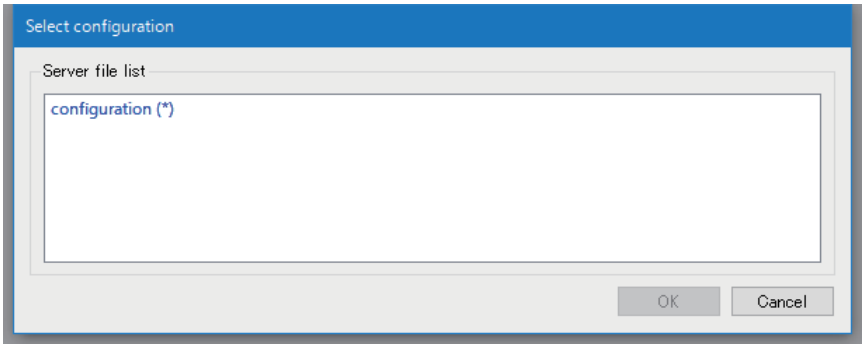
Operating procedure

1. Select [File] ⇨ [Save to server].
2. Information on Server the setting of which can be saved is displayed in "Server configuration".
   To save it to other Server, click the [Edit] button and select Server to save to in the "Connection settings" screen.
   For details, refer to the following:

☞ Page 61 Setting a connection with Server



3. Set a name to save in "Configuration name".
   Enter a name directly, or click the [...] button to select a configuration name.



Point

The active setting is shown with '(*)' (an asterisk in brackets) after its name.

Deleting configuration files

Delete a configuration file.

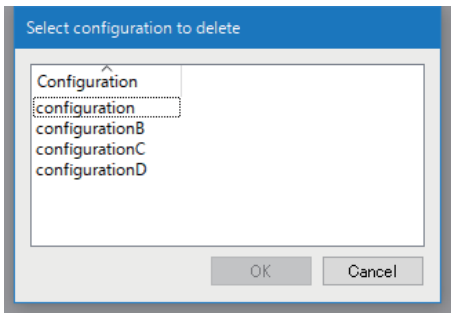
Local file

Delete a configuration file directly from Windows Explorer.

File in Server

Operating procedure

1. Select [File] ⇨ [Delete from server].
2. Select a configuration file to delete in the list, and click the [OK] button.



Precautions

An active configuration file is not listed and cannot be deleted.

11.2 Connection Setting with Server

This section explains about connection with MX OPC UA Server.

Setting a connection with Server

Configure the connection setting of Server that is necessary to open a configuration file or save settings in Server.

Operating procedure

1. Select [Tools] ⇨ [Connection settings].

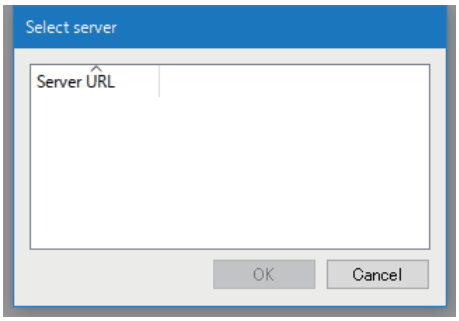
The "Connection settings" screen appears.

2. Set each item as follows:

Item	Description
Endpoint Url	Set a URL to connect to Server. Input format: opc.tcp:///(host name or IP address):4841
Security Policy*1	Set a security policy required for Server connection. • Basic128Rsa15 or Basic256
Message Security Mode*1	Set a security mode to apply to communication with Server. • Sign & Encrypt

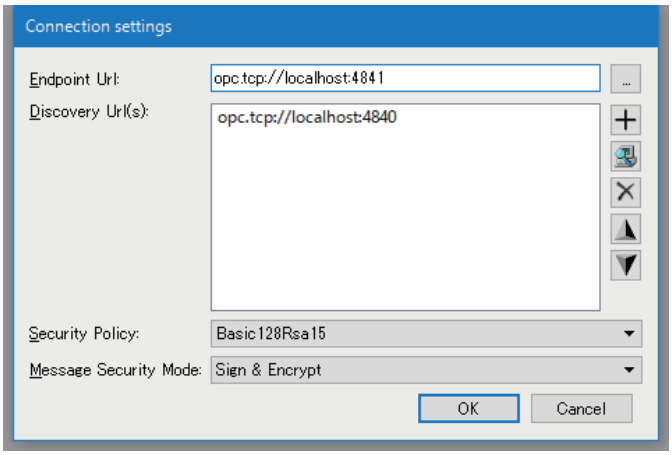
*1 When connecting to Server by selecting the following items, select "On" for "Unsecured connections" in the "Change settings" screen. (☞ Page 30 Security Setting for MX OPC UA Server)
Security Policy: None
Message Security Mode: None

When searching for target Server via discovery Server, enter the URL for "Discovery Url(s)" directly, or select one in the list displayed by clicking the [Browse discovery server(s)] button.



Ex.

When connecting to Server the host name of which is 'localhost'



3. Click the [OK] button to complete the connection setting.

Point

If a connection to Server cannot be established, the following may be possible causes:

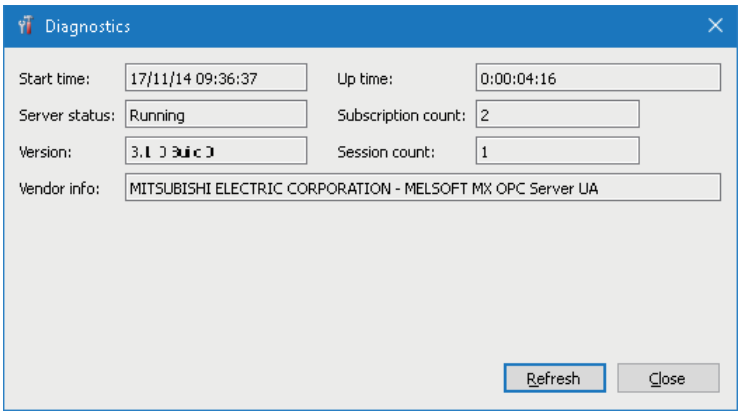
- The firewall ports used for OPC UA are not opened by target Server.
- The certificate of Configuration Tool is not recognized by target Server.

Status of connected Server

This section describes the status of MX OPC UA Server.

Window

Select [View] ⇨ [Diagnostics].



Displayed items

Item	Description
Start time	The date and time when Server started is displayed.
Up time	The elapsed time since Server started is displayed.
Server status	The status of Server is displayed.
Subscription count	The number of subscriptions managed by Server is displayed.
Version	The software version of Server is displayed.
Session count	The number of sessions of an OPC UA client application connected to Server is displayed.
Vendor info	The vendor information of Server is displayed.
[Refresh] button	Click this to update the operating status of Server to the latest information.

12 DEVICE SETTING

This chapter explains the setting to communicate with MX devices and Modbus devices.

12.1 Address Space (Access Target Device) Setting

This section shows the setting of an access target device for MX OPC UA Server.
MX OPC UA Server can access an MX device and Modbus device.

Newly adding or editing an MX device

The following shows the procedures for newly adding and editing an MX device.

New

Operating procedure

1. Select "Address Space" in the tree view.
2. Select [Edit] ⇨ [New MX Device] ().
3. Set a connection destination in the "MX Transfer Setup" screen, and click the [OK] button. (☞ Page 79 Adding a new connection destination setting)
4. Set each item in the "Device Properties" screen, and click the [Save] button. (☞ Page 65 MX device screen setting)

Edit

Operating procedure

1. Double-click a target MX device name in the tree view.
2. Set each item in the "Device Properties" screen, and click the [Save] button. (☞ Page 65 MX device screen setting)

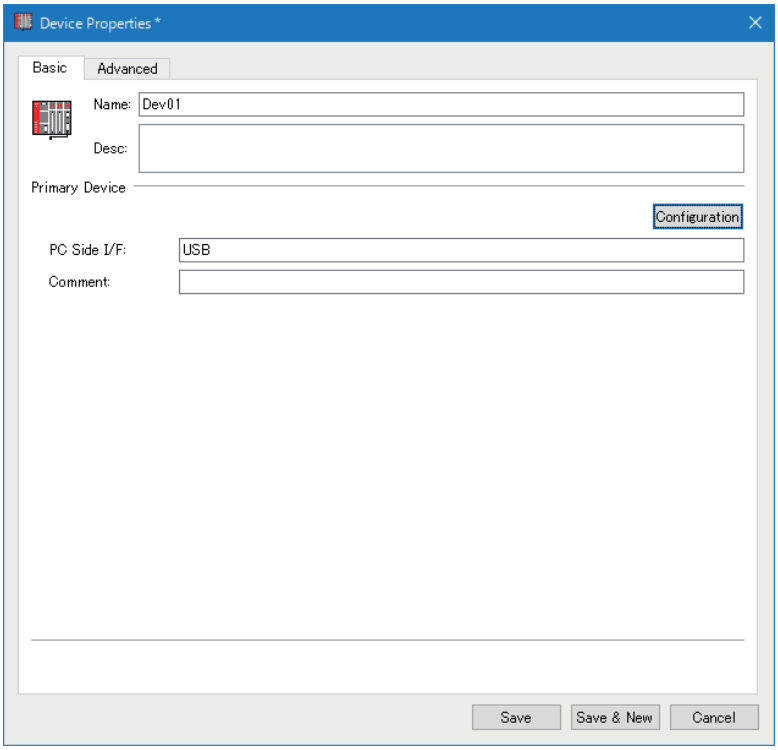
MX device screen setting

Configure the settings for MX devices

Window

Select [Edit] ⇨ [New MX Device] ( ) ⇨ click the [Configure] button and set a connection destination ⇨ click the [OK] button

■Basic



Displayed items

Item		Description
Name		Set the name of an access target device (up to 32 characters).*1 This name is used by an application (OPC UA client) connected to MX OPC UA Server to access an access point on a device. When other items (such as tags, groups, or structures) are included in an access target device, a name cannot be edited.
Desc		Set the description of an access target device (up to 128 characters).
Primary Device	[Configuration] button	Click this to display the "MX Transfer Setup" screen.
	PC Side I/F	A communication route set in the "MX Transfer Setup" screen is displayed. (☞ Page 80 PC side I/F)
	Comment	A comment set in the "MX Transfer Setup Wizard - Finished" screen is displayed.
	Module Type*2	A module type set in the "MX Transfer Setup Wizard" screen is displayed.
	Host*2	An IP address and a port number set in the "MX Transfer Setup Wizard" screen are displayed.
[Save] button		Click this to save the setting and close the "Device Properties" screen.
[Save & New] button		Click this to save the setting and add a new MX device. • A sequential number is added to the name of an MX device to be added next. (Dev→Dev0→Dev1)*3 • When the last character of an MX device name is a number, it is incremented. (Dev00→Dev01→Dev02)*3

*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.
However, numbers cannot be used for the first character.

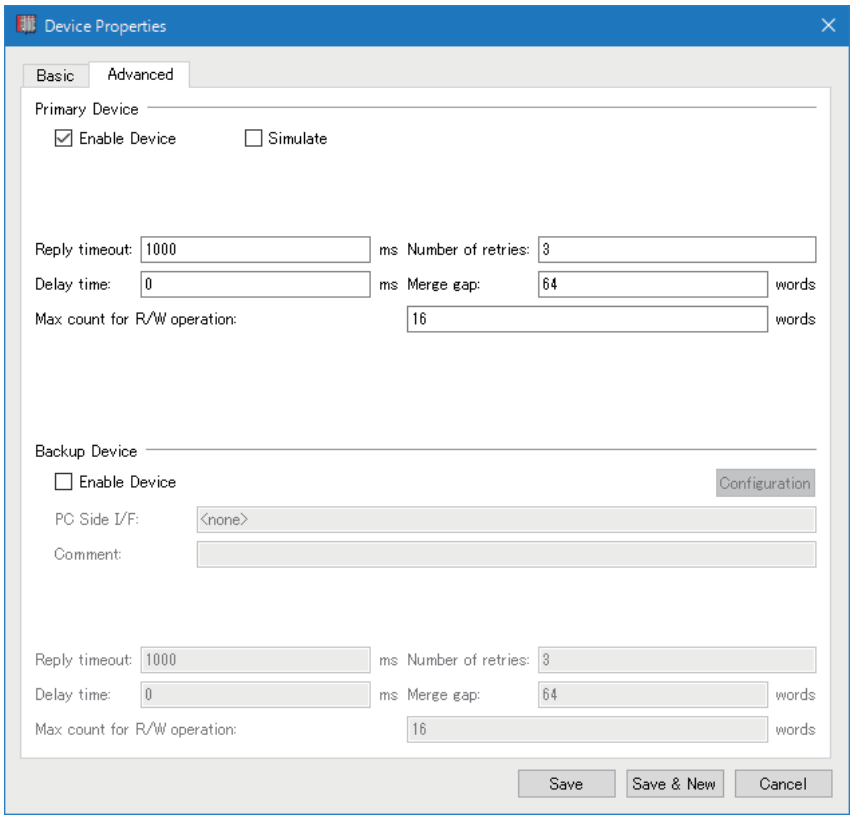
*2 Appears only when selecting "Ethernet board" for "PC side I/F".

*3 When a number to be added already exists, the number is skipped and the next available number is added.

Precautions

Make sure that a COM port selected in the "MX Transfer Setup" screen is not used for another channel or application.
If two channels are assigned to a same port, communication failure occurs on one of the channels.
If a channel is assigned to a COM port used for another application (such as alarm printer), an error may occur during driver communication.

■Advanced



Displayed items

Item		Description
Primary Device	Enable Device	Select the checkbox to enable device polling. Unselect the checkbox to disable polling in the following cases: • When displaying an error is unfavorable while replacing hardware due to repair or maintenance • When collecting data from all devices is not required and reducing the communication load is required • When disconnecting a device for debugging
	Simulate	Select the checkbox to simulate all tags in a device. Simulation signals to be used are as follows: • For a tag that "Simulate" is selected, a set simulation signal definition is used. • For a tag that "Simulate" is not selected, a value is incremented every one second in the range from 1 to 100. • A simulation value is not written to a connected device.
	Reply timeout	Set a response waiting time from a device after sending a request. (In milliseconds) (☞ Page 69 Reply timeout, number of retries, and delay time)
	Number of retries	Set the number of times to resend a request to establish communication when an error occurs while establishing a communication line.
	Delay time	Set Server waiting time when there is no response to all retries. (In milliseconds) (☞ Page 69 Reply timeout, number of retries, and delay time)
	Merge gap	Set a value larger than the number of device points between tags when reading or writing inconsecutive devices in a batch in one communication between MX OPC UA Server and an MX device. (0 to 960 words) (☞ Page 70 Merge gap)
	Max count for R/W operation	Set the maximum number of devices that can be read or written in a single batch operation. The value is not required to be changed while the system is working normally. Setting the value greater than the default is not recommended. Example: When reading devices 'D1', 'D500', and 'D1000' • When '2' is set: D1 and D500 are read by the first batch read operation, and D1000 is read by the next batch read operation. • When '3' is set: All of D1, D500, and D1000 are read by the first batch read operation.

Item		Description
Backup Device	Enable Device	Select the checkbox to enable a backup device. By selecting this, the communication target can be changed to a backup device when a primary device failed in communication.
	[Configuration] button	Click this to display the "MX Transfer Setup" screen. (☞ Page 78 Connection destination setting for an MX device)
	PC Side I/F	A communication route set in the "MX Transfer Setup" screen is displayed. (☞ Page 80 PC side I/F)
	Comment	A comment set in the "MX Transfer Setup Wizard - Finished" screen is displayed.
	Reply timeout	Set a response waiting time from a device after sending a request. (In milliseconds) (☞ Page 69 Reply timeout, number of retries, and delay time)
	Number of retries	Set the number of times to resend a request to establish communication when an error occurs while establishing a communication line.
	Delay time	Set Server waiting time when there is no response to all retries. (In milliseconds) (☞ Page 69 Reply timeout, number of retries, and delay time)
	Merge gap	Set a value larger than the number of device points between tags when reading or writing inconsecutive devices in a batch in one communication between MX OPC UA Server and an MX device. (0 to 960 words) (☞ Page 70 Merge gap)
	Max count for R/W operation	Set the maximum number of devices that can be read or written in a single batch operation. The value is not required to be changed while the system is working normally. Setting the value greater than the default is not recommended. Example: When reading devices 'D1', 'D500', and 'D1000' • When '2' is set: D1 and D500 are read by the first batch read operation, and D1000 is read by the next batch read operation. • When '3' is set: All of D1, D500, and D1000 are read by the first batch read operation.
[Save] button		Click this to save the setting and close the "Device Properties" screen.
[Save & New] button		Click this to save the setting and add a new MX device. • A sequential number is added to the name of an MX device to be added next. (Dev→Dev0→Dev1)*1 • When the last character of an MX device name is a number, it is incremented. (Dev00→Dev01→Dev02)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Reply timeout, number of retries, and delay time

Set the reply timeout, number of retries, and delay time for each device separately.
After setting these items, the device operates as follows:

1. MX OPC UA Server sends a message to a device, and waits for a response from the device for the time set for "Reply timeout".
2. When the device did not respond, MX OPC UA Server sends a message again for the number of times set for "Number of retries".
3. After a message is sent for the number of retries, and the device still did not respond, MX OPC UA Server records the data as a failure.

- A connection target device can be changed to a backup device while the backup device is enabled.
  After waiting for the period set for "Delay time", MX OPC UA Server sends a message to read the same data from the backup device.
  Timeouts and response process are repeated for the backup device, and when MX OPC UA Server recognized that the backup device is not in operation, the connection is started with the primary device.
- When a backup device is not enabled, MX OPC UA Server waits for the period set for "Delay time" and start communication with the selected device.

Merge gap

Inconsecutive devices can be read or written in a batch in one communication between MX OPC UA Server and an MX device by setting a value larger than the number of device points between tags to be monitored for "Merge gap".
Reading or writing inconsecutive devices in a batch reduces the number of times of communication, which may increase the communication speed.
If the number of device points between tags exceeds a value set for "Merge gap", inconsecutive devices are read or written in multiple communications.

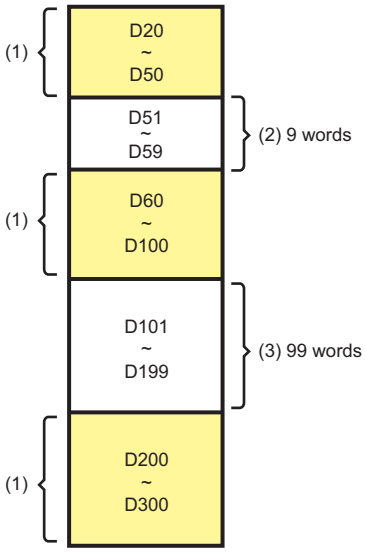
Ex.

When monitoring tags for which inconsecutive devices are set

(1) Devices set for a tag to be monitored: D20 to D50, D60 to D100, D200 to D300

(2) Devices between tags to be monitored: D51 to D59

(3) Devices between tags to be monitored: D101 to D199



■When setting '9' for "Merge gap"

D20 to D100 can be read or written in a batch in one communication because the number of points for (2) does not exceed a value set for "Merge gap".
D60 to D100 and D200 to D300 cannot be read or written in a batch in one communication because the number of points for (3) exceeds a value set for "Merge gap".
Therefore, D20 to D100 are read or written in a batch in one communication, and D200 to D300 in a next communication.

■When setting '100' for "Merge gap"

D20 to D100 can be read or written in a batch in one communication because the number of points for (2) does not exceed a value set for "Merge gap".
D60 to D300 can be read or written in a batch in one communication because the number of points for (3) does not exceed a value set for "Merge gap".
Therefore, D20 to D300 are read or written in a batch in one communication.

Precautions

- If setting a value larger than the number of device points between tags for "Merge gap" when the number of tags to be monitored is small, the communication speed will be decreased because devices not to be monitored are also read or written.
- Depending on a protocol to be used, the size of a device that can be read or written in one communication may be small. In this case, the communication speed is decreased because devices must be read or written in multiple communications.

Newly adding or editing a Modbus device

The following shows the procedures for newly adding and editing a Modbus device.

New

Operating procedure

1. Select "Address Space" in the tree view.
2. Select [Edit] ⇨ [New Modbus Device].
3. Set each item in the "Device properties" screen, and click the [Save] button. (☞ Page 71 Modbus device screen setting)

Edit

Operating procedure

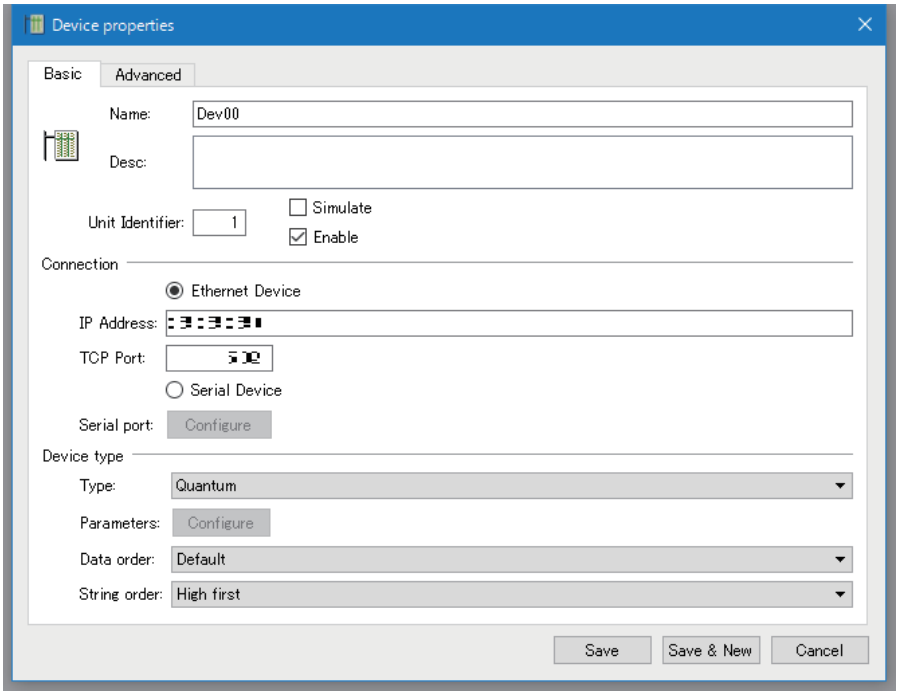
1. Double-click a target Modbus device name in the tree view.
2. Set each item in the "Device properties" screen, and click the [Save] button. (☞ Page 71 Modbus device screen setting)

Modbus device screen setting

Window

[Edit] ⇨ [New Modbus Device]

■Basic



Displayed items

Item	Description
Name	Set the name of an access target device (up to 32 characters).*1 This name is used by an application (OPC UA client) connected to MX OPC UA Server to access an access point on a device. When other items (such as tags, groups, or structures) are included in an access target device, a name cannot be changed.
Desc	Set the description of an access target device (up to 128 characters).

Item		Description
Unit Identifier		Set an identifier that indicates a device ID.
Simulate		Select the checkbox to simulate all tags in a device. Simulation signals to be used are as follows: • For a tag that "Simulate" is selected, a set simulation signal definition is used. • For a tag that "Simulate" is not selected, a value is incremented every one second in the range from 1 to 100.
Enable		Select the checkbox to enable device polling. Unselect the checkbox to disable polling in the following cases: • When displaying an error is unfavorable while replacing hardware due to repair or maintenance • When collecting data from all devices is not required and reducing the communication load is required • When disconnecting a device for debugging
Connection	Ethernet Device	Select this to connect to a device by using an Ethernet port.
	IP Address*2	Set the host address of an Ethernet device. (Default: 255.255.255.0)
	TCP Port*2	Set the TCP or IP port number of a device. (Default: 502)
	Serial Device	Select this to connect to a device by using a serial port.
	Serial port*3	Set a serial port in the "Serial Port Details" screen. (☞ Page 73 Serial port setting)
Device type	Type	Select a device type.
	Parameters	This item will be enabled when selecting "Custom" for "Type". Click the [Configure] button to display the "Device parameters" screen. (☞ Page 74 Device parameters)
	Data order	For Modbus devices, the word or byte order differs depending on a device. (☞ Page 75 Data order) Select the order of data from the following items: • Default: Same order as Configuration Tool. • Swap bytes: The order of bytes in each word is swapped. • Swap words: The order of words of each word type (such as DINT, UDINT, REAL, LREAL) is swapped. • Swap bytes & words: The order of words of each word and the order of bytes in each word are swapped.
	String order	Select the order of character strings from the following items: • High first: The upper two digits are displayed at the first in each word. • Low first: The lower two digits are displayed at the first in each word.
[Save] button		Click this to save the setting and close the "Device properties" screen.
[Save & New] button		Click this to save the setting and add a new Modbus device. • A sequential number is added to the name of a Modbus device to be added next. (Dev→Dev0→Dev1)*4 • When the last character of a Modbus device name is a number, it is incremented. (Dev00→Dev01→Dev02)*4

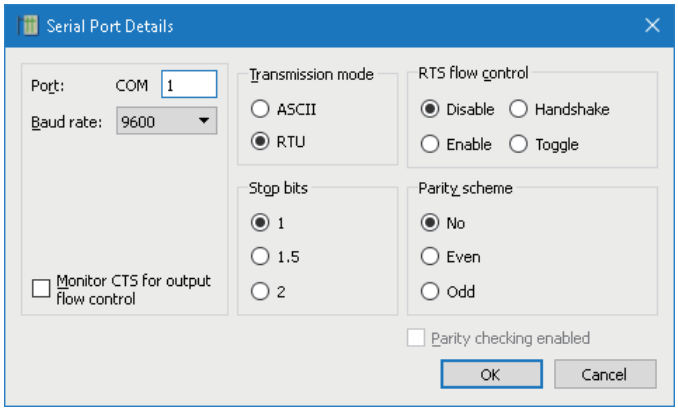
*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.
However, numbers cannot be used for the first character.
*2 Can be set only when selecting "Ethernet Device".
*3 Can be set only when selecting "Serial Device".
*4 When a number to be added already exists, the number is skipped and the next available number is added.

■Serial port setting

Set the serial port of a device currently connected.

Window

1. Select "Serial Device" in "Connection" in the [Basic] tab in the "Device properties" screen.
2. Click the [Configure] button of "Serial port".



Displayed items

Item	Description
Port	Set a port number.
Baud rate	Select a baud rate.
Monitor CTS for output flow control	Select the checkbox to enable monitoring of a CTS signal.
Transmission mode	Select a transmission mode.
RTS flow control	Select an RTS flow control.
Stop bits	Select a stop bit.
Parity scheme	Select a parity scheme to use.
Parity checking enabled*1	Select the checkbox to set whether or not to ignore a parity bit.

*1 Can be set when selecting "Even" or "Odd" in "Parity scheme".

Precautions

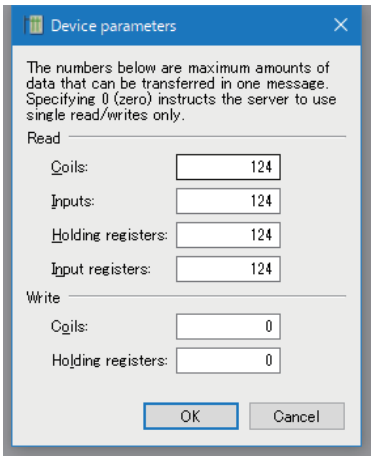
If a same port number is assigned to multiple channels, communication failure occurs on one of the channels.
If a channel is assigned to a COM port used for another application, an error may occur during driver communication.
Make sure that a selected COM port is not used for another channel or application.

■Device parameters

Set device parameters.

Window

1. Select "Custom" for "Type" in the [Basic] tab in the "Device properties" screen.
2. Click the [Configure] button of "Parameters".



Displayed items

Item		Description
Read	Coils	Set the maximum number of coils that can be transferred in one message when reading.
	Inputs	Set the maximum number of inputs that can be transferred in one message when reading.
	Holding registers	Set the maximum number of holding registers that can be transferred in one message when reading.
	Input registers	Set the maximum number of input registers that can be transferred in one message when reading.
Write	Coils	Set the maximum number of coils that can be transferred in one message when writing.
	Holding registers	Set the maximum number of holding registers that can be transferred in one message when writing.

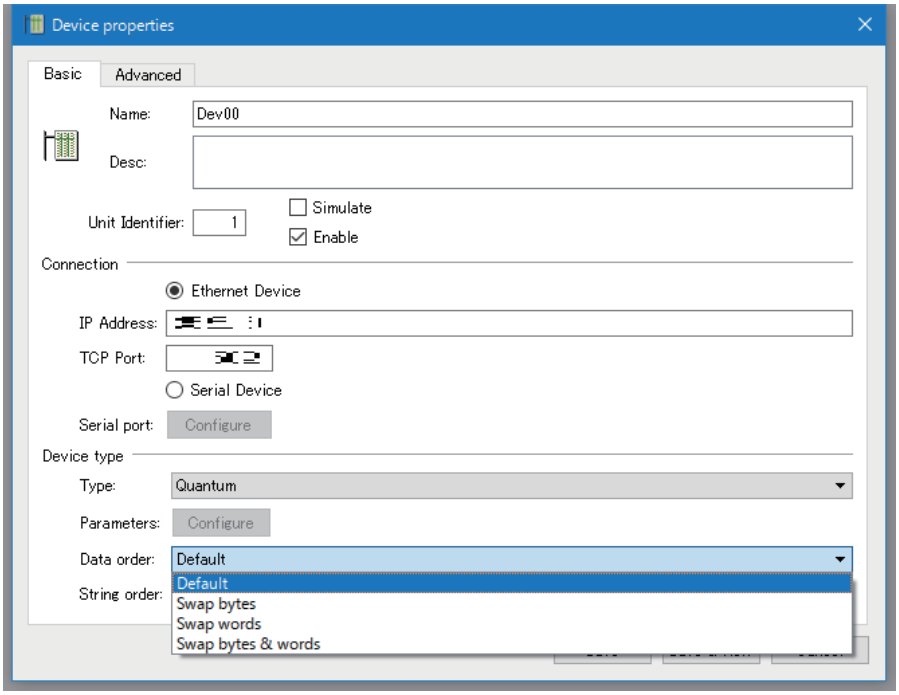
■Data order

For Modbus devices, the word or byte order differs depending on a device.

The following table shows examples of order combinations and their results when storing 12345678h (UDINT).

String order	Data order	Word 1	Word 2
Low first	Default	5678h	1234h
Low first	Swap bytes	7856h	3412h
High first	Default	1234h	5678h
High first	Swap bytes	3412h	7856h

Set this setting for each Modbus device, and the setting applies to all tags of a device.



If the data order used for the Modbus device is unclear, select "Default" or "Swap words" in "Data order", or define the order following the methods below using the programming software of each device.

- Write a fixed value to a device by using programming software or diagnostics software.
- Define tag types supported by Configuration Tool, and read registers.
- Refer to the following table to set appropriate values.

When performing this procedure, check that "Default" is selected for "Data order".

For a device which supports 32-bit data type, write the value '66051' (10203h) to DWORD register, and define DINT/UDINT tags in Configuration Tool to read values.

Swap setting to use	Value to write
Default	66051
Swap bytes	16777986
Swap words	33751041
Swap bytes & words	50462976

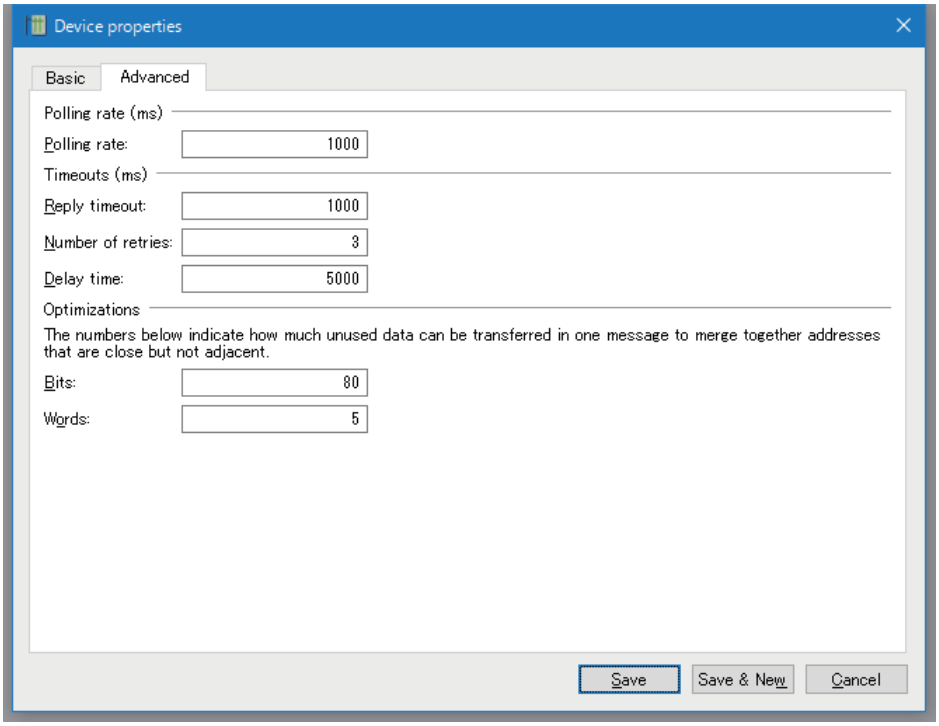
For a device which does not support 32-bit data type, test byte swapping using INT/UINT values.

"Swap words" is effective only when reading larger data than word.

For this test, write the value 258 (102h). The result is as follows:

Swap setting to use	Value to write
Default	258
Swap bytes	513

■Advanced



Displayed items

Item		Description
Polling rate	Polling rate (ms)	Set a polling cycle. (In milliseconds)
Timeouts	Reply timeout (ms)	Set a response waiting time from a device after sending a request. (In milliseconds)
	Number of retries	Set the number of times to resend a message when there is no response from a device.
	Delay time (ms)	Set Server waiting time when there is no response to all retries. (In milliseconds)
Optimizations	Bits	Transfer the addresses within the range of set points in one message, even if the addresses are not consecutive to each other.
	Words	
[Save] button		Click this to save the setting and close the "Device properties" screen.
[Save & New] button		Click this to save the setting and add a new Modbus device. • A sequential number is added to the name of a Modbus device to be added next. (Dev→Dev0→Dev1)*1 • When the last character of a Modbus device name is a number, it is incremented. (Dev00→Dev01→Dev02)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Deleting an MX device or Modbus device

The following shows the procedure for deleting an MX device or a Modbus device.
An MX device or a Modbus device cannot be deleted if it contains items (such as tags, groups, or structures).

Operating procedure

1. Select an MX device or a Modbus device to delete in the tree view (multiple selections not allowed) or in the list view (multiple selections allowed).
2. Select [Edit] ⇨ [Delete].

Precautions

If deleting an MX device or changing a name of an MX device monitored by an OPC UA client application, monitoring stops or an error occurs.
In this case, register an MX device again.

12.2 Setting Connection Destinations

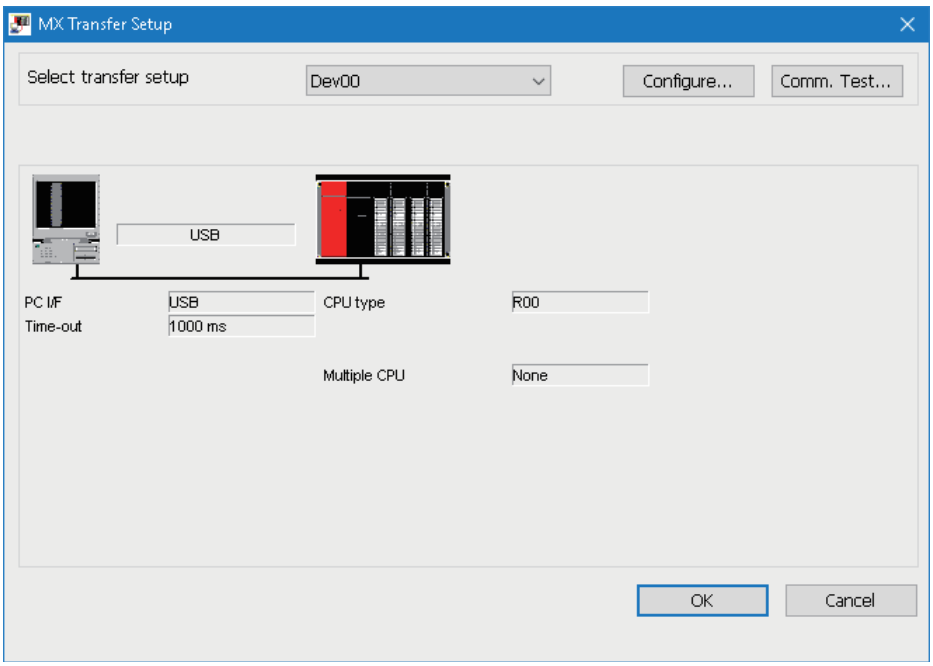
This section shows the connection destination setting for an MX device.

Connection destination setting for an MX device

Set connection destinations for a new MX device.

Window

1. Select "Address Space" in the tree view.
2. Select [Edit] ⇨ [New MX Device], or right-click and select [New MX Device].



Displayed items

Item	Description
Select transfer setup	Select an existing connection destination from the pull-down list. The following operations can be performed. • <New...>: Select this to create a new connection destination setting. (☞ Page 79 Adding a new connection destination setting) • <Rename/Remove...>: Select this to change or delete an existing connection destination name. (☞ Page 79 Deleting a connection destination setting, Page 79 Renaming a connection destination setting)
Configure	Click this to edit a selected connection destination setting. (☞ Page 80 Communication setting wizard screen operation)
Comm. Test	Click this to perform a communication test for a selected connection destination. When performing a communication test, MX OPC UA Server and Configuration Tool must be installed on a same personal computer.

Point

Double-clicking an illustration in the "MX Transfer Setup" screen is also available to display and edit the transfer setup wizard of each device.

Precautions

If performing Ethernet communication, serial communication, or USB communication at the same time between MX OPC UA Server started as a service and another MELSOFT product, a timeout error will occur.
To communicate from multiple MELSOFT products to one device at the same time, perform any of the following operations:

- Communicate via different connection routes.
- Start MX OPC UA Server as a Windows process.

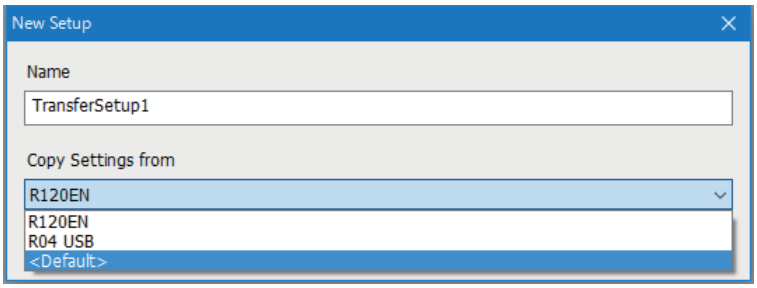
If connecting MX OPC UA Server started as a service to a device via a CC-Link board, a communication test cannot be performed.

Adding a new connection destination setting

The following shows the procedure for adding a new connection destination.

Operating procedure

1. Select <New...> from the pull-down list of "Select transfer setup" in the "MX Transfer Setup" screen.
2. Set the name of a new connection destination, select the setting of a copy source, and click the [OK] button.



Item	Description
Name	Set the name of a new connection destination.
Copy Settings from	Select a setting to apply to a new connection destination. When not using the setting of a copy source, select <Default>.

Precautions

Up to 32 connection destinations can be set. If it is exceeded, delete a connection destination.

Deleting a connection destination setting

The following shows the procedure for deleting a connection destination.

Operating procedure

1. Select <Rename/Remove...> from the pull-down list of "Select transfer setup" in the "MX Transfer Setup" screen.
2. Select a connection destination to delete, and click the [Remove] button.

Renaming a connection destination setting

The following shows the procedure for renaming a connection destination.

Operating procedure

1. Select <Rename/Remove...> from the pull-down list of "Select transfer setup" in the "MX Transfer Setup" screen.
2. Select a connection destination to rename, and click the [Rename] button.
3. Enter a new name, and press the Enter key.

Communication setting wizard screen operation

Configure the settings necessary for communication in a wizard format.

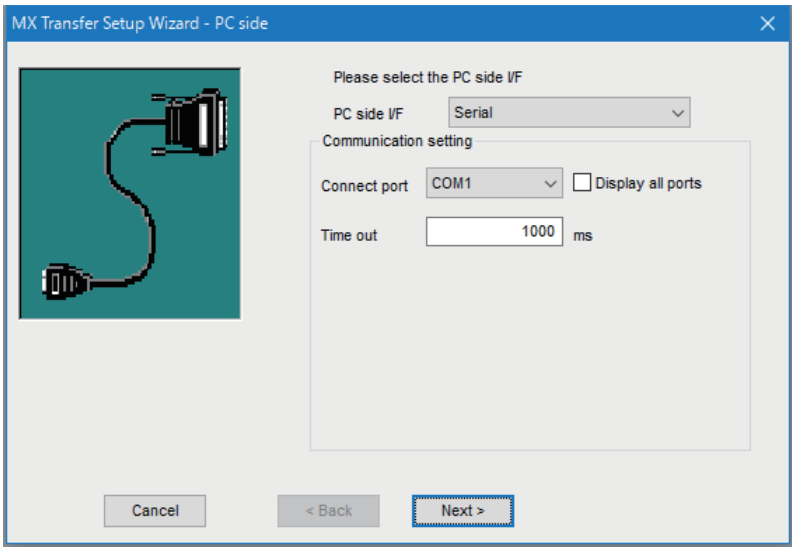
Precautions

Communication settings that can be selected in the "MX Transfer Setup Wizard" screen are not all supported by MX OPC UA Server.

If an unsupported communication route or device is selected, a warning message appears and the setting screen appears again.

Communication setting on the personal computer side

Set a communication type on the personal computer side.



■PC side I/F

Select a communication route. Items displayed in "Communication setting" depend on a selected communication route.

The following table shows the available communication routes.

Communication route	Description
USB	To establish communication by using a USB cable.
Serial	To establish communication by using an RS-232 cable.
Ethernet board (SLMP)	To establish communication by using SLMP via an Ethernet board.
Ethernet board (MELSOFT)	To establish communication through MELSOFT connection via an Ethernet board.
CC IE Control board	To establish communication via a CC-Link IE Controller Network board.
CC IE Field board	To establish communication via a CC-Link IE Field Network board.
CC-Link board	To establish communication via a CC-Link board.
GX Simulator3	To connect to GX Simulator3. Use GX Works3.
GX Simulator2	To connect to GX Simulator2. Use GX Works2.

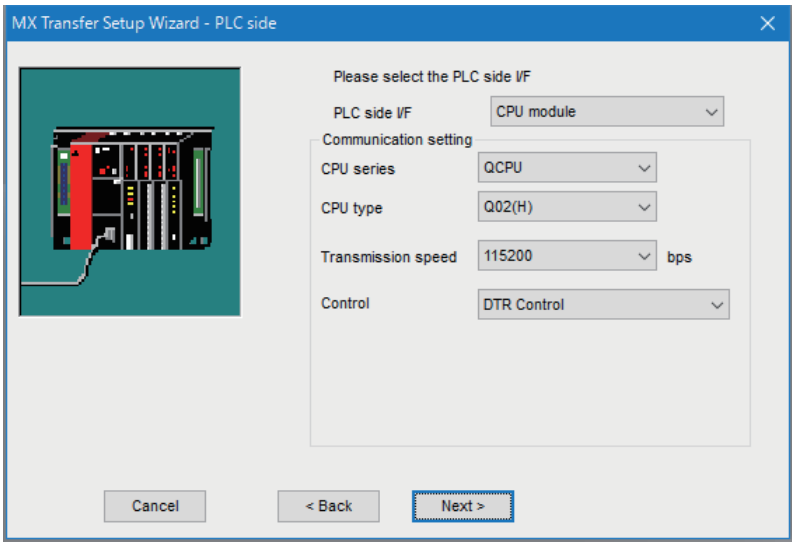
■Communication setting

For details on the setting for each communication route, refer to the following:

☞ Page 84 Configuring the settings on the personal computer side

Communication setting on the connection destination device side

Set a communication type on the connection destination device side.



■PLC side I/F

Select a communication module on the connection destination device side. Items displayed in "Communication setting" depend on a selected communication module.

The following shows the available communication modules.

- CPU module
- C24 module
- FX extended port
- Ethernet module
- FX3U-ENET-ADP
- CC IE TSN/Field module
- CC IE Field Ethernet adapter

■Communication setting

For details on the setting for each communication module, refer to the following:

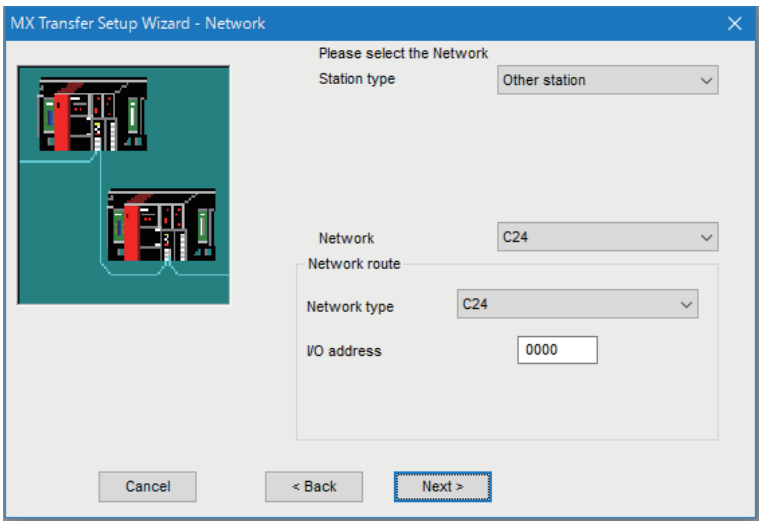
☞ Page 98 Configuring the settings on the connection destination device side

Network station number type setting

Set a station number type or a CPU type of a network.

For details on each item, refer to the following:

☞ Page 112 Network station number type setting

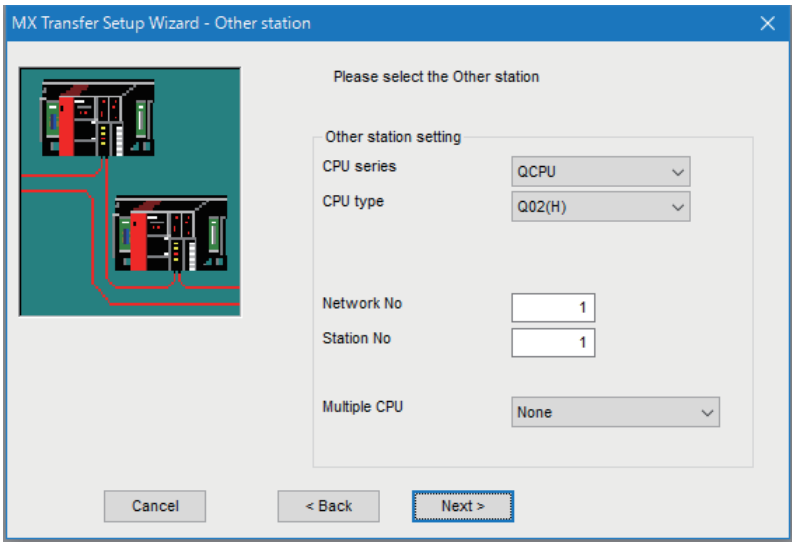


Station number type - other station setting

Set items in "Other station setting" when selecting "Other station" for "Station type".

For details on each item, refer to the following:

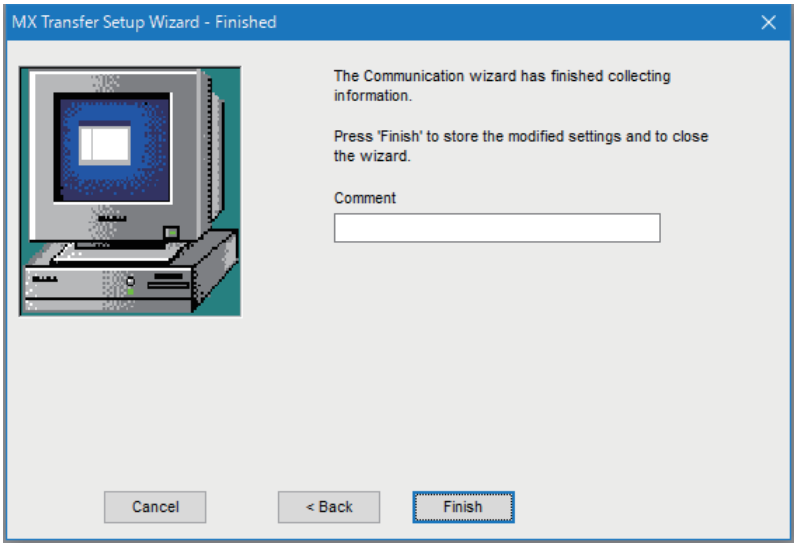
☞ Page 131 Settings for other stations



Entering a comment

Enter a comment for a set connection arbitrarily.

Click the [Finish] button to close the "MX Transfer Setup Wizard" screen.



Configuring the settings on the personal computer side

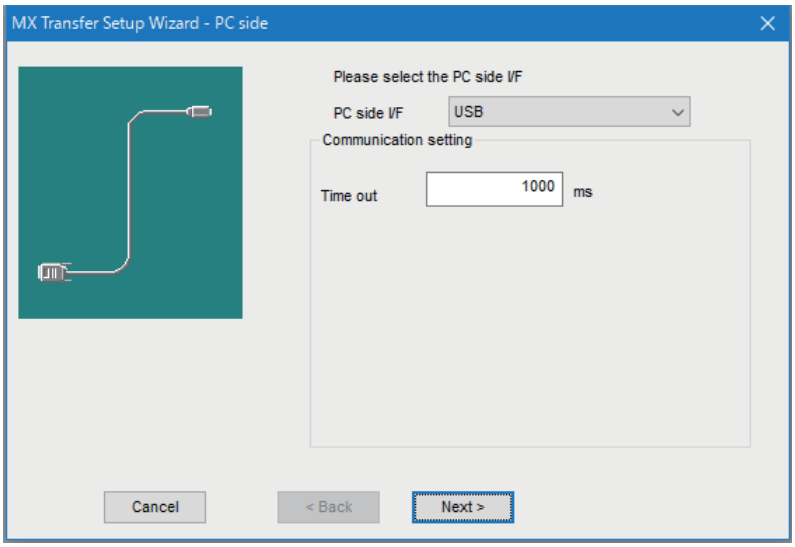
The following explains the settings for each interface on the personal computer side.

