



Programmable Automation Controllers
MELSEC MX Controller



Ezi-IO® CC-Link IE TSN
Network Input/Output **DIO**

Connection Guide

MELSEC MX Controller and **Ezi-IO**® CC-Link IE TSN Network Input/Output **DIO**

Mitsubishi Electric Products

MXR300-16 / MXR300-32 / MXR300-64
MXR300-128 / MXR300-256 / MXF100-8
MXF100-16

FASTECH Products

Ezi-IO CC-Link IE TSN **DIO**, Ezi-IO CC-Link IE TSN **AD**, Ezi-IO CC-Link IE TSN **DA**, Ezi-IO CC-Link IE TSN **CNT**

Before You Begin

- Thank you for using our company's product.
- The Ezi-IO DIO CC-Link IE TSN is an industrial product. Do not use it for any other purpose. We assume no liability for any damages resulting from a violation of this instruction.
- This connection guide provided by our company explains how to connect the Ezi-IO DIO CC-Link IE TSN to a Mitsubishi Electric MELSEC MX controller, covering CSP+ file registration, system configuration, parameter settings, and programming methods.
- Before creating a PLC program, be sure to read this connection guide and use the product correctly after fully understanding its contents.
- This connection guide is subject to change without notice. If you require the latest version, please refer to our CC-Link IE TSN website (<https://cltsn.fastech-motions.com/en>).

Manual Information

- The Ezi-SERVO CC-Link IE TSN Manual can be downloaded from the FASTECH website.

<https://cltsn.fastech-motions.com/en/download/quick>

Manual Name	Manual Number
[Manual][CC-Link IE TSN][Ezi-IO DIO] Digital Input Output Module	
[Connection Guide][CC-Link IE TSN][MELSEC MX Controller][Ezi-IO DIO]	

- The MELSEC MX Controller Manual can be download from the Mitsubishi Electric website.

<https://www.mitsubishielectric.com/fa/index.html>

Manual Name	Manual Number
MELSEC MX Controller (MX-R Model) User's Manual	SH-082640
MELSEC MX Controller (MX-R Model) Programming Manual	SH-082643
GX Works3 Operating Manual	SH-081214

Terminology

- This section covers terms used in the connection guide.

Terminology	Content
CC-Link IE TSN	An open network that adopts 'TSN (Time-Sensitive Networking),' an extension of the standard Ethernet specification, enabling simultaneous processing of real-time control and information from other open networks.
Master Station (Manager Station)	This station manages the entire network and can perform cyclic and transient transmission with all stations. The MELSEC MX controller corresponds to this category.
Remote Station	A station that performs cyclic transmission of bit-level I/O signals and word-level I/O data, and is also capable of transient transmission. The Ezi-SERVO CC-Link IE TSN corresponds to this.
PDO	Abbreviation for Process Data Object. A collection of application objects that are periodically transmitted between multiple CANopen nodes.
Object	Various data held by device stations corresponding to CANopen.