PC side I/F	Connect module	Reference
USB	—	Page 84 USB
Serial	—	Page 85 Serial
Ethernet board (SLMP)	—	Page 86 Ethernet board (SLMP)
Ethernet board (MELSOFT)	QJ71E71/RJ71EN71/LJ71E71	Page 87 When selecting "QJ71E71", "RJ71EN71", or "LJ71E71" for "Connect module"
	GOT	Page 88 When selecting "GOT" for "Connect module"
	FX3U-ENET/FX3U-ENET-ADP	Page 89 When selecting "FX3U-ENET" or "FX3U-ENET-ADP" for "Connect module"
	CPU module	Page 90 When selecting "CPU module" for "Connect module"
	RJ71GN11	Page 91 When selecting "RJ71GN11" for "Connect module"
	CC IE Field Ethernet adapter	Page 92 When selecting "CC IE Field Ethernet adapter" for "Connect module"
CC IE Control board/CC IE Field board	—	Page 93 CC IE Control board/CC IE Field board
CC-Link board	—	Page 94 CC-Link board
GX Simulator3	—	Page 95 GX Simulator3
GX Simulator2	—	Page 96 GX Simulator2

USB

Establish communication between a personal computer and a connection destination device by using a USB cable.

Window



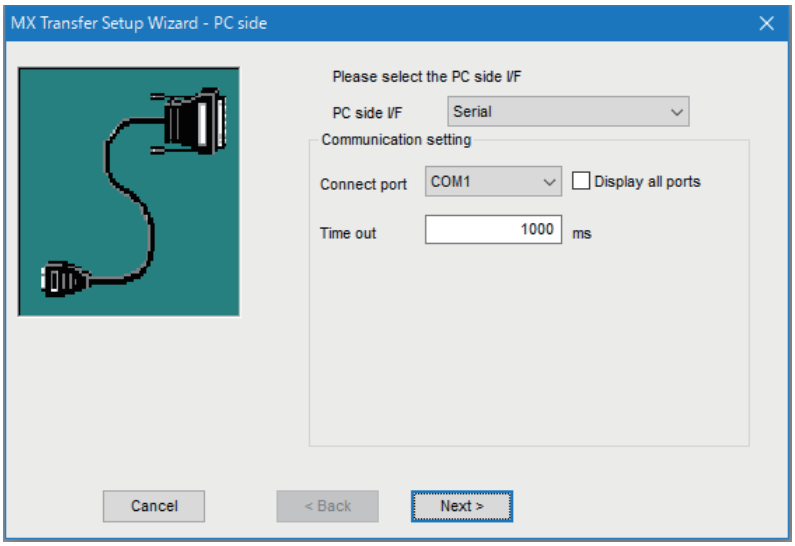
Displayed items

Item	Setting range	Description
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

Serial

Establish communication between a personal computer and a connection destination device by using an RS-232 cable.

Window



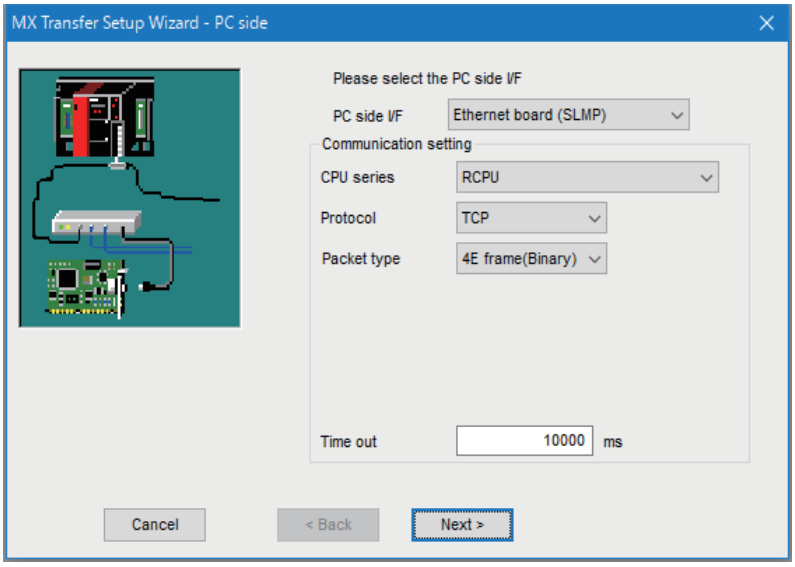
Displayed items

Item	Setting range	Description
Connect port	When unselecting the checkbox of "Display all ports": COM1 to COMn When selecting the checkbox of "Display all ports": COM1 to COM256	Select a port to use from the list of COM ports.
Display all ports	—	Select the checkbox to display all available COM ports. Unselect the checkbox to display only COM ports that are actually available.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

Ethernet board (SLMP)

Establish communication between a personal computer and an SLMP supported connection destination device via an Ethernet board.

Window



Displayed items

Item	Setting range	Description
CPU series	RCPU, QCPU, LCPU, NCCPU(M8), EcoWebServerIII	Select a connection target module.
Protocol	TCP	"TCP" is a fixed value.
Packet type	4E frame(Binary)	"4E frame(Binary)" is a fixed value.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

Precautions

In Ethernet (MELSOFT) communication, communication from both a service and a Windows application cannot be established.

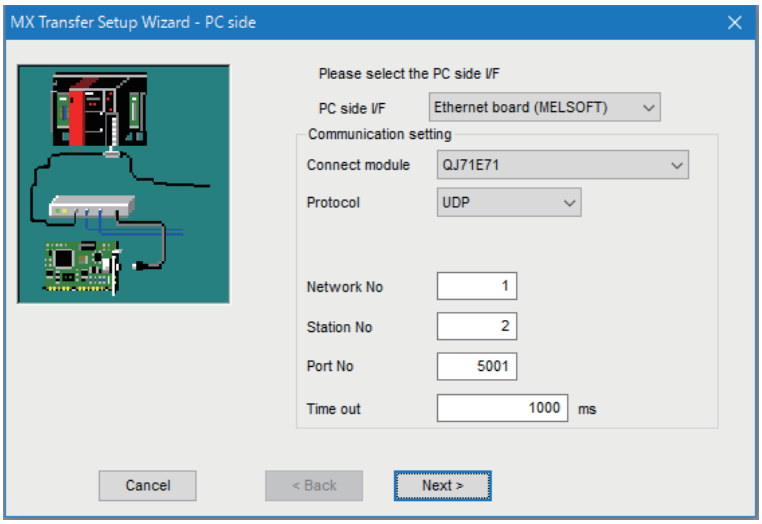
When MX OPC UA Server is running as a service and Ethernet (MELSOFT) connection is established in another application on a same personal computer, select "Ethernet board (SLMP)".

Ethernet board (MELSOFT)

Establish communication between a personal computer and a connection destination device via an Ethernet board.
Setting items differ depending on a module type selected in "Connect module".

■When selecting "QJ71E71", "RJ71EN71", or "LJ71E71" for "Connect module"

Window



Displayed items

Item	Setting range	Description
Connect module	QJ71E71, RJ71EN71, LJ71E71	Select the type of an Ethernet module to connect to.
Protocol	UDP, TCP	Select a communication protocol.
Network No	1 to 239	Set the network number of an Ethernet module.
Station No	1 to 64	Set a station number for an interface on the personal computer. Set a station number in a network set for "Network No" without duplication.
Port No.*1	1025 to 65535	Set a port number on the personal computer side. Do not use numbers less than 1025.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

*1 Appears only when selecting "UDP" for "Protocol".

Precautions

When connecting to the same E71 module from multiple MELSOFT applications

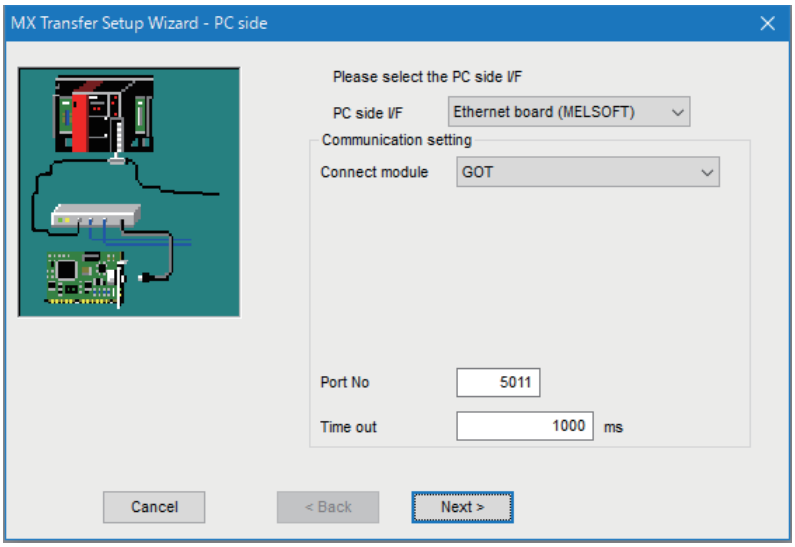
- Set "UDP" for "Protocol" in the "Communication Setting Wizard" screen.
- Set the E71 switch (SW2) to OFF.

The following restrictions apply when connecting to the same E71 module at the same time from multiple personal computers which use TCP or IP protocol.

- Use a module with a serial number whose first five digits are '02122' and function version B or later when connecting a Q series-compatible E71 module (except for QJ71E71-100).
- In a GX Works3 project or GX Works2 project, select "MELSOFT Connection" for the open setting of an Ethernet module parameter.

■When selecting "GOT" for "Connect module"

Window

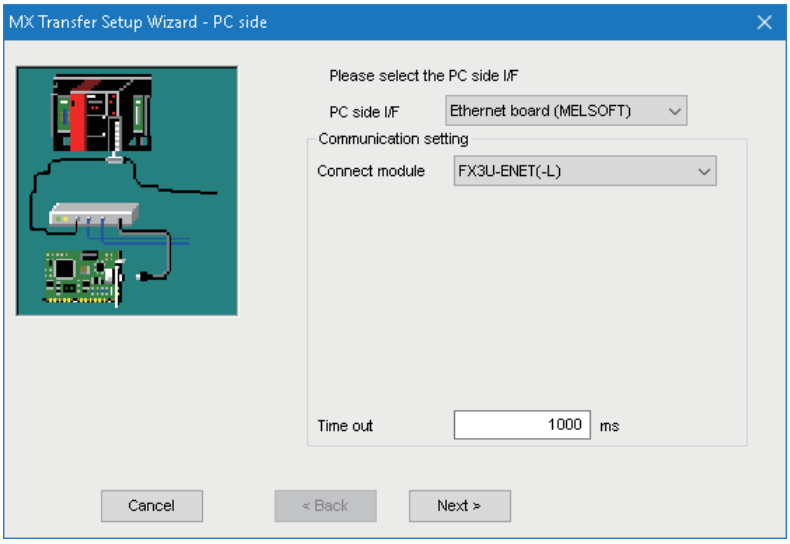


Displayed items

Item	Setting range	Description
Connect module	GOT	Select the type of an Ethernet module to connect to.
Port No.	1025 to 65535	Set a port number on the personal computer side. Do not use numbers less than 1025.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

■When selecting "FX3U-ENET" or "FX3U-ENET-ADP" for "Connect module"

Window



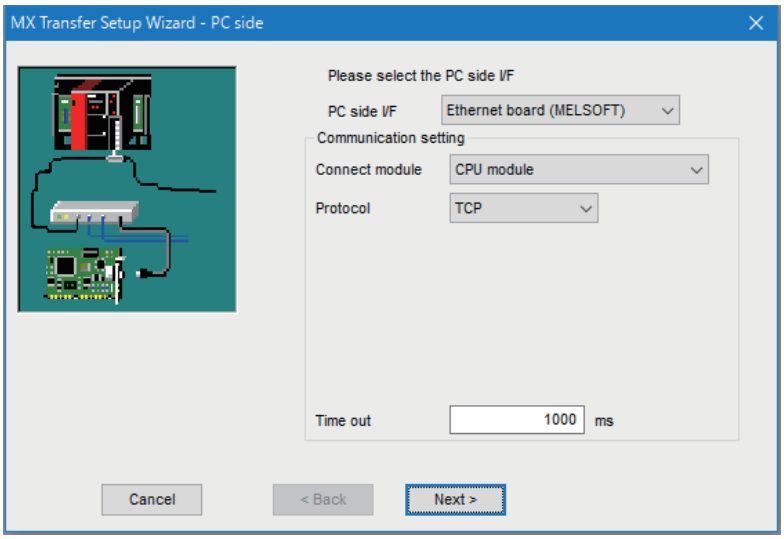
Displayed items

Item	Setting range	Description
Connect module	FX3U-ENET(-L), FX3U-ENET-ADP	Select the type of an Ethernet module to connect to.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

■When selecting "CPU module" for "Connect module"

"CPU module" is displayed in "Connect module" when a built-in Ethernet port CPU or MELSEC iQ-R series motion CPU is connected.

Window

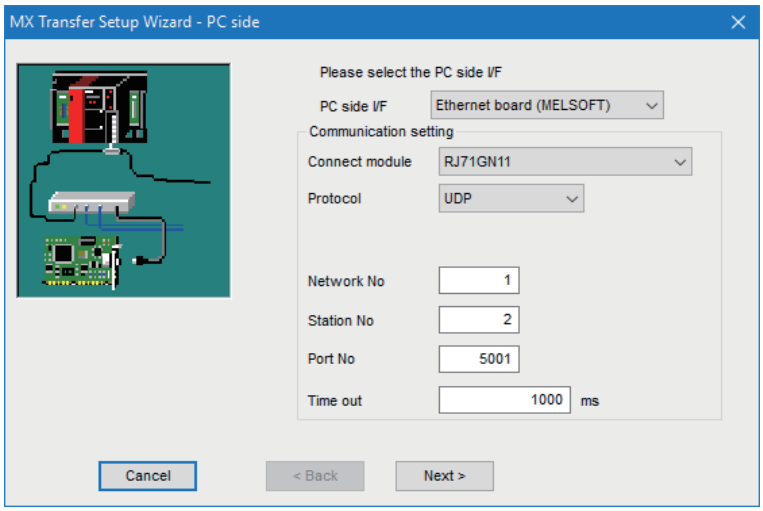


Displayed items

Item	Setting range	Description
Connect module	CPU module	Select the type of an Ethernet module to connect to.
Protocol	UDP, TCP	Select a communication protocol.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

■When selecting "RJ71GN11" for "Connect module"

Window



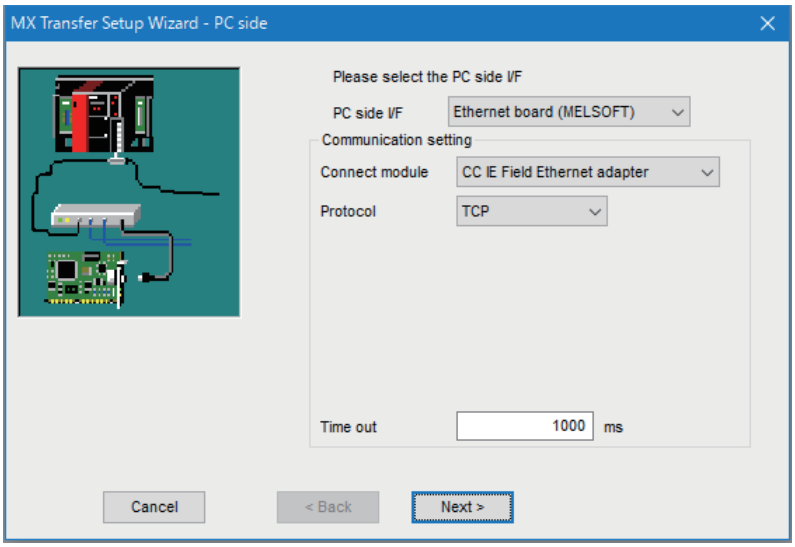
Displayed items

Item	Setting range	Description
Connect module	RJ71GN11	Select the type of an Ethernet module to connect to.
Protocol	UDP, TCP	Select a communication protocol.
Network No	1 to 239	Set the network number of an Ethernet module.
Station No	0 to 120	Set a station number for an interface on the personal computer. Set a station number in a network set for "Network No" without duplication.
Port No.*1	1025 to 65535	Set a port number on the personal computer side. Do not use numbers less than 1025.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

*1 Appears only when selecting "UDP" for "Protocol".

■When selecting "CC IE Field Ethernet adapter" for "Connect module"

Window



Displayed items

Item	Setting range	Description
Connect module	CC IE Field Ethernet adapter	Select the type of an Ethernet module to connect to.
Protocol	UDP, TCP	Select a communication protocol.
Time out	1 to 2147483647	Set a connection timeout. (In milliseconds)

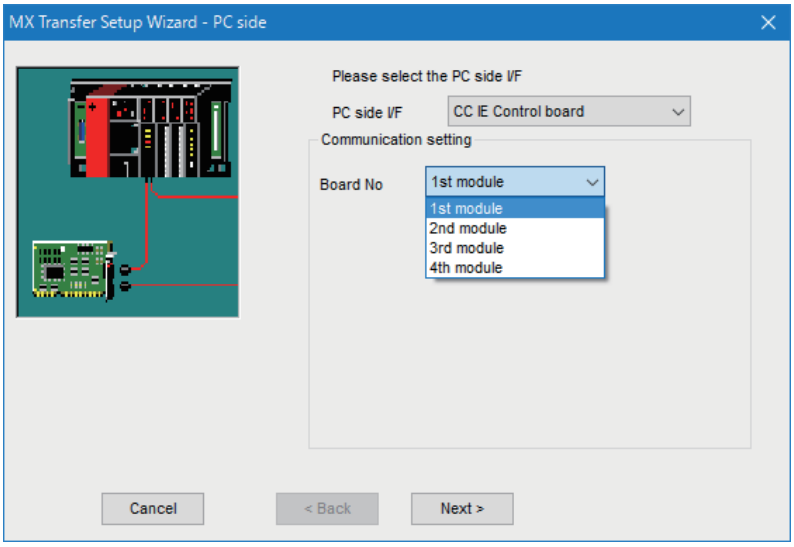
Precautions

When connecting to a CPU module via Ethernet, communication cannot be established until the CPU module is turned into RUN once.

CC IE Control board/CC IE Field board

Establish communication between a personal computer and a connection destination device via a CC-Link IE Controller Network board or CC-Link IE Field Network board.

Window



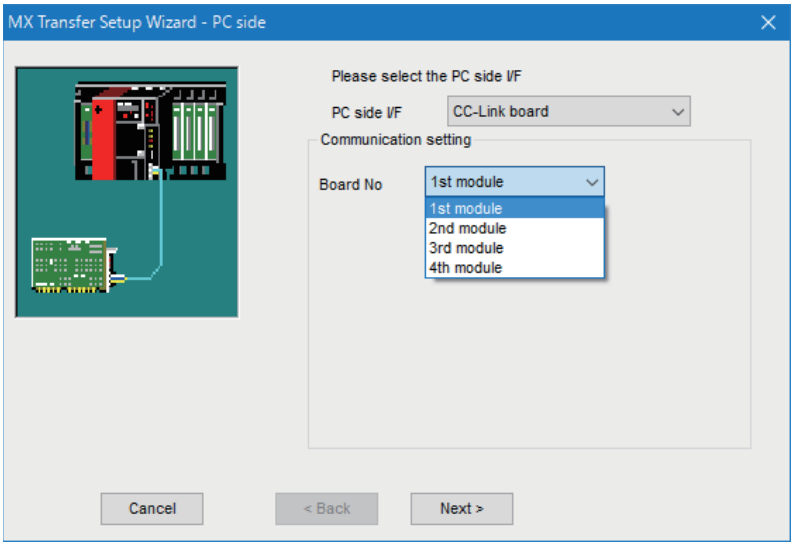
Displayed items

Item	Setting range	Description
Board No.	1st module, 2nd module, 3rd module, 4th module	Select an interface board of a personal computer used for connection.

CC-Link board

Establish communication between a personal computer and a connection destination device via a CC-Link board.

Window



Displayed items

Item	Setting range	Description
Board No.	1st module, 2nd module, 3rd module, 4th module	Select an interface board of a personal computer used for connection.

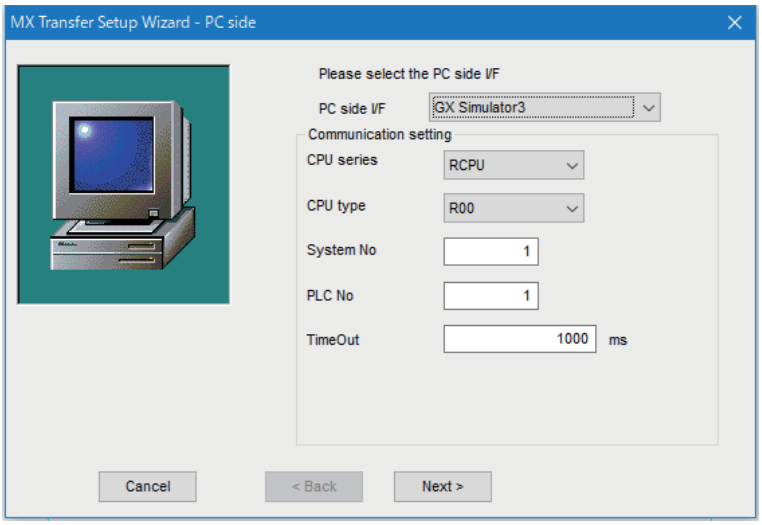
Precautions

For CC-Link communication or CC-Link G4 communication (using AJ65BT-G4), use a CC-Link master/local module whose software version is N or later.
Otherwise, the module does not operate normally.

GX Simulator3

Connect to GX Simulator3 running on the same computer.

Window



Displayed items

Item	Setting range	Description
CPU series	RCPU, FXCPU, R Safety	Select a CPU series to simulate.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type to simulate.
System No	1 to 64	Set a number of a system to simulate.
PLC No	1 to 4	Set the number of a CPU to simulate.
TimeOut	1 to 2147483647	Set a connection timeout. (In milliseconds)

Precautions

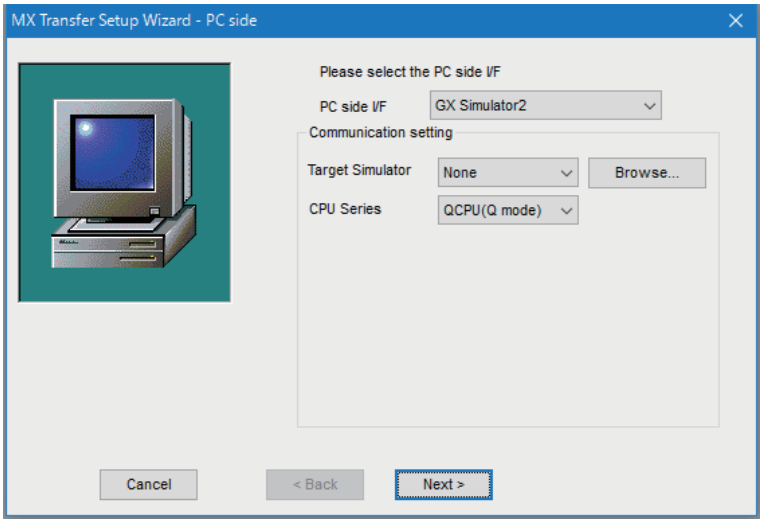
Make sure that GX Simulator3 is running before connecting.

When starting Configuration Tool as a service, GX Simulator3 cannot be connected.

GX Simulator2

Connect to GX Simulator2 running on the same computer.

Window



Displayed items

Item	Setting range	Description
Target Simulator	• None • Simulator A • Simulator B • Simulator C • Simulator D	Select a simulator to connect. Click the [Browse] button to display the "Find GX Simulator2 Runtime" screen. Information on the currently running GX Simulator2 is displayed. Select GX Simulator2 to connect.
CPU Series	QCPU(Q mode), LCPU, FXCPU	Select a CPU series to simulate.

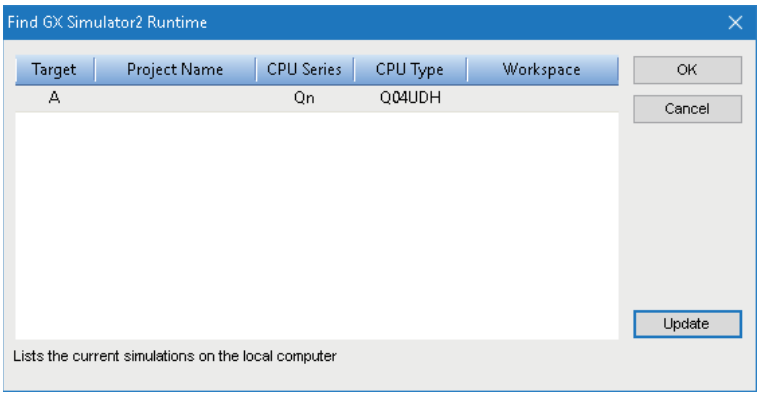
Precautions

Make sure that GX Simulator2 is running before connecting.

■"Find GX Simulator2 Runtime" screen

Search GX Simulator2 to connect.

Window



Displayed items

Item	Description
Target	A name of GX Simulator2 in Configuration Tool is displayed.
Project Name	A file name of a GX Works2 project is displayed.
CPU Series	A CPU series set in a GX Works2 project is displayed.
CPU Type	A CPU type set in a GX Works2 project is displayed.
Workspace	For a GX Works2 project in a workspace format, a workspace name is displayed.

To update the list of GX Simulator2, click the [Update] button.

Configuring the settings on the connection destination device side

The following explains the settings for each interface on the connection destination device side.

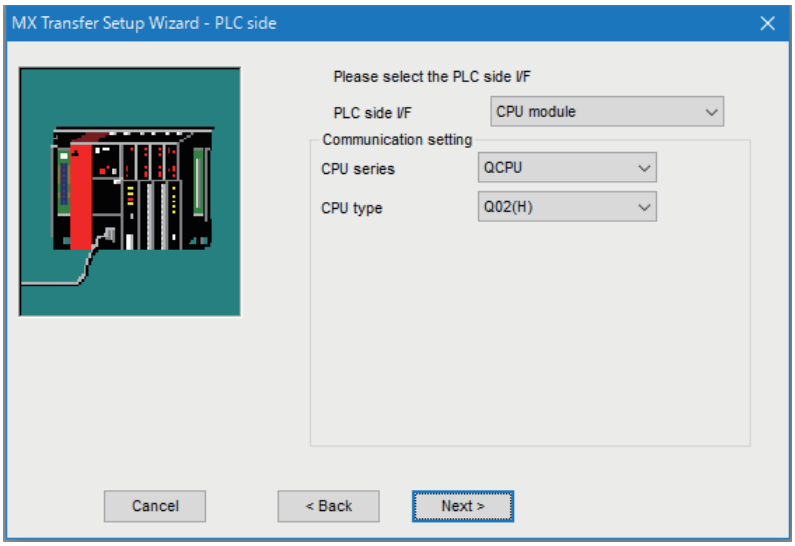
PC side I/F	PLC side I/F	Reference
USB	CPU module	Page 99 When selecting "USB" for "PC side I/F"
Serial		Page 100 When selecting "Serial" for "PC side I/F"
	C24 module	Page 101 C24 module
	FX extended port	Page 102 FX extended port
Ethernet board (MELSOFT)	Ethernet module	Page 103 When selecting "QJ71E71" for "Connect module"
		Page 104 When selecting "RJ71EN71" for "Connect module"
		Page 105 When selecting "LJ71E71" for "Connect module"
		Page 106 When selecting "GOT" for "Connect module"
		Page 107 When selecting "FX3U-ENET" for "Connect module"
	FX3U-ENET-ADP	Page 108 When selecting "FX3U-ENET-ADP" for "Connect module"
	CPU module	Page 109 When selecting "CPU module" for "Connect module"
	CC IE TSN/Field module	Page 110 When selecting "RJ71GN11" for "Connect module"
	CC IE Field Ethernet adapter	Page 111 When selecting "CC IE Field Ethernet adapter" for "Connect module"

CPU module

The following shows the settings when selecting "CPU module" for "PLC side I/F".

■When selecting "USB" for "PC side I/F"

Window



Displayed items

Item	Setting range	Description
CPU series	QCPU, RCPU, FXCPU, LCPU, Q Motion, R Motion, R Safety	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.

Precautions

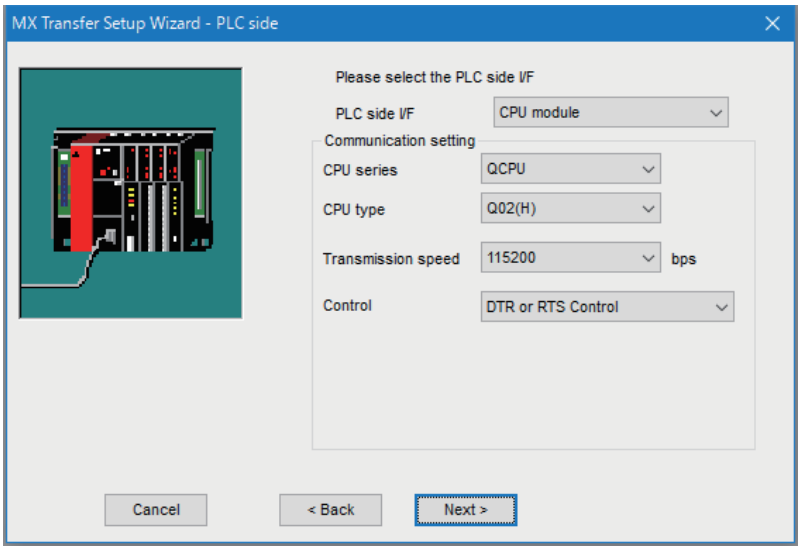
If any of the following operations is performed during the connection with a connection destination CPU, a communication error will occur and the error may not be recovered.

- Reset the connection destination CPU or turn the power ON and OFF
- Disconnection or reconnection of a USB cable

In this case, remove the USB cable, and then connect it again after five seconds or later.

■When selecting "Serial" for "PC side I/F"

Window



Displayed items

Item	Setting range	Description
CPU series	QCPU, FXCPU, LCPU, Q Motion	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Transmission speed	9600 to 115200	Select a transmission speed for serial communication.
Control	DTR Control, RTS Control, DTR and RTS Control, DTR or RTS Control	Select a handshake signal.

Precautions

■Considerations when CPU type is Q00J, Q00, or Q01CPU

If a selected transmission speed is different from one set on the personal computer side, it will be 9600 bps.

To increase the transmission speed, match the setting on the personal computer side to that on the CPU side.

■Supported transmission speed

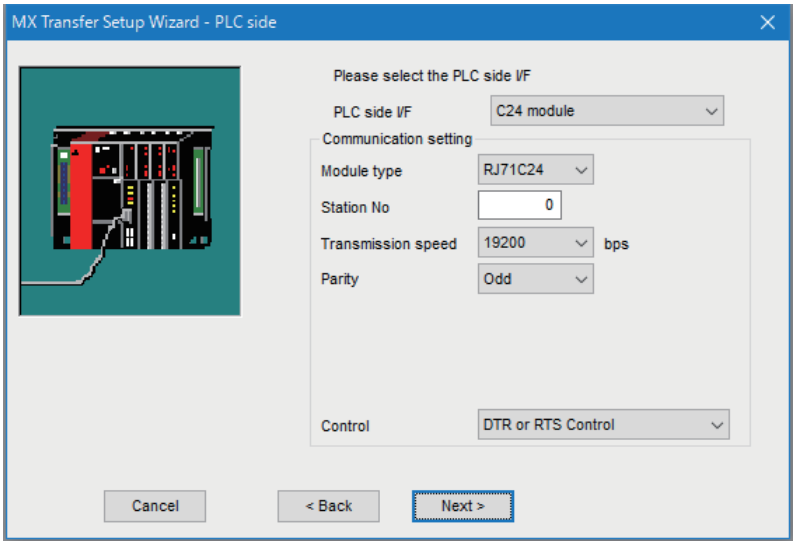
For the transmission speed of QCPUs, 9600 bps, 19200 bps, 38400 bps, 57600 bps, or 115200bps can be set.

The transmission speed of a motion controller CPU is fixed to 9600 bps. (19200 bps may be set for A2USHCPU-S1.)

C24 module

The following shows the settings when selecting "C24 module" for "PLC side I/F".

Window



Displayed items

Item	Setting range	Description
Module type	RJ71C24, QJ71C24, LJ71C24	Select a module type.
Station No	0 to 31	Set a station number.
Transmission speed	9600 to 115200	Select a transmission speed for serial communication.
Parity	None, Odd, Even	Select a parity type.
Control	DTR Control, RTS Control, DTR and RTS Control, DTR or RTS Control	Select a handshake signal.

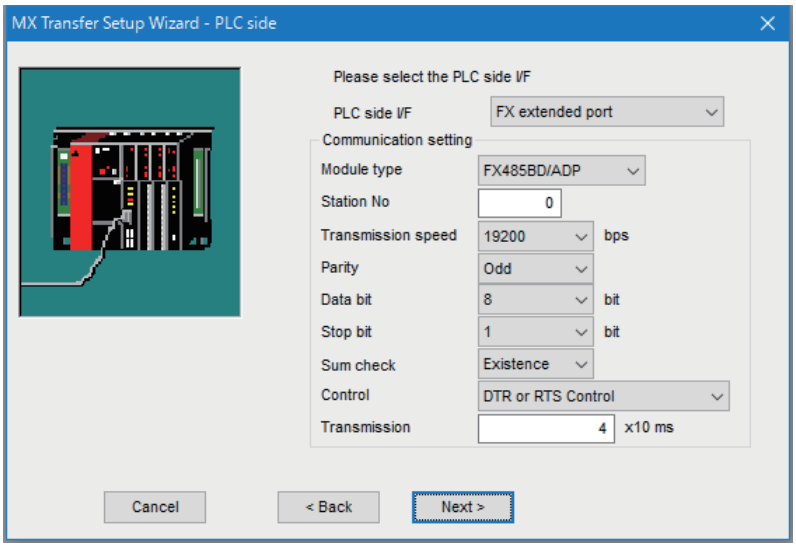
Precautions

When using one specific channel for MELSOFT products such as GX Works2, GX Works3, and GOT, other channels cannot be used for MX OPC UA Server.

FX extended port

The following shows the settings when selecting "FX extended port" for "PLC side I/F".

Window



Displayed items

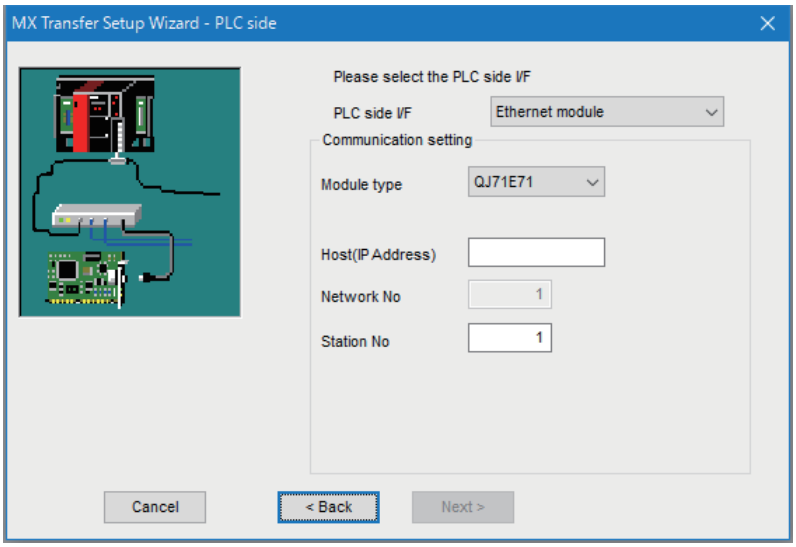
Item	Setting range	Description
Module type	FX485BD/ADP	Select a module type.
Station No	0 to 15	Set a station number.
Transmission speed	300 to 19200	Select a transmission speed for serial communication.
Parity	None, Odd, Even	Select a parity type.
Data bit	7, 8	Select the number of data bits.
Stop bit	1, 2	Select the number of stop bits.
Sum check	Existence, None	Select this to enable or disable sum check.
Control	DTR Control, RTS Control, DTR and RTS Control, DTR or RTS Control	Select a handshake signal.
Transmission	1 to 65535	Set the multiple number of 10 milliseconds as a communication waiting time.

Ethernet module

The following shows the settings when selecting "Ethernet module" for "PLC side I/F".

■When selecting "QJ71E71" for "Connect module"

Window

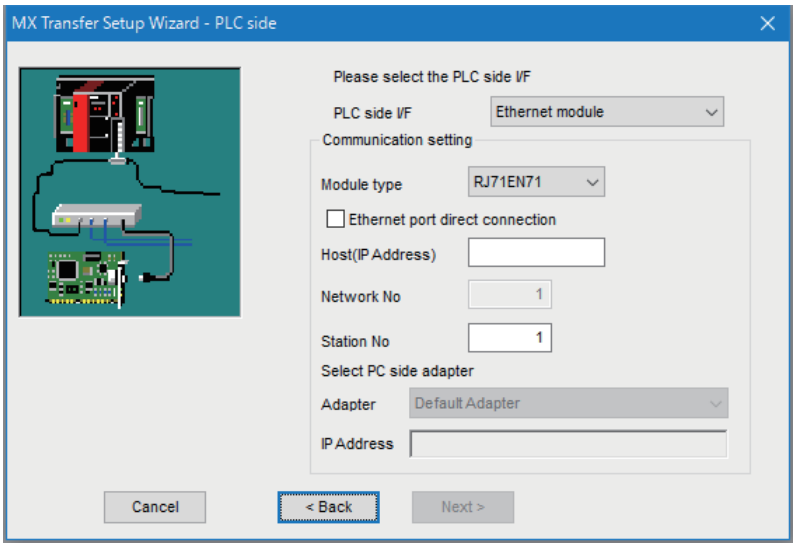


Displayed items

Item	Setting range	Description
Module type	QJ71E71	Select the type of a module.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Network No	1 to 239	A network number set on the personal computer side is displayed.
Station No	1 to 64	Set the station number of a connection destination device.

■When selecting "RJ71EN71" for "Connect module"

Window



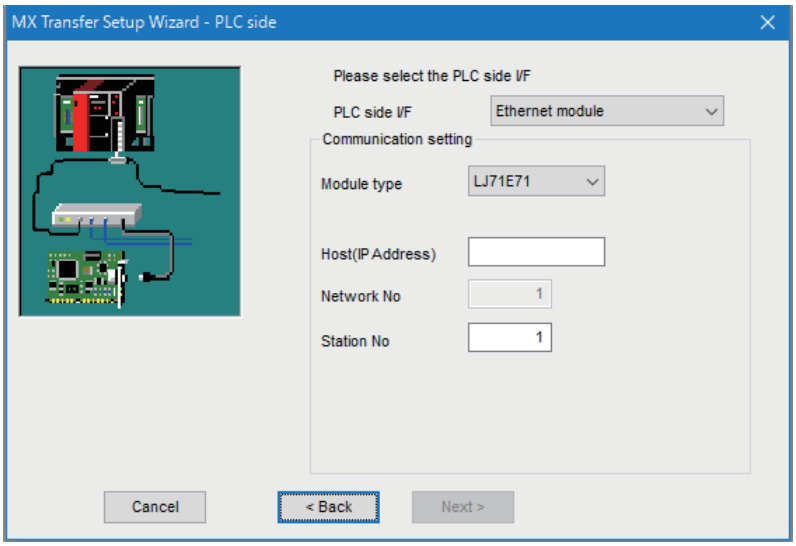
Displayed items

Item	Setting range	Description
Module type	RJ71EN71	Select the type of a module.
Ethernet port direct connection*1	—	Select the checkbox to connect a personal computer and an Ethernet port of a connection destination device with a single cable.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Network No	1 to 239	A network number set on the personal computer side is displayed.
Station No	1 to 120	Set the station number of a connection destination device.
Adapter*1	Ethernet adapter installed in a personal computer	Select an Ethernet adapter to use. The IP address is also displayed for confirmation.
IP Address*1		

*1 Appears only when selecting "UDP" for "Protocol" in the personal computer side setting.

■When selecting "LJ71E71" for "Connect module"

Window

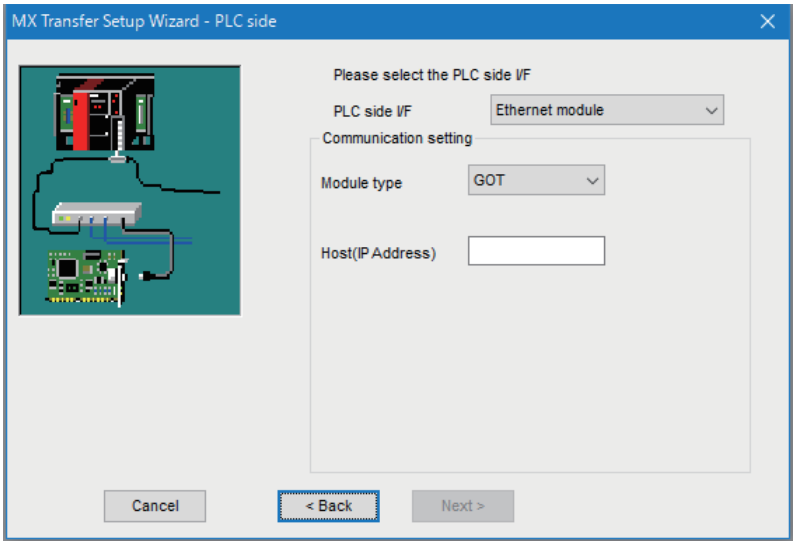


Displayed items

Item	Setting range	Description
Module type	LJ71E71	Select the type of a module.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Network No	1 to 239	A network number set on the personal computer side is displayed.
Station No	1 to 64	Set the station number of a connection destination device.

■When selecting "GOT" for "Connect module"

Window

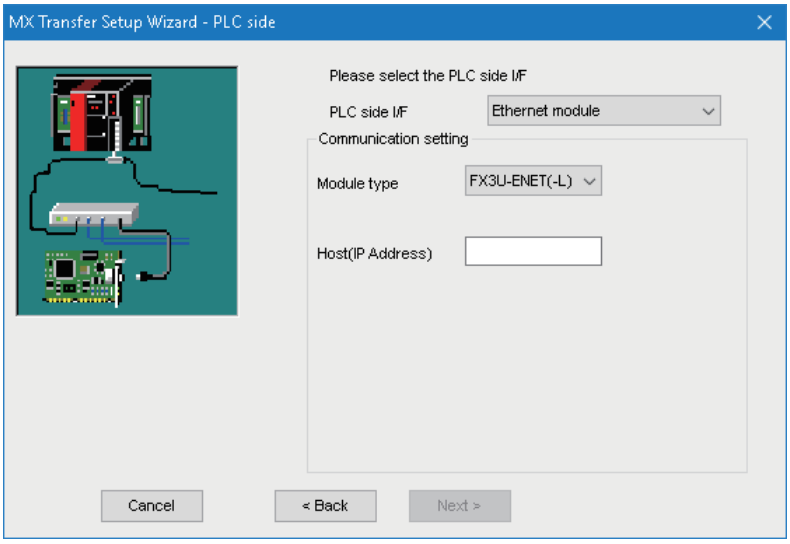


Displayed items

Item	Setting range	Description
Module type	GOT	Select the type of a module.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.

■When selecting "FX3U-ENET" for "Connect module"

Window

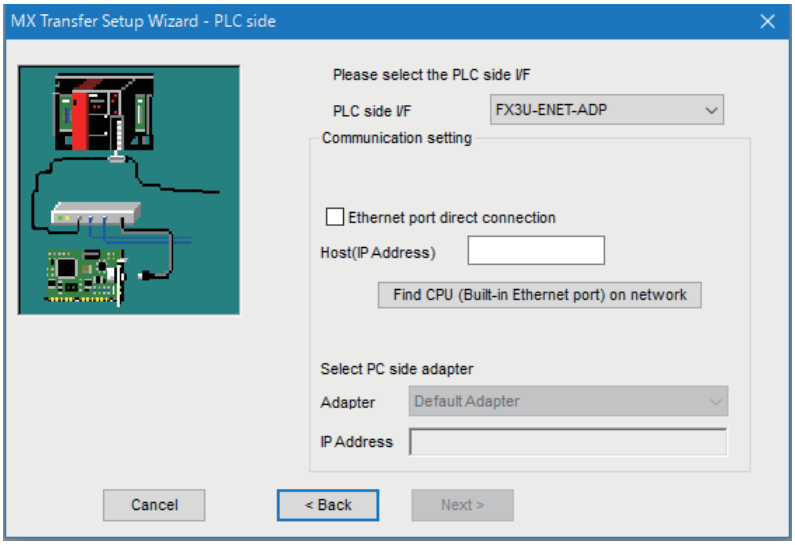


Displayed items

Item	Setting range	Description
Module type	FX3U-ENET(-L)	Select the type of a module.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.

■When selecting "FX3U-ENET-ADP" for "Connect module"

Window

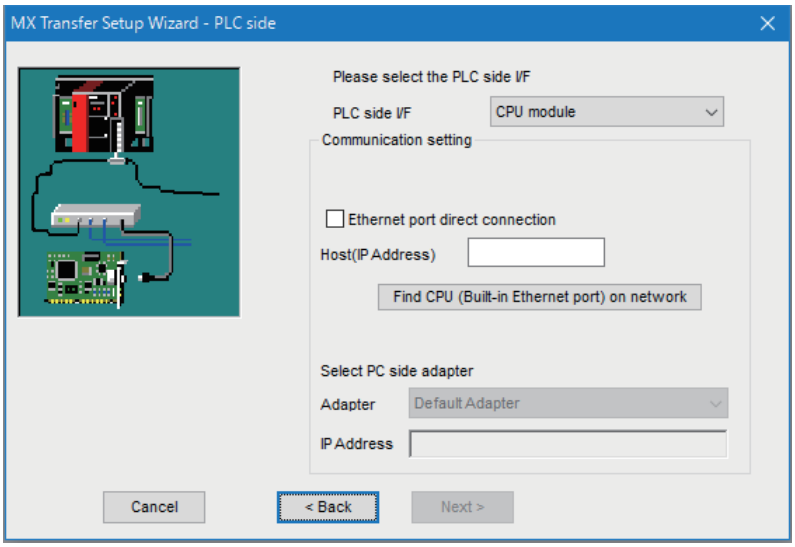


Displayed items

Item	Setting range	Description
Ethernet port direct connection	—	Select the checkbox to connect a personal computer and an Ethernet port of a connection destination device with a single cable.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Find CPU (Built-in Ethernet port) on network	—	Click this to search for a CPU module (built-in Ethernet port) on a network. Selecting a searched CPU module shows its IP address in "Host(IP Address)".
Adapter	Ethernet adapter installed in a personal computer	Select an Ethernet adapter to use. The IP address is also displayed for confirmation.
IP Address		

■When selecting "CPU module" for "Connect module"

Window



Displayed items

Item	Setting range	Description
Ethernet port direct connection*1	—	Select the checkbox to connect a personal computer and an Ethernet port of a connection destination device with a single cable.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Find CPU (Built-in Ethernet port) on network	—	Click this to search for a CPU module (built-in Ethernet port) on a network. Selecting a searched CPU module shows its IP address in "Host(IP Address)".
Adapter*1	Ethernet adapter installed in a personal computer	Select an Ethernet adapter to use. The IP address is also displayed for confirmation.
IP Address*1		

*1 Appears only when selecting "UDP" for "Protocol" in the personal computer side setting.

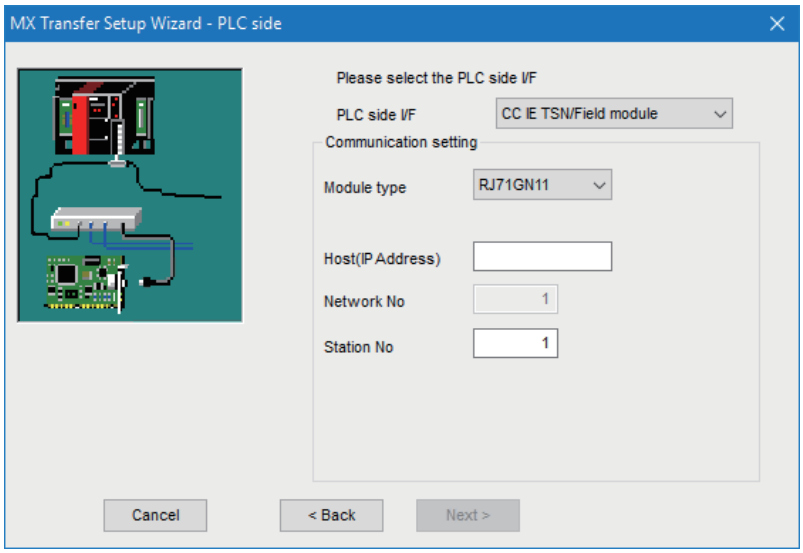
Precautions

• Connection to a C Controller module (Q12DCCPU-V)

Q12DCCPU-Vs on the network are not displayed by using the "Find CPU (Built-in Ethernet port) on network" function.
Set the IP address of Q12DCCPU-V for "Host(IP Address)".

■When selecting "RJ71GN11" for "Connect module"

Window

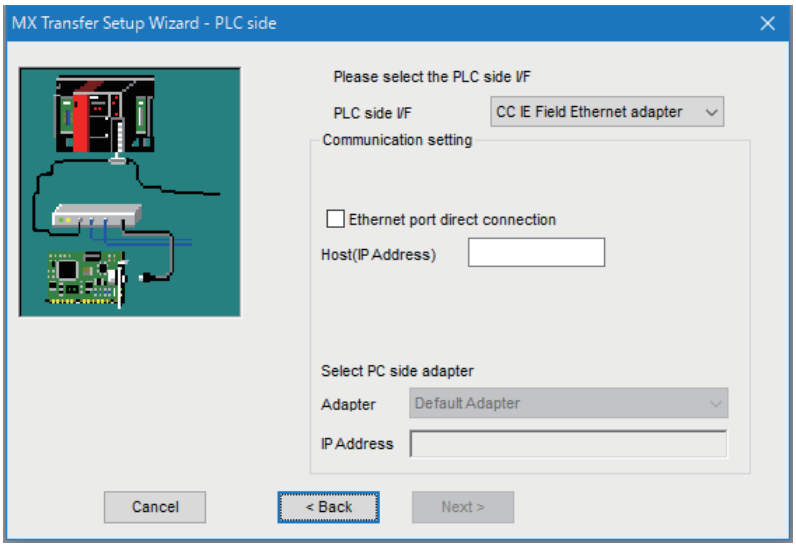


Displayed items

Item	Setting range	Description
Module type	RJ71GN11	Select the type of a module.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Network No	1 to 239	A network number set on the personal computer side is displayed.
Station No	0 to 120	Set the station number of a connection destination device.

■When selecting "CC IE Field Ethernet adapter" for "Connect module"

Window



Displayed items

Item	Setting range	Description
Ethernet port direct connection*1	—	Select the checkbox to connect a personal computer and an Ethernet port of a connection destination device with a single cable.
Host(IP Address)	nnn.nnn.nnn.nnn	Set the IP address of a connection destination device.
Adapter*1	Ethernet adapter installed in a personal computer	Select an Ethernet adapter to use. The IP address is also displayed for confirmation.
IP Address*1		

*1 Appears only when selecting "UDP" for "Protocol" in the personal computer side setting.

Network station number type setting

The following explains the settings for each network.

PC side I/F	PLC side I/F	Network (other station setting)	Reference
USB	CPU module	Host station	Page 113 Connection to the host station (when selecting "CPU module" for "PLC side I/F" (USB, serial))
		Other station	Page 119 Connection to another station (when selecting "CPU module" for "PLC side I/F" (USB, serial))
Serial	CPU module	Host station	Page 113 Connection to the host station (when selecting "CPU module" for "PLC side I/F" (USB, serial))
		Other station	Page 119 Connection to another station (when selecting "CPU module" for "PLC side I/F" (USB, serial))
	C24 module	Host station	Page 115 Connection to the host station (when selecting "C24 module" for "PLC side I/F")
		Other station	Page 121 Connection to another station (when selecting "C24 module" for "PLC side I/F")
	FX extended port	Host station	Page 116 Connection to the host station (when selecting "FX extended port" or "FX3U-ENET-ADP" for "PLC side I/F")
Ethernet board (SLMP)	Ethernet module	N/A	—
Ethernet board (MELSOFT)	Ethernet module	Host station	Page 117 Connection to the host station (when selecting "Ethernet module" for "PLC side I/F")
		Other station	Page 122 Connection to another station (when selecting "Ethernet module" for "PLC side I/F")
	FX3U-ENET-ADP	Host station	Page 116 Connection to the host station (when selecting "FX extended port" or "FX3U-ENET-ADP" for "PLC side I/F")
	CPU module	Host station	Page 114 Connection to the host station (when selecting "CPU module" for "PLC side I/F" (Ethernet board (MELSOFT)))
		Other station	Page 120 Connection to another station (when selecting "CPU module" for "PLC side I/F" (Ethernet board (MELSOFT)))
	CC IE TSN/Field module	Host station	Page 118 Connection to the host station (when selecting "CC IE TSN/Field module" for "PLC side I/F")
		Other station	Page 123 Connection to another station (when selecting "CC IE TSN/Field module" for "PLC side I/F")
	CC IE Field Ethernet adapter	Other station(Single)	Page 124 Connection to another station (single network) (when selecting "CC IE Field Ethernet adapter" for "PLC side I/F")
		Other station(Coexistence)	Page 125 Connection to another station (co-existence network) (when selecting "CC IE Field Ethernet adapter" for "PLC side I/F")
CC IE Control board	N/A	Host station	—
		Other station(Single)	Page 126 Connection to another station (single network) (when selecting "CC IE Control board" or "CC IE Field board" for "PC side I/F")
		Other station(Coexistence)	Page 127 Connection to another station (co-existence network) (when selecting "CC IE Control board" for "PC side I/F")
CC IE Field board	N/A	Host station	—
		Other station(Single)	Page 126 Connection to another station (single network) (when selecting "CC IE Control board" or "CC IE Field board" for "PC side I/F")
		Other station(Coexistence)	Page 128 Connection to another station (co-existence network) (when selecting "CC IE Field board" for "PC side I/F")
CC-Link board	N/A	Host station	—
		Other station(Single)	Page 129 Connection to another station (single network) (when selecting "CC-Link board" for "PC side I/F")
		Other station(Coexistence)	Page 130 Connection to another station (co-existence network) (when selecting "CC-Link board" for "PC side I/F")
GX Simulator3	N/A	N/A	—
GX Simulator2	N/A	N/A	—

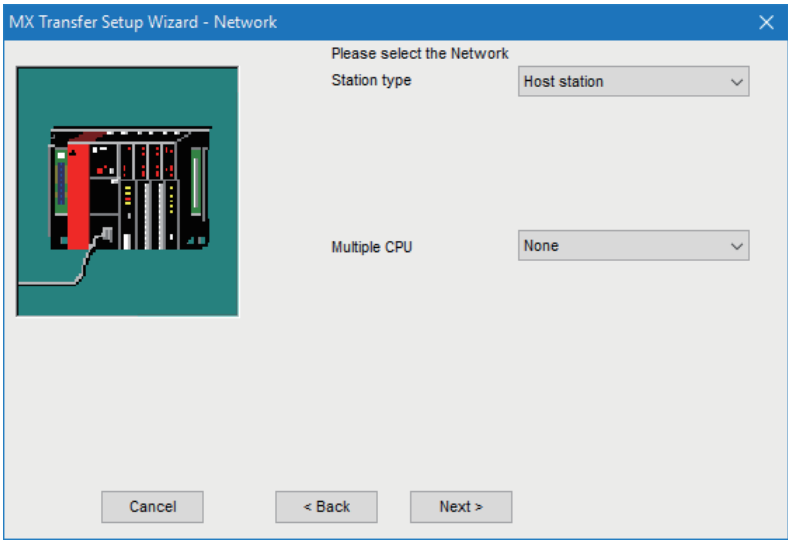
Connection to the host station

The following shows the settings when selecting "Host station" for "Station type".

■Connection to the host station (when selecting "CPU module" for "PLC side I/F" (USB, serial))

Window

Ex.



Displayed items

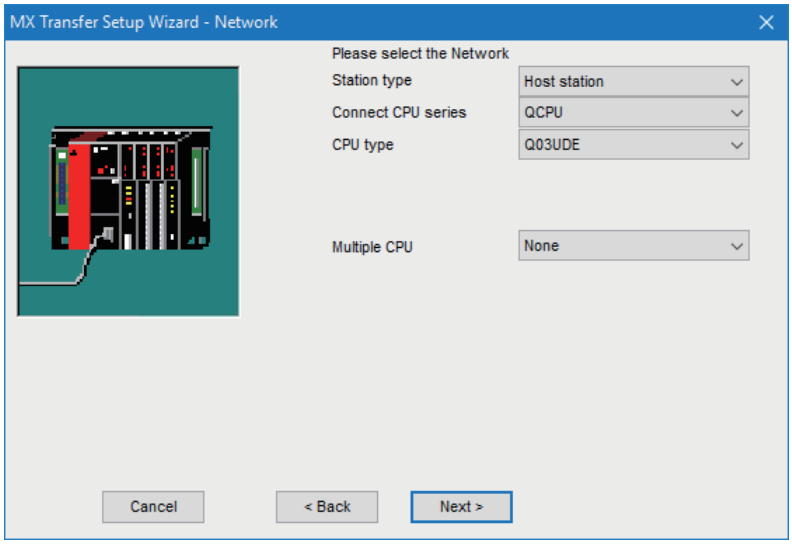
Displayed items and setting ranges differ depending on a connection route.

Item	Setting range	Description
Station type	Host station	Select a station number type.
Operation Mode	None, Redundant	Select an operation mode.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.
Target system	None, Control system	Select a system for a redundant CPU.

■Connection to the host station (when selecting "CPU module" for "PLC side I/F" (Ethernet board (MELSOFT)))

Window

Ex.



Displayed items

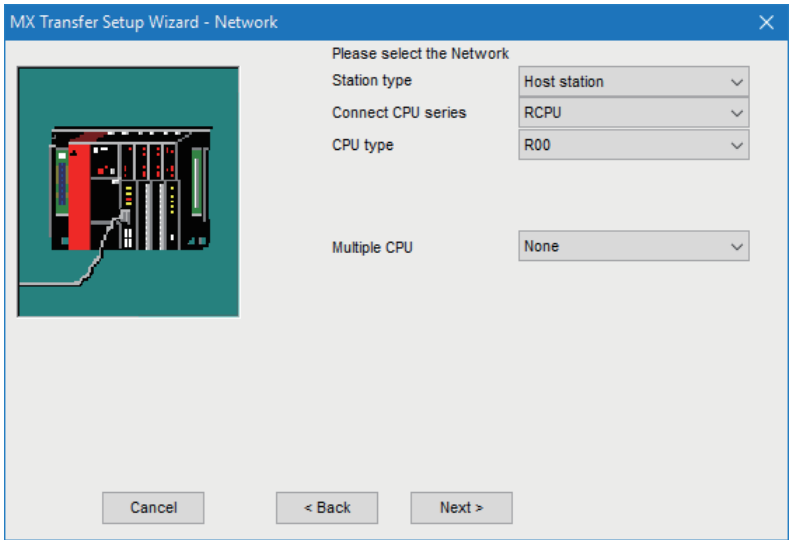
Displayed items and setting ranges differ depending on a connection route.

Item	Setting range	Description
Station type	Host station	Select a station number type.
Connect CPU series	It differs depending on a module type on the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Operation Mode	None, Redundant	Select an operation mode.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.
Target system	None, Control system	Select a system for a redundant CPU.

■Connection to the host station (when selecting "C24 module" for "PLC side I/F")

Window

Ex.



Displayed items

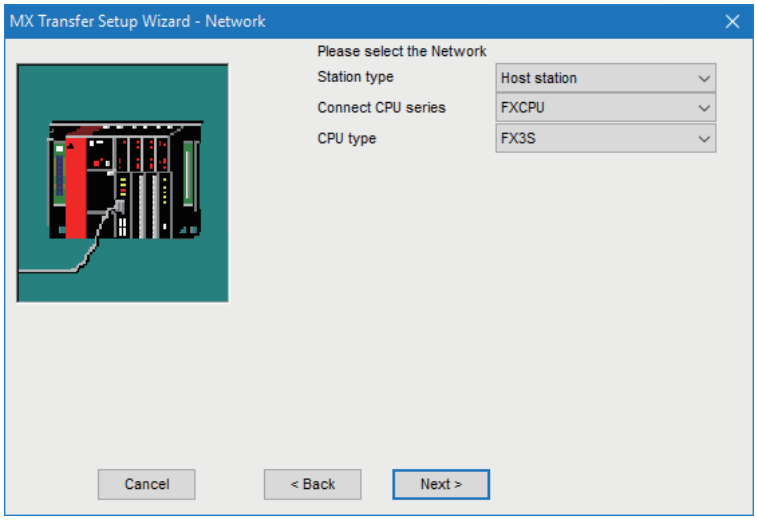
Displayed items and setting ranges differ depending on a connection route.

Item	Setting range	Description
Station type	Host station	Select a station number type.
Connect CPU series	It differs depending on a module type on the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Operation Mode	None, Redundant	Select an operation mode.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.
Target system	None, Control system	Select a system for a redundant CPU.

■Connection to the host station (when selecting "FX extended port" or "FX3U-ENET-ADP" for "PLC side I/F")

Window

Ex.



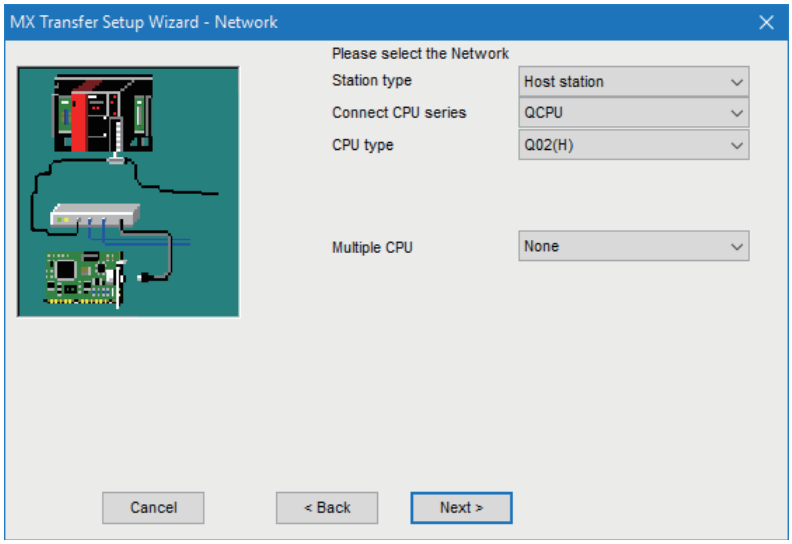
Displayed items

Item	Setting range	Description
Station type	Host station	Select a station number type.
Connect CPU series	FXCPU	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.

■Connection to the host station (when selecting "Ethernet module" for "PLC side I/F")

Window

Ex.



Displayed items

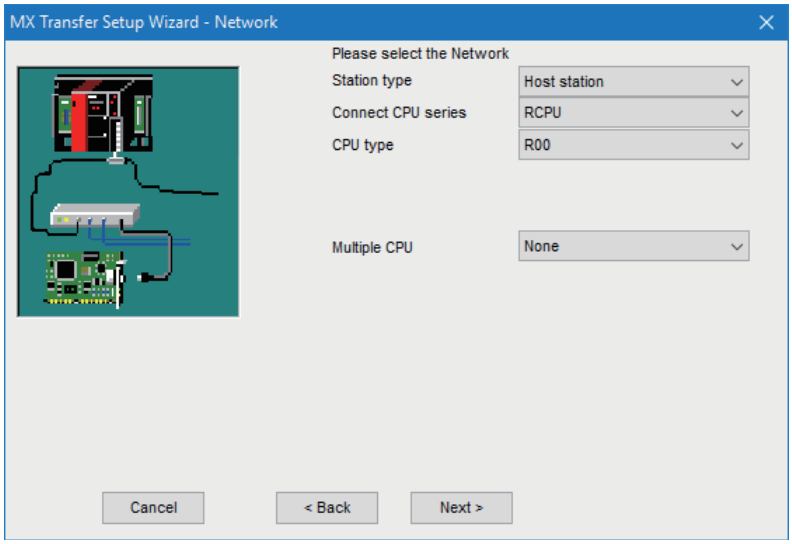
Displayed items and setting ranges differ depending on a connection route.

Item	Setting range	Description
Station type	Host station	Select a station number type.
Connect CPU series	It differs depending on a module type on the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Operation Mode	None, Redundant	Select an operation mode.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.
Target system	None, Control system	Select a system for a redundant CPU.
Open system	MELSOFT connection	Select an open system.

■Connection to the host station (when selecting "CC IE TSN/Field module" for "PLC side I/F")

Window

Ex.



Displayed items

Item	Setting range	Description
Station type	Host station	Select a station number type.
Connect CPU series	It differs depending on a module type on the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.

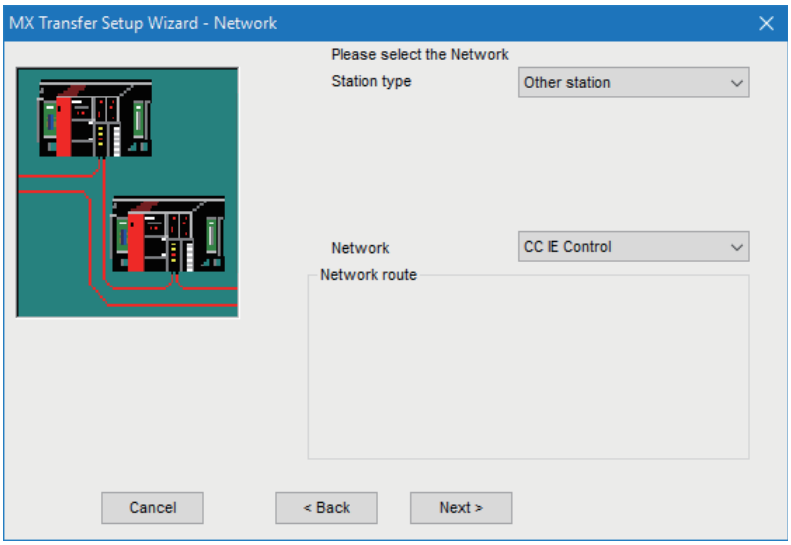
Connection to another station

The following shows the settings when selecting "Other station" for "Station type".

■Connection to another station (when selecting "CPU module" for "PLC side I/F" (USB, serial))

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

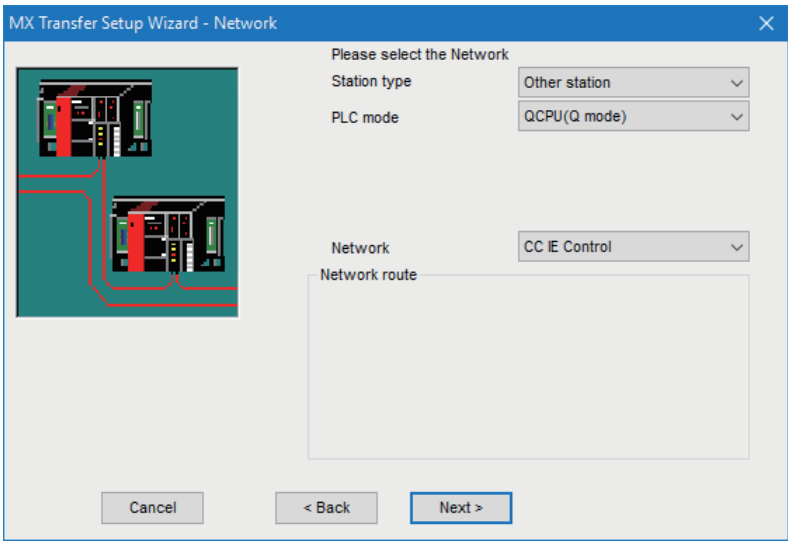
Item	Setting range	Description
Station type	Other station	Select a station number type.
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route to another station.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".
Connect module No	0 to 7	Set the number of a module in a connected station.

*1 For the accessible ranges when using CC-Link IE TSN, refer to the following:
☞ Page 253 Accessible Ranges When Using CC-Link IE TSN

■Connection to another station (when selecting "CPU module" for "PLC side I/F" (Ethernet board (MELSOFT)))

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

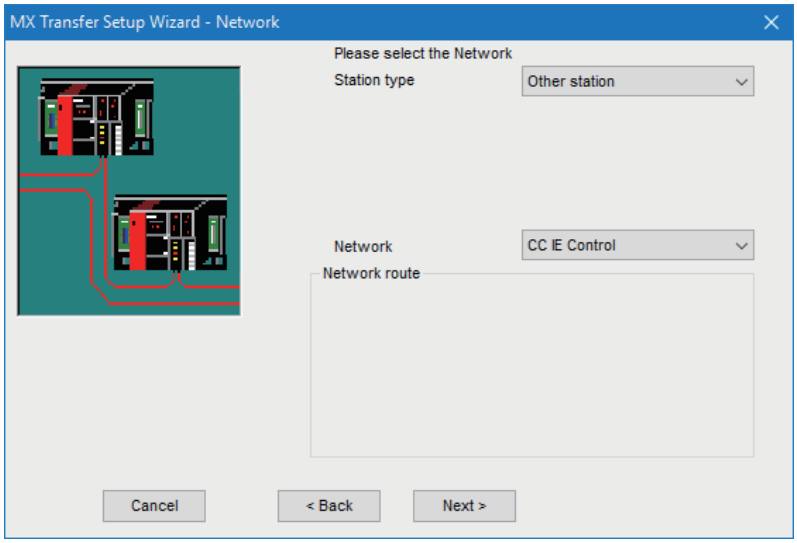
Item	Setting range	Description
Station type	Other station	Select a station number type.
PLC mode	It differs depending on a module type on the connection destination device side.	Select a PLC mode.
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route to another station.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 For the accessible ranges when using CC-Link IE TSN, refer to the following:
☞ Page 253 Accessible Ranges When Using CC-Link IE TSN

■Connection to another station (when selecting "C24 module" for "PLC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

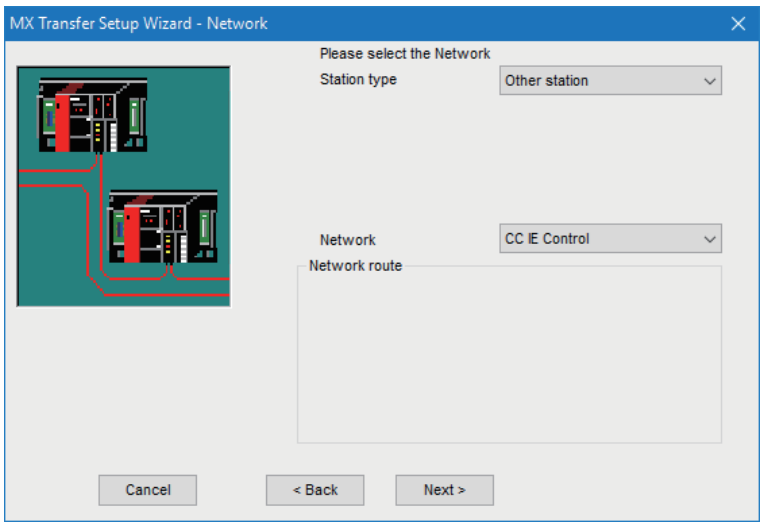
Item	Setting range	Description
Station type	Other station	Select a station number type.
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route.
Network type	C24, Multidrop(independent), Multidrop(combine)	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 For the accessible ranges when using CC-Link IE TSN, refer to the following:
☞ Page 253 Accessible Ranges When Using CC-Link IE TSN

■Connection to another station (when selecting "Ethernet module" for "PLC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

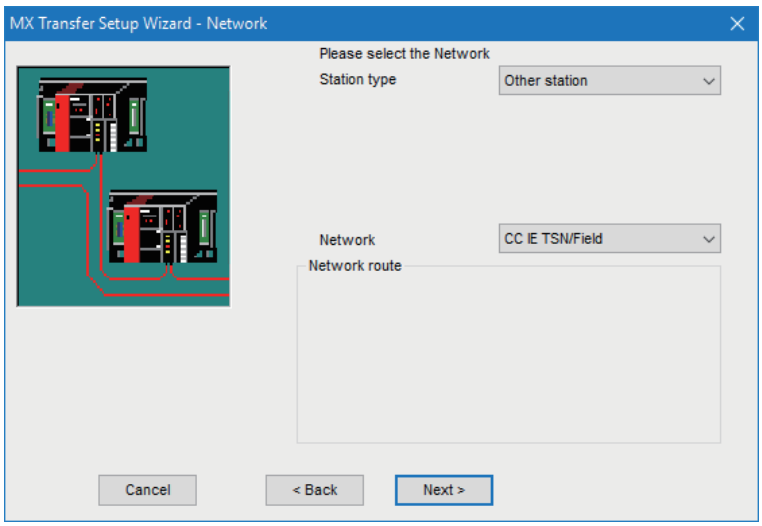
Item	Setting range	Description
Station type	Other station	Select a station number type.
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 Access using CC-Link IE TSN is not supported.

■Connection to another station (when selecting "CC IE TSN/Field module" for "PLC side I/F")

Window

Ex.



Displayed items

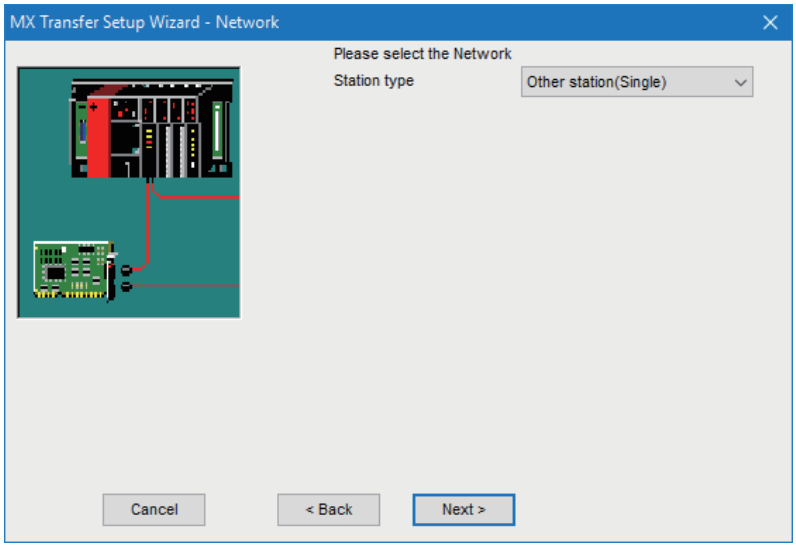
Item	Setting range	Description
Station type	Other station	Select a station number type.
Network	CC IE TSN/Field*1, C24, CC-Link	Select a communication route.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 Access using CC-Link IE Field Network is not supported.
For the accessible ranges when using CC-Link IE TSN, refer to the following:
☞ Page 253 Accessible Ranges When Using CC-Link IE TSN

■Connection to another station (single network) (when selecting "CC IE Field Ethernet adapter" for "PLC side I/F")

Window

Ex.



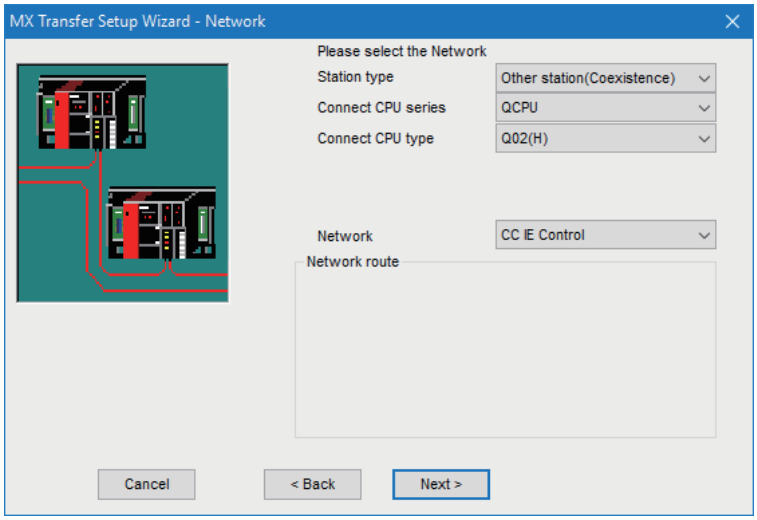
Displayed items

Item	Setting range	Description
Station type	Other station(Single)	Select a station number type.

■Connection to another station (co-existence network) (when selecting "CC IE Field Ethernet adapter" for "PLC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

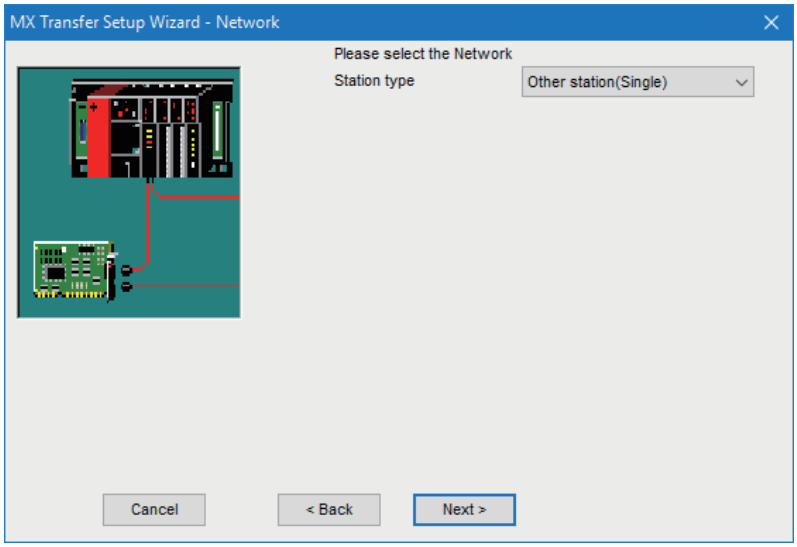
Item	Setting range	Description
Station type	Other station(Coexistence)	Select a station number type.
Connect CPU series	QCPU, LCPU	Select a CPU series.
Connect CPU type	Available types are displayed in the pull-down list.	Select a CPU type of a relay station.
Connect network No	1 to 239	Set a network number of a relay station. It appears only when selecting "C24" or "CC-Link" for "Network".
Connect station No	0 to 120	Set a station number of a relay station. It appears only when selecting "C24" or "CC-Link" for "Network".
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 Access using CC-Link IE TSN is not supported.

■Connection to another station (single network) (when selecting "CC IE Control board" or "CC IE Field board" for "PC side I/F")

Window

Ex.



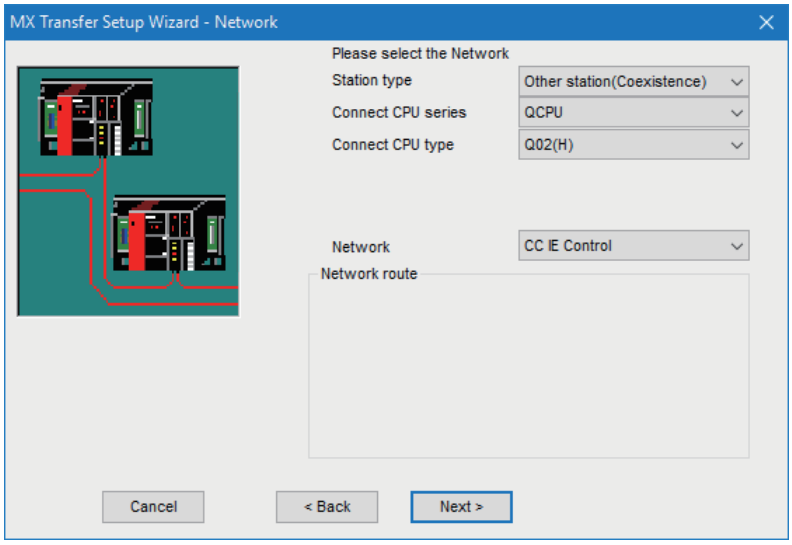
Displayed items

Item	Setting range	Description
Station type	Other station(Single)	Select a station number type.

■Connection to another station (co-existence network) (when selecting "CC IE Control board" for "PC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

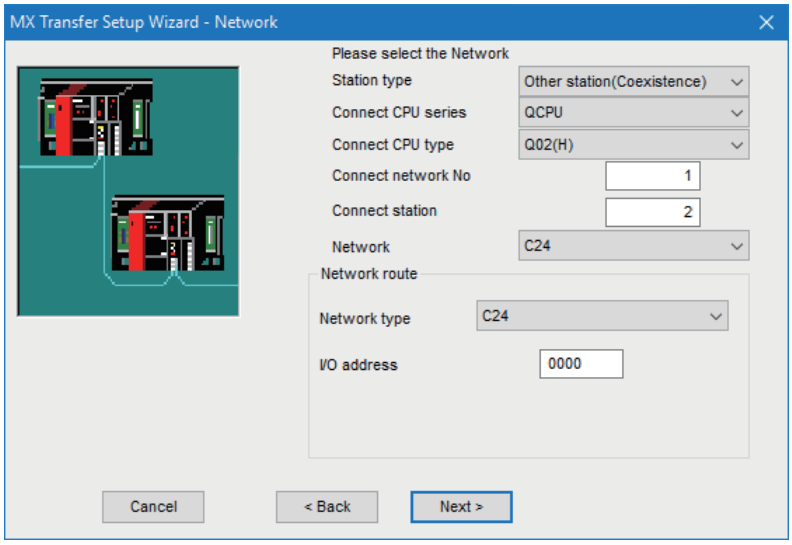
Item	Setting range	Description
Station type	Other station(Coexistence)	Select a station number type.
Connect CPU series	QCPU, RCPU, R Safety	Select a CPU series.
Connect CPU type	Available types are displayed in the pull-down list.	Select a CPU type of a relay station.
Connect network No	1 to 239	Set a network number of a relay station. It appears when selecting "C24" or "CC-Link" for "Network".
Connect station	0 to 120	Set a station number of a relay station. It appears when selecting "C24" or "CC-Link" for "Network".
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 Access using CC-Link IE TSN is not supported.

■Connection to another station (co-existence network) (when selecting "CC IE Field board" for "PC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

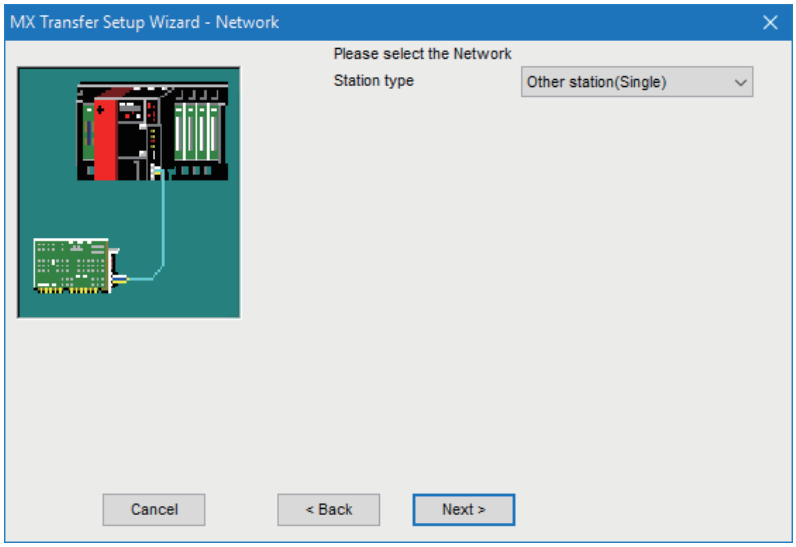
Item	Setting range	Description
Station type	Other station(Coexistence)	Select a station number type.
Connect CPU series	QCPU, RCPU, LCPU, R Safety	Select a CPU series.
Connect CPU type	Available types are displayed in the pull-down list.	Select a CPU type of a relay station.
Connect network No	1 to 239	Set a network number of a relay station. It appears when selecting "C24" or "CC-Link" for "Network".
Connect station	0 to 120	Set a station number of a relay station. It appears when selecting "C24" or "CC-Link" for "Network".
Network	CC IE Control, CC IE TSN/Field*1, Ethernet, C24, CC-Link	Select a communication route.
Network type	C24	Select a network type. It appears only when selecting "C24" for "Network".
I/O address	0 to 9999	Set an I/O address. It appears when selecting "C24" or "CC-Link" for "Network".

*1 Access using CC-Link IE TSN is not supported.

■Connection to another station (single network) (when selecting "CC-Link board" for "PC side I/F")

Window

Ex.



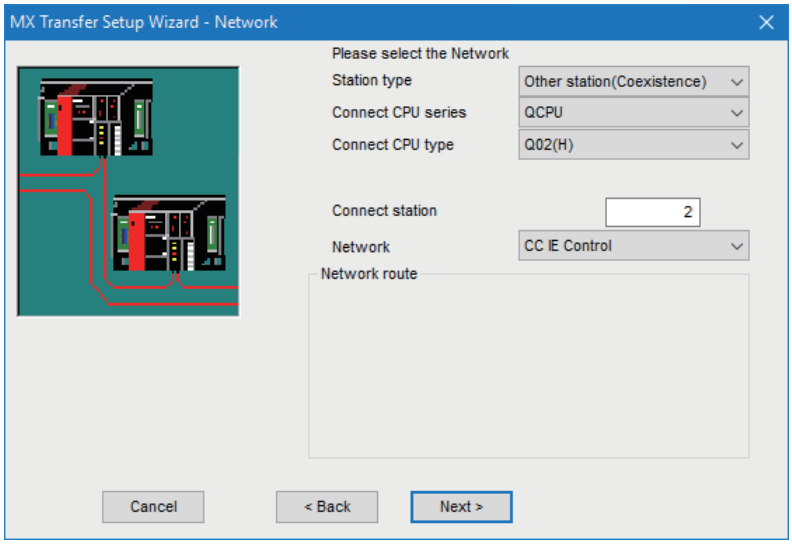
Displayed items

Item	Setting range	Description
Station type	Other station(Single)	Select a station number type.

■Connection to another station (co-existence network) (when selecting "CC-Link board" for "PC side I/F")

Window

Ex.



Displayed items

Displayed items and setting ranges differ depending on a connection route.

Item	Setting range	Description
Station type	Other station(Coexistence)	Select a station number type.
Connect CPU series	QCPU, RCPU, R Safety	Select a CPU series.
Connect CPU type	Available types are displayed in the pull-down list.	Select a CPU type of a relay station.
Connect station No	0 to 64	Set a station number of a relay station.
Network	CC IE Control, CC IE TSN/Field*1, Ethernet	Select a communication route.

*1 For the accessible ranges when using CC-Link IE TSN, refer to the following:
☞ Page 253 Accessible Ranges When Using CC-Link IE TSN

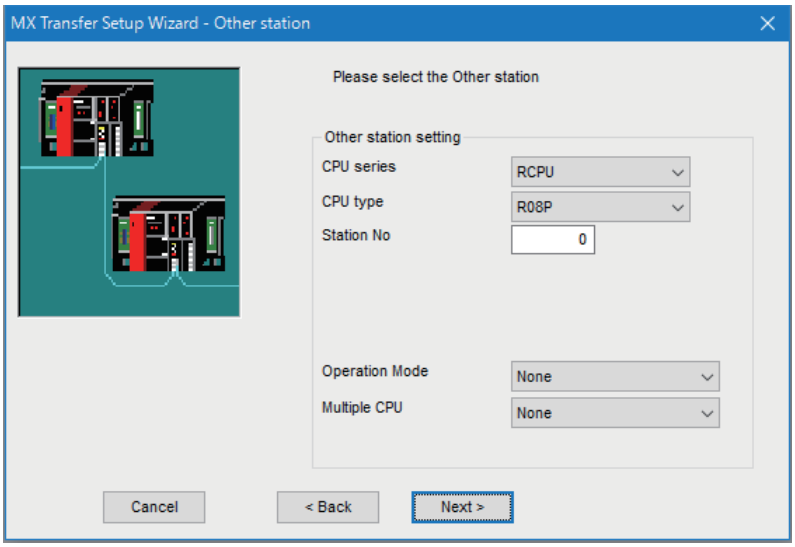
Settings for other stations

Set the type of a connection destination device on another station and network address information.

Station in a same network as C24 or FX

Window

Ex.



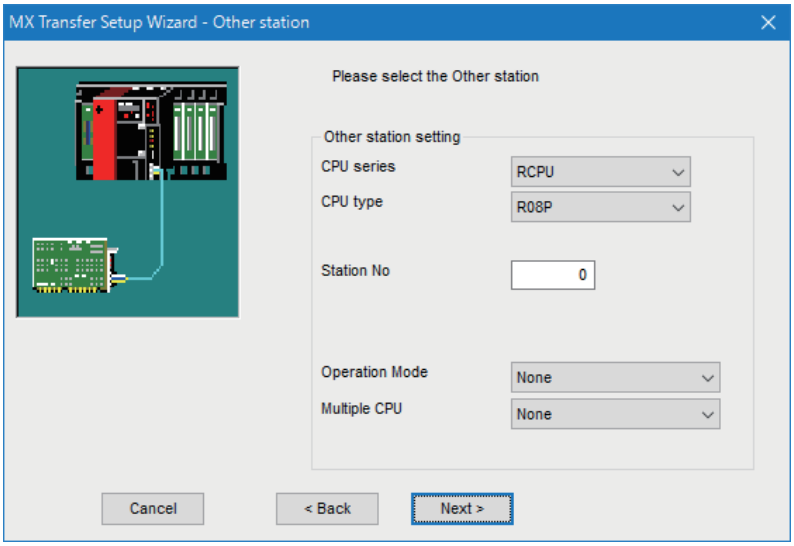
Displayed items

Item	Setting range	Description
CPU series	It differs depending on a setting on the personal computer side or the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Station No	0 to 31	Set the station number of a connection destination device.
Operation Mode	None, Redundant	Select an operation mode. Depending on the CPU series or CPU type, the item may not appear.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.

Station in a same network as CC-Link

Window

Ex.



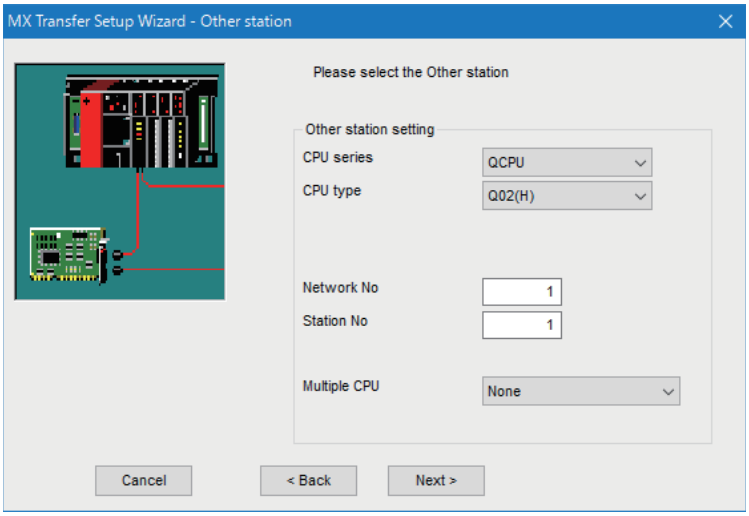
Displayed items

Item	Setting range	Description
CPU series	It differs depending on a setting on the personal computer side or the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Station No	0 to 64	Set a station number of a CC-Link network.
Operation Mode	None, Redundant	Select an operation mode. Depending on the CPU series or CPU type, the item may not appear.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.

Station in a same or different network

Window

Ex.

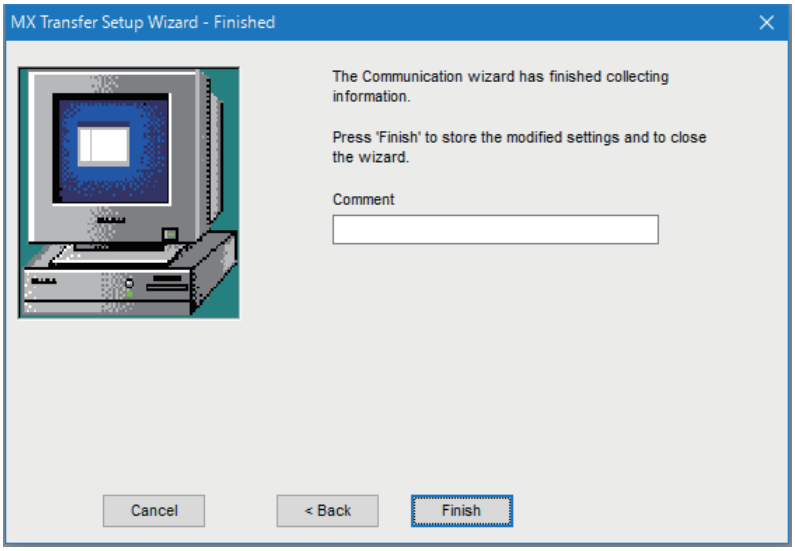


Displayed items

Item	Setting range	Description
CPU series	It differs depending on a setting on the personal computer side or the connection destination device side.	Select a CPU series.
CPU type	Available types are displayed in the pull-down list.	Select a CPU type.
Network No	1 to 239	Set the network number of a connection destination device.
Station No	1 to 64	Set the station number of a connection destination device.
Operation Mode	None, Redundant	Select an operation mode. Depending on the CPU series or CPU type, the item may not appear.
Multiple CPU	None, No.1, No.2, No.3, No.4	When a multiple CPU system is included in a connection destination device, select a target CPU number.

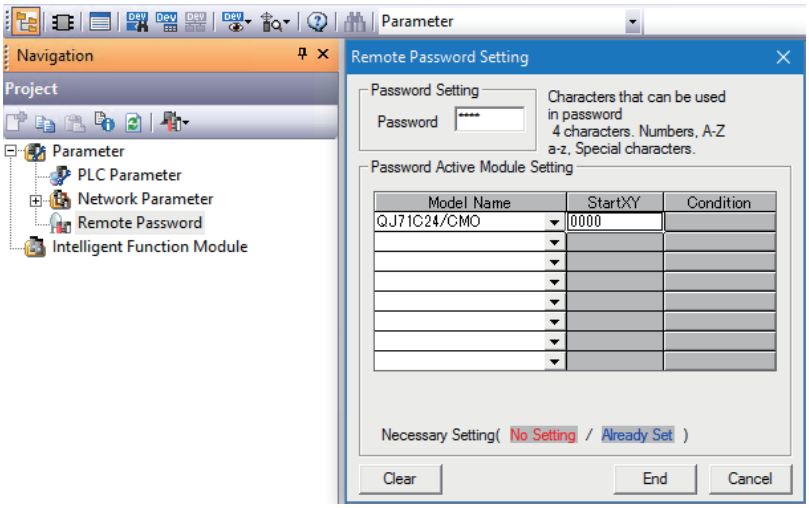
Entering a comment

Enter a comment to describe a set connection.



Remote access password

Set a password for remote access via QJ71E71 or QJ71C24 to a programmable controller using GX Works2 or GX Works3. A password set in a relay module does not affect the connection to a connection destination device.



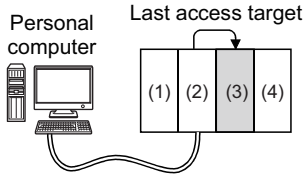
To access the access target device, enter the same password as the one set in the access target device.

Multiple CPU system

In a multiple CPU system, CPU number can only be specified for the target access station.
When accessing a CPU module which is not controlled by a relay module of an access station, use the modules with the function version B or later for the following modules: host station, all the relay stations and relay modules of the station to be accessed, and QCPU.

CPU COM communication

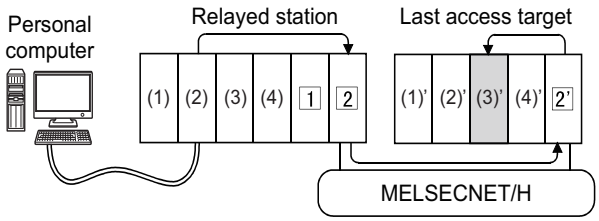
When CPU No.3 (0x3E2) is specified for the access target CPU, the CPU (3) is accessed.



(1):QCPU (Q mode) No. 1
(2):QCPU (Q mode) No. 2
(3):QCPU (Q mode) No. 3
(4):QCPU (Q mode) No. 4

CPU COM communication (via MELSECNET/H)

When CPU No.3 (0x3E2), network number 2, and station number 2 are specified for the access target CPU, the CPU (3)' is accessed.
CPU number cannot be specified to a relay station.
When accessing the module which belongs to network number 1, an error occurs because the CPU (2) manages the network number 2 only.



(1): QCPU (Q mode) No. 1
(2): QCPU (Q mode) No. 2
(3): QCPU (Q mode) No. 3
(4): QCPU (Q mode) No. 4
1 : MELSECNET/H module controlled by(1)
(Network number: 1, station number: 1)
2 : MELSECNET/H module controlled by(2)
(Network number: 2, station number: 1)
2' : MELSECNET/H module controlled by(2)'
(Network number: 2, station number: 2)

Restrictions on C Controller module connection

In the connection destination setting in Configuration Tool, C Controller modules, which do not support MX OPC Server UA, are displayed.

The following shows the connection types supported by MX OPC Server UA.

- PC (USB) - C Controller module
- PC (Ethernet) - C Controller module

Do not set the following connection types since they are not supported by MX OPC Server UA.

- PC (Serial) - C Controller module
- PC (C24) - C Controller module
- PC (CC-Link) - C Controller module
- PC (CC-Link IE Control) - C Controller module
- PC (CC-Link IE Field) - C Controller module

13 TAG SETTING AND MONITORING

This chapter explains the tag setting and monitoring.

13.1 Address Space (Tag) Setting

This section shows the setting of tags accessed from MX OPC UA Server.

Newly adding or editing MX device tags

The following shows the procedures for newly adding and editing an MX device tag.

New

Operating procedure

1. Select an MX device in the tree view.

Select a group when adding a tag to a group.

2. Select [Edit] ⇨ [New Data Tag].

The "Tag Properties" screen appears.

3. Set each item in the "Tag Properties" screen. (☞ Page 138 MX device tag screen setting)

4. Click the [Save] button.

The setting is saved, and an MX device tag appears in the list view.

Edit

Operating procedure

1. Double-click a tag in the list view.

The "Tag Properties" screen appears.

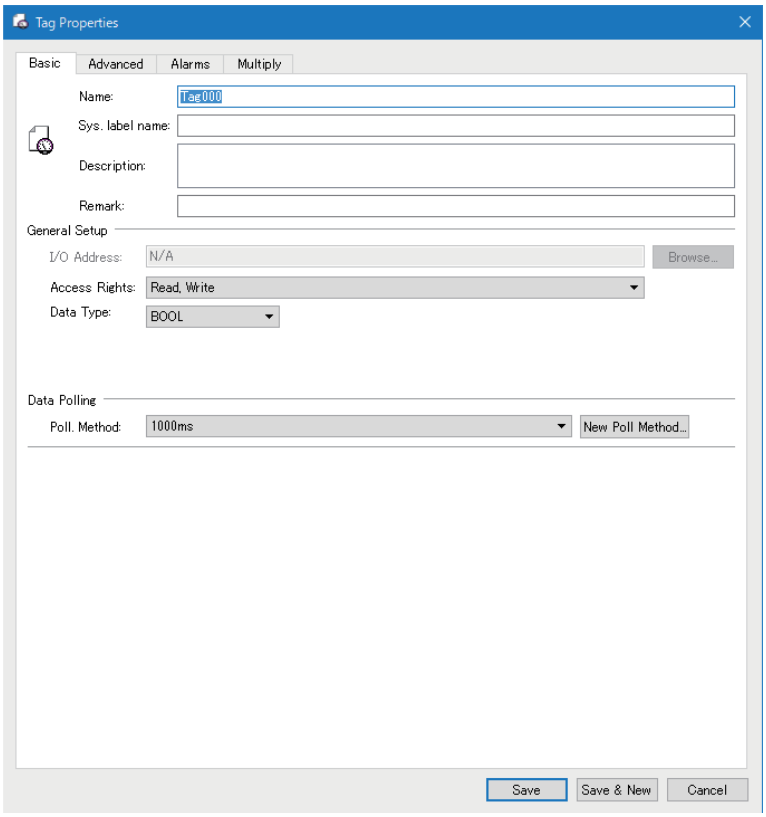
2. Set each item in the "Tag Properties" screen. (☞ Page 138 MX device tag screen setting)

3. Click the [Save] button.

The setting is saved, and an MX device tag appears in the list view.