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1. Overview

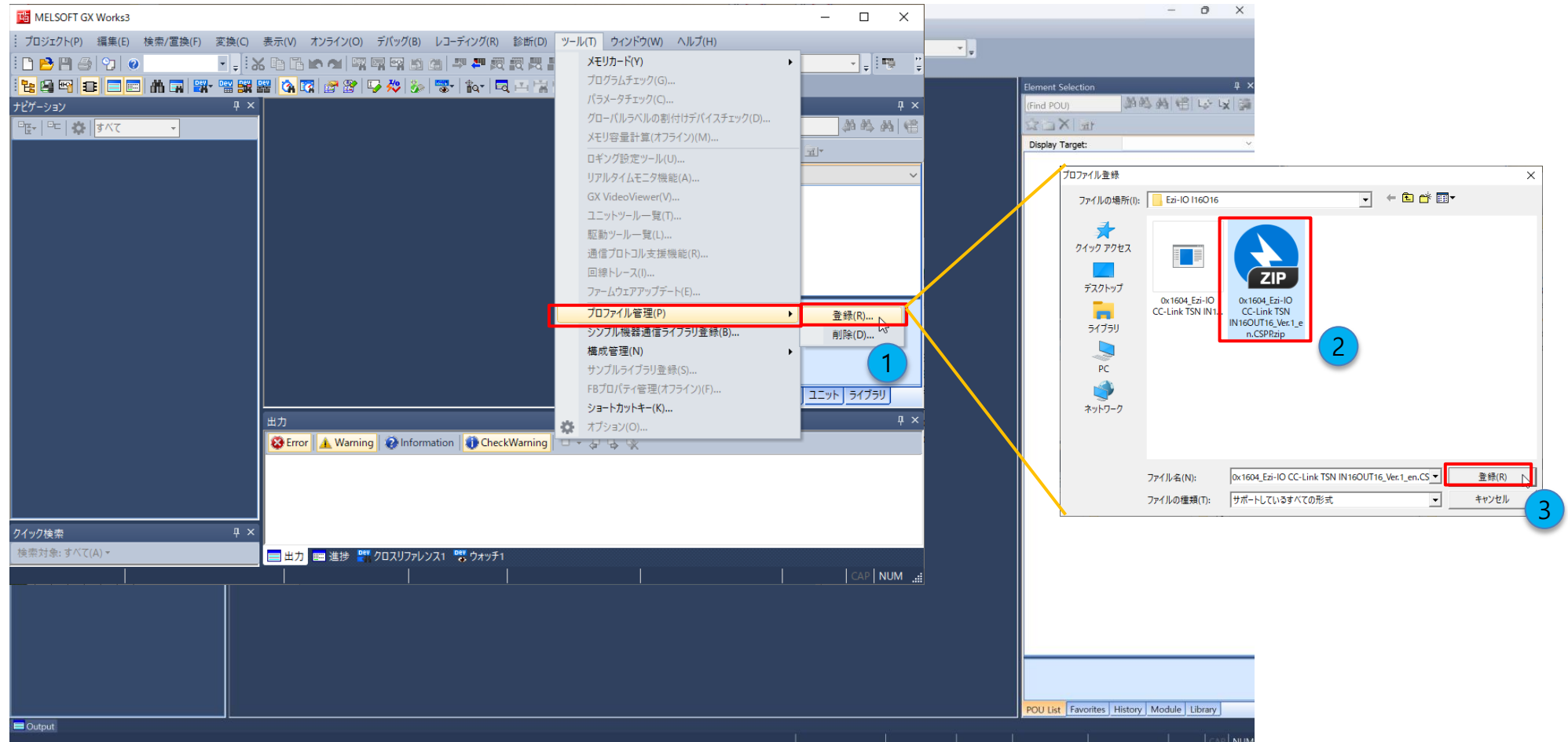
1-1. Overview

- **MELSEC MX Controller and Ezi-SERVO CC-Link IE TSN Connection Guide**
 - ◆ **Master Station: MXR300-16 / MXR300-32 / MXR300-64 / MXR300-128 / MXR300-256
MXF100-8 / MXF100-16**
 - ◆ **Engineering Software**
 - GX Works3: Ver. 1.105K or later
 - Please refer to the Mitsubishi Electric website for the latest files.
(<https://www.mitsubishielectric.com/fa/download/index.html>)
 - ◆ **Remote Station: Ezi-SERVO CC-Link IE TSN**
 - CSP+ file download address: <https://cltsn.fastech-motions.com/en/download/quick>
 - File name: [CSP][Ezi-IO] CT_DIO_1_en_CSPP.zip

1-2. Ezi-IO CC-Link IE TSN DIO CSP+ File Registration

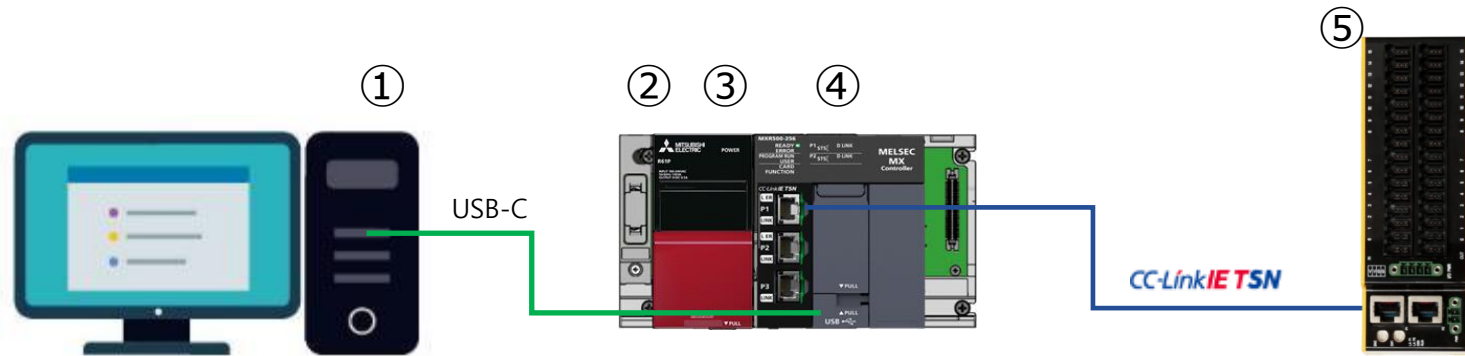
● CSP+ Registration

- [GX Works3] Tool / Profile Management / Register *You can only register before opening a project.