MX device tag screen setting

■Basic



Displayed items

Item		Description
Name		Set the name of a tag (up to 80 characters for an MX device).
Sys. label name		It appears when using a system label.
Description		Set the description of a tag (up to 128 characters).
Remark		Set the remark of a tag (up to 128 characters).
General Setup	I/O Address	Set the device number of an access target.
	[Browse] button	Click this to show the list of available devices. (☞ Page 139 PLC device list screen)
	Access Rights	Select an access right.*1,*2
	Data Type	Select a data type. When an advanced data type is set in the [Advanced] tab, the data type according to the setting is displayed.
Data Polling	Poll. Method	Select a polling definition.
	[New Poll Method] button	Click this to create new polling definitions. (☞ Page 174 Setting Polling Definitions)
[Save & New] button		Click this to save the setting, and then add a new MX device tag. • A sequential number is added to the name of an MX device tag to be added next. (Tag→Tag0→Tag1)*3 • When the last character of an MX device tag name is a number, it is incremented. (Tag000→Tag001→Tag002)*3 • The number displayed in the field for "I/O Address" is incremented. (M0→M1→M2)

*1 When selecting "Write", tag values cannot be read from an client application.
In the list view, "NA" is displayed in the "Value" column, and "Bad" in the "Status" column.

*2 When using read-only devices (such as SA*safety register), only "Read" can be selected.

*3 When a number to be added already exists, the number is skipped and the next available number is added.

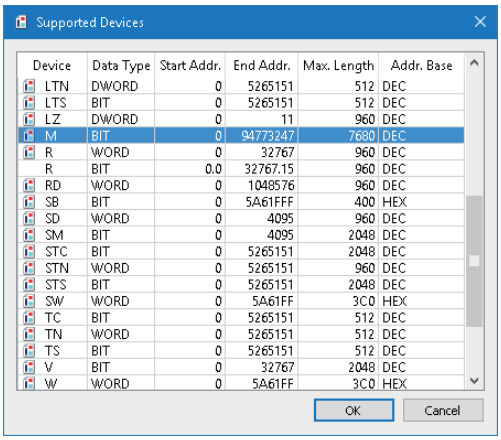
■PLC device list screen

The list of available devices is displayed.

Displayed devices differ depending on an MX device.

Window

"Tag Properties" screen ⇨ [Basic] tab ⇨ [Browse] button



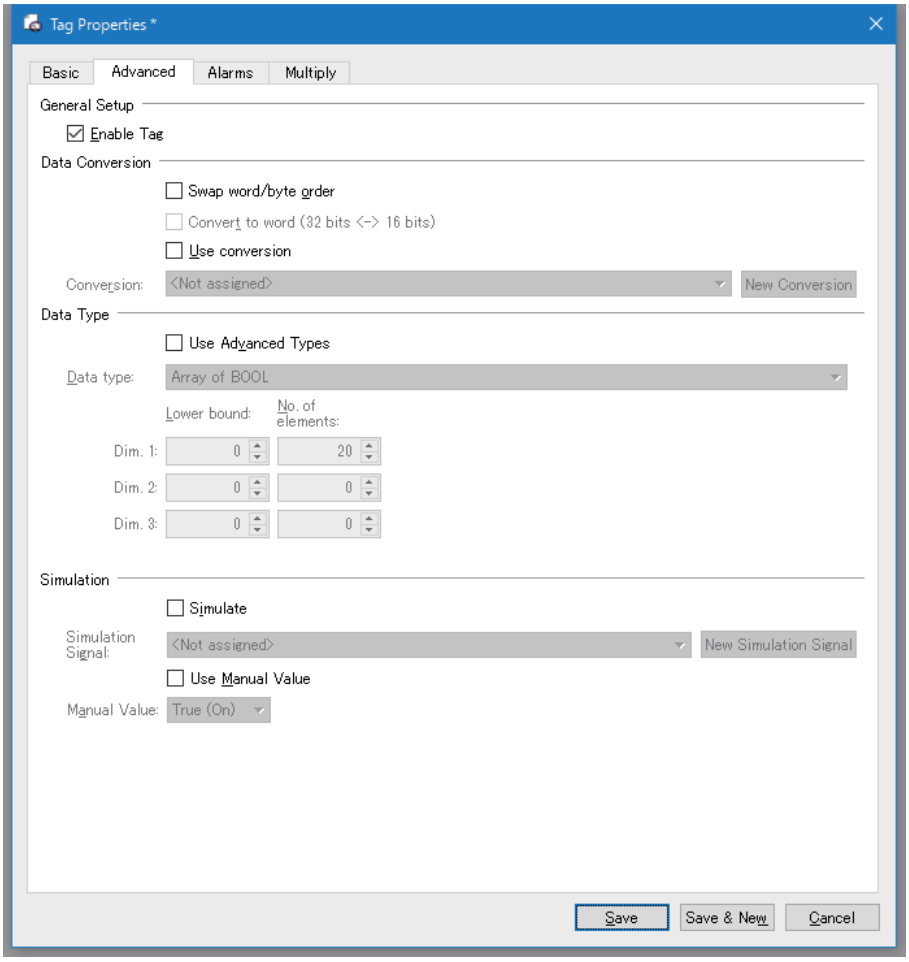
Displayed items

Item	Description
Device	The name of an available device is displayed.
Data Type	The data type of a device is displayed.
Start Addr.	The start address of a device is displayed.
End Addr.	The end address of a device is displayed.
Max. Length	The number of units of data that can be read or written in one time is displayed.
Addr. Base	The notation (such as 'DEC' or 'HEX') of an address is displayed.

Point

Select a device and click the [OK] button to apply it to "I/O Address" in the "Tag Properties" screen.

■Advanced



Displayed items

Item		Description
General Setup	Enable Tag	Select the checkbox to enable the tag.
Data Conversion	Swap word/byte order	Select the checkbox to swap the order of bytes in data. WORD type: 1234h ↔ 3412h DWORD type: 12345678h ↔ 78563412h
	Convert to word	Select the checkbox to convert a tag value to a word or a double word when requesting to read or write from an OPC UA client application. ■INT type tag • Reading: Data is converted to a double word and read. (A sign is considered.) • Writing: Data is converted to a word and written to a tag. ■DINT type tag • Reading: Data is converted to a word and read. • Writing: Data is converted to a double word and written to a tag. (A sign is considered.)
	Use conversion	Select the checkbox to use a conversion definition.
	Conversion	Select a conversion definition.
	[New Conversion] button	Click this to create a new conversion definition. (☞ Page 172 Setting Conversion Definitions)
Data Type	Use Advanced Types	Select the checkbox to use an advanced data type (array, character string).
	Data type	Select an advanced data type.
	Lower bound*1	Set a start element number.
	No. of elements*1,*3	Set the number of elements of an array.
	Data length (chars)*2	Set the number of characters of a character string.

Item		Description
Simulation	Simulate	Select the checkbox to simulate a device.
	Simulation Signal	Select a simulation signal definition.
	[New Simulation Signal] button	Click this to create a new simulation signal definition. (☞ Page 179 Setting Simulation Signal Definitions)
	Use Manual Value	Select the checkbox to use a manual value. When enabled, a constant is fixed to a tag value during simulation.
	Manual Value	Set a value to fix to a tag during simulation.
[Save & New] button		Click this to save the setting, and then add a new MX device tag. • A sequential number is added to the name of an MX device tag to be added next. (Tag→Tag1→Tag2)*4 • When the last character of an MX device tag name is a number, it is incremented. (Tag000→Tag001→Tag002)*4 • The number displayed in the field for "I/O Address" is incremented. (M0→M1→M2)

*1 Does not appear when selecting "STRING" or "WSTRING" for "Data type".

*2 Appears only when selecting "STRING" or "WSTRING" for "Data type".

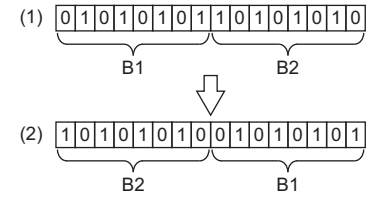
*3 The upper limit of the number of elements of an array is 1024.
[Number of elements in the first dimension] × [Number of elements in the second dimension] × [Number of elements in the third dimension] ≤ 1024

*4 When a number to be added already exists, the number is skipped and the next available number is added.

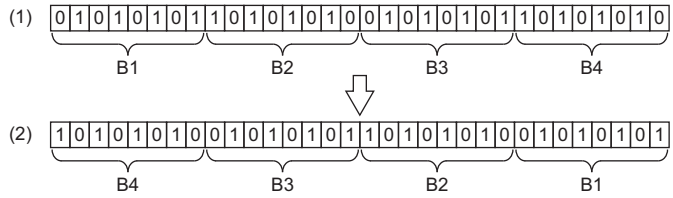
Ex.

The following shows examples for swapping the order of bytes.

<WORD>



<DWORD>



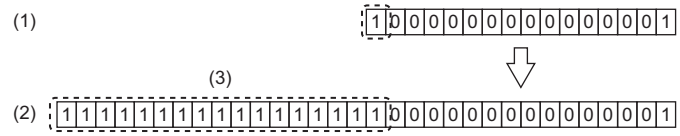
(1) Tag value

(2) Value in an OPC UA client application

Ex.

The following shows examples for converting a value of an INT type tag into a word.

Reading

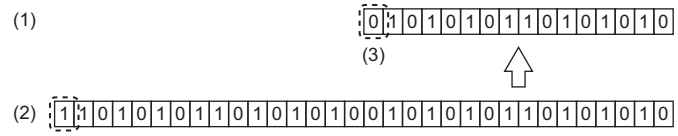


(1) Tag value

(2) Value in an OPC UA client application

(3) A sign is considered.

Writing

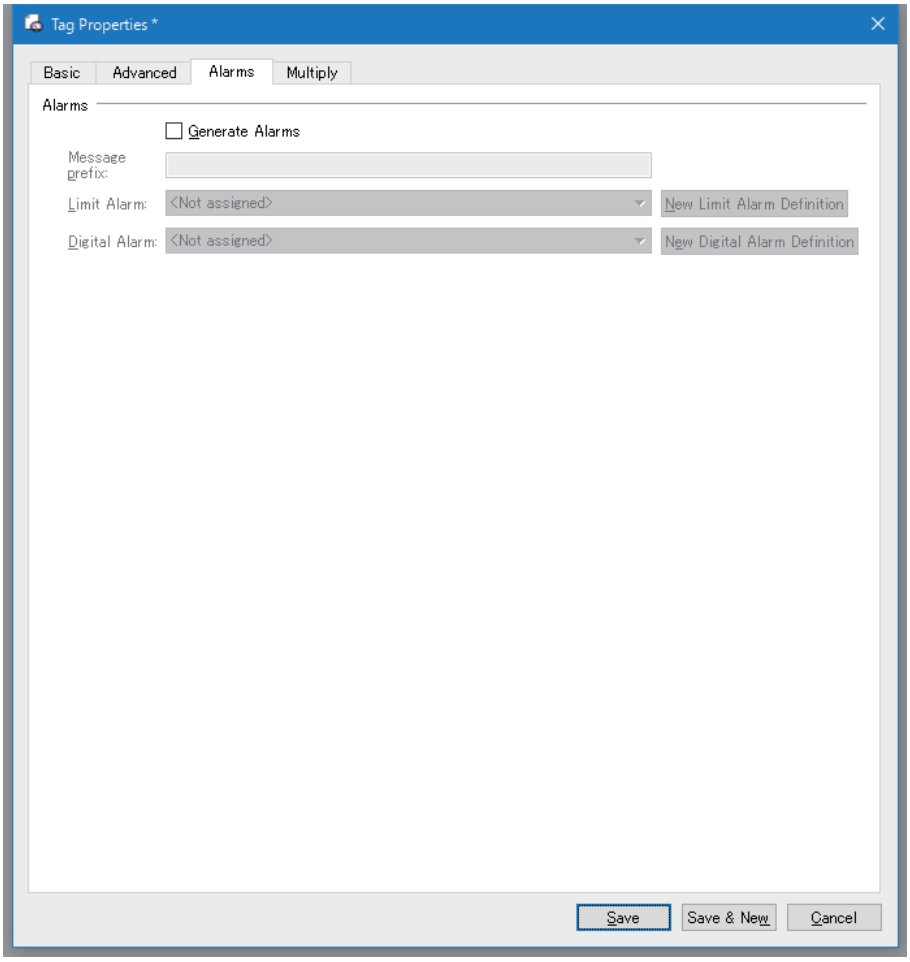


(1) Tag value

(2) Value in an OPC UA client application

(3) A sign is not considered.

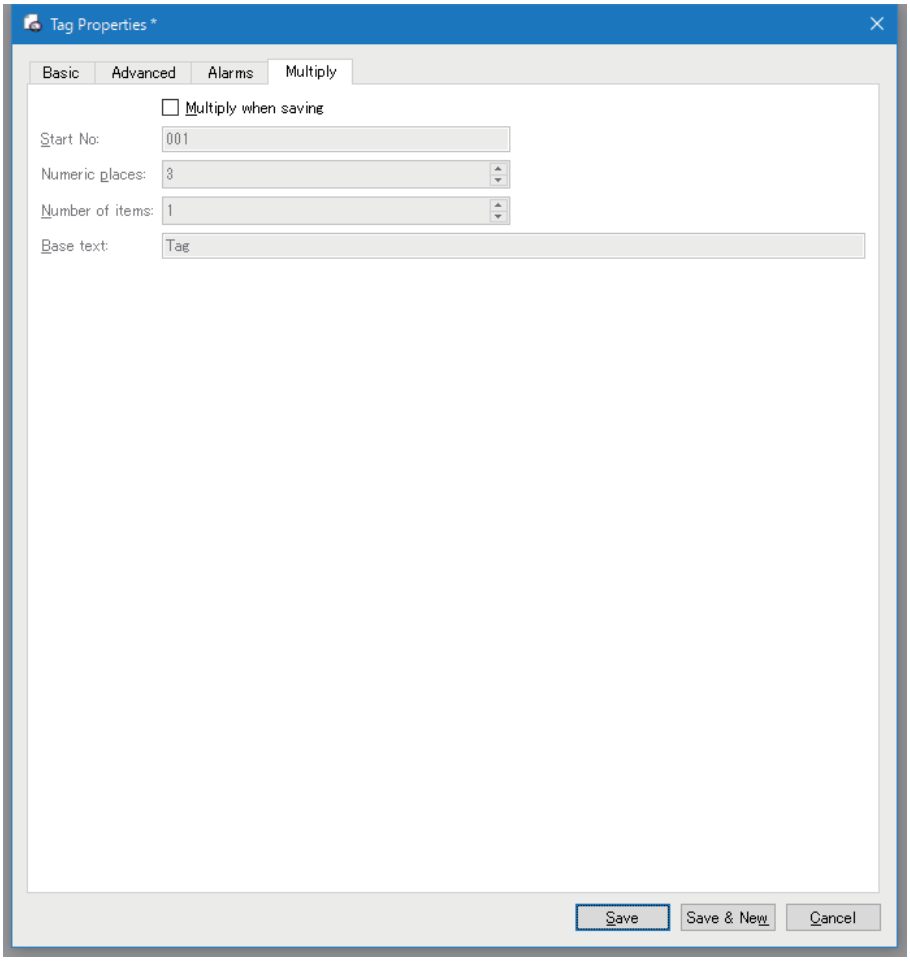
■Alarm



Displayed items

Item	Description
Generate Alarms	Select the checkbox to use a limit alarm definition or a digital alarm definition.
Message prefix	Set a prefix to add to an alarm message. A set word is displayed at the start of an alarm message.
Limit Alarm	Select a limit alarm definition.
[New Limit Alarm Definition] button	Click this to create new limit alarm definitions. (☞ Page 166 Newly adding or editing limit alarm definitions)
Digital Alarm	Select a digital alarm definition.
[New Digital Alarm Definition] button	Click this to create new digital alarm definitions. (☞ Page 169 Newly adding or editing digital alarm definitions)

■Multiply



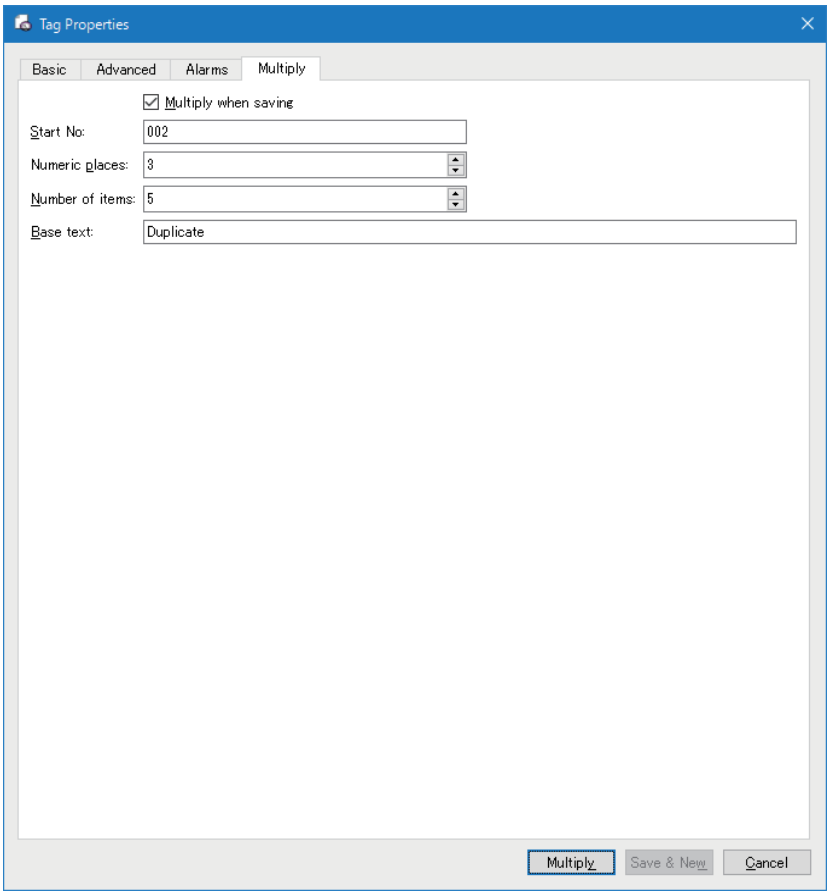
Displayed items

Item	Description
Multiply when saving	Select the checkbox to duplicate tags when saving an MX device tag.
Start No.	Set the start number of a number added to a tag name when duplicating MX device tags.
Numeric places	Set the number of digits in the numeric part of a tag name.
Number of items	Set the number of tags to duplicate.
Base text	Set the name of a tag.
[Save]/[Multiply] button	When selecting "Multiply when saving", the [Save] button is changed to the [Multiply] button. Click the [Save] button to save the setting. Click the [Multiply] button to duplicate tags with set contents.
[Save & New] button	Click this to save the setting, and then add a new MX device tag. • A sequential number is added to the name of an MX device tag to be added next. (Tag→Tag1→Tag2)*1 • When the last character of an MX device tag name is a number, it is incremented. (Tag000→Tag001→Tag002)*1 • The number displayed in the field for "I/O Address" is incremented. (M0→M1→M2)

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Ex.

The following shows an example for duplicating a tag.



Duplicate002 to Duplicate006 are duplicated tags.

Name	Enable Tag	Address
Duplicate002	Yes	M1
Duplicate003	Yes	M2
Duplicate004	Yes	M3
Duplicate005	Yes	M4
Duplicate006	Yes	M5
OriginalTag	Yes	M0

Details of address specification

ER: Memory block: address - When a memory block is an address 1 to 256, specify an address of ER linear in decimal in Configuration Tool.
When a memory block is an address 1 to 256, specify an address of ER linear in decimal in Configuration Tool.
Specify an address for a ZR register in decimal.

Address range

The range of available addresses differs depending on an MX device used.
For details on addresses, refer to the user's manual of each MX device.
The address range of devices supported by Configuration Tool can be checked in the "Supported Devices" screen. (☞ Page 139 PLC device list screen)

Start address specification

Specify the start address of a selected data block.

Available data block register

B, CC, CN, CS, D, ER, F, FT, GV:, L, LCC, LCN, LCS, LTC, LTN, LTS, LSTC, LSTN, LSTS, M, R, SA\B, SA\CC, SA\CN, SA\CS, SA\D, SA\M, SA\SD, SA\SM, SA\STC, SA\STN, SA\STS, SA\TC, SA\TN, SA\TS, SA\W, SA\X, SA\Y, SB, SD, SM, SW, STC, STN, STS, TC, TN, TS, U3En\G, W, WR, WW, X, Y, Z, ZR, #

End address specification

Specify the end address of a selected data block.

Newly adding or editing Modbus device tags

The following shows the procedures for newly adding and editing a Modbus device tag.

New

Operating procedure

1. Select a Modbus device in the tree view.
2. Select [Edit] ⇨ [New Data Tag].

The "Data item properties" screen appears.

3. Set each item in the "Data item properties" screen. (☞ Page 147 Modbus device tag screen setting)
4. Click the [Save] button.

The setting is saved, and a Modbus device tag appears in the list view.

Edit

Operating procedure

1. Double-click a tag in the list view.

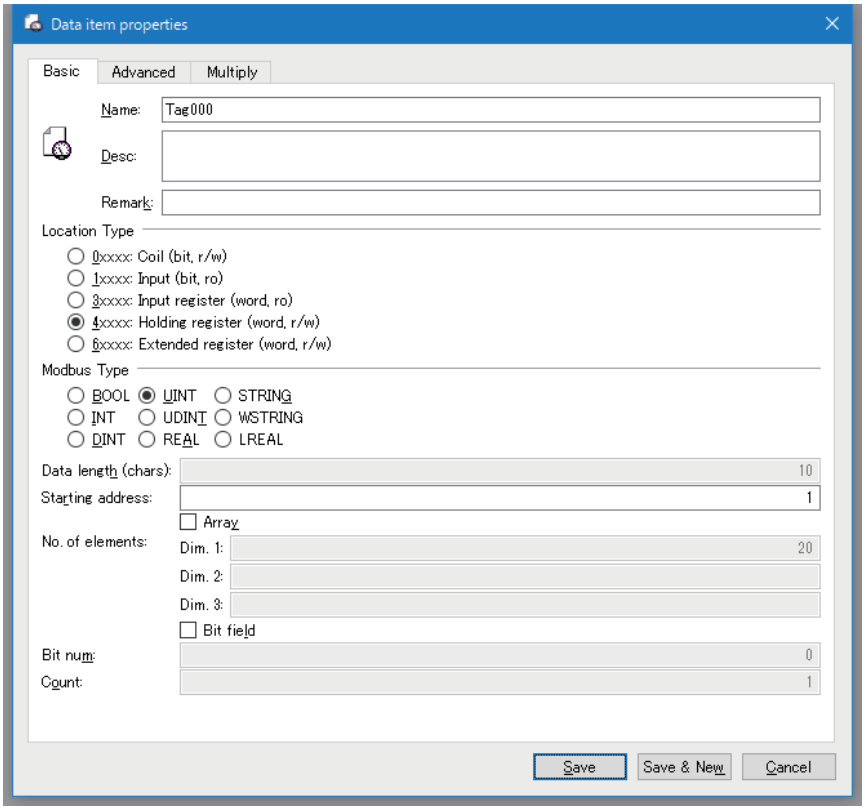
The "Data item properties" screen appears.

2. Set each item in the "Data item properties" screen. (☞ Page 147 Modbus device tag screen setting)
3. Click the [Save] button.

The setting is saved, and a Modbus device tag appears in the list view.

Modbus device tag screen setting

■Basic

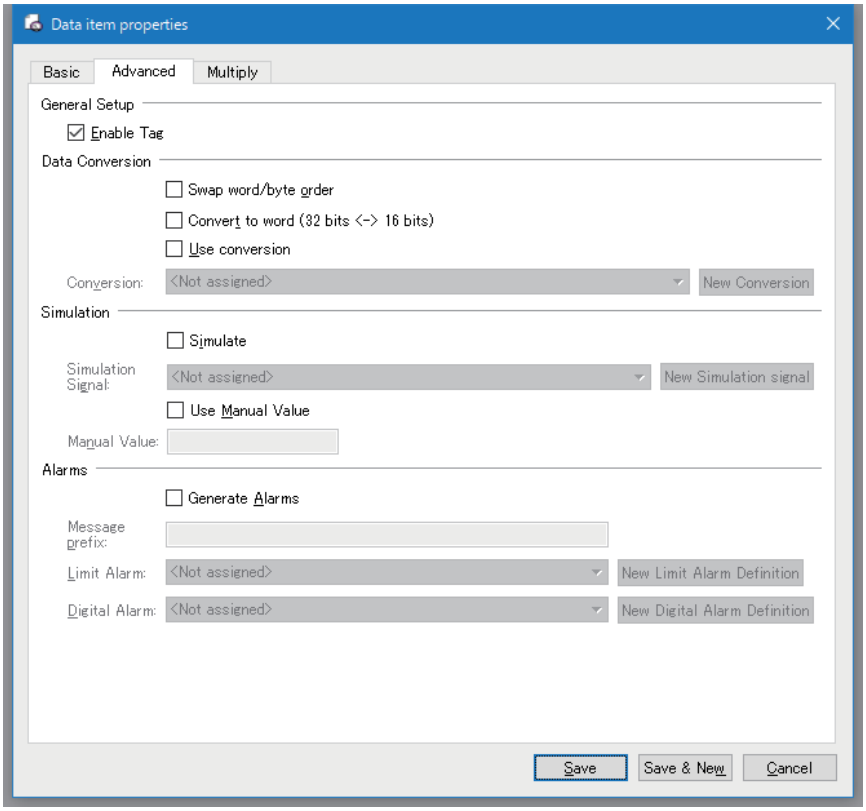


Displayed items

Item	Description
Name	Set the name of a Modbus device tag (up to 80 characters).
Desc	Set the description of a tag (up to 128 characters).
Remark	Set the remark of a tag (up to 128 characters).
Location Type	Select the type of a register of a device.
Modbus Type	Select a Modbus type. Available Modbus types differ depending on types selected for "Location Type".
Data length (chars)	Set the number of characters of a character string. It can be set only when selecting "STRING" or "WSTRING" for "Modbus Type".
Starting address	Set the start address of an access target.
Array	Select the checkbox to use data as an array. It cannot be set when selecting "BOOL", "STRING", or "WSTRING" for "Modbus Type". Up to a three-dimensional array can be set.
No. of elements	Set the number of elements of an array. It can be set only when selecting "Array". No need to set if not using a two-dimensional or three-dimensional array.
Bit field	Select the checkbox to read bit data from a register and use it as Boolean or an integer value. It can be set only when selecting "Input register" or "Holding register" for "Location Type", and "BOOL", "UDINT", or "UINT Modbus" for "Modbus Type".
Bit num	Set the start position of bit data. It can be set only when selecting "Bit field".
Count	Set the length of the bit field. It can be set only when selecting "Bit field".
[Save & New] button	Click this to save the setting, and then add a new Modbus device tag. • A sequential number is added to the name of a Modbus device tag to be added next. (Tag→Tag0→Tag1)*1 • When the last character of a Modbus device tag name is a number, it is incremented. (Tag000→Tag001→Tag002)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

■Advanced

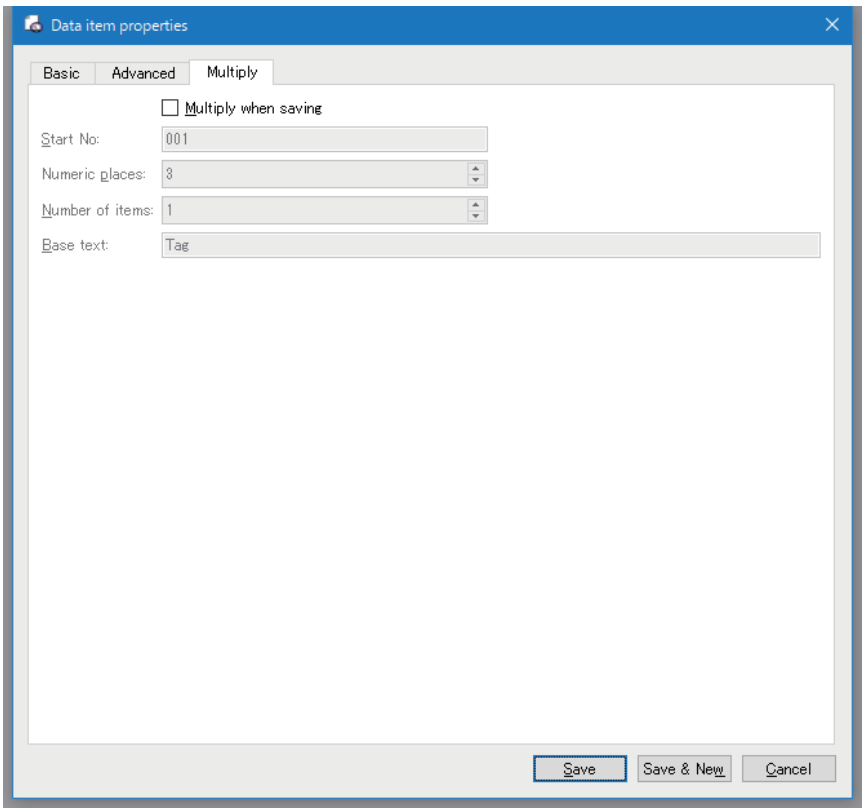


Displayed items

Item		Description
General Setup	Enable Tag	Select the checkbox to enable the tag.
Data Conversion	Swap word/byte order	Select the checkbox to swap the order of bytes in data. WORD type: 1234h ↔ 3412h DWORD type: 12345678h ↔ 78563412h
	Convert to word	Select the checkbox to convert a tag value to a word or a double word when requesting to read or write from an OPC UA client application. ■INT type tag • Reading: Data is converted to a double word and read. (A sign is considered.) • Writing: Data is converted to a word and written to a tag. ■DINT type tag • Reading: Data is converted to a word and read. • Writing: Data is converted to a double word and written to a tag. (A sign is considered.)
	Use conversion	Select the checkbox to use a conversion definition.
	Conversion	Select a conversion definition.
	[New Conversion] button	Click this to create a new conversion definition. (☞ Page 172 Setting Conversion Definitions)
Simulation	Simulate	Select the checkbox to simulate a device.
	Simulation Signal	Select a simulation signal definition.
	[New Simulation signal] button	Click this to create a new simulation signal definition. (☞ Page 179 Setting Simulation Signal Definitions)
	Use Manual Value	Select the checkbox to use a manual value. When enabled, a constant is fixed to a tag value during simulation.
	Manual Value	Set a value to fix to a tag during simulation.

Item		Description
Alarms	Generate Alarms	Select the checkbox to use a limit alarm definition or a digital alarm definition. It cannot be set when selecting "STRING" or "WSTRING" for "Modbus Type" in the [Basic] tab.
	Message prefix	Set a message prefix to add to an alarm. A set word is displayed at the start of an alarm message.
	Limit Alarm	Select a limit alarm definition. It cannot be set when selecting "BOOL" for "Modbus Type" in the [Basic] tab.
	[New Limit Alarm Definition] button	Click this to create new limit alarm definitions. (☞ Page 166 Newly adding or editing limit alarm definitions)
	Digital Alarm	Select a digital alarm definition. It can be set only when selecting "BOOL" for "Modbus Type" in the [Basic] tab.
	[New Digital Alarm Definition] button	Click this to create new digital alarm definitions. (☞ Page 169 Newly adding or editing digital alarm definitions)

■Multiply



Displayed items

Item	Description
Multiply when saving	Select this to duplicate tags when saving a Modbus device tag.
Start No.	Set the start number of a number added to a tag name when duplicating Modbus device tags.
Numeric places	Set the number of digits in the numeric part of a tag name.
Number of items	Set the number of tags to duplicate.
Base text	Set the name of a tag.
[Save]/[Multiply] button	When selecting "Multiply when saving", the [Save] button is changed to the [Multiply] button. Click the [Save] button to save the setting. Click the [Multiply] button to duplicate tags with set contents.
[Save & New] button	Click this to save the setting, and then add a new Modbus device tag. • A sequential number is added to the name of a Modbus device tag to be added next. (Tag→Tag1→Tag2)*1 • When the last character of a Modbus device tag name is a number, it is incremented. (Tag000→Tag001→Tag002)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Deleting tags

The following shows the procedure for deleting a tag.

Operating procedure

1. Select a tag to delete in the list view. (Multiple selections allowed.)
2. Select [Edit] ⇨ [Delete].

13.2 Group

Multiple tags can be managed as a group.
A group can be created as a member of a group.

Newly adding or editing groups

The following shows the procedures for newly adding and editing a group.
After adding a group, add a new tag in the group. (☞ Page 137 Newly adding or editing MX device tags)

New

Operating procedure

1. Select an MX device or a Modbus device in the tree view.
2. Select [Edit] ⇨ [New Group].

The "Group Properties" screen appears.

3. Set each item in the "Group Properties" screen. (☞ Page 151 Group screen setting)
4. Click the [Save] button.

The setting is saved, and a group appears in the tree view or the list view.

Edit

Operating procedure

1. Double-click a group name in the tree view.

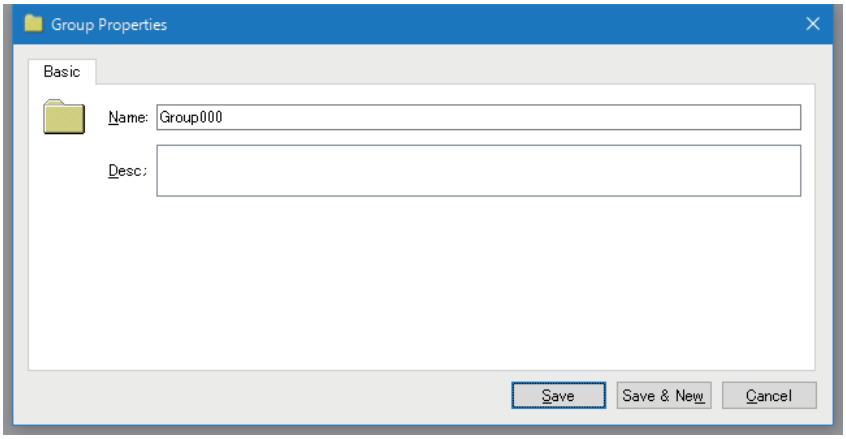
The "Group Properties" screen appears.

2. Set each item in the "Group Properties" screen. (☞ Page 151 Group screen setting)
3. Click the [Save] button.

The setting is saved, and a group appears in the tree view or the list view.

Group screen setting

■Basic



Item	Description
Name	Set the name of a group (up to 50 characters).
Desc	Set the description of a group (up to 128 characters).
[Save & New] button	Click this to save the setting, and then add a new group. • A sequential number is added to the name of a group to be added next. (Group→Group0→Group1)*1 • When the last character of a group name is a number, it is incremented. (Group000→Group001→Group002)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Deleting groups

The following shows the procedure for deleting a group.

Operating procedure

1. Select a group to delete in the tree view (multiple selections not allowed) or in the list view (multiple selections allowed).
2. Select [Edit] ⇨ [Delete].

13.3 Structure Labels

This section shows structure labels created by using structure definitions including simple types (such as word or bit).
For details on the structure definition, refer to the following:
☞ Page 176 Setting Structure Definitions

Newly adding or editing structure labels

The following shows the procedures for newly adding and editing a structure label.

New

Operating procedure

1. Set a structure definition. (☞ Page 176 Setting Structure Definitions)
2. Select an MX device in the tree view.
3. Select [Edit] ⇨ [New Structure].

The "Add structure label" screen appears.

4. Set each item in the "Add structure label" screen. (☞ Page 154 Structure label definition screen setting)
5. Click the [Finish] button.

The setting is saved, and a structure label appears in the tree view and the list view.

Edit

Operating procedure

1. Double-click a structure label in the tree view.

The "Structure Type Properties" screen appears.

2. Set each item in the "Structure Type Properties" screen. (☞ Page 154 Structure label definition screen setting)
3. Click the [Finish] button.

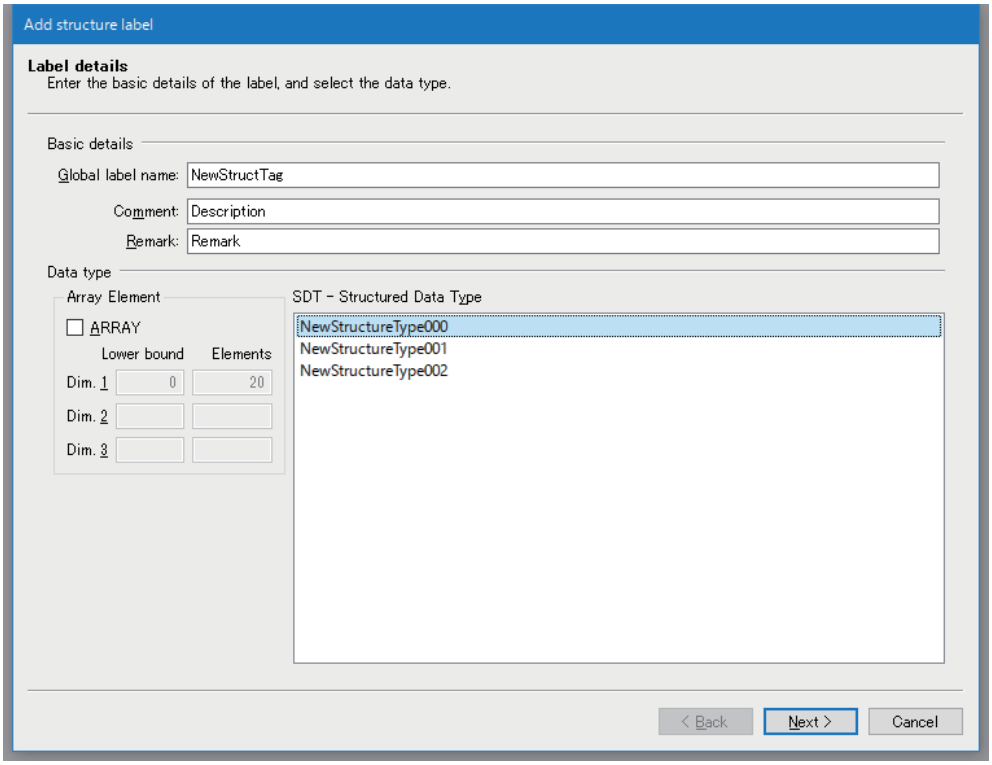
The setting is saved, and a structure label appears in the tree view and the list view.

Structure label definition screen setting

Label

Enter the basic details of a label, and select a data type.

Window



Displayed items

Item		Description
Basic details	Global label name	Set the name of a structure label.
	Comment	Set a comment.
	Remark	Set a remark if necessary.
Array Element	ARRAY	Select the checkbox to use a structure as an array. Up to a three-dimensional array can be set.
	Lower bound	Set the first element number of each dimension of an array.
	Elements	Set the number of elements of each dimension of an array. Do not enter any value for an unused dimension.
SDT - Structured Data Type		Select a structure definition to use for a new structure label. (☞ Page 176 Setting Structure Definitions)

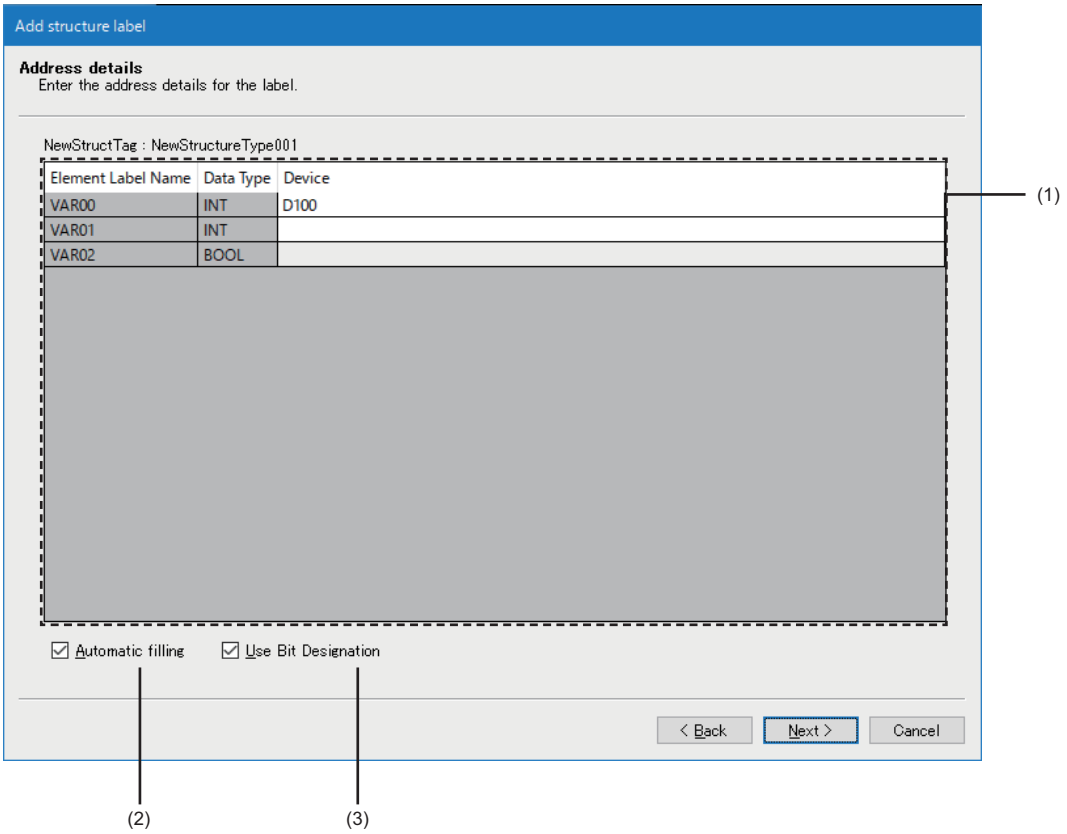
Address

Set an address of a structure label.

☞ Page 155 Non-array structure label
☞ Page 156 Structure array label

■Non-array structure label

Window



Displayed items

Item	Description
(1) Address area	The address of each element of a structure is displayed. Double-click a cell in the "Device" column to enter or edit the address. For a structure array, only the start address is displayed. Subsequent addresses are assigned automatically by selecting the checkbox of "Automatic filling".
(2) Automatic filling	Select the checkbox to assign available addresses automatically.
(3) Use Bit Designation	Select the checkbox to specify a bit of a word device. In the above example of a structure, the address 'D102.0' can be assigned to BOOL variable VAR02. If unselecting the checkbox, a bit of a word device cannot be specified. In this case, enter an address manually.

Precautions

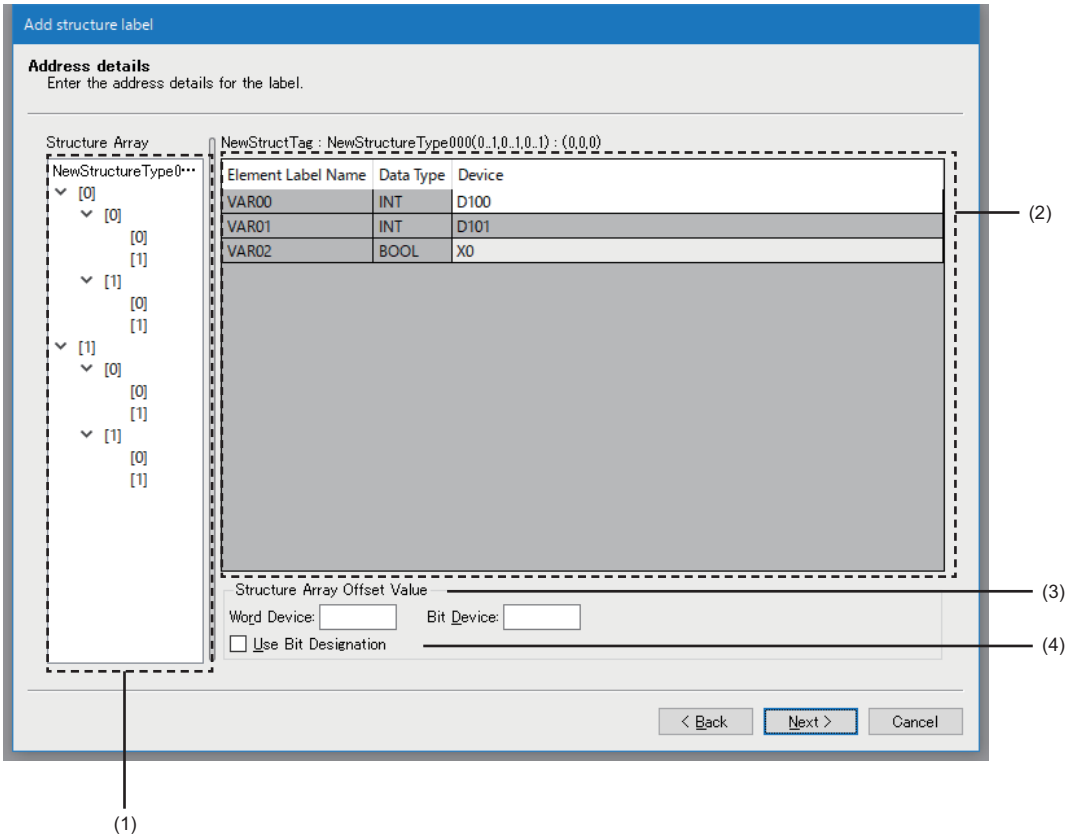
Not all connected devices support bit specification of a word device.
If specifying a bit to a connected device that does not support it, a warning appears.
In this case, unselect the checkbox of "Use Bit Designation".

■Structure array label

Only the start address is displayed.

Subsequent addresses are assigned automatically by selecting the checkbox of "Automatic filling".

Window



Displayed items

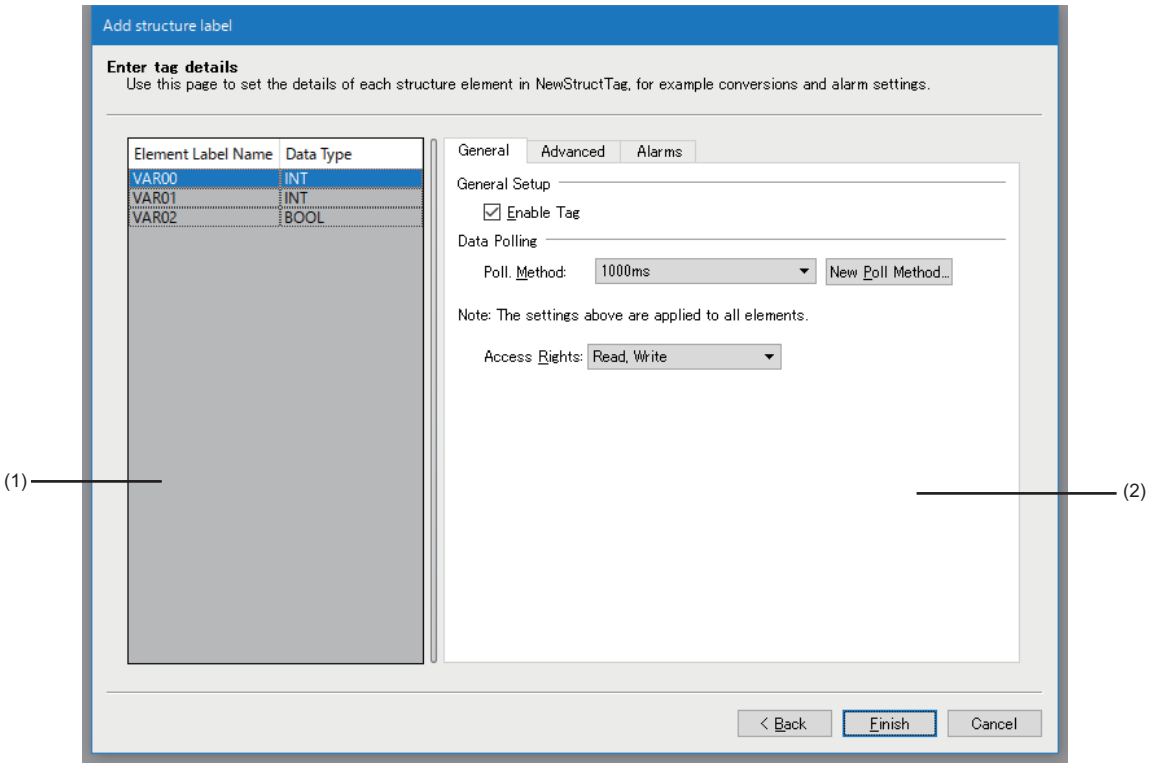
Item	Description
(1) Element selection	Elements of a structure array are displayed in a tree.
(2) Address area	Set an address to assign. An address can only be set to the first element of an array. An address for an offset value from an address set to the first is automatically assigned to an address following the start address.
(3) Structure Array Offset Value	Set an offset value of a structure array. • Word device: Set an offset value of an address that is automatically set in an element of an array. (When VAR00 is in the first array index D100 and an offset of a word device is set to 10, the next index VAR00 starts with D110.) • Bit device: Set a difference of an address between array elements as an offset value for the start address. An address automatically entered can be set at a constant interval between array elements of a structure array by setting an offset value.
(4) Use Bit Designation	Select the checkbox to specify a bit of a word device. If unselecting the checkbox, a bit of a word device cannot be specified. In this case, enter an address manually.

Precautions

- Not all connected devices support bit specification of a word device. If specifying a bit to a connected device that does not support it, a warning appears. In this case, unselect the checkbox of "Use Bit Designation".

Tag

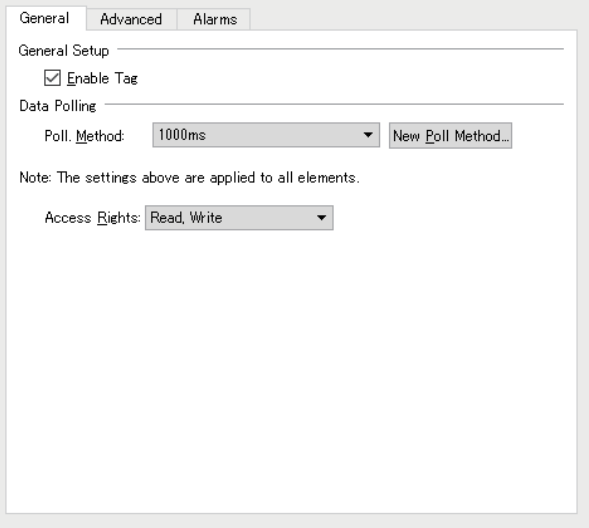
Set details for a member of a structure.



Item	Description
(1) Element selection	Members of a structure are displayed in a tree. The setting contents of an element selected in the tree are displayed on the right side of the screen.
(2) Detailed setting	Items that can be set to a selected element are displayed. It consists of three tabs: [General], [Advanced], and [Alarms].

■General setting

Window



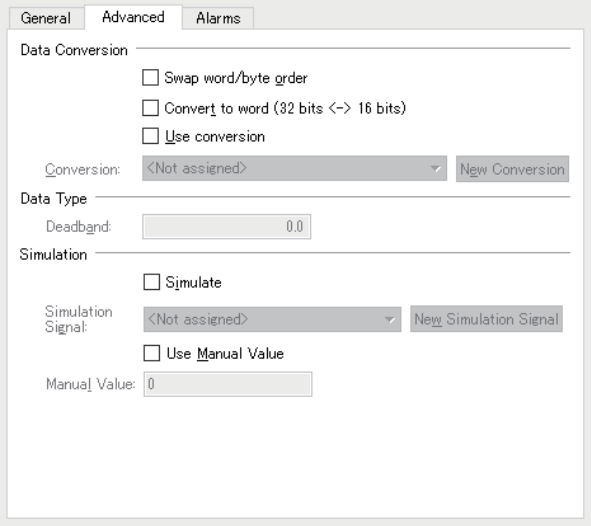
Displayed items

Item		Description
General Setup	Enable Tag	Select the checkbox to enable the structure tag. (Applies to all elements of the structure.)
Data Polling*1	Poll. Method	Set a polling cycle. A setting is shared between all elements of a structure.
	Access Rights	Select an access right.

*1 Appears only for MX devices.

■Advanced

Window

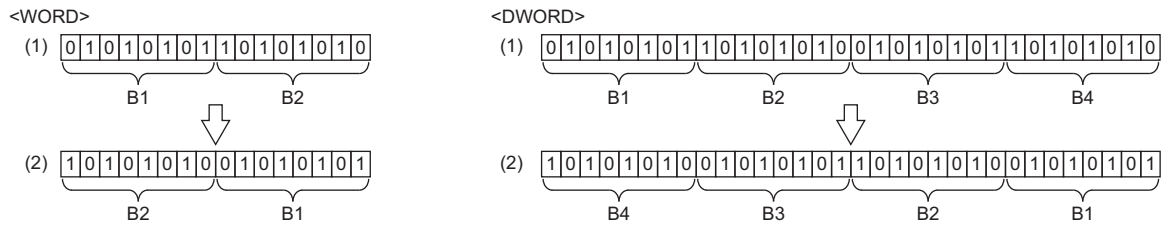


Displayed items

Item		Description
Data Conversion	Swap word/byte order	Select the checkbox to swap the order of bytes in data. WORD: Convert 1234h ↔ 3412h DWORD: Convert 12345678h ↔ 78563412h
	Convert to word	Select the checkbox to convert a tag value to a word or a double word when requesting to read or write from an OPC UA client application. ■INT type tag • Reading: Data is converted to a double word and read. (A sign is considered.) • Writing: Data is converted to a word and written to a tag. ■DINT type tag • Reading: Data is converted to a word and read. • Writing: Data is converted to a double word and written. (A sign is considered.)
	Use conversion	Select the checkbox to use a conversion definition.
	Conversion	Select a conversion definition.
	[New Conversion] button	Click this to create a new conversion definition. (☞ Page 172 Setting Conversion Definitions)
Data Type	Deadband	Set a value of a deadband. When a data value does not fluctuate much, the current value of data is not changed. It is available only for members of a structure of REAL or LREAL type.
Simulation	Simulate	Select the checkbox to simulate a device.
	Simulation Signal	Select a simulation signal definition.
	[New Simulation Signal] button	Click this to create a new simulation signal definition. (☞ Page 179 Setting Simulation Signal Definitions)
	Use Manual Value	Select the checkbox to use a manual value. When enabled, a constant is fixed to a tag value during simulation.
	Manual Value	Set a value to fix to a tag during simulation.

Ex.

The following shows examples for swapping the order of bytes.



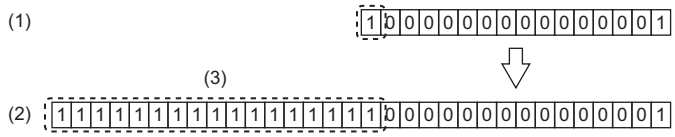
(1) Tag value

(2) Value in an OPC UA client application

Ex.

The following shows examples for converting a value of an INT type tag into a word.

Reading

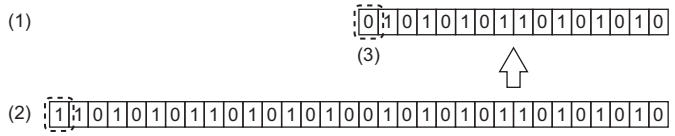


(1) Tag value

(2) Value in an OPC UA client application

(3) A sign is considered.

Writing



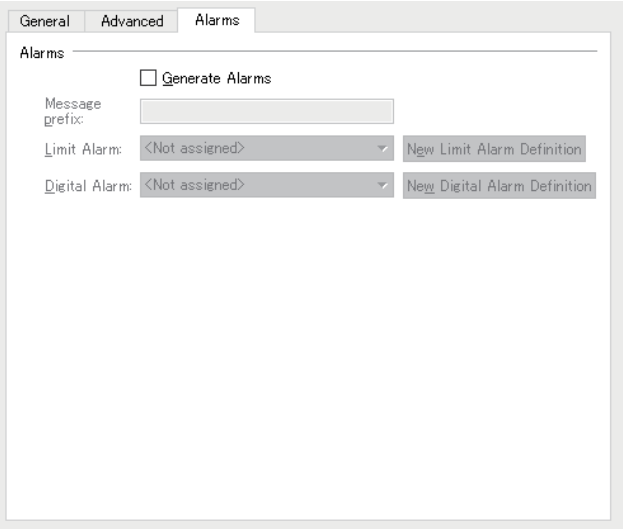
(1) Tag value

(2) Value in an OPC UA client application

(3) A sign is not considered.

■Alarms

Window



Displayed items

Item	Description
Generate Alarms	Select the checkbox to use a limit alarm definition or a digital alarm definition.
Message prefix	Set a message prefix to add to an alarm. A set word is displayed at the start of an alarm message.
Limit Alarm	Select a limit alarm definition.
[New Limit Alarm Definition] button	Click this to create new limit alarm definitions. (☞ Page 166 Newly adding or editing limit alarm definitions)
Digital Alarm	Select a digital alarm definition.
[New Digital Alarm Definition] button	Click this to create new digital alarm definitions. (☞ Page 169 Newly adding or editing digital alarm definitions)

Deleting structure labels

The following shows the procedure for deleting a structure label.

Operating procedure

1. Select a structure label to delete in the tree view. (Multiple selections not allowed.)
   Or, select a structure label to delete in the list view. (Multiple selections allowed.)
2. Select [Edit] ⇨ [Delete].

13.4 Monitoring

This section explains the method for monitoring a set tag.

Set the following before monitoring.

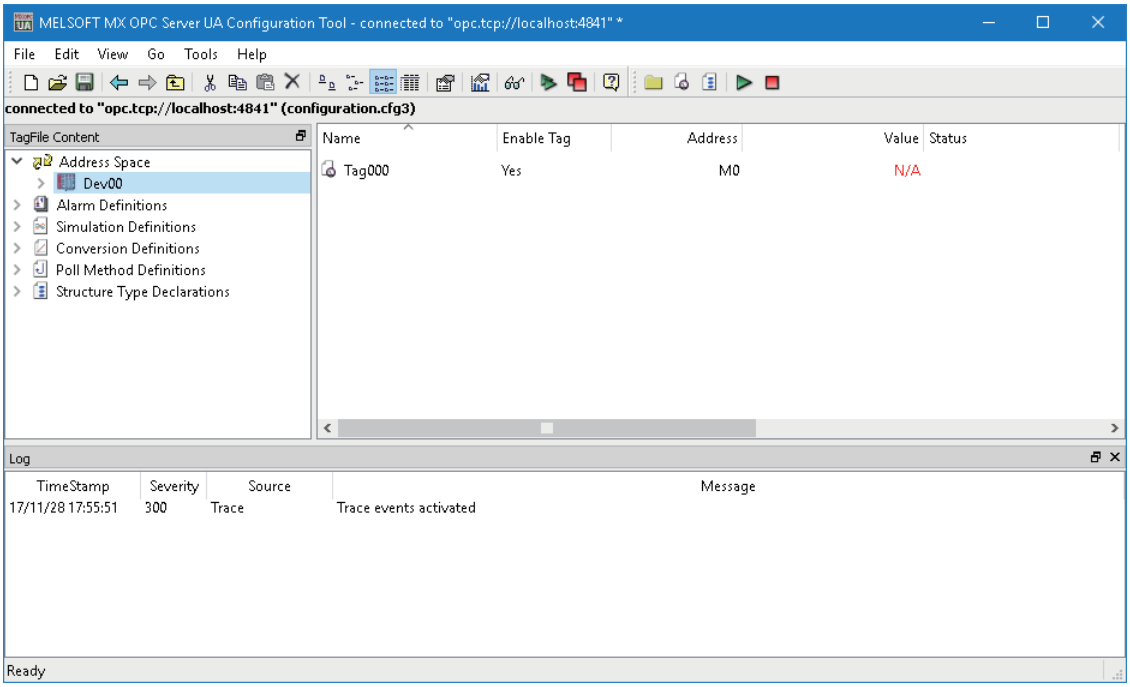
☞ Page 33 Communication with Devices and Tags

☞ Page 35 Starting or Stopping Polling

Operating procedure

Select [View] ⇨ [Monitor view], or click the icon (🔭) on the toolbar.

Monitoring a tag starts in the list view.



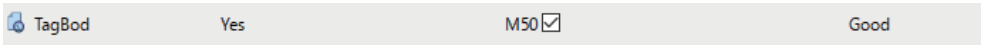
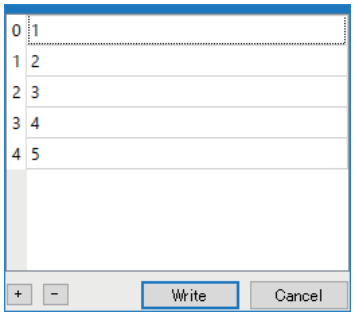
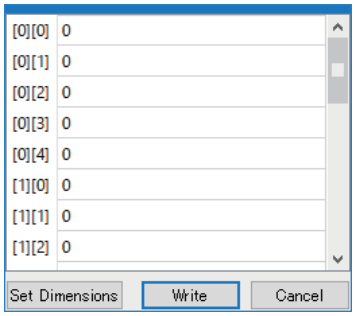
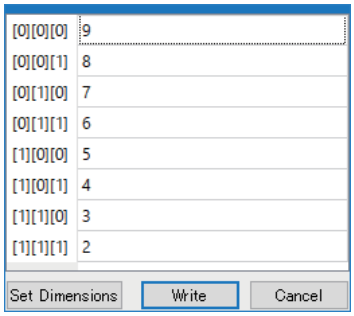
Precautions

A value that fails to be read is displayed in red.

Name	Enable Tag	Address	Value	Status
TagArrD20	Yes	D20	Double click to display value	Good
TagBlank	Yes	R0	0	BadConfigurationError
TagBod	Yes	M50	False	Good
TagD100	Yes	D100	0	Good
TagD300	Yes	D300	""	Good
TagM150	Yes	M150	{False,False,False}	Good
TagM50	Yes	M50	False	Good

13.5 Writing Values to Tags

When a tag is being monitored in the list view, a value can be written to each displayed tag.
A written value is applied to an address of a connection destination.

Data type	Entering method
Bool/Bit	"True" or "False" is displayed. Double-click a value to display the checkbox and edit a value. 
Character string	A value is displayed with enclosed in quotes (for example, "STRINGVALUE"). To change a value, enter it without quotes.
Array (one-dimension)	A value is displayed with enclosed in curly brackets (for example, {1, 2, 3}). A value can be edited by double-clicking it. 
Array (two or more dimension)	"Double click to display value" is displayed for a two or more dimensional array. A value can be edited by double-clicking it.   To change a dimension of an array, click the [Set Dimensions] button. Enter a dimension of an array by using a comma as a delimiter in the displayed "Set Matrix Dimensions" screen.

14 DISPLAY OF STATISTICS INFORMATION

This chapter explains the display of statistics information of data in MX OPC UA Server.

14.1 Display Method

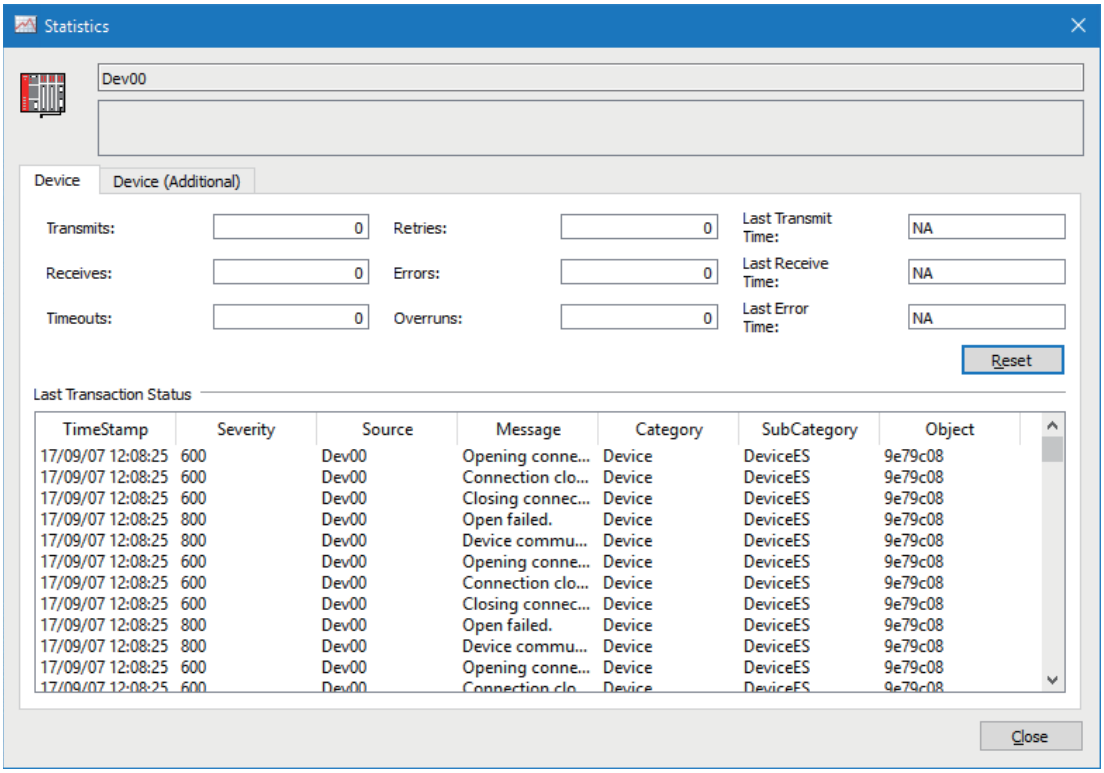
Operating procedure

1. Select a device to display the statistics information in the tree view.
2. Select [View] ⇨ [Statistics], or click the icon ( ) on the toolbar.

Window

■Transaction

Statistics information on transactions of the device is displayed.



Displayed items

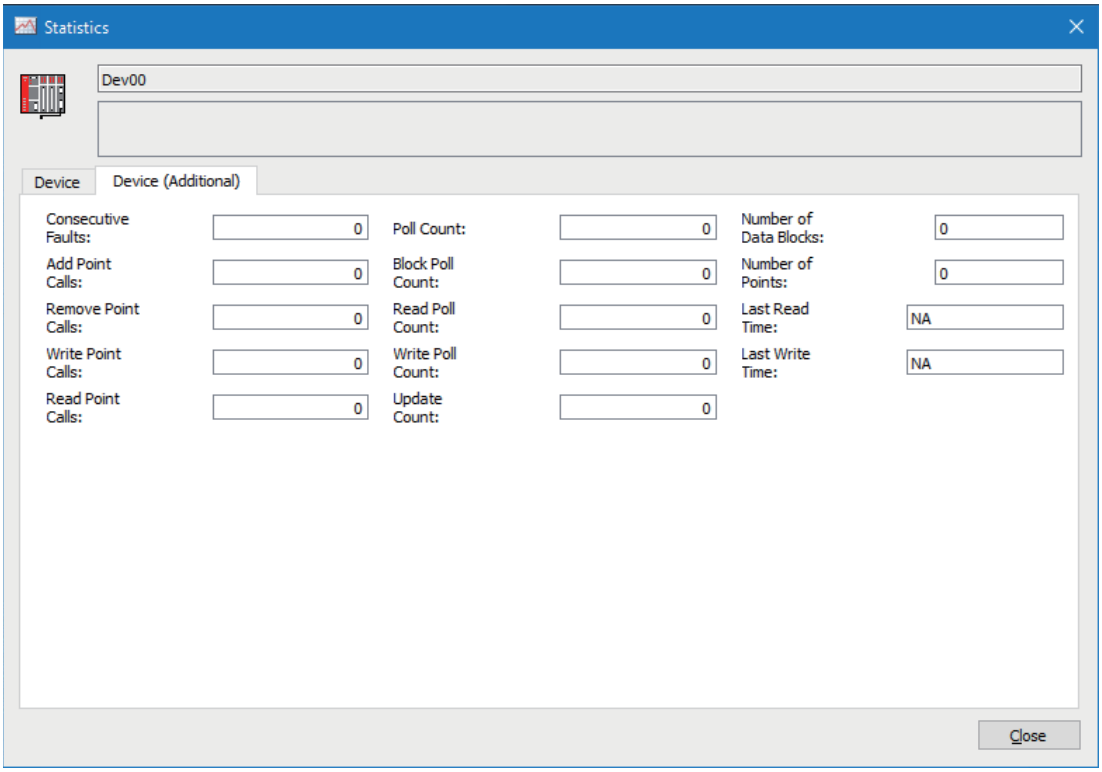
Item	Description
Transmits	The number of messages sent to a device by Server is displayed.
Receives	The number of messages received from a device by Server is displayed. The number of invalid messages is included.
Timeouts	The number of times there was no response from the device within a set time is displayed.
Retries	The number of retries for establishing a communication line is displayed.
Errors	The total number of protocol errors received in the device is displayed. A protocol error occurs when: • A message with a sum check error caused by interference of the device or a connection failure is received. • Data is acquired for a register that does not exist in the device. For details on the cause of the error, check the latest error for all data blocks configured for the driver.
Overruns	The total number of timed-out sessions for polling processing in Server is displayed. It is incremented when a tag cannot be polled within a set polling interval because a response time from a communication device is increased due to a large volume of traffic.
Last Transmit Time	The last time Server sent data to the device is displayed.
Last Receive Time	The last time Server successfully received data from the device is displayed.

Item	Description
Last Error Time	The last time an error occurred on the device, including connection errors is displayed.
[Reset] button	Click this to reset all displayed data statistics. Previous transactions are also cleared. Update frequency of items displayed in the "Statistics" screen can be set in the "Options" screen. (☞ Page 46 General settings)

■Details

Detailed information of transactions is displayed.

Select the [Device (Additional)] tab in the "Statistics" screen.



Displayed items

Item	Description
Consecutive Faults	The number of failed communications with a device is displayed.
Add Point Calls	The total number of tags added or deleted during the communication with a device is displayed. If MX OPC UA Server is not in communication with a device, no value will be displayed.
Remove Point Calls	
Write Point Calls	The number of times for writing tag data during the communication with a device is displayed.
Read Point Calls	The number of times for reading tag data during the communication with a device is displayed.
Poll Count	The number of times of polling is displayed.
Block Poll Count	The number of times of periodic polling is displayed.
Read Poll Count	The number of times of polling for reading data is displayed.
Write Poll Count	The number of times of polling for writing is displayed.
Update Count	The number of updates is displayed.
Number of Data Blocks	The total number of data blocks this device uses. Data blocks are allocated automatically by a runtime module depending on the values set for the advanced device properties
Number of Points	The total number of tags currently managed by a device is displayed.
Last Read Time	The last time data is read from a device is displayed.
Last Write Time	The last time data is written to a device is displayed.

15 VARIOUS DEFINITIONS (ALARM, CONVERSION, POLLING, STRUCTURE)

Alarm definitions, conversion definitions, polling definitions, and structure definitions can be set in advance.

15.1 Setting Alarm Definitions

The following alarm definitions can be set.

- Limit alarm (high high limit, high limit, low limit, low low limit)
- Digital alarm

Newly adding or editing limit alarm definitions

A limit alarm outputs a warning message when a tag value exceeded the set limit value.
Four levels can be set for a limit alarm: high high limit, high limit, low limit, low low limit.
The following shows the procedures for newly adding and editing a limit alarm definition.

Operating procedure

■New

1. Select "Alarm Definitions" in the tree view.

2. Select [Edit] ⇨ [New Limit Alarm Definition].

The "Limit Alarm Properties" screen appears.

3. Set each item in the "Limit Alarm Properties" screen.(☞ Page 167 Limit alarm definition screen setting)

4. Click the [Save] button.

The setting is saved, and a limit alarm definition appears in the list view.

■Edit

1. Double-click a limit alarm definition in the list view.

The "Limit Alarm Properties" screen appears.

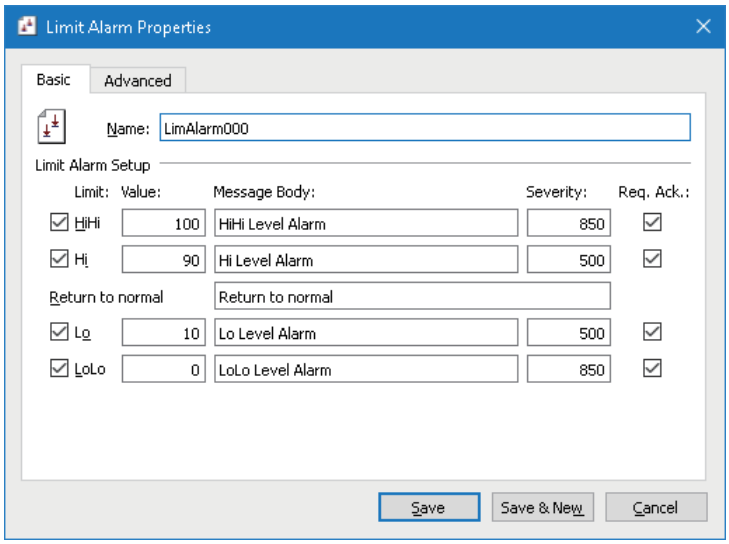
2. Set each item in the "Limit Alarm Properties" screen.(☞ Page 167 Limit alarm definition screen setting)

3. Click the [Save] button.

The setting is saved, and a limit alarm definition appears in the list view.

Limit alarm definition screen setting

■Basic



Displayed items

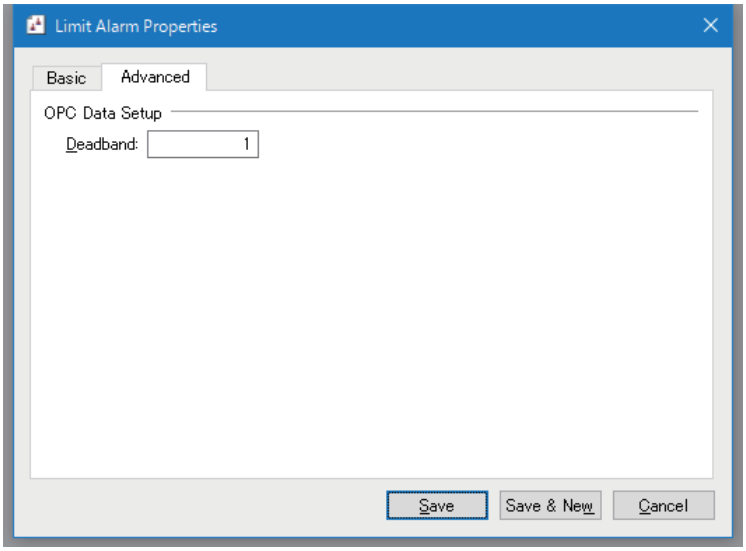
Item		Description
Name		Set the name of a limit alarm definition.
Limit Alarm Setup	Limit	Select a limit to use.
	Value	Enter the threshold of a limit. Whether or not to output a warning message is judged by comparing this value with a tag value.
	Message Body	Enter a text to output as a warning message.
	Severity	Set an OPC-defined value for alarm priority. The available range is between 0 (minimum) and 1000 (maximum).
	Req.Ack	Select this to require user authentication when using an alarm. Selected: User authentication required. Unselected: Notified as user authenticated.
[Save & New] button		Click this to save the setting, and then add a new alarm definition. • A sequential number is added to the name of an alarm definition to be added next. (LimAlarm0→LimAlarm1→LimAlarm2)*1 • When the last character of an alarm definition name is a number, it is incremented. (LimAlarm000→LimAlarm001→LimAlarm002)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Precautions

The changes in the alarm property fields (HiHi, LoLo, Hi, Lo, Message Body, etc.) in runtime through an OPC tag update are automatically saved to the database by overwriting any values set in the configuration mode.

■Advanced



Displayed items

Item		Description
OPC Data Setup	Deadband	Set the variation width of a data value. When a deadband value is set, a warning message is not output when data fluctuates within the range of the value. Therefore, when reading or writing data that fluctuates, more warning messages than necessary are not output.

Precautions

If a deadband value is larger than the difference between two limits set in the [Basic] tab, a limit alarm may not work properly.
(Example: low low limit is '9', low limit is '10', deadband is '2')

Newly adding or editing digital alarm definitions

A digital alarm outputs warning message when a tag value is different from the set value (True or False).
The following shows the procedures for newly adding and editing a digital alarm definition.

Operating procedure

■New

1. Select "Alarm Definitions" in the tree view.
2. Select [Edit] ⇨ [New Digital Alarm Definition].

The "Digital Alarm Properties" screen appears.

3. Set each item in the "Digital Alarm Properties" screen. (☞ Page 170 Digital alarm definition screen setting)
4. Click the [Save] button.

The setting is saved, and a digital alarm definition appears in the list view.

■Edit

1. Double-click a digital alarm definition in the list view.

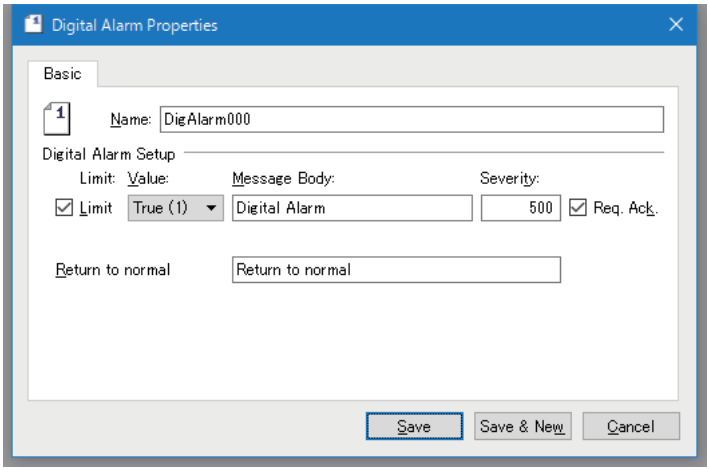
The "Digital Alarm Properties" screen appears.

2. Set each item in the "Digital Alarm Properties" screen. (☞ Page 170 Digital alarm definition screen setting)
3. Click the [Save] button.

The setting is saved, and a digital alarm definition appears in the list view.

Digital alarm definition screen setting

■Basic



Displayed items

Item		Description
Name		Set the name of a digital alarm definition.
Digital Alarm Setup	Limit	Select the checkbox to use a digital alarm.
	Value	Select a digital alarm value.
	Message Body	Enter a text to output as a warning message.
	Severity	Set an OPC-defined value for alarm priority. The available range is between 0 (minimum) and 1000 (maximum).
	Req.Ack	Select this to require user authentication when using an alarm. Selected: User authentication required. Unselected: Notified as user authenticated.
Return to normal		Enter a text to display as a message when an alarm is processed (when a value became normal).
[Save & New] button		Click this to save the setting, and then add a new alarm definition. • A sequential number is added to the name of an alarm definition to be added next. (DigAlarm0→DigAlarm1→DigAlarm2)*1 • When the last character of an alarm definition name is a number, it is incremented. (DigAlarm000→DigAlarm001→DigAlarm002)*1

*1 When a number to be added already exists, the number is skipped and the next available number is added.

Associating alarm definitions with tags

The following shows the procedure for associating a created alarm definition with a tag.

1. Double-click a tag in the list view of an MX device or a Modbus device.
2. Display the [Alarms] tab in the "Tag Properties" screen or the [Advanced] tab in the "Data item properties" screen.
   (☞ Page 137 Address Space (Tag) Setting)
3. Select the checkbox of "Generate Alarms".
4. Select an alarm definition from the pull-down list of "Limit Alarm" or "Digital Alarm".

Deleting alarm definitions

The following shows the procedure for deleting an alarm definition.
Alarm definitions used for tags cannot be deleted.

Operating procedure

1. Select an alarm definition to delete in the list view.
2. Select [Edit] ⇨ [Delete].

15.2 Setting Conversion Definitions

Set a definition to convert the device value and the value in the engineering unit to each other.

Newly adding or editing conversion definitions

The following shows the procedures for newly adding and editing a conversion definition.

Operating procedure

■New

1. Select "Conversion Definitions" in the tree view.
2. Select [Edit] ⇨ [New Conversion].

The "Conversion Properties" screen appears.

3. Set each item in the "Conversion Properties" screen. (☞ Page 172 Conversion definition screen setting)
4. Click the [Save] button.

The setting is saved, and a conversion definition appears in the list view.

■Edit

1. Double-click a conversion definition in the list view.

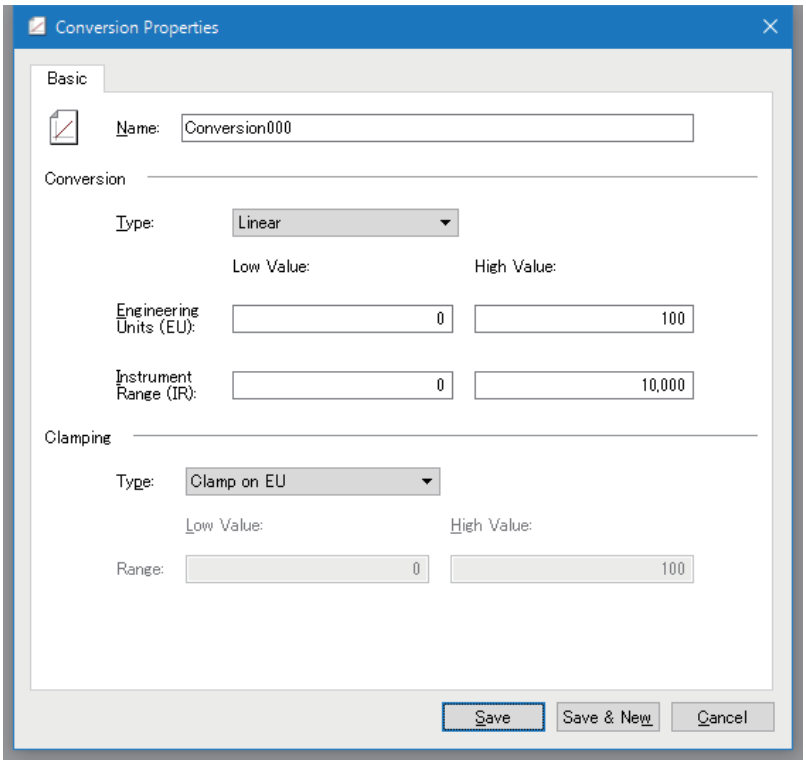
The "Conversion Properties" screen appears.

2. Set each item in the "Conversion Properties" screen. (☞ Page 172 Conversion definition screen setting)
3. Click the [Save] button.

The setting is saved, and a conversion definition appears in the list view.

Conversion definition screen setting

■Basic



Displayed items

Item		Description
Name		Set the name of a conversion definition (up to 50 characters).*1
Conversion	Type	Select a conversion type.
	Engineering Units (EU)	Set the minimum value and the maximum value in engineering units.
	Instrument Range (IR)	Set a device value equivalent to a value in engineering units.
Clamping	Type	Select processing when a value exceeds the range.
	Range	Set the maximum value and the minimum value of clamping (range of double type).
[Save & New] button		Click this to save the setting, and then add a new conversion definition. • A sequential number is added to the name of a conversion definition to be added next. (Conversion→Conversion1→Conversion2)*2 • When the last character of a conversion definition name is a number, it is incremented. (Conversion000→Conversion001→Conversion002)*2

*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.
*2 When a number to be added already exists, the number is skipped and the next available number is added.

Ex.

The following shows an example for each clamp type when converting the device value '3000' with the settings below.
Conversion type: Linear
Range of the engineering unit (EU): 0 to 400
Range of the instrument range (IR): 0 to 2000

Type	Range	Value after conversion
None	—	600
Clamp on EU	0 to 400 (range of engineering units (EU))	400
As specified	0 to 200	200

Associating conversion definitions with tags

The following shows the procedure for associating a created conversion definition with a tag.

1. Double-click a tag in the list view of an MX device or a Modbus device.
2. Display the [Advanced] tab in the "Tag Properties" screen or the "Data item properties" screen. (☞ Page 137 Address Space (Tag) Setting)
3. Select the checkbox of "Use conversion" in "Data Conversion".
4. Select a created conversion definition from the pull-down list of "Conversion".

Deleting conversion definitions

The following shows the procedure for deleting a conversion definition.
Conversion definitions associated with tags cannot be deleted.

Operating procedure

1. Select a conversion definition to delete in the list view.
2. Select [Edit] ⇨ [Delete].

15.3 Setting Polling Definitions

Cycles that MX OPC UA Server polls access target devices can be set.

Newly adding or editing polling definitions

The following shows the procedures for newly adding and editing a polling definition.

Operating procedure

■New

1. Select "Poll Method Definitions" in the tree view.
2. Select [Edit] ⇨ [New Polling Method].

The "Polling Method Properties" screen appears.

3. Set each item in the "Polling Method Properties" screen. (☞ Page 174 Polling definition screen setting)
4. Click the [Save] button.

The setting is saved, and a polling definition appears in the list view.

■Edit

1. Double-click a polling definition in the list view.

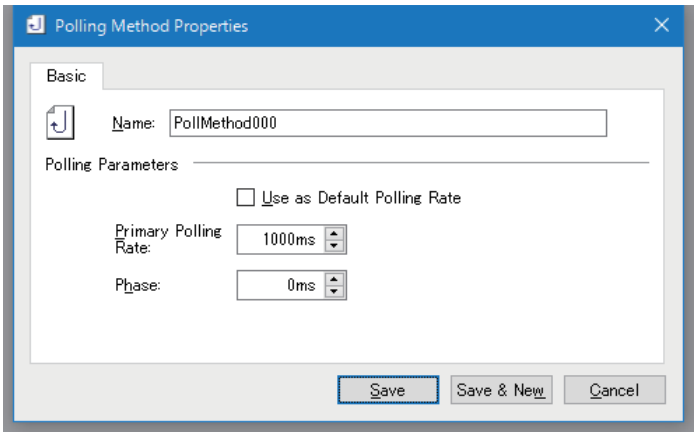
The "Polling Method Properties" screen appears.

2. Set each item in the "Polling Method Properties" screen. (☞ Page 174 Polling definition screen setting)
3. Click the [Save] button.

The setting is saved, and a polling definition appears in the list view.

Polling definition screen setting

■Basic



Displayed items

Item		Description
Name		Set the name of a polling definition (up to 50 characters).*1
Polling Parameters	Use as Default Polling Rate	Select the checkbox to use as the default value of a polling definition.
	Primary Polling Rate	Set a polling cycle. (In milliseconds)
	Phase	Set a time to perform polling. A polling time of a tag can be shifted by setting different phases for multiple tags. Therefore, the load on MX OPC UA Server can be reduced when reading a large number of tags. Example: When setting '10000 ms' for "Primary Polling Rate" and '200 ms' for "Phase", polling is performed at intervals of '200 ms, 10200 ms, 20200 ms, 30200 ms...'.

Item	Description
[Save & New] button	Click this to save the setting, and then add a new polling definition. • A sequential number is added to the name of a polling definition to be added next. (PollMethod→PollMethod1→PollMethod2)*2 • When the last character of a polling definition name is a number, it is incremented. (PollMethod000→PollMethod001→PollMethod002)*2

*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.

*2 When a number to be added already exists, the number is skipped and the next available number is added.

Associating polling definitions with tags

The following shows the procedure for associating a created polling definition with a tag.

Operating procedure

1. Double-click a tag in the list view of an MX device.
2. Display the [Basic] tab in the "Tag Properties" screen. (☞ Page 137 Address Space (Tag) Setting)
3. Select a created polling definition from the pull-down list of "Poll. Method" in "Data Polling".

Deleting polling definitions

The following shows the procedure for deleting a polling definition.

Polling definitions associated with tags cannot be deleted.

Operating procedure

1. Select a polling definition to delete in the list view.
2. Select [Edit] ⇨ [Delete].

15.4 Setting Structure Definitions

Structure definitions used as structure labels for MX devices or Modbus devices can be set.

Newly adding or editing structure definitions

The following shows the procedures for newly adding and editing a structure definition.

Operating procedure

■New

1. Select "Structure Type Declarations" in the tree view.
2. Select [Edit] ⇨ [New StructureType].

The "Structure Type Properties" screen appears.

3. Right-click a structure name in "Structure Hierarchy" in the "Structure Type Properties" screen, and select [Add variable].
4. Set each item in the "Select data type" screen. (☞ Page 177 Structure definition screen setting)
5. Click the [Save] button.

The setting is saved, and a structure definition appears in the list view.

■Edit

1. Double-click a structure name in the tree view.

The "Structure Type Properties" screen appears.

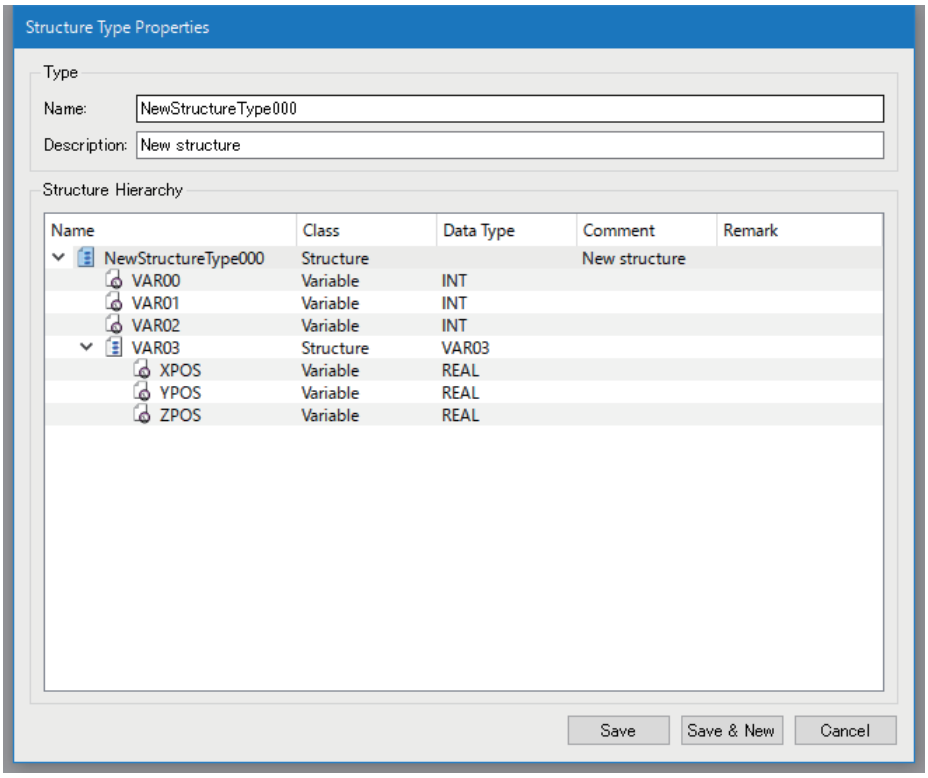
2. Set each item in the "Structure Type Properties" screen. (☞ Page 177 Structure definition screen setting)
3. Click the [Save] button.

The setting is saved, and a structure definition appears in the list view.

Structure definition screen setting

Window

[Edit] ⇨ [New StructureType]



Displayed items

Item	Description
Name	Set the name of a structure definition (up to 32 characters).*1
Description	Set the description of a structure definition.
Structure Hierarchy	A member of a structure and its data type are displayed. • A member can be deleted by right-clicking a member and selecting [Delete item]. (☞ Page 178 Adding a member) • The name, comment, or remark of each item can be edited directly by double-clicking it. • Items can be sorted by dragging and dropping. • A member can be added by right-clicking a structure name and selecting "Add variable".
[Save & New] button	Click this to save the setting, and then add a new structure definition. • A sequential number is added to the name of a structure definition to be added next. (NewStructureType→NewStructureType0→NewStructureType2)*2 • When the last character of a structure definition name is a number, it is incremented. (NewStructureType000→NewStructureType001→NewStructureType002)*2

*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.

*2 When a number to be added already exists, the number is skipped and the next available number is added.

Precautions

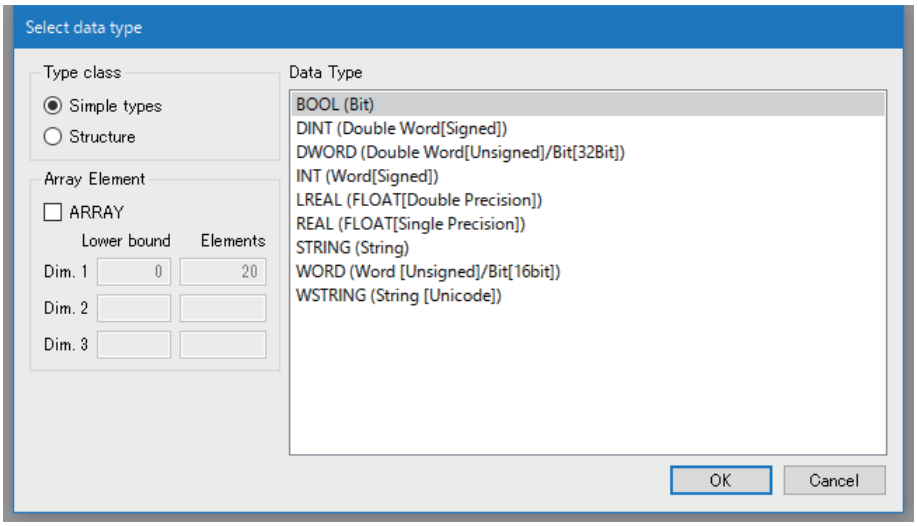
When a structure definition is changed, the change applies to structure labels that use the structure definition.

- Structure: A blank address is set for an added member.
- Array of a structure: Addresses of all elements are calculated based on the first bit or word address. If there is no appropriate address, a blank is set.

■Adding a member

The "Select data type" screen appears by right-clicking a structure name in "Structure Hierarchy" and selecting [Add variable].

Window



Displayed items

Item		Description
Type class	Simple types	Select this to add a variable or an array.
	Structure	Select this to add a structure or a structure array.
Array Element	ARRAY	Select the checkbox to add an array. Arrays of STRING or WSTRING cannot be set. Up to a three-dimensional array can be set.
	Lower bound	Set the first element number of each dimension of an array.
	Elements	Set the number of elements of each dimension of an array. Do not enter any value for an unused dimension.
Data Type		Select the data type of a variable or an array.

Deleting structure definitions

The following shows the procedure for deleting a structure definition.

Structure definitions used for structure labels cannot be deleted.

Operating procedure

1. Select a structure name to delete in the tree view.
2. Select [Edit] ⇨ [Delete].

16 SIMULATION

This chapter shows the simulation of tags and alarms.

16.1 Setting Simulation Signal Definitions

Set a simulation signal definition for simulation.

Newly adding or editing a simulation signal definition

The following shows the procedures for newly adding and editing a simulation signal definition.

Operating procedure

■New

1. Select "Simulation Definitions" in the tree view.
2. Select [Edit] ⇨ [New Simulation Signal].

The "Simulation Signal Properties" screen appears.

3. Set each item in the "Simulation Signal Properties" screen. (☞ Page 180 Simulation signal definition screen setting)
4. Click the [Save] button.

The setting is saved, and a simulation signal definition appears in the list view.

■Edit

1. Double-click a simulation signal definition in the list view.

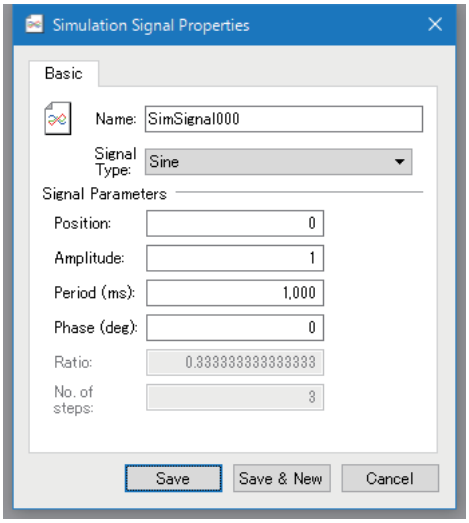
The "Simulation Signal Properties" screen appears.

2. Set each item in the "Simulation Signal Properties" screen. (☞ Page 180 Simulation signal definition screen setting)
3. Click the [Save] button.

The setting is saved, and a simulation signal definition appears in the list view.

Simulation signal definition screen setting

■Basic



Displayed items

Item	Description
Name	Set the name of a simulation signal definition (up to 50 characters).*1
Signal Type	Select a signal type. The following shows available signal types. • Read Count: A value of each tag is incremented when reading an item. • Write Count: A value of each tag is incremented when writing an item. • Random: Values are randomly generated within the range of values set for "Position" and "Amplitude". • Ramp, Sine, Square, Triangle, Step: Periodical signals. The signal time can be set for "Period" and "Phase" in "Signal Parameters". Set the signal frequency (in milliseconds) for "Period" , while set the start position of a signal (in degrees) for "Phase". When selecting "Square", set the ratio of the maximum value and the minimum value of a signal for "Ratio", while selecting "Triangle", set a signal steepness for "Ratio".
Signal Parameters	Set the following items: • Position • Amplitude • Period (ms) • Phase (deg) • Ratio • No. of steps
[Save & New] button	Click this to save the setting, and then add a new simulation signal definition. • A sequential number is added to the name of a simulation signal definition to be added next. (SimSignal0→SimSignal1→SimSignal2)*2 • When the last character of a simulation signal definition name is a number, it is incremented. (SimSignal000→SimSignal001→SimSignal002)*2

*1 Alphanumeric characters, underscores (_), and hyphens (-) can be used.

*2 When a number to be added already exists, the number is skipped and the next available number is added.

Associating a simulation signal definition with a tag

The following shows the procedure for associating a created simulation signal definition with a tag.

Operating procedure

1. Double-click a tag in the list view of an MX device or a Modbus device.
2. Click the [Advanced] tab in the "Tag Properties" screen or the "Data item properties" screen. (☞ Page 137 Address Space (Tag) Setting)
3. Select the checkbox of "Simulate" in "Simulation".
4. Select a created simulation signal definition from the pull-down list of "Simulation Signal".

Point

- Simulated values are not written to a connected device.
- To fix a tag value during simulation, select the checkbox of "Use Manual Value". The value set for "Manual Value" is always used for the tag.

Deleting a simulation signal definition

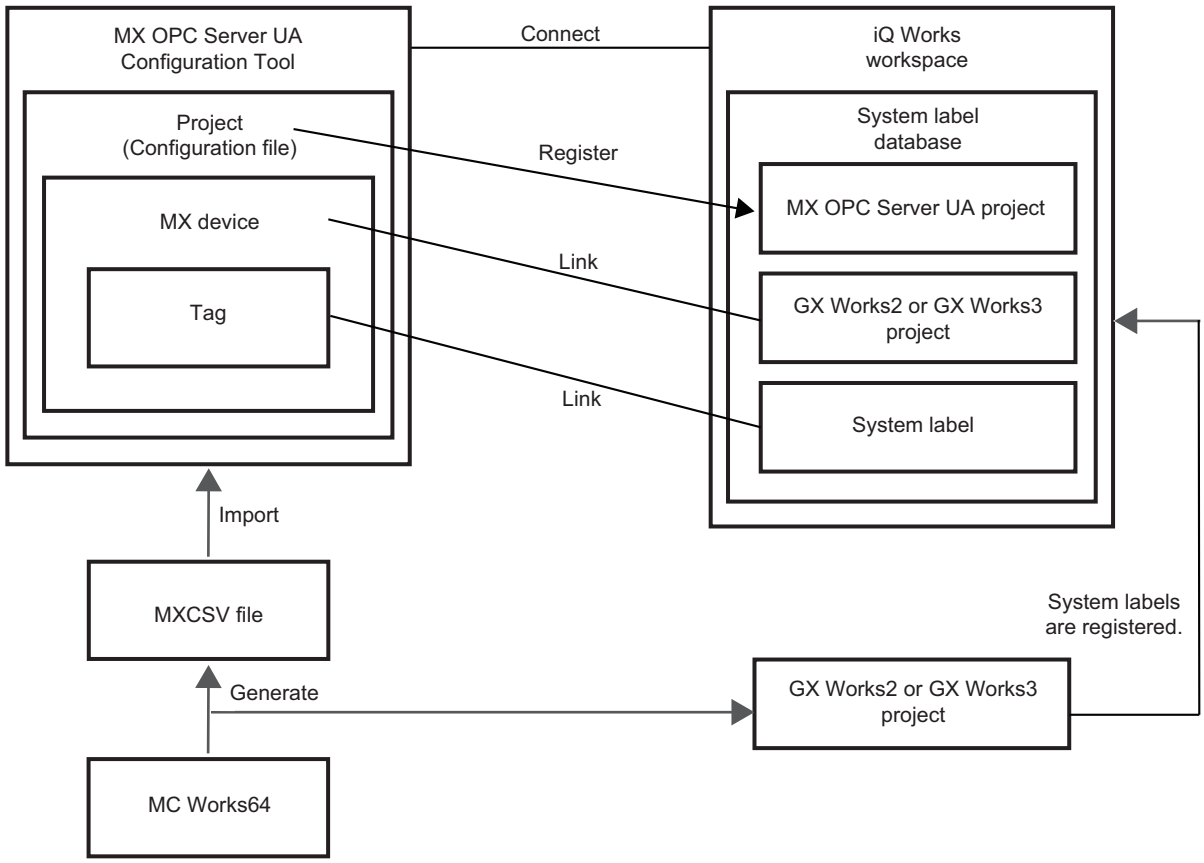
The following shows the procedure for deleting a simulation signal definition.
A simulation signal definition associated with a tag cannot be deleted.

Operating procedure

1. Select a simulation signal definition to delete in the list view.
2. Select [Edit] ⇨ [Delete].

17 INTERACTION WITH iQ Works

A system label registered in a workspace of MELSOFT iQ Works can be imported in Configuration Tool as a tag.
When importing as a tag, link with a GX Works2 or GX Works3 project.
The tag name of an MX device that is being linked cannot be changed. Unlink and then change it.
The following shows the relation between data in Configuration Tool and that in a workspace.



Data in Configuration Tool	Data in a workspace
Project (configuration file)	MX OPC Server UA project
MX device	GX Works2 or GX Works3 project
Tag	System label

Precautions

Do not use configuration files that were open when using the iQ Works interaction function in Configuration Tool version 3.01B or earlier. MX devices and tags cannot be edited.

17.1 Procedure for Registering System Labels for the First Time

When linking with an MX device in Configuration Tool based on a GX Works2 or GX Works3 project

1. Connect to a workspace. (☞ Page 184 Connection to a Workspace)
2. Link an MX device in Configuration Tool with a GX Works2 or GX Works3 project. (☞ Page 186 Import)

When linking with a GX Works2 or GX Works3 project based on an MX device in Configuration Tool

1. Create a GX Works2 or GX Works3 project to link with a project in Configuration Tool.

For the method for creating a GX Works2 or GX Works3 project in a workspace, refer to the following:

📖Let's start iQ Works Version 2

2. Connect to a workspace. (☞ Page 184 Connection to a Workspace)
3. Link an MX device in Configuration Tool with a GX Works2 or GX Works3 project. (☞ Page 188 Export)

17.2 Connection to a Workspace

By connecting Configuration Tool to a workspace, a system label can be imported as a tag.
A workspace can be connected by opening it in Configuration Tool.

Connection to a workspace on a local computer

The following shows the procedure for connecting to a workspace on a local computer.

Operating procedure

1. Select [File] ⇨ [iQ Works workspace actions] ⇨ [Open workspace].
2. Click the [Browse workspaces] button.
3. Select a workspace, and click the [OK] button.

If there is no MX OPC Server UA project in the selected workspace, create one according to the message.

4. When there is a GX Works2 or GX Works3 project that can be imported in the workspace, import it to Configuration Tool.

For details on the import, refer to the following:
☞ Page 186 Import

5. When there is an MX device that can be exported, export it to the workspace. (Except when a new MX OPC Server UA project is created in step 3.)

For details on the export, refer to the following:
☞ Page 188 Export

6. When connecting to the workspace, the name of the connected workspace appears in the database bar.

Connection to a workspace on a remote computer

The following shows the procedure for connecting to a workspace on a remote computer.

Operating procedure

1. Select [File] ⇨ [iQ Works workspace actions] ⇨ [Open workspace].
2. Click the [Browse network] button.
3. Select a workspace, and click the [OK] button.*1

When a target remote computer is on a different subnet, enter the IP address in "Other subnet address" and click the [Refresh list] button.
If there is no MX OPC Server UA project in the selected workspace, create one according to the message.

4. When there is a GX Works2 or GX Works3 project that can be imported in the workspace, import it to Configuration Tool.

For details on the import, refer to the following:
☞ Page 186 Import

5. When there is an MX device that can be exported, export it to the workspace. (Except when a new MX OPC Server UA project is created in step 3.)

For details on the export, refer to the following:
☞ Page 188 Export

6. When connecting to the workspace, the names of the connected remote computer and the workspace appear in the database bar.

*1 To display a workspace in a remote computer in the list, the workspace must be open in MELSOFT Navigator on the target remote computer.

17.3 Disconnection from a Workspace

A workspace is disconnected by closing it.

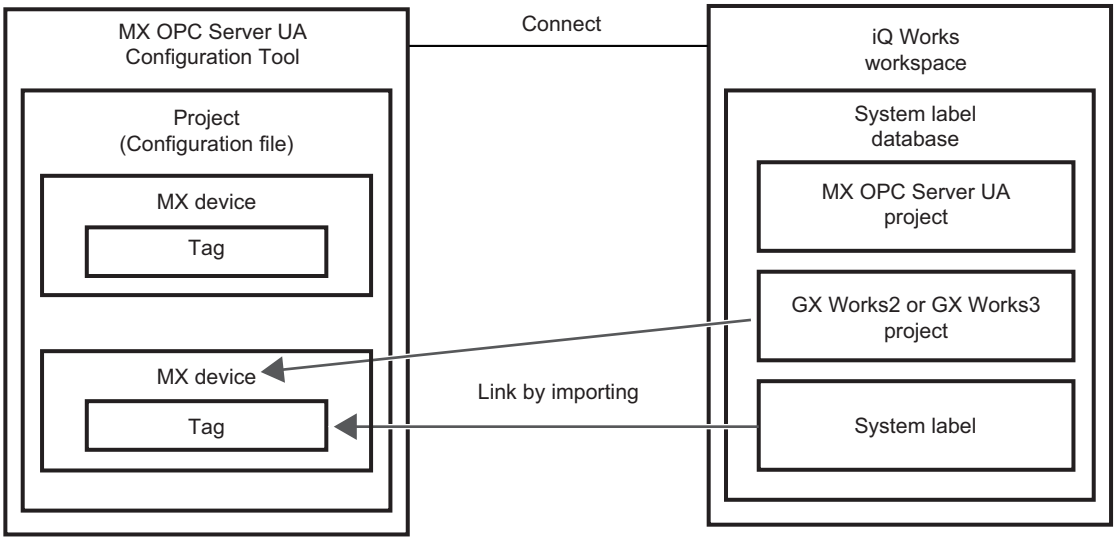
An MX OPC Server UA project in a workspace is not deleted even after disconnection.

Operating procedure

Select [File] ⇨ [iQ Works workspace actions] ⇨ [Close workspace].

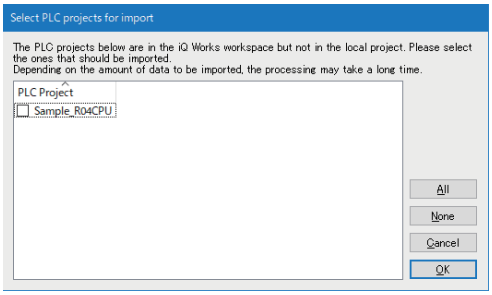
17.4 Import

This section shows the procedure for importing a GX Works2 or GX Works3 project in a workspace of iQ Works to Configuration Tool as an MX device.
An MX device and a GX Works2 or GX Works3 project are linked by importing.



Operating procedure

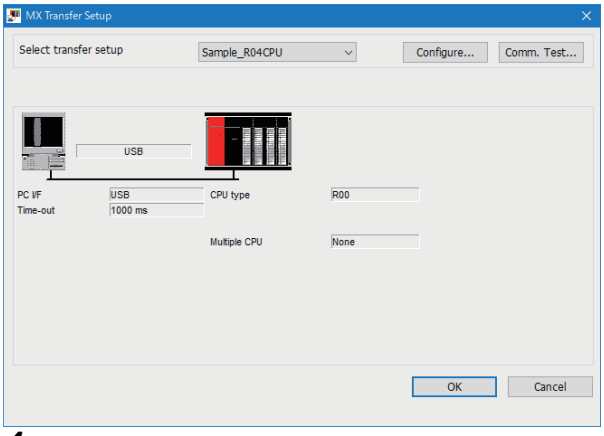
1. Select [File] ⇨ [iQ Works project actions] ⇨ [Import GX Works project].
2. Select a project to import, and click the [OK] button.



3. Check and edit the connection destination setting, and click the [OK] button.

For details on the connection destination setting, refer to the following:

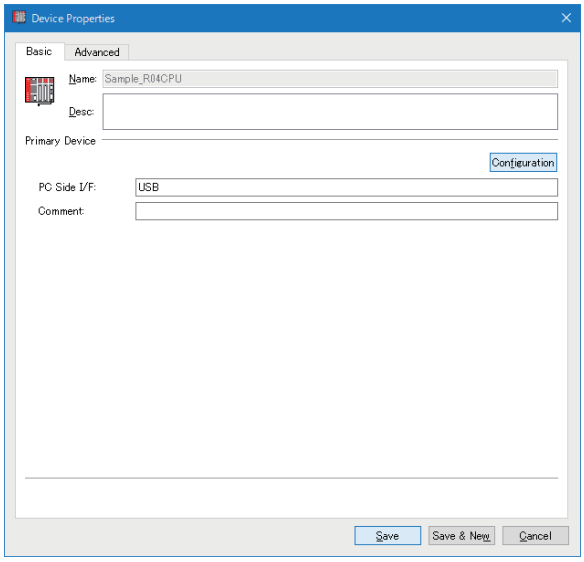
☞ Page 78 Setting Connection Destinations



4. Set each item in the "Device Properties" screen, and click the [Save] button.*1

For details on the items, refer to the following:

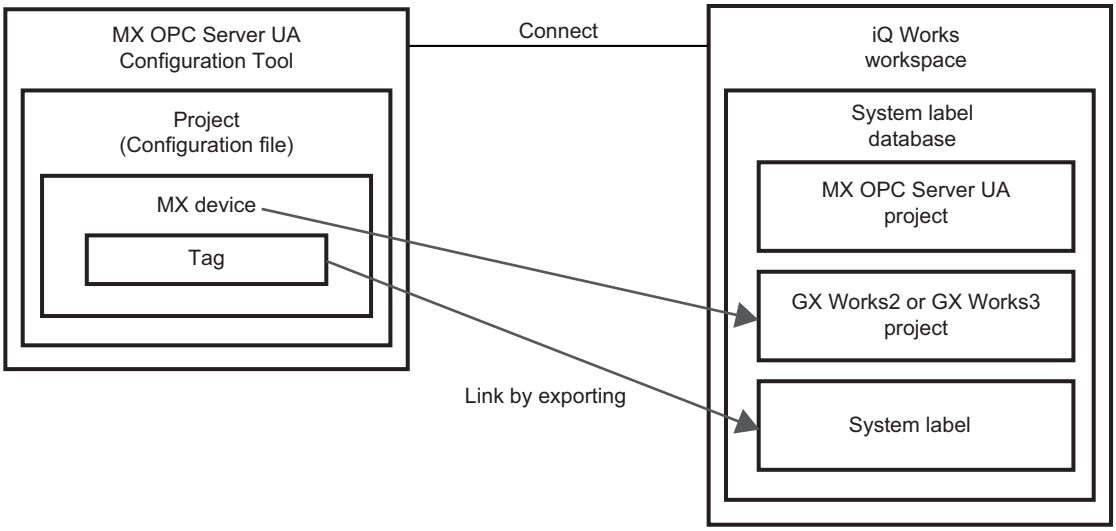
☞ Page 65 MX device screen setting



*1 The name of a GX Works2 or GX Works3 project that is imported is set for the name of an MX device. It cannot be changed in Configuration Tool.

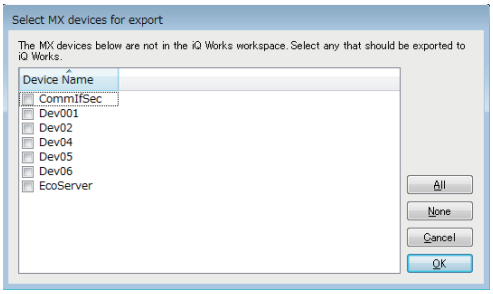
17.5 Export

This section shows the procedure for exporting a setting of an MX device or a tag created in Configuration Tool to a GX Works2 or GX Works3 project in a workspace of iQ Works.
A GX Works2 or GX Works3 project and an MX device are linked by exporting.

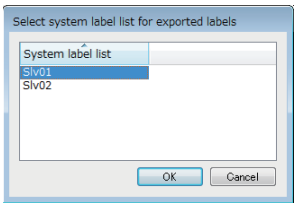


Operating procedure

1. Select [File] ⇨ [iQ Works project actions] ⇨ [Export devices to GX Works].
2. Select an MX device to export, and click the [OK] button.



3. If there are multiple system label lists in a workspace, select the system label in an export destination.



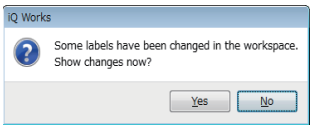
17.6 Checking for the Change of a System Label

This section shows the procedure for checking the change when a system label in a workspace of iQ Works is edited.
If a system label is changed while connecting to a workspace, the notification message will appear on Configuration Tool.

Operating procedure

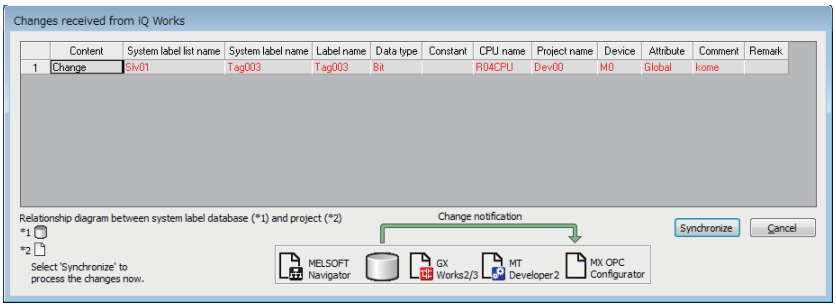
■When checking with a received notification message

Select [Yes] according to the message.



■When checking at any timing

Select [File] ⇨ [iQ Works project actions] ⇨ [Show changes].



Click the [Synchronize] button to apply the change contents to a project in Configuration Tool.

Precautions

If a system label is changed to one not supported by Configuration Tool, the change contents will be blank.

17.7 System Label Synchronization

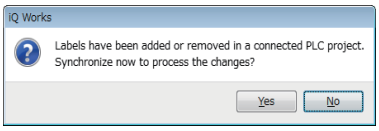
This section shows the procedure for synchronizing a tag in Configuration Tool with a system label in a workspace of iQ Works.

If a system label is added or deleted while connecting to a workspace, the notification message will appear on Configuration Tool.

Operating procedure

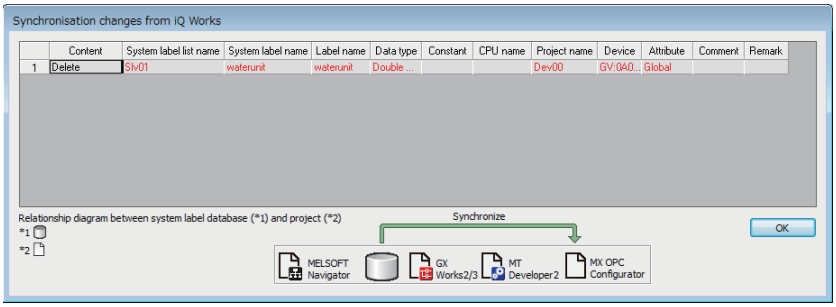
■When synchronizing with a received notification message

Select [Yes] according to the message.



■When synchronizing at any timing

Select [File] ⇨ [iQ Works project actions] ⇨ [Synchronize].



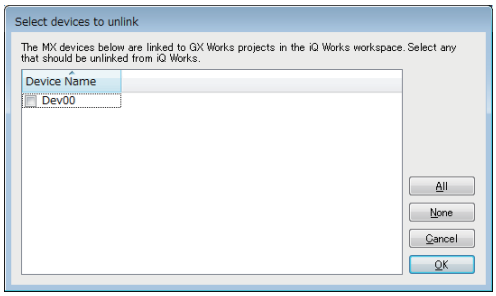
17.8 Unlinking of an MX Device

This section shows the procedure for unlinking a GX Works2 or GX Works3 project in a workspace for each MX device.

Tag information of each MX device can be edited by unlinking.

Operating procedure

1. Select [File] ⇨ [iQ Works project actions] ⇨ [Unlink device].
2. Select an MX device to unlink, and click the [OK] button.



17.9 Import of MXCSV Files

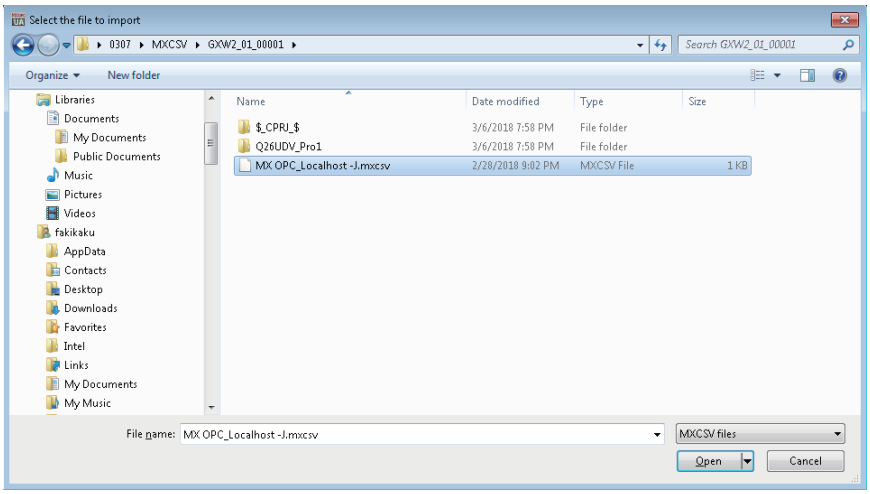
This section shows the procedure for connecting to a workspace of iQ Works by importing a setting (MXCSV file) provided by MC Works64.

Precautions

A system label in a GX Works2 or GX Works3 project to import must be registered in the system label database of a workspace in advance.

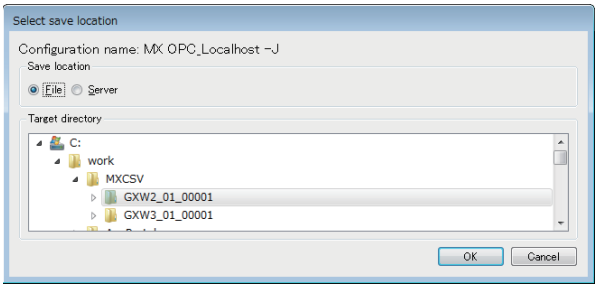
Operating procedure

1. Select [File] ⇨ [iQ Works project actions] ⇨ [Import CSV].
2. Select an MXCSV file to import, and click the [Open] button.

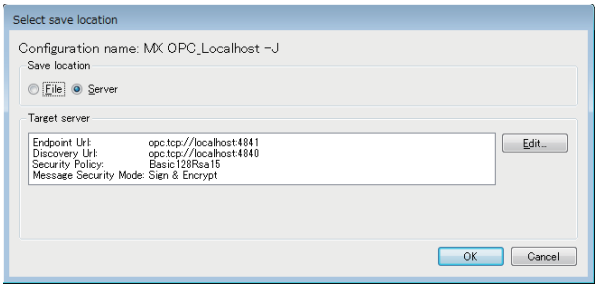


3. Select "File" or "Server" for the save destination of a configuration file.

When selecting "File", select a directory to save the file and click the [OK] button.



When selecting "Server", server information is displayed in "Target server". Click the [OK] button if there is no problem. The server setting can also be edited by selecting [Edit].

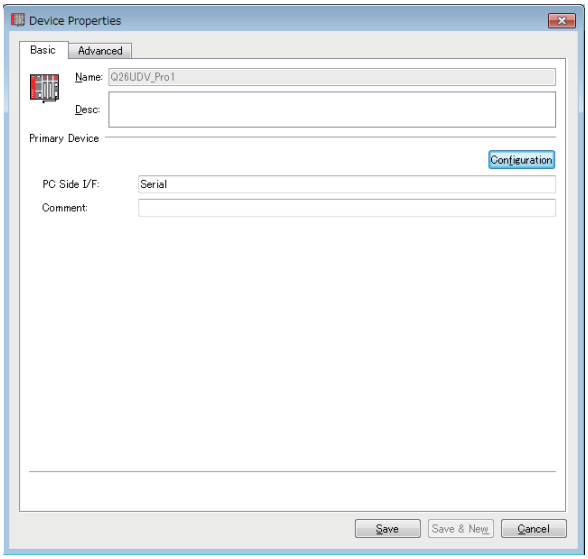


The name of the configuration file will be same as that of the imported MXCSV file.

4. If there is no MX device with the same name as the GX Works2 or GX Works3 project in the MXCSV file, the "Device Properties" screen will appear.

Set the communication setting by clicking the [Configuration] button as necessary, and click the [Save] button.

When there are multiple projects, the "Device Properties" screen appears again after saving and the next MX device setting starts.



If there is an MX device with the same name as the GX Works2 or GX Works3 project in the MXCSV file, only tag information of the device will be updated.

The MX device links with iQ Works and a label is imported from each GX Works series project.

17.10 MX OPC Server UA Project Deletion

An MX OPC Server UA project in a workspace of iQ Works is not displayed in the project list of MELSOFT Navigator. Therefore, delete it in Configuration Tool.

A system label in a workspace is not deleted even when an MX OPC Server UA project is deleted.

Precautions

A project deleted from a workspace cannot be restored.

Connected project deletion

The following shows the procedure for deleting an MX OPC Server UA project in a connected workspace.

Operating procedure

Select [File] ⇨ [iQ Works project actions] ⇨ [Delete OPC project].

Unused project deletion

The following shows the procedure for deleting an unused MX OPC Server UA project in a workspace.

Operating procedure

1. Select [File] ⇨ [iQ Works workspace actions] ⇨ [Delete unused projects].
2. Select a project to delete, and click the [OK] button.

18 IMPORT OF EcoWebServer III CONFIGURATION FILES

An EcoWebServer III configuration file can be imported.

18.1 Automatic Generation of EcoWebServer III Tags

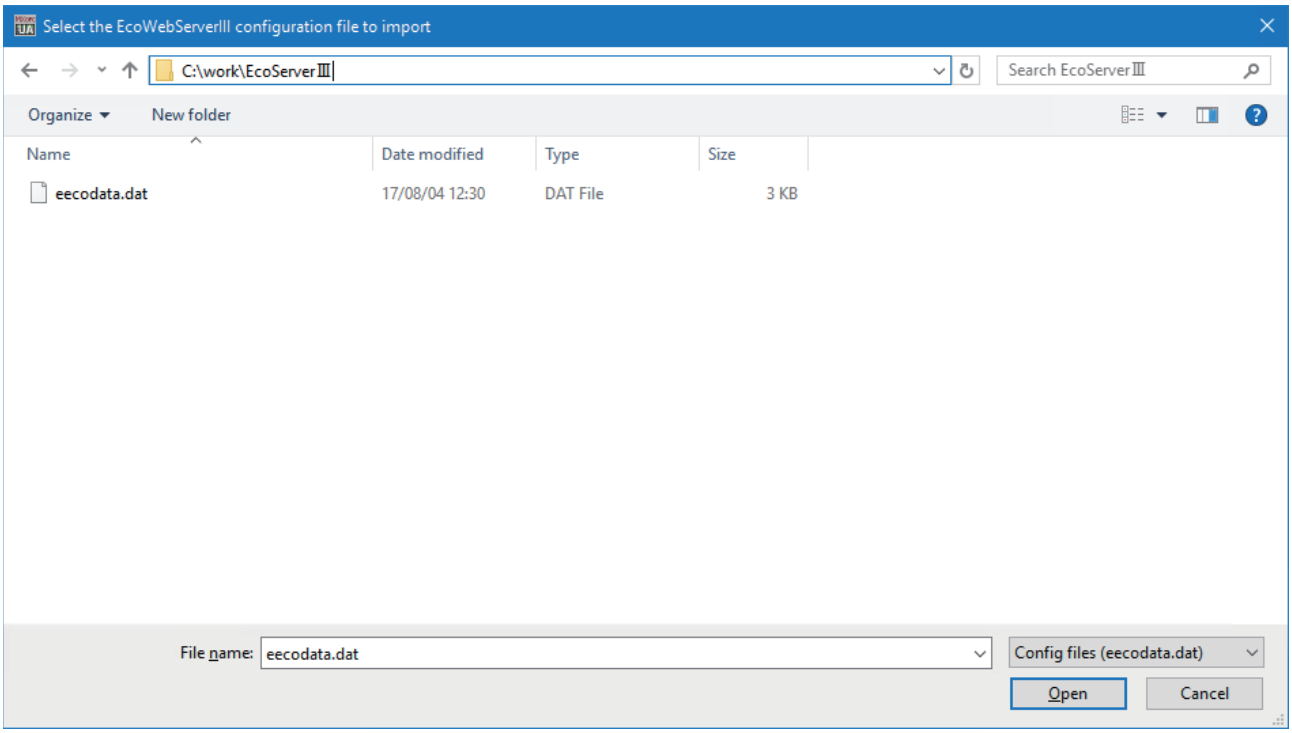
By importing an EcoWebServer III configuration file, the measurement point which is written in the EcoWebServer III setting file and tags for demand measurement point can be generated automatically.

Precautions

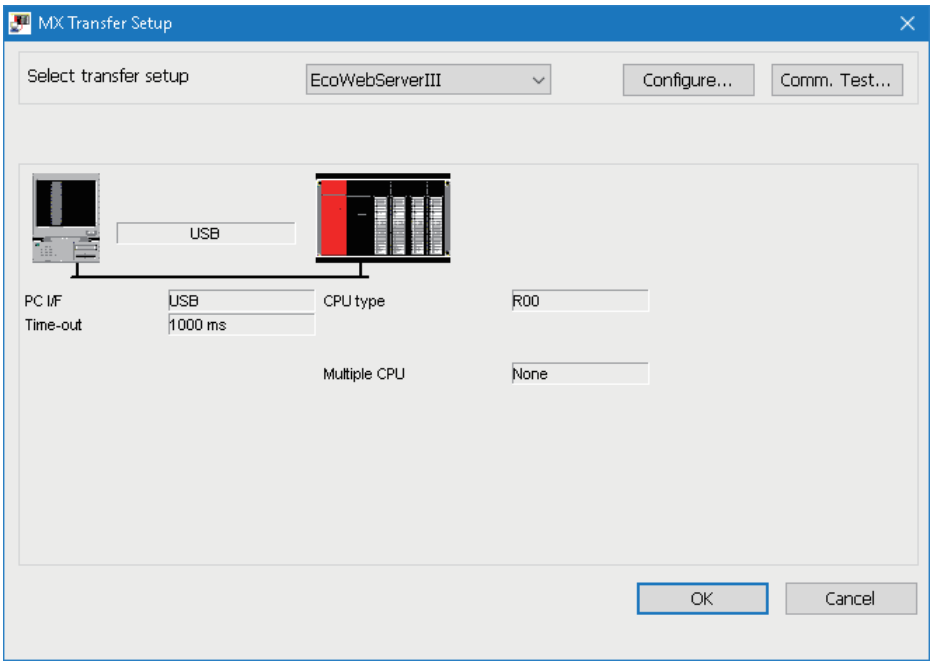
EcoWebServer III configuration files to import needs to be created in EcoWebServer III Configuration Tool of version 3 or later.

Operating procedure

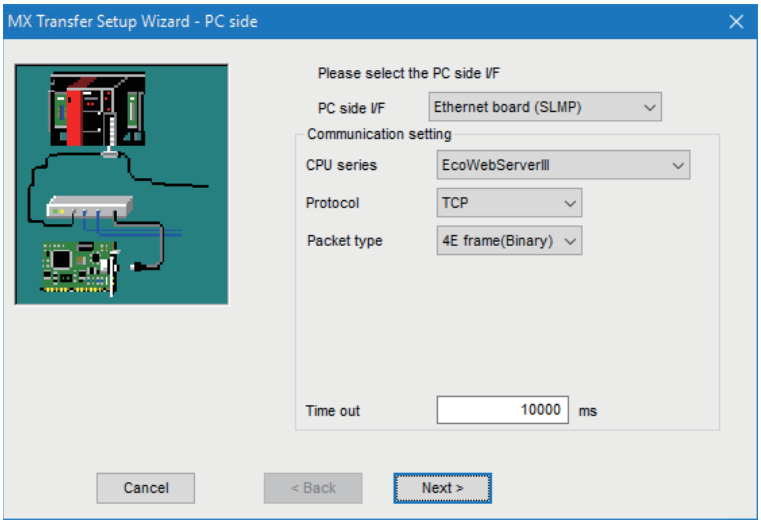
1. Select [File] ⇨ [EcoWebServerIII configuration file actions] ⇨ [Import EcoWebServerIII configuration file].
2. Select an EcoWebServer III configuration file (eecodata.dat), and click the [Open] button.



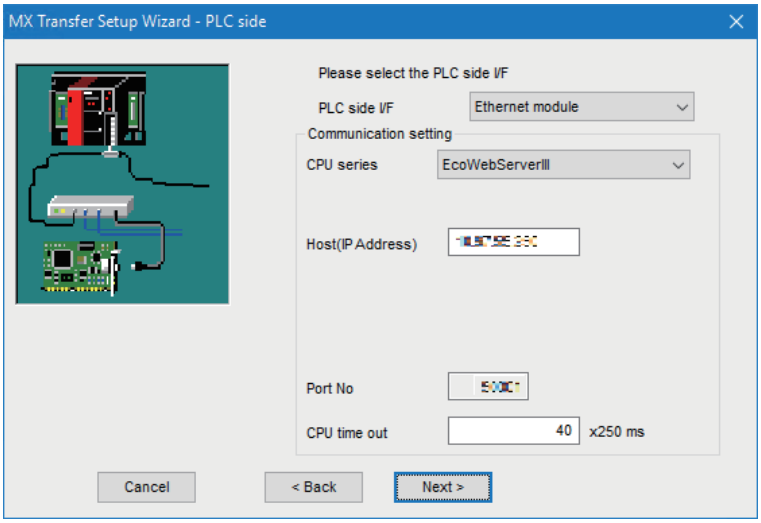
3. Click the [Configure] button.



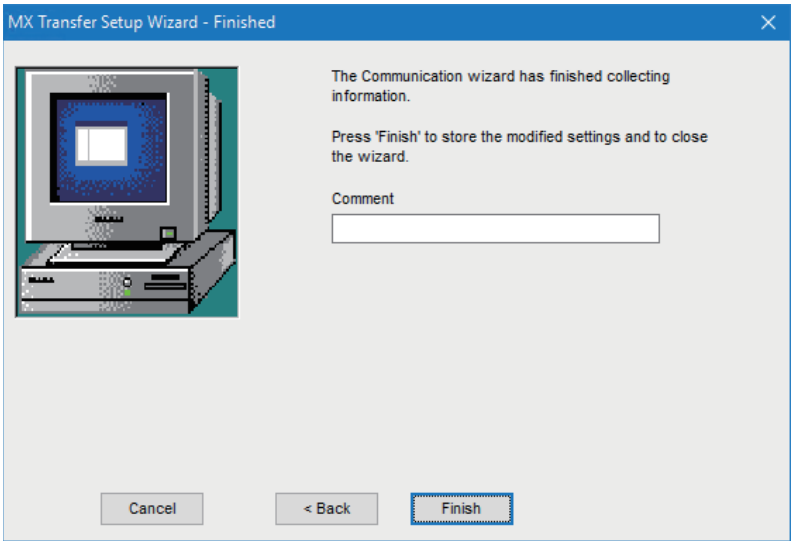
4. Select "Ethernet board (SLMP) for "PC side I/F" and "EcoWebServerIII" for "CPU series". Set an arbitrary value for "Time out", and click the [Next] button.



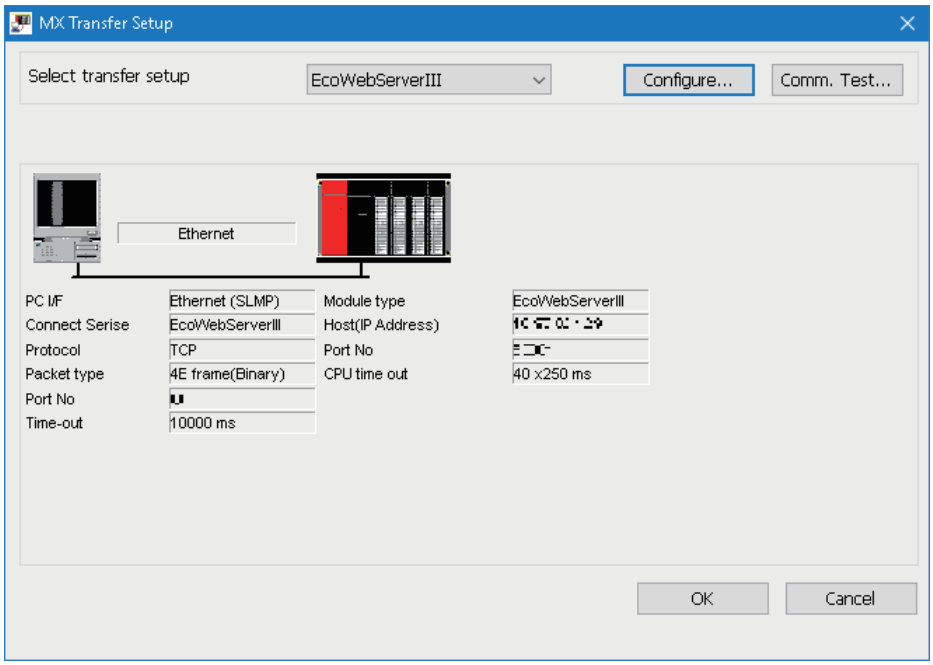
5. Set an arbitrary value for "Host (IP Address)" and "CPU time out", and then click the [Next] button.



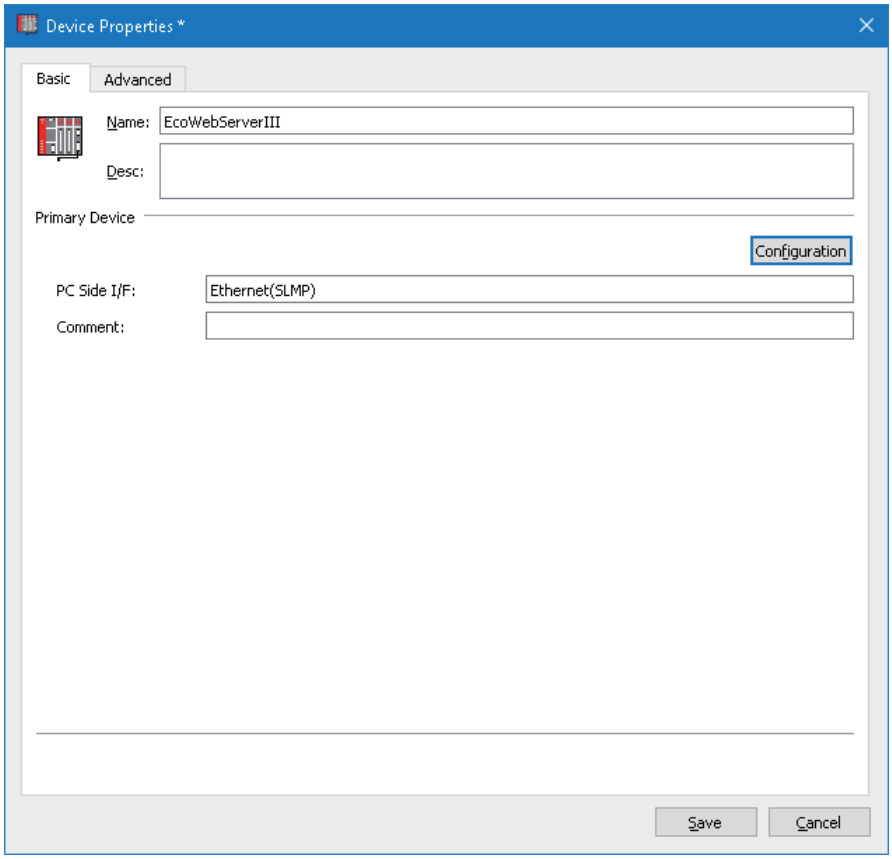
6. Set a comment, and click the [Finish] button.



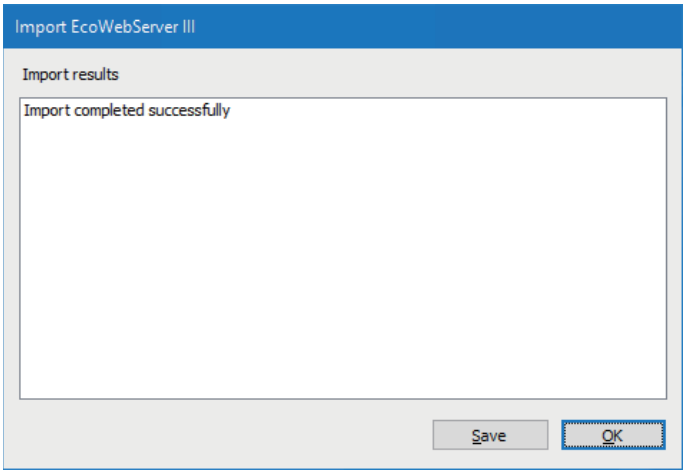
7. Click the [OK] button.



8. Set each item in the "Device Properties" screen, and click the [Save] button.
For details on each item, refer to the following:
☞ Page 65 MX device screen setting



9. When the import is succeeded, "Import completed successfully" is displayed in the "Import EcoWebServer III" screen.
If an error occurs, the error content will be displayed.
Click the [OK] button.



10. The message whether to save the setting appears. Click the [Yes] button.

18.2 Settings for Connecting to EcoWebServer III

This section shows how to add a new connection to an EcoWebServer III without importing an EcoWebServer III configuration file.

Operating procedure

1. Select "Address Space" in the tree view.
2. Select [Edit] ⇨ [New MX Device] ( ).
3. Add a new connection destination in the "MX Transfer Setup" screen.

☞ Page 79 Adding a new connection destination setting

4. The procedure after the setting above is the same as the step 3 to 8 for importing an EcoWebServer III configuration file.

☞ Page 193 Automatic Generation of EcoWebServer III Tags

18.3 Tags for Demand Measurement Point

When importing the setting of a device with the demand monitoring function, the tags for demand measurement point are automatically generated.

A group name is created with "DemandInfomation".

The following table shows tag names for each item.

Device number	Item		Tag name	Data type
D1000	Control device for monitoring		ControlDeviceForMonitoring	WORD
D1001	Healthy		Healthy	WORD
D1002	Current time	Year	CurrentTimeYear	WORD
D1003		Month	CurrentTimeMon	WORD
D1004		Day	CurrentTimeDays	WORD
D1005		Time	CurrentTimeHours	WORD
D1006		Minute	CurrentTimeMinute	WORD
D1007		Second	CurrentTimeSec	WORD
D1008	Integrated value of consumption		IntegratedValueOfConsumption	DWORD
D1010	Current demand		CurrentDemand	DWORD
D1012	Predicted demand		PredictedDemand	DWORD
D1014	Adjusted electrical power		AdjustedElectricalPower	DWORD
D1016	Permissible power		PermissiblePower	DWORD
D1018	Previous demand		PreviousDemand	DWORD
D1020	Remaining time		RemainingTime	WORD
D1021	Alarm		Alarm	WORD
D1022	Control status		ControlStatus	WORD
D1023	Target demand		TargetDemand	DWORD
D1025	VCT ratio		VCTRatio	DWORD
D1027	Alarm type		AlarmType	WORD
D1028	Integrated value of consumption Number of decimal digits		IntegratedValueOfConsumptionNumberOfDecimaldigits	WORD
D1029	Demand Number of decimal digits		CurrentDemand_NumberOfDecimalDigits	WORD

19 IMPORT OF CSP+ FOR MACHINE

By importing CSP+ for machine, tags required for MX OPC UA Server are automatically generated.
A tag generated with the import function of CSP+ for machine can be used only for Ethernet (SLMP) communication.

19.1 Automatic Generation of Tags by Importing CSP+ for Machine

This section shows the procedure for automatically generating a tag by importing CSP+ for machine.

Precautions

■When importing a large amount of data from CSP+ for machine

It takes time to import a large amount of data (more than 100000 data items, for example) by connecting MX OPC UA Server; therefore, following the procedure below to import data is recommended.

1. Select [File] ⇨ [Save to file] to save the setting locally (disconnected from Server).
2. Import CSP+ for machine.
3. Select [File] ⇨ [Save to server] to save the setting to Server (reconnected to Server).

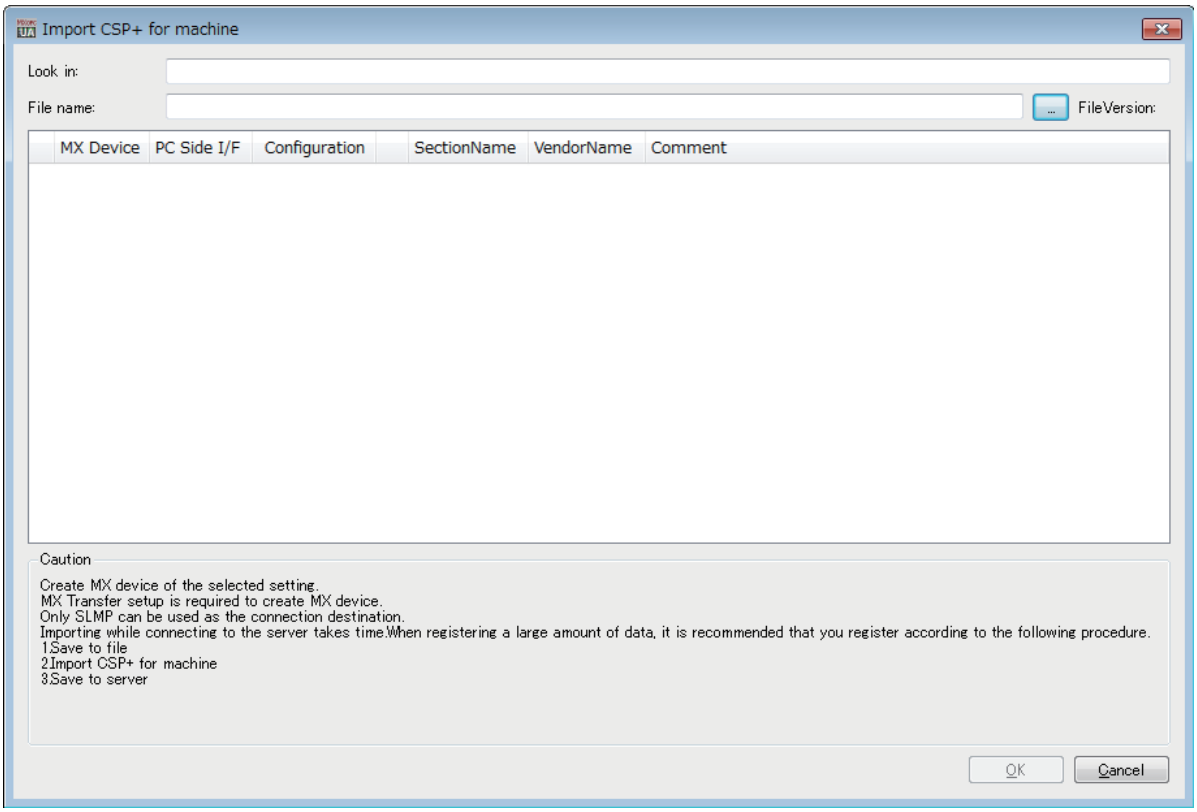
Operating procedure

1. Select [File] ⇨ [CSP+ for machine actions] ⇨ [Import CSP+ for machine].

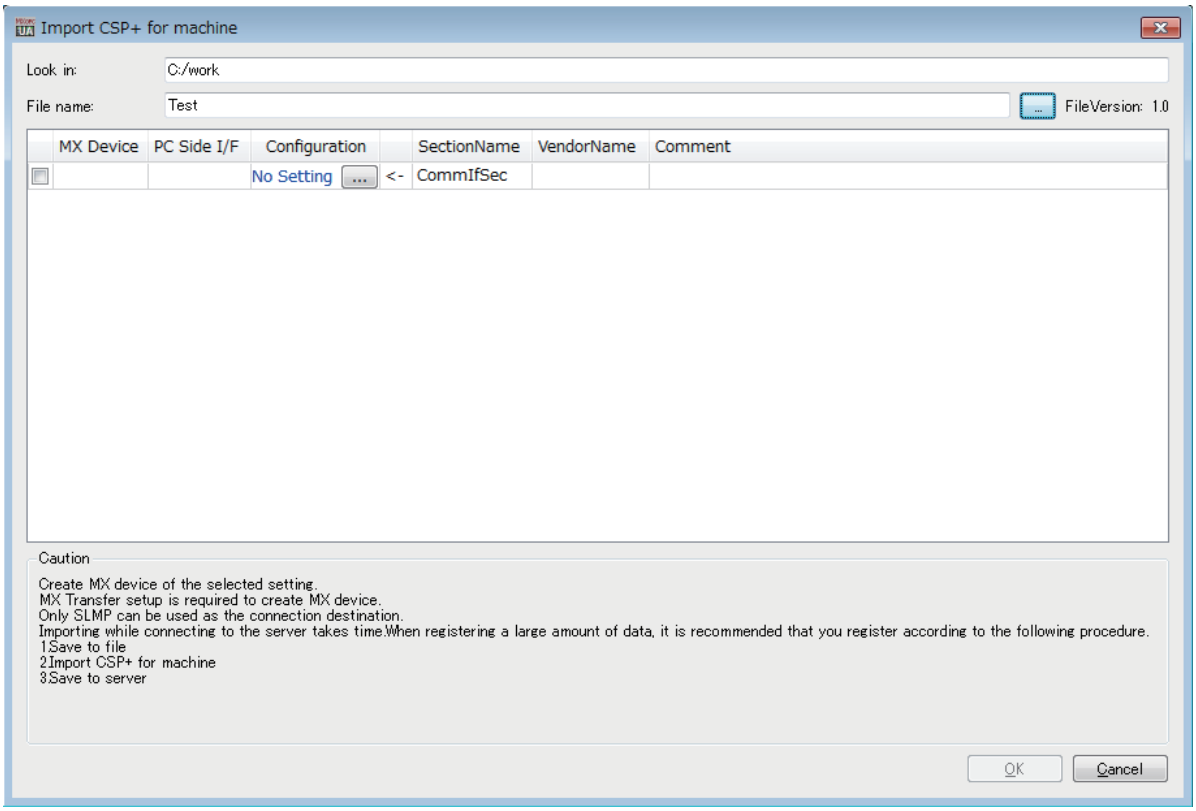
The "Import CSP+ for machine" screen appears.

2. Click the [...] button to select CSP+ for machine to import.

For details on each item in the screen, refer to the following:
☞ Page 203 Import CSP+ for Machine Screen



3. Click the [...] button in "Configuration" of an MX device for which a tag is generated.



4. Set a connection destination in the displayed "MX Transfer Setup" screen.

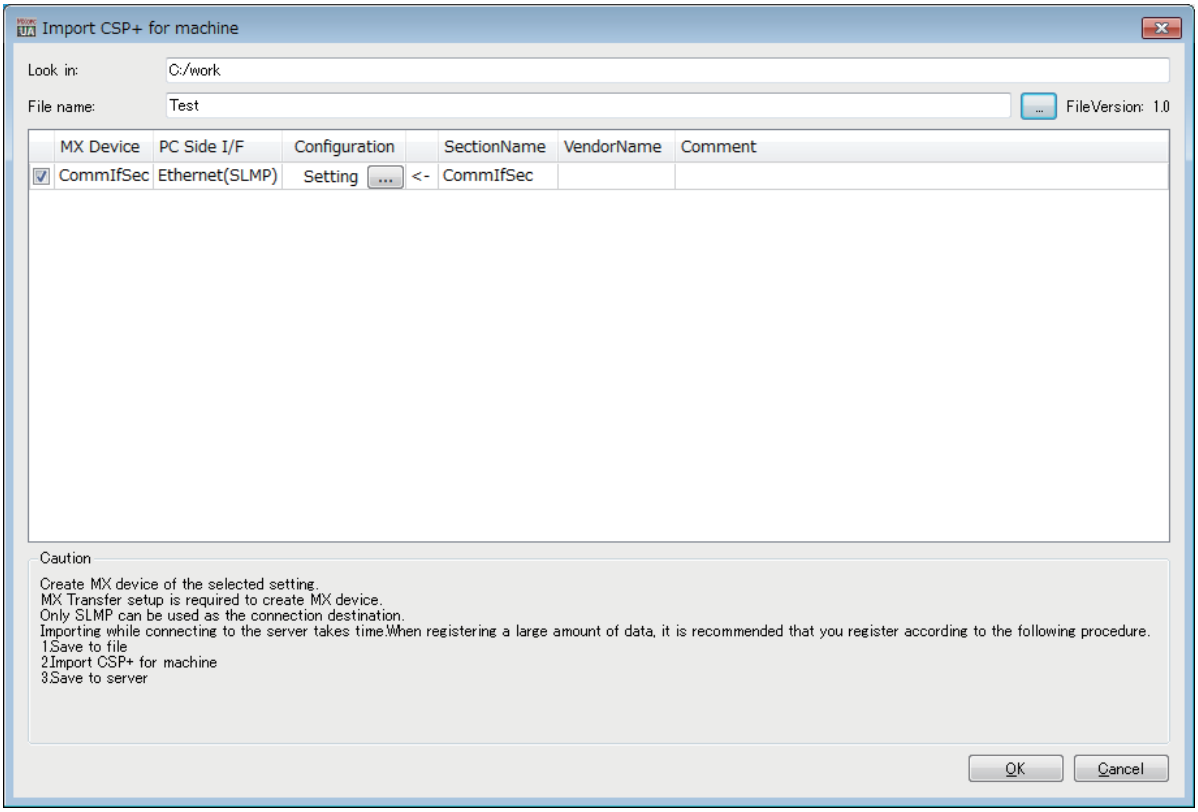
Set "Ethernet(SLMP)" for "PC side I/F". For details, refer to the following:

☞ Page 78 Setting Connection Destinations

5. Set each item in the displayed "Device Properties" screen.

☞ Page 65 MX device screen setting

6. When the setting are properly configured, "Configuration" is displayed in "Device Setting".
Select the checkbox of an MX device to import, and click the [OK] button.



CSP+ for machine is imported and a tag is automatically generated.

Precautions

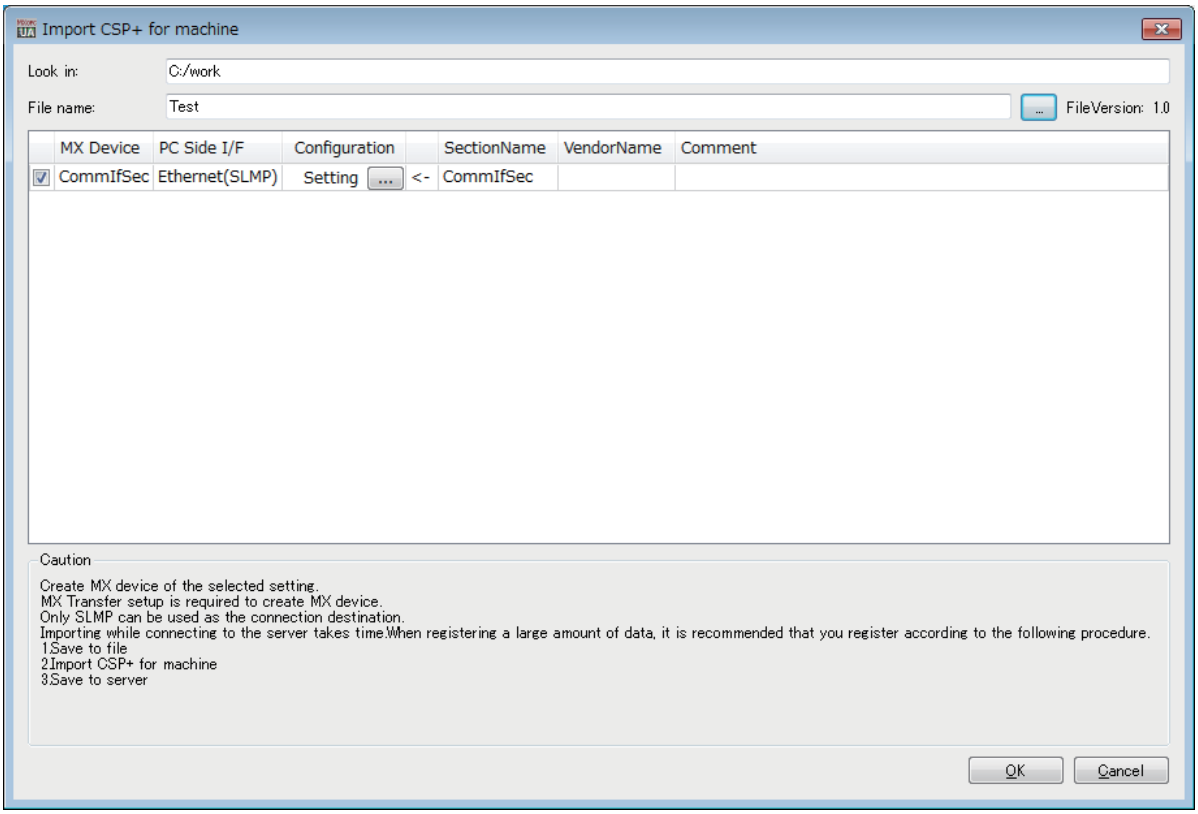
■When "Setting Error" is displayed

A tag generated with the import function of CSP+ for machine can be used only for Ethernet (SLMP) communication.
When a device other than "Ethernet(SLMP)" is selected for "PC side I/F" in the connection destination setting, "Setting Error" is displayed. Always set "Ethernet(SLMP)" for "PC side I/F".

19.2 Import CSP+ for Machine Screen

This section shows the details of the "Import CSP+ for machine" screen.

Window



Displayed items

Item		Description
Look in		A folder storing CSP+ for machine to be imported is displayed.
File name	—	The name of CSP+ for machine to be imported is displayed.
	[...] button	Click this to display the "Select the CSP+ for machine" screen. Select CSP+ for machine to import, and click the [OK] button.
FileVersion		The file version of CSP+ for machine is displayed.
Device selection list	Checkbox	Select the checkbox of machine data to generate its tag.
	MX Device	The MX device name set in the "Device Properties" screen is displayed.
	PC Side I/F	The PC side I/F set in the "MX Transfer Setup Wizard" screen is displayed.
	Configuration	Any of the following status is displayed for the current status of the device. • No Setting: No device is set. • Setting: A device is set normally. • Setting Error: A device other than "Ethernet(SLMP)" is set for "PC side I/F".
	SectionName	"LABEL" of "COMM_IF" described in CSP+ for machine is displayed.
	VendorName	"VendorName" of "DEVICE_IF" described in CSP+ for machine is displayed.
	Comment	"COMMENT" of "COMM_IF" described in CSP+ for machine is displayed.

20 IMPORT OF MX OPC Server DA SETTINGS

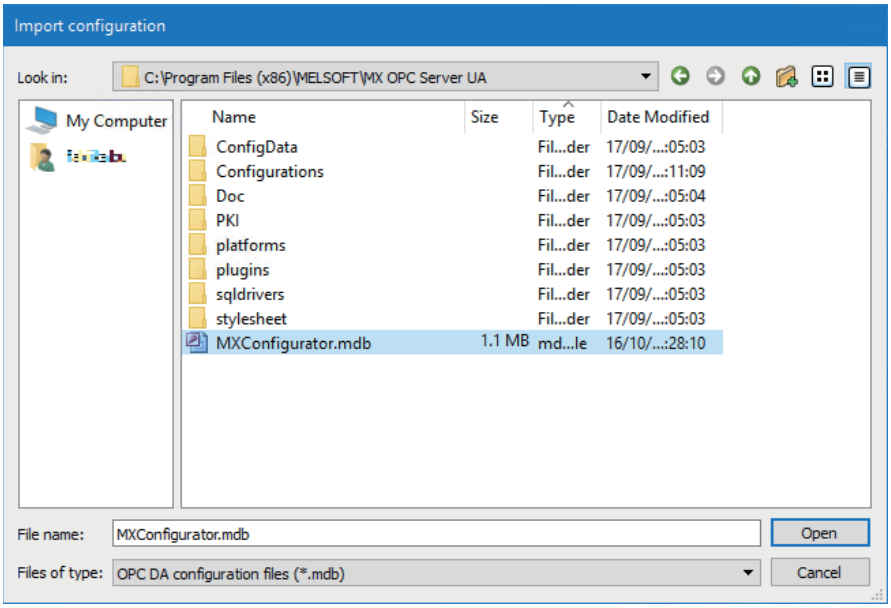
By importing the server settings of MX OPC Server DA, the settings can be used in MX OPC Server UA.

20.1 Using Server Settings of MX OPC Server DA

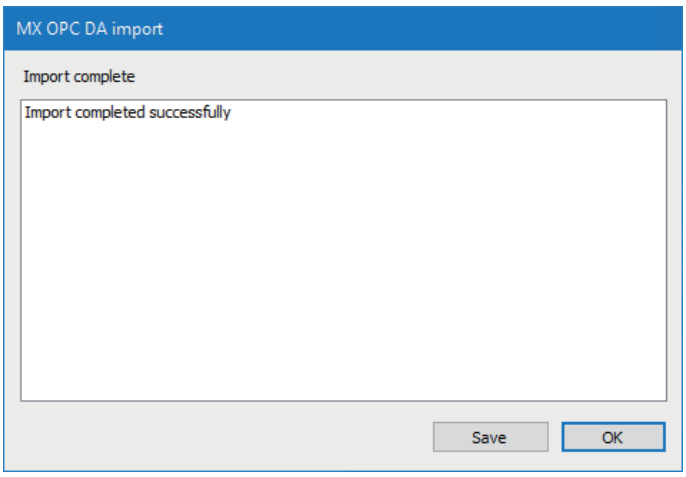
This section shows the procedure for importing server settings of MX OPC Server DA.

Operating procedure

1. Select [File] ⇨ [Import/Export] ⇨ [Import MX OPC DA configuration].
2. Select a file to import, and click the [Open] button.



3. After the completion of import, a result screen is displayed.



Precautions

- MX OPC Server DA configuration files to be imported must be version 6.0.5 or later.
- Within the data types which can be used for MX OPC DA, some data types are not supported by Configuration Tool. For example, native timer tags/native counter tags cannot be imported; therefore set the tag again.

MEMO

21 IMPORT OF GLOBAL LABELS

By importing a global label of GX Works3, a tag for an MX device is automatically generated.

Restriction

- A global label for which the checkbox of "Access from External Device" is selected in the global label editor in GX Works3 cannot be imported.
- If the number of registered MX device tags exceeds 100000 or the total number of MX device tags to be registered when importing global labels and registered MX device tags exceeds 100000, global labels cannot be imported.
- All global labels that can be imported among global labels registered in a GX Works3 project are imported. Only some global labels cannot be imported.
- When a timer type and counter type global labels are imported, the device information of a coil (C) and contact (S) is not registered.
- If a structure definition with the same name as one registered in Configuration Tool is registered in a GX Works3 project to be imported, it cannot be imported unless their structure members match. In addition, a global label for which the structure definition is used cannot be imported.

Point

When using the iQ Works interaction function, label information registered in an iQ Works workspace is imported and a tag is generated. The tag information and label information are linked, and this allows a change in label information in an import source to be followed.
For details on the iQ Works interaction function, refer to the following:
☞ Page 182 INTERACTION WITH iQ Works

GX Works3

To import global labels, GX Works3 the version of which is 1.50C or later must be installed.

■File format

Only global labels in the following file can be imported.

- GX Works3 project file in a single file format (.gx3)

Precautions

In GX Works3, addresses assigned to automatically assigned devices are changed when converting a project. If importing global labels in a project containing automatically assigned devices and then converting the project containing the global labels in GX Works3, the global labels must be imported again for consistency.

21.1 Automatic Generation of Tags by Importing Global Labels

This section shows the procedure for automatically generating a tag by importing a global label of GX Works3.

Precautions

- Tag information cannot be added to an existing MX device. Delete an existing MX device before importing global labels.
- Convert and save a project file in GX Works3 before importing.

Operating procedure

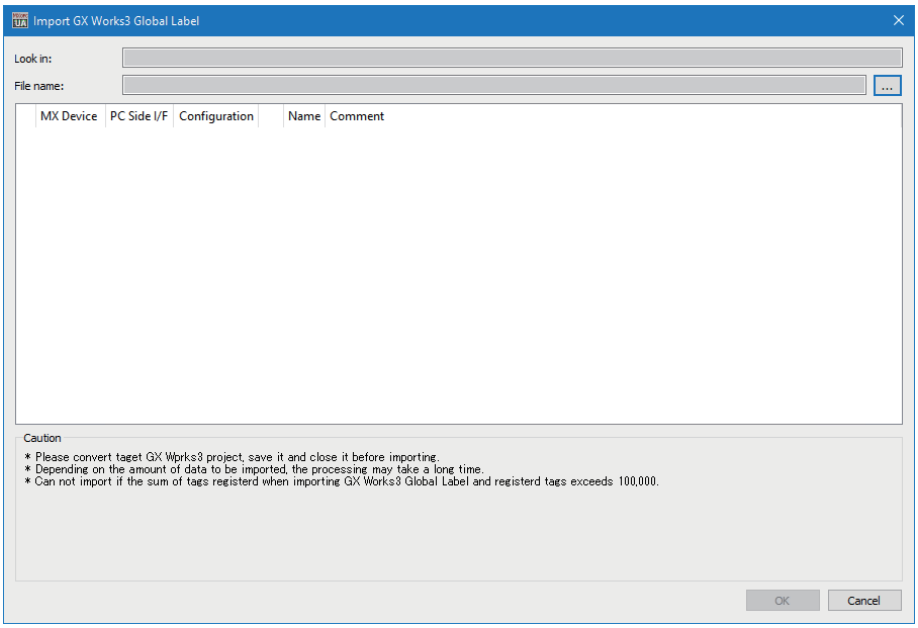
1. Select [File] ⇨ [Import/Export] ⇨ [Import GX Works3 Global Label].

The "Import GX Works3 Global Label" screen appears.

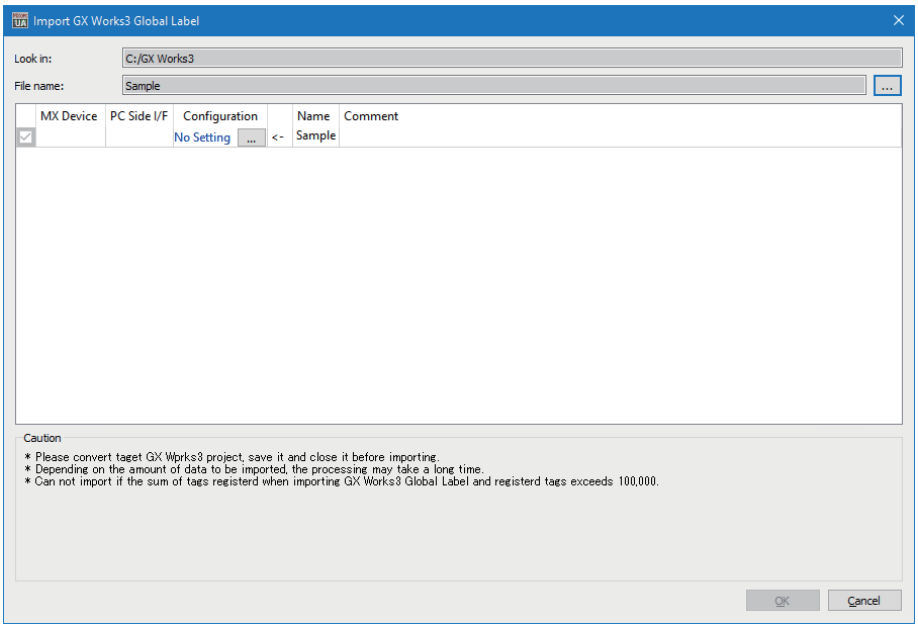
2. Click the [...] button to select a project file in which a global label to be imported is set.

For details on each item in the screen, refer to the following:

☞ Page 211 Import GX Works3 Global Label Screen



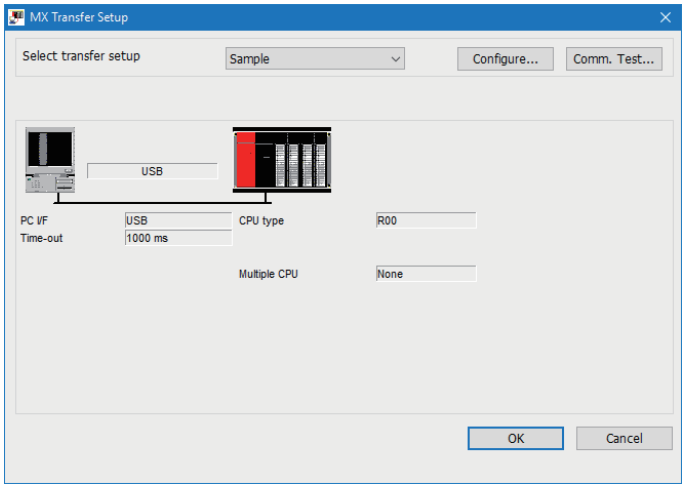
3. Click the [...] button in "Configuration" of an MX device for which a tag is generated.


Import GX Works3 Global Label
Look in:
C:/GX Works3
File name:
Sample
MX Device
PC Side I/F
Configuration
Name
Comment
No Setting
<-
Sample
Caution
* Please convert taget GX Works3 project, save it and close it before importing.
* Depending on the amount of data to be imported, the processing may take a long time.
* Can not import if the sum of tags registerd when importing GX Works3 Global Label and registerd tags exceeds 100,000.
OK
Cancel

4. Set a connection destination in the displayed "MX Transfer Setup" screen, and click the [OK] button.

For details on the connection destination setting, refer to the following:

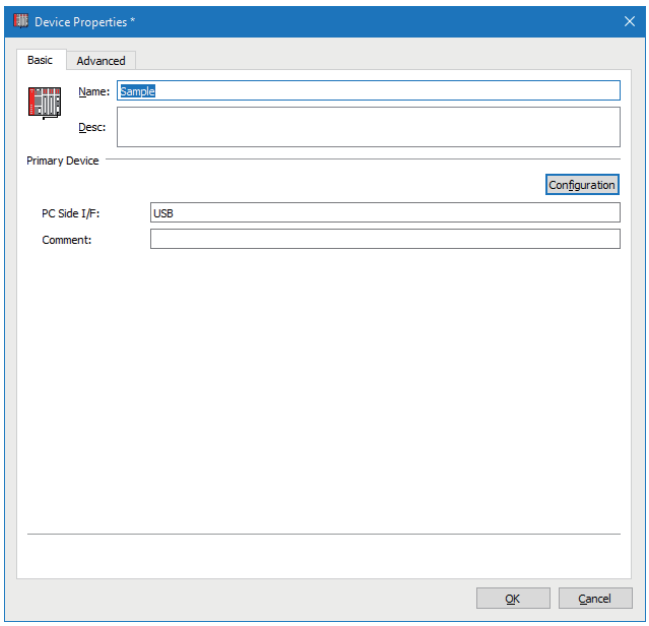
☞ Page 78 Setting Connection Destinations



5. Set each item in the "Device Properties" screen, and click the [OK] button.*1

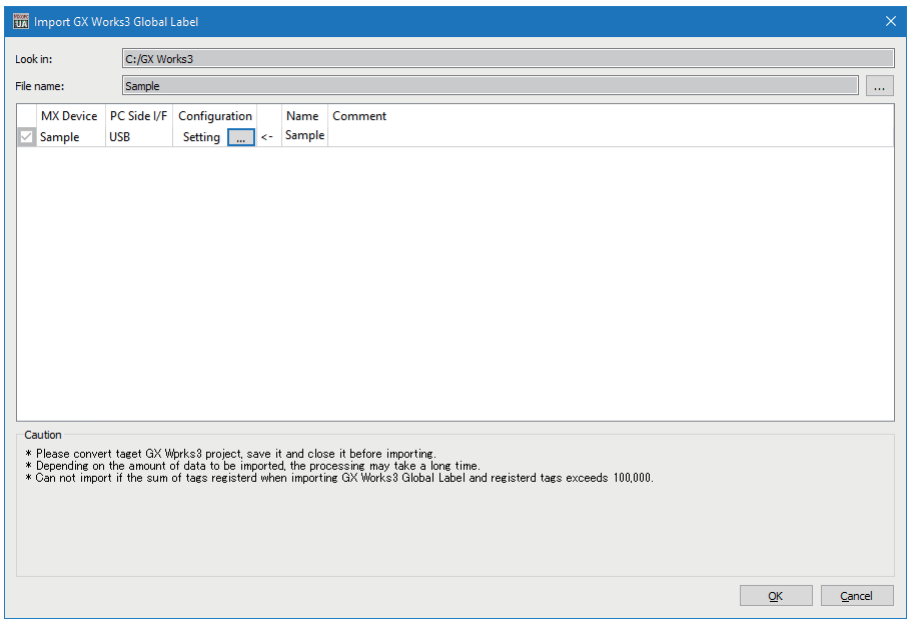
For details on the items, refer to the following:

☞ Page 65 MX device screen setting



*1 The name of an imported GX Works3 project is set for that of an MX device. It can be changed in Configuration Tool.

6. Click the [OK] button.



A global label is imported and a tag is automatically generated.

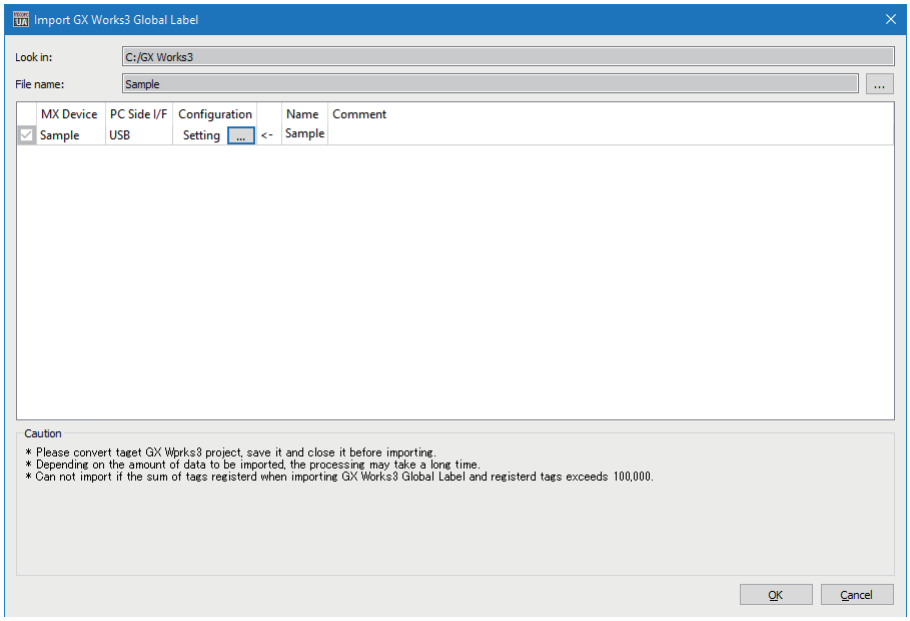
The generated tag is sorted according to the following rules and displayed in the tree view and list view (Page 39 Main frame).

- Tree view: Groups and structure tags are displayed in ascending order of their name lengths. If they have a same length, they are displayed in ascending order of their names (characters).
- List view: Groups, MX device tags, and structure tags are displayed in ascending order of their names (characters).

21.2 Import GX Works3 Global Label Screen

This section shows the details of the "Import GX Works3 Global Label" screen.

Window



Displayed items

Item		Description
Look in		A folder storing a GX Works3 project to be imported is displayed.
File name	—	The name of a GX Works3 project to be imported is displayed.
	[...] button	Click this to display the "Select the GX Works3 project" screen. Select a GX Works3 project to import, and click the [Open] button.
Device selection list	Checkbox	Select the checkbox of an MX device to generate its tag.
	MX Device	The MX device name set in the "Device Properties" screen is displayed.
	PC Side I/F	The PC side I/F set in the "MX Transfer Setup Wizard" screen is displayed.
	Configuration	Any of the following status is displayed for the current status of the device. • No Setting: No device is set. • Setting: A device is set normally.
	Name	The name of a GX Works3 project to be imported is displayed.
	Comment	The comment of a GX Works3 project to be imported is displayed.

Global labels to be imported

The following tables show the data types and devices of a global label that can be imported.

Data type

○: Importable, ×: Not importable

GX Works3		MX OPC Server UA		
Data type		**Import availability**	**Import availability (array)**	**Data type after import**
Simple type	Bit	○	○	BOOL
	Word [signed]	○	○	INT
	Word [unsigned]/Bit string [16-bit]	○	○	WORD
	Double word [signed]	○	○	DINT
	Double word [unsigned]/Bit string [32-bit]	○	○	DWORD
	Single-precision real number	○	○	REAL
	Double-precision real number	○	○	LREAL
	String	○	×	STRING
	String [Unicode]	○	×	WSTRING
	Time	○	○	DWORD
	Pointer	×	×	—
	Timer*1	○	○	WORD
	Retentive timer*1	○	○	
	Counter*1	○	○	
	Long counter*1	○	○	DWORD
	Long retentive timer*1	○	○	
	Long timer*1	○	○	
Structure*2		○	○	Structure
Function block		×	×	—

*1 Only the current value (N) is imported, and a tag is generated. 'N' is added to a device name.
A tag is generated as 'GV' for an automatically assigned device (GV).

*2 Structure definitions that can be imported are imported in MX OPC Server UA even when they are not specified as data types for a global label. To use an imported structure definition, create a tag manually. (☞ Page 153 Structure Labels)

■Importing a structure

If one or more data types that cannot be imported are included in a member of a structure, all members of the structure are not imported.

Device

○: Importable, ×: Not importable

Device (device name)			Information that can be imported in MX OPC Server UA			
			RCPU	RnPSFCPU	R Safety	FX5U
User device	Input (X)		○	○	○	○
	Output (Y)		○	○	○	○
	Internal relay (M)		○	○	○	○
	Link relay (B)		○	○	○	○
	Annunciator (F)		○	○	○	○
	Link special relay (SB)		○	○	○	○
	Edge relay (V)		○	○	○	×
	SFC device (S)		×	×	×	×
	Timer (T)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	○
	Retentive timer (ST)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	○
	Long timer (LT)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	×
	Long retentive timer (LST)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	×
	Counter (C)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	○
	Long counter (LC)	Contact (S)	×	×	×	×
		Coil (C)	×	×	×	×
		Current value (N)	○	○	○	○
	Data register (D)		○	○	○	○
	Link register (W)		○	○	○	○
	Link special register (SW)		○	○	○	○
	Latch relay (L)		○	○	○	○
System device	Function input (FX)		×	×	×	×
	Function output (FY)		×	×	×	×
	Function register (FD)		×	×	×	×
	Special relay (SM)		○	○	○	○
	Special register (SD)		○	○	○	○
Link direct device	Link input (Jn\X)		×	×	×	×
	Link output (Jn\Y)		×	×	×	×
	Link relay (Jn\B)		×	×	×	×
	Link input (Jn\SB)		×	×	×	×
	Link output (Jn\W)		×	×	×	×
	Link relay (Jn\SW)		×	×	×	×
Module access device (Un\G)			×	×	×	×
CPU buffer memory access device		(U3En\G)	×	×	×	×
		(U3En\HG)	×	×	×	×
Index register		(Z)	○	○	○	○
		(ZZ)	×	×	×	×
Long index register		(LZ)	○	○	○	○
File register (R)			○	○	○	○

Device (device name)		Information that can be imported in MX OPC Server UA			
		RCPU	RnPSFCPU	R Safety	FX5U
Extended file register	(ER)	×	×	×	×
	(ZR)	○	○	○	×
Refresh data register (RD)		○	○	○	×
Nesting (N)		×	×	×	×
Pointer (P)		×	×	×	×
Interrupt pointer (I)		×	×	×	×
Network number specified device (J)		×	×	×	×
I/O number specified device (U)		×	×	×	×
SFC block device (BL)		×	×	×	×
SFC transition device (TR)		×	×	×	×
Automatically assigned device (GV)		○	○	○	○
Module label (UV)		×	×	×	×
Safety device	(SA\B)	×	○	○	×
	(SA\CC)	×	×	×	×
	(SA\CN)	×	○	○	×
	(SA\CS)	×	×	×	×
	(SA\D)	×	○	○	×
	(SA\M)	×	○	○	×
	(SA\SD)	×	○	○	×
	(SA\SM)	×	○	○	×
	(SA\STC)	×	×	×	×
	(SA\STN)	×	○	○	×
	(SA\STS)	×	×	×	×
	(SA\TC)	×	×	×	×
	(SA\TN)	×	○	○	×
	(SA\TS)	×	×	×	×
	(SA\W)	×	○	○	×
	(SA\X)	×	○	○	×
	(SA\Y)	×	○	○	×

22 IMPORT/EXPORT IN A CSV FILE

Server settings of MX OPC Server UA can be utilized by exporting then importing to the same version of MX OPC Server UA.

22.1 Importing Settings

This section shows the procedure for importing server settings of MX OPC Server UA from a CSV file.

Restriction

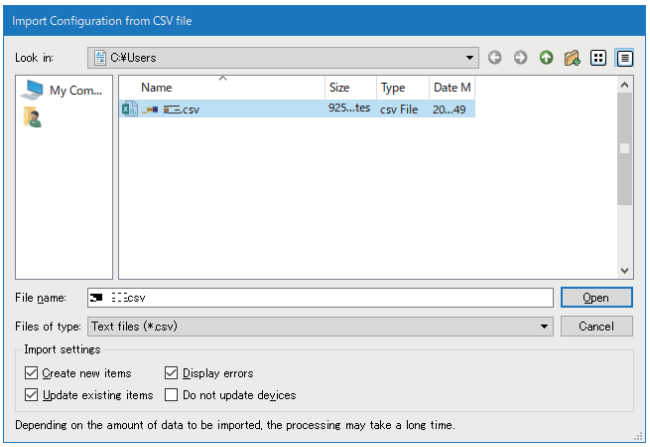
CSV files that can be imported

• CSV files exported from the same version of MX OPC Server UA Configuration Tool

CSV files edited after export are not supported.

Operating procedure

1. Select [File] ⇨ [Import/Export] ⇨ [Import CSV].
2. Select a CSV file and setting items to import, and click the [Open] button.



Item		Description
Import settings	Create new items	Select the checkbox to add information of an MX device and tag.
	Display errors	Select the checkbox to display a message when an error occurs.
	Update existing items	Select the checkbox to update information of an MX device and tag.
	Do not update devices	Select the checkbox to avoid updating information of an MX device. To enable this setting, select the checkbox of "Update existing items".

22.2 Exporting Settings

This section shows the procedure for exporting server settings of MX OPC Server UA.

Operating procedure

1. Select [File] ⇨ [Import/Export] ⇨ [Export CSV].
2. Enter a file name, and click the [Save] button.

PART 4 TROUBLESHOOTING

This part explains about troubleshooting.

23 TROUBLESHOOTING

This chapter explains common problems and their corrective actions for MX OPC UA Server and Configuration Tool.
For errors other than ones listed below, refer to the following:
☞ Page 220 ERROR CODES

Symptom	Check point	Corrective action
Unable to establish communication between an OPC UA client application and MX OPC UA Server.	■For the start as a process Is Server running? ■For the start as a service Is a service of Server running?	■For the start as a process Start Server. ■For the start as a service Start the service of Server. (☞ Page 251 Restart of Service)
	Can Server be accessed?	• Enter the URL of Server for "Endpoint Url" in the "Connection settings" screen. • Change the Windows firewall setting as necessary. • Select an item for "Security Policy" and "Message Security Mode" in the "Connection settings" screen to meet the connection requirements.
	Are the certificates of a client application and Server stored in the 'rejected' directory?	• Move the certificates to the 'trusted' or 'certs' directory. (The move destination differs depending on the program.)
	Is an old certificate with the same name stored?	• Delete an old certificate.
	Is a certificate expired?	• Delete an expired certificate and create a new one.
Unable to register Server in remote discovery Server.	Is remote discovery Server running? Can remote discovery Server be accessed?	• Start remote discovery Server. • Enter the URL of remote discovery Server for "Discovery Url(s)" in the "Connection settings" screen. • Change the Windows firewall setting as necessary.
	Was Server restarted after changing local Server setting?	• If the setting is changed, restart Server.
	Is a certificate stored in the 'rejected' directory?	• Move the certificate to the 'trusted' or 'certs' directory. (The move destination differs depending on the program.)
	Does the certificate of remote discovery Server exist in the 'certs' directory of Server to be registered?	• Store the certificate of remote discovery Server in the 'certs' directory.
	Is an old certificate with the same name stored?	• Delete an old certificate.
	Is a certificate expired?	• Delete an expired certificate and create a new one.
The screen size of Configuration Tool is changed accidentally, and the size cannot be restored to default.	—	Delete a configuration file to reset the layout. Note that, however, all settings including window layout, display/hide status of toolbars and columns, and column width are also reset. • Close Configuration Tool. • Start Explorer (by pressing the Windows key + E key) and enter the following in the address bar. '%appdata%\Mitsubishi'. Rename or delete the file 'MX OPCUA Configurator.ini' • Restart Configuration Tool.
Contents in the screen may not be displayed properly. (For example, overlapping of icons, text overflowing from the flame of a button, etc.)	Is the size of the text and/or other items in the screen changed to a value other than the default value (such as 96 DPI, 100%, and 9 pt) in Windows settings?	• Return the settings to the defaults. • For Windows 10 (version 1703 or later)[*1], the display of Configuration Tool can be enlarged with high DPI scaling by using a Windows 10 function[*2]. ❶ Select 'configtool.exe'[*3], then select [Properties] on the right-click menu. ❷ Select the checkbox of "Override high DPI scaling behavior. Scaling performed by:" in the [Compatibility] tab, then select "System" from the pull-down list. ❸ Click the [OK] button.
Ethernet communication (TCP) is slow on Windows Server.	Is the ECN function enabled in the Windows Server setting when communicating with a MELSEC iQ-R series CPU and RJ71EN71 via Ethernet communication (TCP) in Windows Server 2012?	Disable the ECN function with the following procedure. ❶ Enter 'netsh interface tcp show global' in the command prompt to check the current setting (with administrator authority). ❷ When the ECN function is enabled, enter 'netsh interface tcp set global ecncapability=disabled' to disable the ECN setting.
	Is the CPU or module supported?	Replace the CPU or module with another one as necessary.
	Is the firmware version of MELSEC iQ-R series appropriate?	Upgrade the firmware version of MELSEC iQ-R series to 0.8 or higher.
Importing takes time.	Are a large number of settings saved in MX OPC Server UA?	Delete unnecessary data and then import settings.

Symptom	Check point	Corrective action
Unable to start Configuration Tool even when entering a password for a private key.	Is the password correct?	Enter a correct password. If a password is forgotten, create a new certificate and set a password. (☞ Page 28 Procedure for changing a password)
Unable to install local discovery Server included in Configuration Tool because another version of local discovery Server is already installed.	—	Uninstall the installed local discovery Server then install this product. For the versions of local discovery Server supported by those of this product, refer to the following: ☞ Page 256 Supported Versions of Local Discovery Server

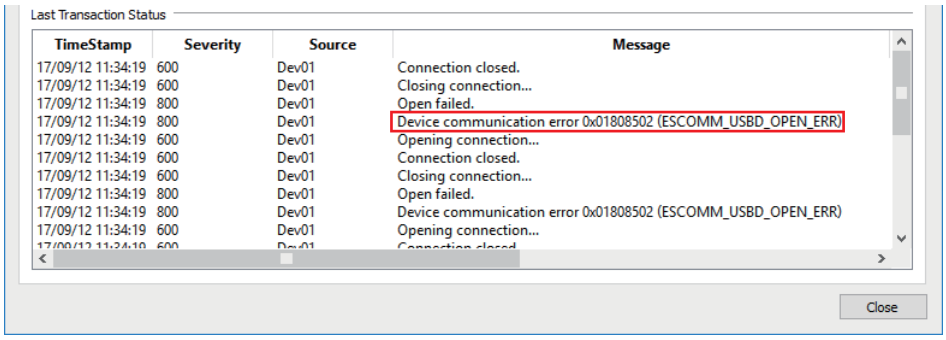
*1 The Windows version can be checked by the following procedure.
❶ Press Windows key + [R], or select [Windows System] ⇨ [Run] from the Start menu of Windows.
❷ Enter 'winver' in the "Run" screen.
❸ Check the version in the displayed screen.

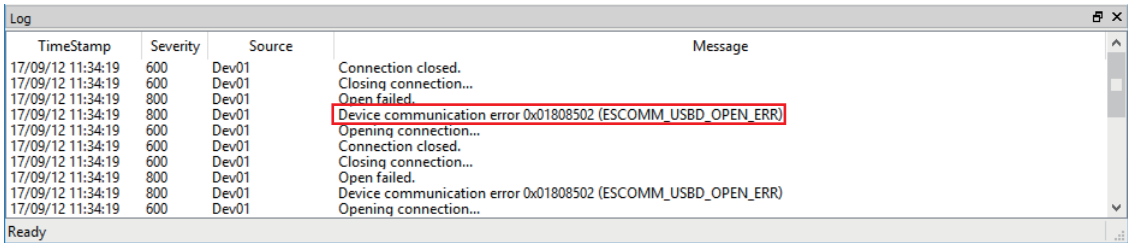
*2 The display of Configuration Tool will be blurred by enlarging.
The following lists the setting values for "Change the size of text, apps, and other items" and the recommended display resolution for each setting value in Windows 10.
Setting value: 100%, display resolution: 1024 × 768 dots or more
Setting value: 125%, display resolution: 1900 × 1200 dots or more
Setting value: 150%, display resolution: 1900 × 1200 dots or more
Setting value: 175%, display resolution: 2880 × 1620 dots or more
Setting value: 200%, display resolution: 2880 × 1620 dots or more
Setting value: 225%, display resolution: 3840 × 2160 dots or more
Setting value: 250%, display resolution: 3840 × 2160 dots or more

*3 'configtool.exe' is stored in the folder where Configuration Tool has been installed.
The following are examples of storage locations.
64-bit version operating system: C:\Program Files (x86)\MELSOFT\MX OPC Server UA\configtool.exe
32-bit version operating system: C:\Program Files\MELSOFT\MX OPC Server UA\configtool.exe

24 ERROR CODES

This chapter explains the error descriptions and corrective actions for each error code.
When an error occurred, the detailed error code is displayed in the log view, or "Last Transaction Status" in the "Statistics" screen.





Error codes are classified into the following three types:

Error code	Description	Reference
HRESULT error code	A general error code which is displayed regardless of the setting of a device and its status.	Page 221 HRESULT error codes
Server error code	An error code returned from Server.	Page 222 Server error codes
Error code in a connection destination device	An error code returned from a specific device.	Page 246 Error codes in a connection destination device

24.1 Server Error Codes

HRESULT error codes

The following table shows general ActiveX errors.

HRESULT error codes are not necessarily related to the setting or status of a device.

Value	Name	Type	Description
0x00000000	S_OK	Normal termination	The function processing is normally terminated.
0x00000001	S_FALSE	Normal termination	The function processing (as ActiveX control) is normally terminated, but the operation (access to programmable controller) failed.
0x80004003	E_POINTER	Abnormal termination	The pointer passed to the function is invalid.
0x80070006	E_HANDLE	Abnormal termination	A supplied handle value is invalid.
0x8007000E	E_OUTOFMEMORY	Abnormal termination	Memory assignment or object creation failed.
0x80070057	E_INVALIDARG	Abnormal termination	An incorrect argument was passed.
0x80070005	E_ACCESSDENIED	Abnormal termination	Permission to use the object is insufficient.
0x8000FFFF	E_UNEXPECTED	Abnormal termination	An unexpected error occurred.
0x80004005	E_FAIL	Abnormal termination	An unspecified error occurred.

Server error codes

The following error codes are useful for diagnostics when there is a problem in connection due to an incorrect parameter setting.

Error code	Description	Corrective action
0x01800001	No command error The method does not support.	• The corresponding method does not support.
0x01800002	Memory lock error	• Exit the program and restart the personal computer. • When using an interface board for personal computer, increase the minimum working set size of the personal computer.*1
0x01800003	Memory securing error	• Exit the program and restart the personal computer. • Exit other programs and secure free memory area. • When using an interface board for personal computer, increase the minimum working set size of the personal computer.*1
0x01800004	DLL load error	• Exit the program and restart the personal computer. • Exit other programs and secure free memory area.
0x01800005	Resource securing error	
0x01801001	Resource timeout error The resource could not be retrieved within the specified time.	• Execute again after the other object completes the communication. • Execute again after increasing the timeout value. • Exit the program and restart the personal computer.
0x01801002	Multi-line open error	• Exit the program and restart the personal computer.
0x01801003	Open not yet executed	
0x01801004	Open type error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01801005	Specified port error	• Exit the program and restart the personal computer.
0x01801006	Specified module error	• Check that the actual system configuration matches to the settings in the communication settings utility or the values of the properties. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01801007	Specified CPU error	• Check the CPU type set to ActCpuType. • Check whether the system configuration is supported or not. • Exit the program and restart the personal computer. • Check the packet type set to ActPacketType.
0x01801008	Target station access error	• Review the target station.
0x01801009	Registry open failure Failed while opening data key of the registry.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0180100A	Packet type error The packet type specified is incorrect.	• Recheck the ActPacketType. • Exit the program and restart the personal computer.
0x0180100B	Protocol type error The protocol specified is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0180100C	Registry search failure	• Exit the program and restart the personal computer.
0x0180100D	GetProcAddress failure	
0x0180100E	DLL non-load error	
0x0180100F	Another object in execution Method cannot be executed because of exclusive control in progress.	• Execute again after some time.
0x01802001	Device error The device character string specified in the method is an unauthorized device character string.	• Review the device name.
0x01802002	Device number error The device character string number specified in the method is an unauthorized device number.	• Review the device number.
0x01802003	Program type error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01802004	Sumcheck error The sumcheck value of the received data is abnormal.	• Check the module side sumcheck setting. • Check the sumcheck property of the control. • Check the cable. • Exit the program and restart the personal computer.

Error code	Description	Corrective action
0x01802005	Size error The number of points specified in the method is unauthorized.	• Check the number of points specified in the method. • Check that the address range being read does not exceed the range set in the programmable controller. • Review the system, e.g. programmable controller CPU, module setting, and cable status. • Exit the program and restart the personal computer.
0x01802006	Block number error The block specifying number in the device character string specified in the method is unauthorized.	• Review the block specifying number in the device character string specified in the method.
0x01802007	Receive data error The data received is abnormal.	• Review the system, e.g. programmable controller CPU, module setting, and cable status. • Check the cable. • Exit the program and restart the personal computer.
0x01802008	Write protect error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01802009	Reading parameters error	
0x0180200A	Writing parameters error	
0x0180200B	Programmable controller type mismatch The CPU type set in the property and communication settings utility do not match the CPU type on the other end of communication.	• Set the correct CPU type in the CPU type of the property. • Set the correct CPU type on the communication settings utility. • Review the system, e.g. programmable controller CPU, module setting, and cable status.
0x0180200C	Request cancel error The request was cancelled while being processed.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0180200D	Drive name error The specified drive name is incorrect.	
0x0180200E	Start step error The start step specified is incorrect.	
0x0180200F	Parameter type error The parameter type is incorrect.	
0x01802010	File name error The file name is incorrect.	
0x01802011	Status error The status of Registration/Cancellation/Setting is incorrect.	
0x01802012	Detailed condition field error	
0x01802013	Step condition error	
0x01802014	Bit device condition error	
0x01802015	Parameter settings error	
0x01802016	Error in specifying telephone exchange number. Method does not support the operations corresponding to the specified telephone exchange number.	• Review the station number. • Check if the method being executed is supported or not. • Review the system configuration, e.g. CPU and module.
0x01802017	Keyword error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01802018	Read/Write flag error	
0x01802019	Refresh method error	
0x0180201A	Buffer access method error	
0x0180201B	Start mode/stop mode error	
0x0180201C	Written clock data error Clock data specified for write cannot be written properly since that data is in error.	• Review the clock data to be written.
0x0180201D	Online clock data write error Failed to write clock data. Clock data cannot be written because the programmable controller CPU is in RUN.	• Place the programmable controller CPU in the STOP state.
0x0180201E	ROM drive error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0180201F	While tracing error Invalid operation was carried out during trace.	
0x01802020	Start I/O number error The start I/O number specified in the method is incorrect.	• Check the value of the start I/O number specified in the method. • Using the GPP function, check the programmable controller parameters (I/O assignment). • Exit the program and restart the personal computer.
0x01802021	First address error The buffer address specified in the method is incorrect.	• Check the value of the buffer address specified in the method. • Exit the program and restart the personal computer.

Error code	Description	Corrective action
0x01802022	Pattern error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01802023	SFC block No. error	
0x01802024	SFC step number error	
0x01802025	Step number error	
0x01802026	Data error	
0x01802027	System data error	
0x01802028	Error in number of TC settings value	
0x01802029	Clear mode error	
0x0180202A	Signal flow error	
0x0180202B	Version management error	
0x0180202C	Monitor not registered error	
0x0180202D	PI type error	
0x0180202E	PI number error	
0x0180202F	Error in number of PIs	
0x01802030	Shift error	
0x01802031	File type error	
0x01802032	Specified module error	
0x01802033	Error check flag error	
0x01802034	Step RUN operation error	
0x01802035	Step RUN data error	
0x01802036	During step RUN error	
0x01802037	Write error while running program corresponding to E2ROM	
0x01802038	Clock data read/write error The clock data read/write method was executed for a programmable controller CPU which does not have clock data.	• Do not execute clock data read/write.
0x01802039	Trace not completed error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0180203A	Registration clear flag error	
0x0180203B	Operation error	
0x0180203C	Error in the number of exchanges	
0x0180203D	Error in number of loops specified	
0x0180203E	Retrieve data selection	
0x0180203F	Error in number of SFC cycles	
0x01802040	Motion programmable controller error	
0x01802041	Motion programmable controller communication error	
0x01802042	Fixed execution time setting error	
0x01802043	Error in number of functions	
0x01802044	System information specification error	
0x01802045	Registration condition not formed error	

Error code	Description	Corrective action
0x01802046	Function number error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01802047	RAM drive error	
0x01802048	ROM drive error at the booting side	
0x01802049	Transfer mode specification error at the booting side	
0x0180204A	Insufficient memory error	
0x0180204B	Back up drive ROM error	
0x0180204C	Block size error	
0x0180204D	Detached during RUN state error	
0x0180204E	Module already registered error	
0x0180204F	Password registration data full error	
0x01802050	Password not registered error	
0x01802051	Remote password error	
0x01802052	IP address error	
0x01802053	Timeout value out of range error	
0x01802054	Command not detected error	
0x01802055	Trace execution type error	
0x01802056	Version error	
0x01802057	Tracking cable error The tracking cable is faulty. The programmable controller CPU is in error.	• Review the system, e.g. programmable controller CPU, module setting, and cable status.
0x0180205C	Keyword protection error The programmable controller CPU is protected by a keyword.	• Disable the keyword and execute again.
0x0180205D	Keyword disable error The inputted keyword is wrong.	• Input a correct keyword.
0x0180205E	Keyword protecting error The programmable controller CPU did not accept the command.	• Execute keyword protection again, or cycle the power of the programmable controller CPU again.
0x0180205F	Keyword entry error An illegal character is included in the inputted keyword.	• Input a correct keyword.
0x01802060	Keyword deletion error The inputted keyword is wrong.	
0x01802062	Received packet CRC check error An error occurred in CRC check for receive packet data.	• Execute the communication process again.
0x01802063	Received packet CRC check error An error occurred in CRC check for whole data file of receive packet.	
0x01802064	FX series programmable controller connection error	• Consult your local Mitsubishi representative.
0x01802070	Online change program error No target program for online change exists in the programmable controller CPU.	• Execute the online change after changing the programmable controller CPU status to STOP.
0x01802071	Ether direct communication multiple response receive error Multiple responses were received during Ether direct communication.	• Check if the personal computer and the programmable controller CPU are connected on a one-to-one basis.
0x01802072	Ether direct communication error Unable to communicate because the programmable controller CPU is being accessed by another personal computer during Ether direct communication.	
0x01802073	Programmable controller CPU search response error When a programmable controller CPU search is performed, the number of responses exceeded the maximum number to be searched.	• Reduce the number of programmable controller CPUs on the network to 1024 or less.
0x01802074	Redundant system other system connection diagnostics error	• Disconnect the cable and connect it to the currently disconnected programmable controller CPU. • Or, change the redundant CPU specification to the self system.
0x01808001	Multiple Open error Open method was executed while in Open state.	• Exit the program and restart the personal computer. • Execute any method other than Open.
0x01808002	Channel number specifying error The port number set to the property and the port number set on the communication settings utility are incorrect.	• Set the correct value to the port number of the property. • Set it again on the communication settings utility.

Error code	Description	Corrective action
0x01808003	Driver not yet started The network board driver is not started.	• Start the driver.
0x01808004	Error in overlap event generation	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808005	MUTEX generation error Failed in creation of MUTEX to perform exclusive control.	• Exit the program and restart the personal computer.
0x01808006	Error in socket object generation A Socket object could not be created.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808007	Socket object generation error Failed in creating a Socket object.	• Check for a running application which uses the same port number. • Retry after changing the port number value of the property. • Retry after changing the port number value on the communication settings utility. • Make Ethernet board and protocol settings on the control panel of the OS. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808008	Port connection error Failed to establish connection. The other end does not respond.	• Review the values of the IP address and port number of the properties. • Review the value of the port number in the communication settings utility. • Review the system, e.g. programmable controller CPU, module setting, and cable status. • Exit the program and restart the personal computer.
0x01808009	COM port handle error Unable to acquire the handle of the COM port. Unable to copy the COM port object. Unable to copy the SOCKET object.	• Check for an application which uses the COM port. • Exit the program and restart the personal computer.
0x0180800A	Buffer size setting error Failed in setting COM port buffer size.	• Check for an application which uses the COM port. • Configure the COM port setting in the control panel of the operating system. • Exit the program and restart the personal computer.
0x0180800B	DCB value acquisition error Failed in acquiring a COM port DCB value.	
0x0180800C	DCB setting error Failed in setting a COM port DCB value.	
0x0180800D	Time-out value setting error Failed in setting a COM port time-out value.	• Review the time-out value of the property. • Review the time-out value on the communication settings utility. • Check for an application which uses the COM port. • Configure the COM port setting in the control panel of the operating system. • Exit the program and restart the personal computer.
0x0180800E	Shared memory open error Failed to execute open processing of shared memory.	• Check whether the GX Simulator has started. • Exit the program and restart the personal computer.
0x01808101	Duplex close error	• Exit the program and restart the personal computer.
0x01808102	Handle close error Failed in closing the COM port handle.	
0x01808103	Driver close error Failed in closing the driver handle.	
0x01808104	Overlap event close error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808105	Mutex handle close error	
0x01808106	COM port handle close error	
0x01808201	Send error Failed to send data.	• Review the system, e.g. programmable controller CPU, module setting, and cable status. • Configure the COM port setting in the control panel of the operating system. • Configure the settings of Ethernet board and protocol in the control panel. • Retry the method. • Exit the program and restart the personal computer.
0x01808202	Send data size error Failed to send data.	• Exit the program and restart the personal computer.
0x01808203	Queue clear error Failed in clearing a COM port queue.	• Exit the program and restart the personal computer. • Execute Close once and execute Open again.

Error code	Description	Corrective action
0x01808301	Receive error Failed to receive data.	• Review the system, e.g. programmable controller CPU, module setting, and cable status. • Review the time-out value of the property. • Review the time-out value on the communication settings utility. • Retry the method. • Exit the program and restart the personal computer.
0x01808302	Not sent error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808303	Error in retrieving overlap event	
0x01808304	Receive buffer size shortage Receive data was larger than the receive buffer size prepared for the system.	• Exit the program and restart the personal computer.
0x01808401	Control error Failed in changing a COM port communication control.	
0x01808402	Signal line control error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808403	Signal line specifying error Failed in changing a COM port communication control.	• Exit the program and restart the personal computer.
0x01808404	Open not yet executed	• Execute Open. • Exit the program and restart the personal computer.
0x01808405	Communication parameter error The data bit and stop bit combination of the properties is unauthorized.	• Review the data bit and stop bit values of the properties. • Set it again on the communication settings utility.
0x01808406	Transmission speed value specifying error The transmission speed of the property is unauthorized.	• Review the transmission speed value of the property. • Set it again on the communication settings utility.
0x01808407	Data length error The data bit value of the property is unauthorized.	• Review the data bit value of the property. • Set it again on the communication settings utility.
0x01808408	Parity specifying error The parity value of the property is unauthorized.	• Review the parity value of the property. • Set it again on the communication settings utility.
0x01808409	Stop bit specifying error The stop bit value of the property is unauthorized.	• Review the stop bit value of the property. • Set it again on the communication settings utility.
0x0180840A	Communication control setting error The control value of the property is unauthorized.	• Review the control value of the property. • Set it again on the communication settings utility.
0x0180840B	Time-out error Though the time-out period had elapsed, data could not be received.	• Review the time-out value of the property. • Set it again on the communication settings utility. • Review the system, e.g. programmable controller CPU, module setting, and cable status. • Retry the method. • Execute Close once and execute Open again. • Exit the program and restart the personal computer.
0x0180840C	Connect error	• Exit the program and restart the personal computer.
0x0180840D	Duplex connect error	
0x0180840E	Attach failure Failed in attaching a socket object.	
0x0180840F	Signal line status acquisition failure Failed in acquiring the COM port signal line status.	
0x01808410	CD signal line OFF The CD signal on the other end of communication is OFF.	• Review the system, e.g. programmable controller CPU, module setting, and cable status. • Exit the program and restart the personal computer.
0x01808411	Password mismatch error	• Check the remote password of the property.
0x01808412	TEL communication error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808501	USB driver load error Failed to load USB driver.	• Exit the program and restart the personal computer. • Check USB driver installation.
0x01808502	USB driver connect error Failed to connect a USB driver.	
0x01808503	USB driver send error Failed to send data.	• Review the system, e.g. programmable controller CPU, module setting, and cable status. • Configure the USB setting on the control panel (device manager) of the operating system. • Retry the method. • Exit the program and restart the personal computer. • Check if communication from another MELSOFT product is established at the same time.
0x01808504	USB driver receive error Failed to receive data.	

Error code	Description	Corrective action
0x01808505	USB driver timeout error	• Review the timeout value. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01808506	USB driver initialization error Failed to initialize a USB driver.	• Configure the USB setting on the control panel (device manager) of the operating system. • Exit the program and restart the personal computer.
0x01808507	Other USB error Error related to data send/receive occurred.	• Disconnect the cable once, then reconnect. • Exit the program and restart the personal computer. • Check if communication from another MELSOFT product is established at the same time.
0x01809000	GX Simulator2 uninstallation error An error occurred when searching the installation path of GX Simulator2.	• Reinstall GX Simulator2.
0x01809001	GX Simulator2 unstart error GX Simulator2 is not started.	• Start GX Simulator2.
0x01809002	GX Simulator2 start error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x01809003	GX Simulator2 start time-out error	
0x01809004	GX Simulator2 stop error	
0x01809005	GX Simulator2 start error	
0x01809007	GX Simulator2 stop error	
0x01809008	GX Simulator2 start error Because it had reached upper bounds of the number of simulations that was able to be started at the same time, it was not possible to start.	
0x01809009	GX Simulator2 start error The simulation of only one project that can be started has started.	
0x01809010	GX Simulator2 start information illegal error An error occurred because the memory area to allocate GX Simulator2 start information could not be acquired.	
0x01809021	GX Simulator2 start error Because it had reached upper bounds of the number of simulations that was able to be started at the same time, it was not possible to start.	
0x01809022	GX Simulator2 start error The simulation of another CPU was not able to begin because the simulation of the FXCPU project had already been begun.	
0x02000001	Points exceeded error The number of points registered in the monitoring server is very high.	• Reduce the number of points registered by the monitor. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x02000002	Shared memory creation error Failed in creating shared memory.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x02000003	Shared memory access error	
0x02000004	Memory securing error Failed in securing memory for the monitoring server.	• Close the other applications. • Increase the system memory. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x02000005	Device not registered error Monitor has not been registered.	• Register the monitor in the monitoring server. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x02000006	Monitoring server startup error Monitoring server is not started.	• Start the monitoring server. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x02000010	Yet to retrieve device value error Monitoring is not yet completed.	• Try to retrieve the value again after waiting for a fixed amount of time. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.

Error code	Description	Corrective action
0x03000001	Command not supported Command is not supported.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03000002	Memory lock error Failed in locking memory.	
0x03000003	Memory securing error Failed in securing the memory.	
0x03000004	DLL read error Failed in reading DLL.	
0x03000005	Securing resources error Failed in securing the resources.	
0x03010001	File creation error Failed in creating a file.	• Check if there is enough space on the hard disk. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010002	File open error Failed to open the file.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010003	Buffer size error The buffer size specified is either incorrect or not enough.	
0x03010004	SIL sentence formation error SIL sentence formation is incorrect.	
0x03010005	File name error The specified filename is too long.	• Specify a shorter filename. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010006	File does not exist error The specified file does not exist.	• Check the filename. • Check if the file exists or not. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010007	File structure error The data structure in the specified file is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010008	File already exists error The specified file already exists.	• Check the filename. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010009	File does not exist error The specified file does not exist.	
0x0301000A	File deletion error Unable to delete the specified file.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0301000B	Multiple open error The specified project has been opened twice.	
0x0301000C	File name error The specified filename is incorrect.	• Check the filename. • Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0301000D	File read error Failed in reading the file.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0301000E	File write error Failed in writing the file.	
0x0301000F	File seek error File seek failed.	
0x03010010	File close error Failed while closing the file.	

Error code	Description	Corrective action
0x03010011	Folder creation error Failed in creating a folder.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03010012	File copy error Failed while copying the file.	
0x03010013	Project path error The length of the project path is incorrect.	
0x03010014	Project type error The project type is incorrect.	
0x03010015	File type error The file type is incorrect.	
0x03010016	Sub-file type error The sub-file type is incorrect.	
0x03010017	Insufficient disk space error The disk space is insufficient.	
0x03020002	Multiple open error DBProduct is opened more than once.	
0x03020003	Not opened error DBProduct is not opened.	
0x03020004	Extract error DBProduct is not extracted.	
0x03020010	Parameter error The parameter of DBProduct is incorrect.	
0x03020011	Language error The language parameter is incorrect.	
0x03020012	Error in specifying manufacturer The maker parameter is incorrect.	
0x03020013	Error in specifying module The module parameter is incorrect.	
0x03020014	SQL parameter error SIL and SQL parameter of DBProduct is incorrect.	
0x03020015	SIL sentence formation error SIL sentence formation of DBProduct is incorrect.	
0x03020016	Field key input error The field key entered is incorrect.	
0x03020050	Record data construction error Failed in reconstructing the record data of DBProduct.	
0x03020060	Error retrieving record data Failed in retrieving DBProduct record data.	
0x03020061	Last record error Unable to retrieve the next record since the current record is the last record.	
0x03FF0000	Initialization error	
0x03FF0001	Not initialized error	
0x03FF0002	Multiple initialization error	
0x03FF0003	Workspace initialization error	
0x03FF0004	Database initialization error	
0x03FF0005	Recordset initialization error	
0x03FF0006	Closing database error	
0x03FF0007	Closing recordset error	
0x03FF0008	Database not opened error Database is not opened.	

Error code	Description	Corrective action
0x03FF0009	Recordset not opened error Recordset is not opened.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x03FF000A	Table initialization error Failed in initializing TtableInformation table.	
0x03FF000B	Table initialization error Failed in initializing TfieldInformation table.	
0x03FF000C	Table initialization error Failed in initializing TrelationInformation table.	
0x03FF000D	Table initialization error Failed in initializing Tlanguage table.	
0x03FF000E	Table initialization error Failed in initializing Tmaker table.	
0x03FF000F	Table initialization error Failed in initializing TOpenDatabase table.	
0x03FF0010	Field value error	
0x03FF0011	Field value error	
0x03FF0012	Exit error Failed to exit the database.	
0x03FF0100	Moving record error Failed while moving the record.	
0x03FF0101	Record count retrieving error Failed to retrieve the record count.	
0x03FF0110	Field value retrieving error Failed in retrieving the field value.	
0x03FF0111	Field value setting error Failed in setting the field value.	
0x03FFFFFF	Other errors	
0x04000001	No command error The specified CPU type cannot be used to perform processing.	• Check the CPU type set to ActCpuType. • Check whether the system configuration is supported or not. • Exit the program and restart the personal computer.
0x04000002	Memory lock error Failed in locking memory.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04000003	Memory securing error Failed in securing the memory.	
0x04000004	Internal server DLL load error Failed to start an internal server.	
0x04000005	Securing resources error Failed in securing the resources.	
0x04000006	Loading main object error Failed in reading the file.	
0x04000007	Loading conversion table error Failed in reading table data.	
0x04000100	Incorrect intermediate code size error	
0x04010001	Intermediate code not converted error The converted machine code for one command has exceeded 256 bytes.	
0x04010002	Intermediate code completion error Intermediate code area of the code to be converted ended abruptly.	
0x04010003	Insufficient intermediate code error The intermediate code of the code to be converted was insufficient.	
0x04010004	Intermediate code data error The intermediate code to be converted is incorrect.	

Error code	Description	Corrective action
0x04010005	Intermediate code structure error The number of steps in the intermediate code is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04010006	Error in number of steps The number of steps in comment intermediate code is incorrect.	
0x04010007	Insufficient storage space for machine code error The storage space for machine code is insufficient.	
0x04010008	Other errors (other errors occurred during the conversion from an intermediate code to a machine code)	
0x04011001	Machine code not converted error The converted intermediate code for one command has exceeded 256 bytes.	
0x04011002	Machine code completion error The machine code area to be converted ended abruptly.	
0x04011003	Abnormal machine code Unable to convert since the machine code to be converted was abnormal.	
0x04011004	Insufficient storage space for intermediate code error The storage area for intermediate code is insufficient.	
0x04011005	Other errors (other errors occurred during the conversion from a machine code to an intermediate code)	
0x04020001	Text code not converted error The converted intermediate code for one command has exceeded 256 bytes.	
0x04020002	No input error The input list code is insufficient.	
0x04020003	Command error The command name of list code to be converted is incorrect.	
0x04020004	Device error The device name of list code to be converted is incorrect.	
0x04020005	Device number error The device number of the list code to be converted is out of range.	
0x04020006	Conversion error The list code to be converted cannot be identified.	
0x04020007	Text data error The list code to be converted is incorrect.	
0x04020008	SFC action error SFC action command is incorrect.	
0x04020009	SFC transition condition error SFC transition condition command is incorrect.	
0x0402000A	Line statement error The line statement entered is incorrect.	
0x0402000B	P.I Statement error The P.I statement entered is incorrect.	
0x0402000C	Note error The note entered is incorrect.	
0x0402000D	Comment error The comment entered is incorrect.	
0x0402000E	Other errors (other errors occurred during the conversion from a list to an intermediate code)	

Error code	Description	Corrective action
0x04021001	Intermediate code not converted error The converted list code for one command has exceeded 256 bytes.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04021002	Intermediate code area full error Intermediate code storage area to be converted is full.	
0x04021003	Command error The command specified by the intermediate code to be converted is incorrect.	
0x04021004	Device error The device specified in the intermediate code to be converted is incorrect.	
0x04021005	Intermediate code error The structure of intermediate code to be converted is incorrect.	
0x04021006	Insufficient list storage space error The space for storing the converted list code is insufficient.	
0x04021007	Other errors (other errors occurred during the conversion from an intermediate code to a list)	
0x04030001	Not converted error The storage space for converted intermediate code is insufficient.	
0x04030002	Incorrect circuit creation error The character memory circuit is not completed in a sequence.	
0x04030003	Specified circuit size exceeded Specified circuit size is too big.	
0x04030004	Incorrect return circuit error There is no consistency before and after the return circuit. The setting for the return circuit is too high.	
0x04030005	Other errors (other errors occurred during the conversion from character memory to an intermediate code)	
0x04031001	Not converted error The size (vertical/horizontal) of the character memory specified is incorrect.	
0x04031002	Abnormal command code error The command intermediate code to be converted is incorrect.	
0x04031003	Incorrect circuit creation error Unable to convert to Sequence Circuit. There is no END command.	
0x04031004	Specified circuit size exceeded error Specified circuit size is too big.	
0x04031005	Fatal error Fatal error has occurred.	
0x04031006	Insufficient number of storage blocks error The space to store the converted character memory circuit blocks is not sufficient.	
0x04031007	Circuit block search error Data is broken off in the circuit block.	
0x04031008	Other errors (other errors occurred during the conversion from an intermediate code to character memory)	
0x04040001	CAD data error There is no CAD data to be converted. The CAD data format is incorrect.	
0x04040002	Output data error The input CAD data type and the output CAD data type are not matching.	

Error code	Description	Corrective action
0x04040003	Library load error Failed to load the library.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04040004	Storage space secure error The space to store the data after conversion is insufficient.	
0x04040005	No END command error There is no END command in the CAD data to be converted.	
0x04040006	Abnormal command code There is abnormal command code in the CAD data to be converted.	
0x04040007	Device number error The device number is out of range.	
0x04040008	Step number error The step number is out of range.	
0x04040009	Specified circuit size exceeded error One circuit block is too big.	
0x0404000A	Return circuit error The return circuit is incorrect.	
0x0404000B	Incorrect circuit creation error The circuit data is incorrect.	
0x0404000C	SFC data error The SFC data to be converted is incorrect.	
0x0404000D	List data error The list data to be converted is incorrect.	
0x0404000E	Comment data error The comment data to be converted is incorrect.	
0x0404000F	Statement error The statement data to be converted is incorrect.	
0x04040010	Other errors (other errors occurred during the conversion from a CAD code to an intermediate code)	
0x04041001	Intermediate code data error There is no intermediate code to be converted. The format of the intermediate code is incorrect.	
0x04041002	CAD data type error The input data type and the output CAD data type are not matching.	
0x04041003	Library error Failed to load the library.	
0x04041004	Insufficient input data error Data to be converted is insufficient.	
0x04041005	Insufficient storage space error The space secured to store the converted CAD data is not sufficient.	
0x04041006	No END command error There is no END command in the data to be converted.	
0x04041007	Abnormal command code error There is abnormal command code in the data to be converted.	
0x04041008	Device number error The device number is out of range.	
0x04041009	Step number error The step number is out of range.	
0x0404100A	Specified circuit size exceeded error One circuit block is too big.	
0x0404100B	Return circuit error The return circuit is incorrect.	
0x0404100C	Incorrect circuit creation error The circuit data is incorrect.	

Error code	Description	Corrective action
0x0404100D	SFC data error The SFC data to be converted is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0404100E	List data error The list data to be converted is incorrect.	
0x0404100F	Comment data error The comment data to be converted is incorrect.	
0x04041010	Statement error The statement data to be converted is incorrect.	
0x04041011	Other errors (other errors occurred during the conversion from an intermediate code to a CAD code)	
0x040A0001	Insufficient intermediate code storage space The space to store the data after conversion is insufficient.	
0x040A0002	Insufficient storage space for additional SFC information	
0x040A0003	Conversion error	
0x040A0004	Non-SFC program error	
0x040A1001	Step not used/no output error	
0x040A1002	Step number out of range error	
0x040A1003	Step not used/no output error	
0x040A1004	Transition number out of range	
0x040A1005	Maximum number exceeded error	
0x040A1006	Microcontroller program space error	
0x040A1007	Non-SFC program error	
0x040B0001	Insufficient intermediate code storage space The space to store the data after conversion is insufficient.	
0x040B0002	Conversion error	
0x040B1001	Failed in creating step start position table	
0x040B1002	Error reading step information	
0x040B1003	Step number error	
0x040B1004	Failed in reading an action/transition condition intermediate code error	
0x040B1005	Securing internal work area failed error	
0x040B1006	Error in setting the maximum value of X direction for character memory	
0x040B1007	Insufficient internal work area error	
0x040B1008	Stack overflow, abnormal character memory	
0x040B1009	Insufficient number of storage blocks error	
0x040B100A	Non-SFC program error	
0x04050001	Abnormal character string specified error Device character string specified is incorrect.	
0x04050002	Device points error Device points are out of range.	
0x04050003	Other errors (other errors occurred during the conversion from a device character string to a device intermediate code)	
0x04051001	Device name error The classification for the device intermediate code is incorrect.	
0x04051002	Device name error The classification for the intermediate code of the extended specification device is incorrect.	
0x04051003	Other errors (other errors occurred during the conversion from a device intermediate code to a device character string)	

Error code	Description	Corrective action
0x04052001	Abnormal character string specified error Device character string specified is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04052002	Device points error Device points are out of range.	
0x04052003	Other errors (other errors occurred during the conversion from a device character string to a device representation code)	
0x04053001	Device representation error The classification specified for the device intermediate code is incorrect.	
0x04053002	Device representation error The classification for the intermediate code of the extended specification device is incorrect.	
0x04053003	Device representation error The rectification part specified for the device is incorrect.	
0x04053004	Device representation error The rectification part specified for the extended device is incorrect.	
0x04053005	Other errors (other errors occurred during the conversion from a device representation code to a device character string)	
0x04064001	Abnormal device intermediate code error The intermediate code for the device is incorrect.	
0x04064002	Other errors (other errors occurred during the conversion from a device intermediate code to a device name)	
0x04065001	Abnormal device name error The classification for the device intermediate code is incorrect.	
0x04065002	Abnormal device name error The classification for the intermediate code of the extended specification device is incorrect.	
0x04065003	Other errors (other errors occurred during the conversion from a device name to an intermediate code)	
0x04066001	Device intermediate code error The intermediate code for the device is incorrect.	
0x04066002	Other errors (other errors occurred during the conversion from a device intermediate code to a device representation)	
0x04067001	Device representation error The classification for the device intermediate code is incorrect.	
0x04067002	Device representation error The classification for the intermediate code of the extended specification device is incorrect.	
0x04067003	Device representation error The rectification part specified for the device is incorrect.	
0x04067004	Device representation error The rectification part specified for the extended device is incorrect.	
0x04067005	Other errors (other errors occurred during the conversion from a device representation to a device intermediate code)	
0x04070001	Common data conversion error The input data of the device comment conversion is incorrect.	
0x04070002	Insufficient common data The data to be converted is insufficient.	
0x04070003	Insufficient storage area The area where the conversion data is stored is insufficient.	

Error code	Description	Corrective action
0x04071001	CPU data conversion error The input data of the device comment conversion is incorrect.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04071002	Insufficient CPU data error The data to be converted is insufficient.	
0x04071003	Insufficient storage area The area where the conversion data is stored is insufficient.	
0x04072001	Open error Failed in creating a conversion object.	
0x04072002	CPU type error The specified CPU type does not exist.	
0x04072003	Not converted error Converted object does not exist.	
0x04072004	Input data error The input data is incorrect.	
0x04073001	Program common data conversion error	
0x04073002	Program common data conversion error	
0x04073101	Program CPU data conversion error	
0x04074001	Common data parameter error	
0x04074002	Network parameter common data error The parameter block exists, but the data inside is not set.	
0x04074101	Parameter CPU data error	
0x04074102	Network parameter CPU data error The parameter block exists, but the data inside is not set.	
0x04074103	Offset error	
0x04074201	Error in specifying network type The network type is not supported by the specified CPU.	
0x04074202	Parameter block number error The Block corresponding to the parameter block number specified does not exist.	
0x04074203	Parameter block content error The contents are different from the ones supported by the specified CPU.	
0x04074204	Parameter block information error The specified block number does not exist.	
0x04074205	Default parameter block is abnormal The specified block number does not exist.	
0x04074301	Error in conversion of the common parameter block	
0x04074302	Error in common parameter block No.1001 The value of the RUN-PAUSE settings existence flag is incorrect.	
0x04074303	Error in common parameter block No.1003	
0x04074304	Error in common parameter block No.1008	
0x04074305	Error in common parameter block No.1100	
0x04074306	Error in common parameter block No.2001 The device intermediate code specified does not exist.	
0x04074307	Error in common parameter block No.3000	

Error code	Description	Corrective action
0x04074308	Error in common parameter block No.3002	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04074309	Error in common parameter block No.3004 The settings for the annunciator display mode is incorrect.	
0x0407430A	Error in common parameter block No.4000 I/O assignment data is not created.	
0x0407430B	Error in common parameter block No.5000 The specified network is not supported.	
0x0407430C	Error in common parameter block No.5001 Valid module number is not set while accessing another station.	
0x0407430D	Error in common parameter block No.5002	
0x0407430E	Error in common parameter block No.5003	
0x0407430F	Error in common parameter block No.5NM0	
0x04074310	Error in common parameter block No.5NM1	
0x04074311	Error in common parameter block No.5NM2	
0x04074312	Error in common parameter block No.5NM3	
0x04074313	Error in common parameter block No.6000	
0x04074314	Error in common parameter block No.FF18 Link parameter capacity is not set.	
0x04074315	Error in common parameter block No.FF25 Calculation circuit check is not set.	
0x04074316	Error in common parameter block No.FF30 Sampling trace data is not created.	
0x04074317	Error in common parameter block No.FF31 Status latch data is not created.	
0x04074318	Error in common parameter block No.FF42 Timer processing points are not set.	
0x04074319	Error in common parameter block No.FF30 Setting value device for specified extended timer does not exist.	
0x0407431A	Error in common parameter block No.FF44	
0x0407431B	Error in common parameter block No.FF45	
0x0407431C	Error in common parameter block No.FF60 Terminal settings are not set.	
0x0407431D	Error in common parameter block No.FF70 User Release area is not set.	

Error code	Description	Corrective action
0x04074401	Error in conversion of CPU parameter block	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04074402	Error in CPU parameter block No.1001	
0x04074403	Error in CPU parameter block No.1003	
0x04074404	Error in CPU parameter block No.1008	
0x04074405	Error in CPU parameter block No.1100	
0x04074406	Error in CPU parameter block No.2001	
0x04074407	Error in CPU parameter block No.3000	
0x04074408	Error in CPU parameter block No.3002	
0x04074409	Error in CPU parameter block No.3004	
0x0407440A	Error in CPU parameter block No.4000	
0x0407440B	Error in CPU parameter block No.5000 The specified network type is not supported.	
0x0407440C	Error in CPU parameter block No.5001	
0x0407440D	Error in CPU parameter block No.5002	
0x0407440E	Error in CPU parameter block No.5003	
0x0407440F	Error in CPU parameter block No.5NM0 The specified network type is not supported.	
0x04074410	Error in CPU parameter block No.5NM1	
0x04074411	Error in CPU parameter block No.5NM2 The specified network type is not supported.	
0x04074412	Error in CPU parameter block No.5NM3	
0x04074413	Error in CPU parameter block No.6000	
0x04074414	Error in CPU parameter block No.FF18	
0x04074415	Error in CPU parameter block No.FF25	
0x04074416	Error in CPU parameter block No.FF30	
0x04074417	Error in CPU parameter block No.FF31	
0x04074418	Error in CPU parameter block No.FF42	
0x04074419	Error in CPU parameter block No.FF43	
0x0407441A	Error in CPU parameter block No.FF44	
0x0407441B	Error in CPU parameter block No.FF45	
0x0407441C	Error in CPU parameter block No.FF60	

Error code	Description	Corrective action
0x0407441D	Error in CPU parameter block No.FF70	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04075001	Common data conversion error Failed while converting the settings portion of device memory.	
0x04075002	Common data conversion error Failed while converting the data portion of device memory.	
0x04075003	Common data conversion error Device memory data portion did not exist.	
0x04075101	CPU data conversion error Failed while converting the settings portion of device memory.	
0x04075102	CPU data conversion error Failed while converting the data portion of device memory.	
0x04076001	Common data conversion error Failed while converting the settings portion of the device comments.	
0x04076002	Common data conversion error Failed while converting the data portion of device comments.	
0x04076101	CPU data conversion error Failed while converting the settings portion of the device comments.	
0x04076102	CPU data conversion error Failed while converting the data portion of device comments.	
0x04077001	Common data conversion error Failed during the conversion of sampling trace settings portion.	
0x04077002	Common data conversion error Failed during the conversion of sampling trace data portion.	
0x04077101	CPU data conversion error Failed during the conversion of sampling trace settings portion.	
0x04077102	CPU data conversion error Failed during the conversion of sampling trace data portion.	
0x04078001	Common data conversion error Failed in the conversion of the status latch settings portion.	
0x04078002	Common data conversion error Failed in the conversion of the status latch data portion.	
0x04078101	CPU data conversion error Failed in the conversion of the status latch settings portion.	
0x04078102	CPU data conversion error Failed in the conversion of the status latch data portion.	
0x04079101	Failure history CPU data conversion error	
0x0407A101	File list CPU data conversion error	
0x0407B101	Error information CPU data conversion error	
0x0407C001	Error in conversion of indirect address to device name Device name storage area is not secured.	

Error code	Description	Corrective action
0x0407C002	Error in conversion of device name to indirect address Indirect address storage area is not secured.	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x0407C003	Error in conversion of indirect address to device representation The device representation storage area is not secured.	
0x0407C004	Error in conversion of device representation to indirect address Indirect address storage area is not secured.	
0x0407C005	Error in conversion of indirect address to device character string Device character string storage area is not secured.	
0x0407C006	Error in conversion of device character string to indirect address Indirect address storage area is not secured.	
0x0407C007	Error in conversion of intermediate code to device name Device name storage area is not secured.	
0x0407C008	Error in conversion of device name to intermediate code Intermediate code storage area is not secured.	
0x0407C009	Error in conversion of intermediate code to device representation Device representation storage area is not secured.	
0x0407C00A	Error in conversion of device representation to intermediate code Intermediate code storage area is not secured.	
0x0407C00B	Error in conversion of intermediate code to indirect address Indirect address storage area is not secured.	
0x0407C00C	Error in conversion of indirect address to intermediate code Intermediate code storage area is not secured.	
0x0407C00D	CPU type error The specified CPU type is not supported.	
0x0407C00E	Device character string error The specified device is not supported.	
0x0407C00F	Device character string error The specified device character string, type is incorrect.	
0x0407C010	Device error The specified device is not supported by the specified CPU.	
0x0407C011	CPU type error The specified CPU is not supported.	
0x0407C012	Device out of range error	
0x0407D001	Common data conversion error Error in conversion of SFC trace condition settings portion	
0x0407D002	Common data conversion error Error in conversion of SFC trace condition data portion	
0x0407D101	CPU data conversion error Error in conversion of SFC trace condition settings portion	

Error code	Description	Corrective action
0x0407D102	CPU data conversion error Error in conversion of SFC trace condition data portion	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x04080001	Intermediate code classification out of range error The intermediate code classification specified is out of range.	
0x04080002	Extended specification intermediate code classification out of range error The extended specification intermediate code specified is out of range.	
0x04080003	Device points check absent error The device does not check the device points.	
0x04090001	GPP project error The specified CPU type and GPP project type are not matching.	
0x04090002	File type error The specified GPP project type and file type are not matching.	
0x04090010	Insufficient GPP data to be converted There is no data to be converted. The data size specified is incorrect.	
0x04090011	Insufficient storage space for converted data The space for storing converted data is insufficient.	
0x04090012	Error in GPP data to be converted The GPP data to be converted is incorrect.	
0x04090110	Insufficient data to be converted error There is no data to be converted. The data size specified is insufficient.	
0x04090111	Insufficient storage space for converted data error The storage space for converted data is insufficient.	
0x04090112	Error in data to be converted The data to be converted is incorrect.	
0x04FFFFFF	Other errors	
0x10000001	No command error	
0x10000002	Failed to start communication DLL of MX Component.	• Exit the program and restart the personal computer.
0x10000003	Open failed. (DiskDrive)	
0x10000004	Duplex Open error	
0x10000005	File access error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x10000006	Incorrect folder name error	
0x10000007	File access denied error	
0x10000008	Disk full error	
0x10000009	File deletion error	
0x1000000A	Incorrect file name error	
0x1000000C	Execution failed since another application or thread is making a request.	• Execute again after some time. • Perform programming according to the multithread rules of COM and ActiveX. • Exit the program and restart the personal computer.
0x1000000D	Folder creation error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x1000000E	Folder/file type error	
0x1000000F	Offset address error	
0x10000010	Request cancel Cancel process has occurred.	
0x10000011	Memory securing error	• Exit the program and restart the personal computer.
0x10000012	Open not yet executed	
0x10000013	Attach not executed error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x10000014	Object invalid error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x10000015	Request cancel failed error	
0x10000016	Status reading failed error	

Error code	Description	Corrective action
0x10000017	The specified size (number of devices) is unauthorized.	• Check the number of points specified in the method. • Exit the program and restart the personal computer.
0x10000018	There is no registered device.	• Exit the program and restart the personal computer.
0x10000019	Data set not executed	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x1000001A	Read not executed error	
0x1000001B	Incorrect create flag error	
0x1000001C	Operation over access	
0x1000001D	Redundant device error	
0x1000001E	Registry search failed.	• Exit the program and restart the personal computer. • Exit other programs and secure free memory area.
0x1000001F	File type error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x10000020	Device memory type error	
0x10000021	Program range error	
0x10000022	TEL type error	
0x10000023	TEL access error	
0x10000024	Cancel flag type error	
0x10000030	Multiple device registration error	
0x10000031	Device not registered error	
0x10000032	Specified device error	• Review the specified device data. • Exit the program and restart the personal computer. • Exit other programs and secure free memory area.
0x10000033	Specified device range error	
0x10000034	File write error	• Exit the program and restart the personal computer. • Consult your local Mitsubishi representative.
0x10000040	Failed to start Server.	
0x10000041	Server stop error Failed to stop Server.	
0x10000042	Server started twice error	
0x10000043	Server not started error	
0x10000044	Resource timeout error	
0x10000045	Server type error	
0x10000046	Access server failed error	
0x10000047	Server already accessed error	
0x10000048	Failed in simulator startup	
0x10000049	Failed in exiting simulator	
0x1000004A	Simulator not started error	
0x1000004B	Simulator type error	
0x1000004C	Simulator not supported error	
0x1000004D	Simulator started twice error	
0x1000004E	Shared memory not started error	
0xF0000001	No-license error The license is not given to the personal computer.	• Using a license key FD, give a license to the personal computer. • MELSOFT MX OPC Server UA is used without the license. Install the license of MELSOFT MX OPC Server UA duly.
0xF0000002	Set data read error Failed in reading set data of the logical station number.	• Specify the correct logical station number. • Set the logical station number on the communication settings utility.
0xF0000003	Already open error The Open method was executed in the open status.	• When changing the communication target CPU, execute the Open method after executing Close.
0xF0000004	Not opened error The Open method is not yet executed.	• After executing the Open method, execute the corresponding method.
0xF0000005	Initialization error Failed in initialization of the object possessed internally in MX Component.	• Exit the program and restart the personal computer.
0xF0000006	Memory securing error Failed to secure MX Component internal memory.	• Exit the program and restart the personal computer. • Exit other programs and secure free memory area.
0xF0000007	Function non-support error The method does not support.	• Can not use because the corresponding method is not supported.

Error code	Description	Corrective action
0xF1000001	Character code conversion error Failed to convert character code (UNICODE to ASCII code, or ASCII code to UNICODE).	• Check the character string specified in the method. • The ASCII character string acquired from the programmable controller CPU is abnormal. • Review the system, e.g. programmable controller CPU, module setting, and cable status. • Exit the program and restart the personal computer. • Retry the GetCpuType method.
0xF1000002	Start I/O number error The specified start I/O number is incorrect. A matching start I/O number does not exist.	• Check the value of the start I/O number specified in the method. • Using the GPP function, check the programmable controller parameters (I/O assignment).
0xF1000003	Buffer address error The specified buffer address is incorrect. The buffer address is outside the range.	• Check the value of the buffer address specified in the method.
0xF1000004	Buffer read size error As a result of buffer read, the specified size could not be acquired.	• Execute Open again. • Review the system, e.g. programmable controller CPU, module setting, and cable status. • Retry. • Exit the program.
0xF1000005	Size error The size specified in the read/write method is abnormal. The read/write first number plus size exceeds the device or buffer area.	• Check the size specified in the method.
0xF1000006	Operation error The operation specified for remote operation is an abnormal value.	• Check the operation specifying value specified in the method.
0xF1000007	Clock data error The clock data is abnormal.	• Check the clock data specified in the method. • Set the correct clock data to the clock data of the programmable controller CPU.
0xF1000008	Monitored device registration count excess 0 or less device point was registered in the EntryDeviceStatus method. 20 or more device points ware registered in the EntryDeviceStatus method.	• Register device points between 1 and 20 in the EntryDeviceStatus method.
0xF1000009	Monitored device data registration error	• After cancelling the registration in the FreeDeviceStatus method, execute the EntryDeviceStatus method again.
0xF1000010	Failed to start device status monitor processing. Failed to end device status monitor processing	• Start/end the device status monitor processing again in the EntryDeviceStatus method.
0xF1000011	The VARIANT argument data type is wrong.	• Review the data type specified for the VARIANT argument. • Check whether the array variable size is large enough. • Check whether the data type specified in the corresponding method has been set.
0xF1000012	The device status monitoring interval is set outside the range from 1 second to 1 hour (1 to 3600).	• Specify the device status monitoring time between 1 and 3600.
0xF1000013	Already connected error After Connect was executed, it was executed again in the same object.	• Execute the Connect method after executing the Disconnect method.
0xF1000015	Exclusive control failed error Failed in exclusive control process while executing the Connect and Disconnect.	• When Connect or Disconnect is being executed for any other object, execute the failed method (Connect/Disconnect) again after the completion of the Connect/Disconnect method. • If the Connect/Disconnect process is in progress only for the self object, perform the following. • Exit the program. • Restart the personal computer.
0xF1000019	Not closed error Disconnect was executed while in Open state.	• Try Disconnect again after executing Close.
0xF100001D	Not connected error Open was executed before executing Connect, or Disconnect was executed.	• Execute Connect once, and execute Open again. • Try Disconnect again after executing Connect.
0xF100001E	Fatal error	• Exit the program. • Restart the personal computer. • Consult your local Mitsubishi representative.
0xF2000003	Invalid data was received. Causes can be the following. • Incorrect data packet received due to noise.	• Retry. • Check the communication device used at the other end.

Error code	Description	Corrective action
0xF200000B	Timeout reached for the call back receive waiting time.	• Increase the call back receive waiting time (ActCallbackReceptionWaitingTimeOut) and execute Connect again.
0xF200000C	The password of QJ71C24/CMO module could not be resolved.	• Set a password to ActPassword property, and then execute the failed method again.

*1 For the method for increasing the minimum working set size of the personal computer, refer to the following manual.
MELSEC Data Link Library Reference Manual

Error codes in a connection destination device

The following explains the error codes returned from a module or a network board connected to Server.
When an error is detected by the module or network board, any of the error code shown in the following table is returned.
The upper two bytes indicates the module where an error is detected, and the lower two bytes indicates an error code which is returned from the module where an error occurred.
For details on errors, refer to the manual of a module or network board which is indicated in the error code.

Error code	Module in which an error occurred
0x01010000 to 0x0101FFFF	Motion controller CPU
0x01070000 to 0x0107FFFF	CC-Link IE Controller Network board, MELSECNET/H board, CC-Link Ver.2 board
0x01090000 to 0x0109FFFF	FXCPU
0x010A0000 to 0x010AFFFF	QCPU, QSCPU, RCPU, FX5CPU
0x010B0000 to 0x010BFFFF	Q series-compatible C24
0x010C0000 to 0x010CFFFF	Q series-compatible E71
0x010D0000 to 0x010DFFFF	Personal computer CPU module
0x010F0000 to 0x010FFFFF	GOT

Precautions

The following shows the considerations for checking error codes returned by programmable controller CPUs, modules, and network boards.

■Property setting error

If the actual system configuration and the set property values do not match, the upper two bytes does not indicate an error-detected module.
For example, if FXCPU property value is set to ActCpuType when using QCPU, the upper two bytes may indicate that FXCPU has detected an error.
In this case, verify the actual system configuration and all property values, and establish the communication again.
Additionally, when using ActUtlType control, check the setting contents of the communication settings utility.

■When accessing another station

When accessing another station, the error code of a relay module (CC-Link IE Controller Network, MELSECNET/H, CC-Link, serial communication, or Ethernet module) may be stored to the lower two bytes.
In this case, there is a possibility that the upper two bytes that indicates an error-detected module does not match the module where an error has occurred. Check the system configuration, and then refer to the manual of the CPU, relay network module, and network board used.

APPENDIX

Appendix 1 Additions and Changes from Previous Version

This section shows the additions and changes with upgrade.

Version 3.01B

Item	Description	Reference
Module	The following modules are supported. • R00CPU, R01CPU, R02CPU, R08PSFCPU, R16PSFCPU, R32PSFCPU, R120PSFCPU	Page 15 Supported modules

Version 3.02C

Item	Description	Reference
Interaction with iQ Works	System labels Ver.1 in a workspace can be synchronized by connecting with iQ Works.	Page 182 INTERACTION WITH iQ Works

Version 3.03D

Item	Description	Reference
Simulation function of GX Works3	The simulation function of GX Works3 can be used.	Page 95 GX Simulator3
Import of CSP+ for machine	File version 2 of CSP+ for machine can be imported.	Page 200 IMPORT OF CSP+ FOR MACHINE
Import/export in a CSV file	Settings exported from MX OPC Server UA can be used in the same version of MX OPC Server UA by importing.	Page 215 IMPORT/EXPORT IN A CSV FILE

Version 3.04E

Item	Description	Reference
System configuration	CC-Link IE TSN modules are supported.	Page 31 SYSTEM CONFIGURATION
Import of global labels	Global labels of GX Works3 can be imported.	Page 206 IMPORT OF GLOBAL LABELS

A

Appendix 2 Version Compatibility

This section explains the considerations when using Configuration Tool, MX OPC UA Server, and a configuration file with different versions.

Using a configuration file created in Configuration Tool version 2.04 or earlier

■When using it in MX OPC UA Server version 3.0.0 or later

Operation	Consideration
Server startup	MX OPC UA Server cannot start because cfg file is not supported.

■When using it in Configuration Tool version 3.00A or later

Operation	Consideration
Save (offline)	A message to confirm a file name appears because the extension of the configuration file is changed.
Save (online)	A cfg file is deleted, and new cfg3 file with the same name is created.

Using a configuration file created in Configuration Tool version 3.00A or later

■When using it in MX OPC UA Server version 2.0.4 or earlier

Operation	Consideration
Server startup	MX OPC UA Server cannot start because cfg3 file is not supported.

■When using it in Configuration Tool version 2.04 or earlier

Operation	Consideration
Open a file	A file cannot open because cfg3 file is not supported.
Open Server	A file cannot open because cfg3 file is not supported.
Save (offline)	A file cannot be saved because cfg3 file is not supported.
Save (online)	A file cannot be saved because cfg3 file is not supported.

Using a configuration file created in Configuration Tool version 3.01B or later

■When using it in Configuration Tool version older than one in which the file was created (excluding version 2.04 or earlier)

Operation	Consideration
Open a file	Data that cannot be used in Configuration Tool may not be displayed properly. To display data in Configuration Tool properly, the latest Configuration Tool is required to be installed.
Open Server	

Using a configuration file created in Configuration Tool version 3.02C or later

■When using it in Configuration Tool version 3.01B or earlier

Operation	Consideration
Open a file	Do not open a file. An MX device and a tag cannot be edited.*1

*1 Only configuration files that were open when the iQ Works interaction function was used.

The versions of MX OPC UA Server and Configuration Tool are different

■When connecting MX OPC UA Server version 2.0.4 or earlier and Configuration Tool version 3.00A or later

Operation	Consideration
Save settings to Server	The settings cannot be saved because cfg3 file is not supported by Server.
Save settings with the property screen (online)	The settings cannot be saved because the version of the setting information in the memory and the version of the sever do not match.

■When connecting MX OPC UA Server version 3.0.0 or later and Configuration Tool version 2.04 or earlier

Operation	Consideration
Save settings to Server	The settings cannot be saved to a file because the version of the setting information in Sever and Configuration Tool do not match.
Save settings with the property screen (online)	The settings cannot be saved because the version of the setting information in the memory and the version of the sever do not match.

■When connecting MX OPC UA Server version 3.0.0 or later and Configuration Tool version 3.00A or later

Operation	Consideration
Save	If the version of Server is older than that of Configuration Tool, a configuration file cannot be saved. Install the latest Server or use Configuration Tool with the same version as Server.
Save settings with the property screen (online)	If the version of the setting information in the memory and the version of Server do not match, the settings cannot be saved.

Appendix 3 Differences from MX OPC Server DA

This section explains the differences of operations between MX OPC Server DA and MX OPC Server UA.

Saving of server settings

In MX OPC Server UA, the setting of Server is saved in a configuration file. (☞ Page 55 Configuration File Management)
Unlike the MX OPC DA configurator, Configuration Tool does not save changes automatically.
Save the changes regularly, whether or not they are connected to Server.

Import of MX OPC Server DA settings

When using the server settings of MX OPC Server DA in MX OPC Server UA, an active database of MX OPC Server DA can be imported.
For details, refer to the following:
☞ Page 204 IMPORT OF MX OPC Server DA SETTINGS

Tag monitoring

Unlike the MX OPC DA configurator, Configuration Tool does not have a view for monitoring. (☞ Page 162 Monitoring)
Instead, values are displayed directly in the list view, and can be written by double-clicking on the value cell. (☞ Page 163 Writing Values to Tags)

TCP/IP connection and security

MX OPC Server UA uses TCP/IP connection for the communication between a personal computer and Server.
Connection security is provided using public key encryption; therefore, depending on the setting, creating a certificate for a client application and Server and copying them among personal computers are required.
For details, refer to the following:
☞ Page 26 SECURITY OF MX OPC Server UA

Creation of structure definitions and structure labels

With Configuration Tool, structure definitions and structure labels can be created.
For details, refer to the following:
☞ Page 176 Setting Structure Definitions

Entering of REAL/LREAL type values

Enter values for REAL/LREAL type using the format of each region.
For example in the UK, a period '.' is used for a floating point decimal separator, but on the other hand in Germany, a comma ',' is used.

Appendix 4 Restart of Service

This section shows the procedures to restart service in Windows® for each operating system.

Windows Server® 2003/2008 R2/2012 R2

Operating procedure

1. Windows Server® 2008 R2: Click the Windows icon, enter 'Services.msc' in the search box, and press the Enter key.

When the "User Account Control" screen appears, click the [Yes] button.

2. Right-click "MELSOFT MX OPC Server UA" in the list, and click the [Restart] button.

Windows® 7

Operating procedure

1. Select the Windows® Start, enter 'Services.msc' in the search box, and press the Enter key.

When the "User Account Control" screen appears, click the [Yes] button.

2. Right-click "MELSOFT MX OPC Server UA" in the list, and click the [Restart] button.

Windows® 8 or 8.1

Operating procedure

1. Move the mouse pointer on the upper right of the screen to display the Charms bar.
2. Click [Search] in the Charms bar.
3. Enter 'Services.msc' in the search box of the search charm, and press the Enter key.

When the "User Account Control" screen appears, click the [Yes] button.

4. Right-click "MELSOFT MX OPC Server UA" in the list, and click the [Restart] button.

Windows® 10

Operating procedure

1. Enter 'Services.msc' in the search box, and press the Enter key.

When the "User Account Control" screen appears, click the [Yes] button.

2. Right-click "MELSOFT MX OPC Server UA" in the list, and click the [Restart] button.

Appendix 5 USB Driver Installation Procedure

To communicate with a CPU module via USB, installing a USB driver is required.
If multiple MELSOFT products are already installed, refer to the installation location of the first product.

Windows® 7 or later

Operating procedure

1. Connect a personal computer and a CPU module with a USB cable, and turn the power of the programmable controller ON.
2. Select [Control Panel] ⇨ [System and Security] ⇨ [Administrative Tools] ⇨ [Computer Management] ⇨ [Device Manager] from Windows® Start*1. Right-click "Unknown device" and click "Update Driver Software".
3. Select "Browse my computer for driver software" on the "Update Driver Software" screen, and specify 'Easysocket\USBDrivers' in the folder where MELSOFT MX OPC Server UA Configuration Tool is installed on the next screen.

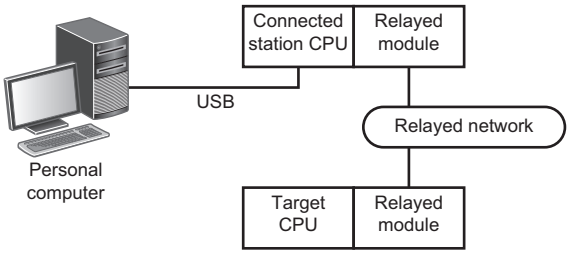
*1 On the Start screen or from the Start menu.

Appendix 6 Accessible Ranges When Using CC-Link IE TSN

The following shows the accessible ranges when using CC-Link IE TSN.

USB communication

■Configuration



■Accessibility

The following tables show the accessibility to a target CPU.

○: Accessible, ×: Not accessible

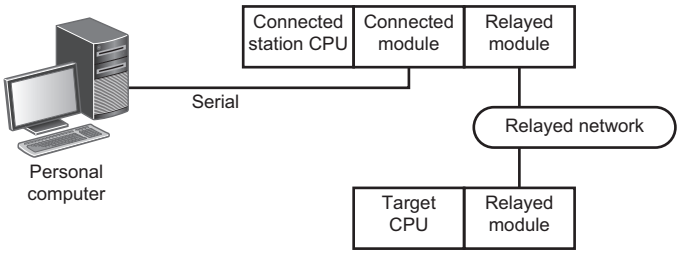
Connected station CPU	Relayed network	Target CPU			
		RCPU	RCCPU	R motion CPU	FX5CPU
RCPU*1	CC IE TSN	○	×	×	×

Connected station CPU	Relayed network	Target CPU					
		QCPU (Q mode)	QCCPU	LCPU	QSCPU	Q motion CPU	FXCPU
RCPU*1	CC IE TSN	×	×	×	×	×	×

*1 When accessing a target CPU in a single network or co-existence network from a connected station in a multiple CPU configuration, the communication can be established via a network not managed by a connected station CPU.

Serial communication

■Configuration



■Accessibility

The following tables show the accessibility to a target CPU.

○: Accessible, ×: Not accessible

Connected station		Relayed network	Target CPU			
Connected station CPU	Connected module		RCPU	RCCPU	R motion CPU	FX5CPU
RCPU	R series-compatible C24	CC IE TSN	○	×	×	×

Connected station		Relayed network	Target CPU					
Connected station CPU	Connected module		QCPU (Q mode)	QCCPU	LCPU	QSCPU	Q motion CPU	FXCPU
RCPU	R series-compatible C24	CC IE TSN	×	×	×	×	×	×

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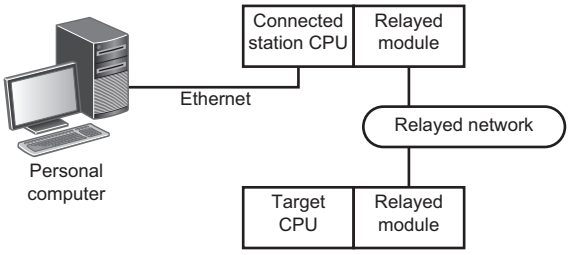
Ethernet communication (when using a built-in Ethernet CPU)

■Configuration



■Accessibility

The following tables show the accessibility to a target CPU.

○: Accessible, ×: Not accessible

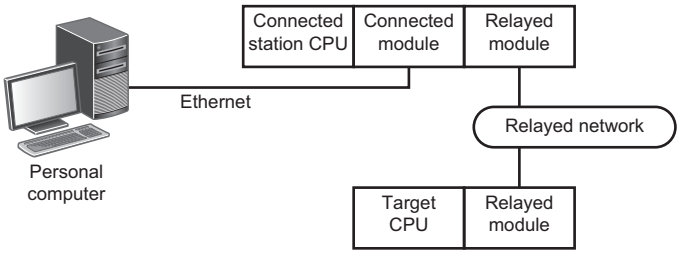
Connected station CPU	Relayed network	Target CPU			
		RCPU	RCCPU	R motion CPU	FX5CPU
RCPU*1	CC IE TSN	○	×	×	×

Connected station CPU	Relayed network	Target CPU					
		QCPU (Q mode)	QCCPU	LCPU	QSCPU	Q motion CPU	FXCPU
RCPU*1	CC IE TSN	×	×	×	×	×	×

*1 When accessing a target CPU in a single network or co-existence network from a connected station in a multiple CPU configuration, the communication can be established via a network not managed by a connected station CPU.

Ethernet communication (when using a CC-Link IE TSN module)

■Configuration



■Accessibility

The following tables show the accessibility to a target CPU.

○: Accessible, ×: Not accessible

Connected station		Relayed network	Target CPU			
Connected station CPU	Connected module		RCPU	RCCPU	R motion CPU	FX5CPU
RCPU*1	CC-Link IE TSN module*2	CC IE TSN	○	×	×	×
		C24	○	×	×	×
		CC-Link	○	×	×	×

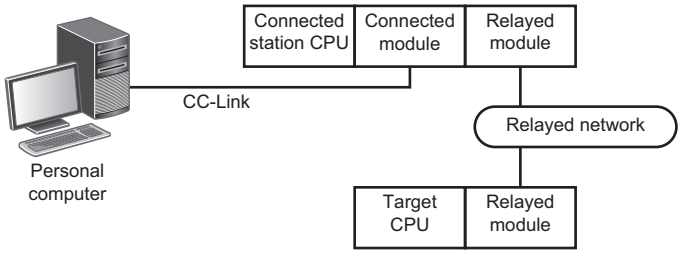
Connected station		Relayed network	Target CPU					
Connected station CPU	Connected module		QCPU (Q mode)	QCCPU	LCPU	QSCPU	Q motion CPU	FXCPU
RCPU*1	CC-Link IE TSN module*2	CC IE TSN	×	×	×	×	×	×
		C24	×	×	×	×	×	×
		CC-Link	×	×	×	×	×	×

*1 When accessing a target CPU in a single network or co-existence network from a connected station in a multiple CPU configuration, the communication can be established via a network not managed by a connected station CPU.

*2 Direct connection is not supported to access CC-Link IE TSN modules.

CC-Link communication

■Configuration



■Accessibility

The following tables show the accessibility to a target CPU.

○: Accessible, ×: Not accessible

Connected station		Relayed network	Target CPU			
Connected station CPU	Connected module		RCPU	RCCPU	R motion CPU	FX5CPU
RCPU*1	CC-Link module	CC IE TSN	○	×	×	×

Connected station		Relayed network	Target CPU					
Connected station CPU	Connected module		QCPU (Q mode)	QCCPU	LCPU	QSCPU	Q motion CPU	FXCPU
RCPU*1	CC-Link module	CC IE TSN	×	×	×	×	×	×

*1 When accessing a target CPU in a single network or co-existence network from a connected station in a multiple CPU configuration, the communication can be established via a network not managed by a connected station CPU.

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Appendix 7 Supported Versions of Local Discovery Server

This section shows the versions of local discovery Server supported by those of this product.

This product	Local discovery Server
3.00A	1.02.334
3.01B	
3.02C	
3.03D	
3.04E	1.02.334.5

REVISIONS

*The manual number is given on the bottom left of the back cover.

Revision date	*Manual number	Description
October 2017	SH(NA)-081859ENG-A	First edition
December 2017	SH(NA)-081859ENG-B	■Added or modified parts TERMS, Chapter 2, Chapter 8, Section 12.1, Chapter 20, Section 21.1, Appendix 1, Appendix 2
April 2018	SH(NA)-081859ENG-C	■Added or modified parts TERMS, Chapter 18, Chapter 20, Appendix 1, Appendix 2
January 2019	SH(NA)-081859ENG-D	■Added or modified parts Chapter 2, Chapter 4, Chapter 8, Section 10.3, Section 12.2, Section 13.1, Chapter 20, Chapter 22, Appendix 1
August 2019	SH(NA)-081859ENG-E	■Added or modified parts TERMS, Chapter 2, Chapter 4, Chapter 6, Section 7.1, Section 7.2, Section 7.3, Section 7.4, Chapter 8, Section 10.3, Section 10.5, Section 10.6, Section 11.2, Section 12.2, Section 19.1, Section 19.2, Section 20.1, Chapter 21, Chapter 23, Section 24.1, Appendix 1, Appendix 6, Appendix 7

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SH(NA)-081859ENG-E(1908)
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