1-3. CC-Link IE TSN Configuration

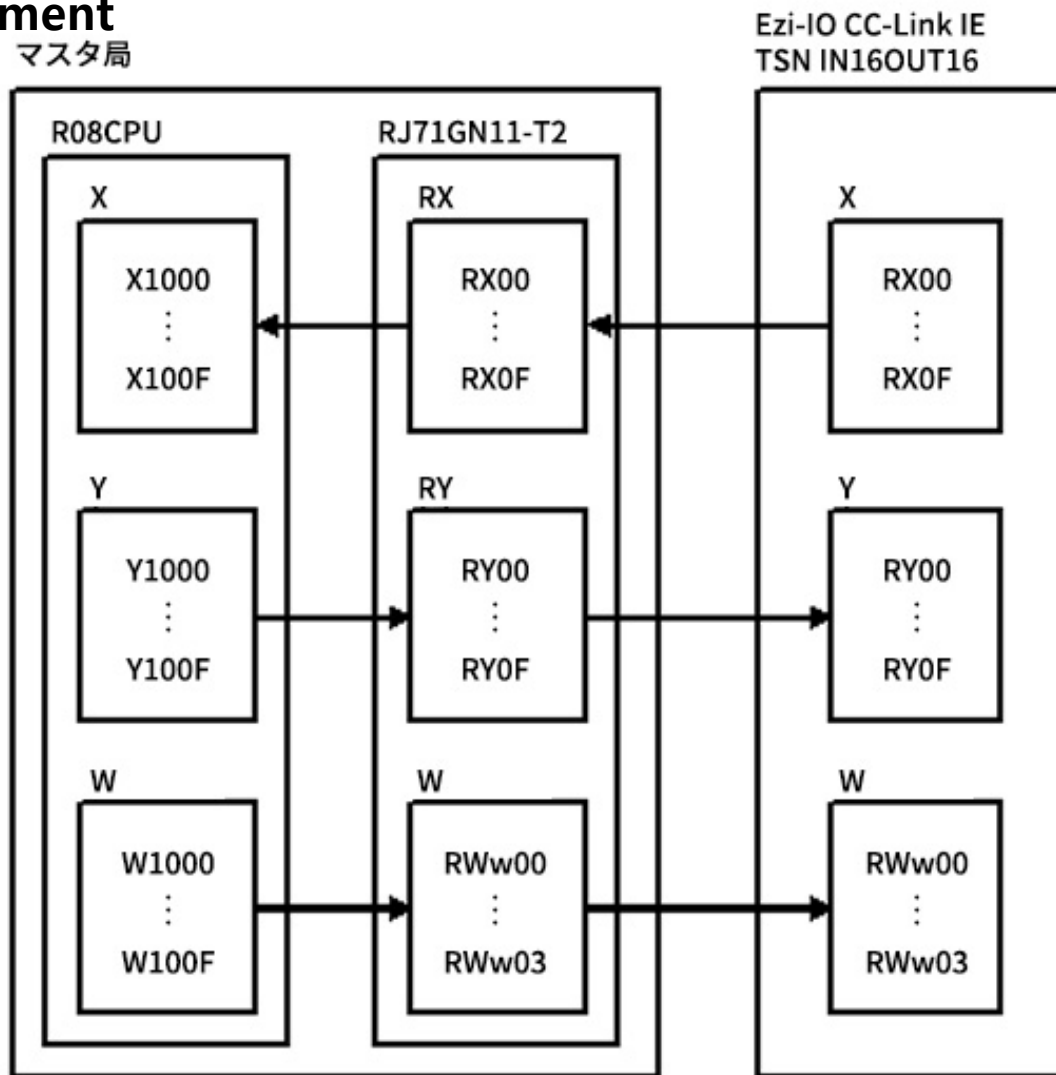
- System Configuration



Configuration		Product Name	IP Address
①	Engineering Software	GX Works3	-
②	Basic Base	R33B	-
③	Power Module	R61P	-
④	Controller	MXR300-16	192.168.3.253
⑤	I/O Module	Ezi-IO-CT-I16O16N-E	192.168.3.1

1-3. CC-Link IE TSN Configuration

- Example: System Link Device Assignment



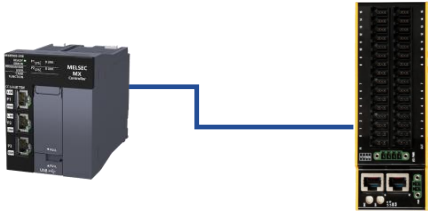
1-3. CC-Link IE TSN Configuration

● Ezi-SERVO Specifications

Communication Method	CC-Link IE TSN
Physical Layer	Ethernet – 100BASE-TX
Connector	RJ45 LA P1/LA P2
Station Type	Remote Device Station
Authentication Class	Class B
Data Rate	1 Gbps
Link Topology	• Line connection, star connection, or a combination of star and line connections • Ring configuration
Connection Cable	STP (Shielded Twisted Pair) cable, Category 5e or higher / Maximum length 100 m
Communication Method	CC-Link IE TSN

1-4. Configuration Flow

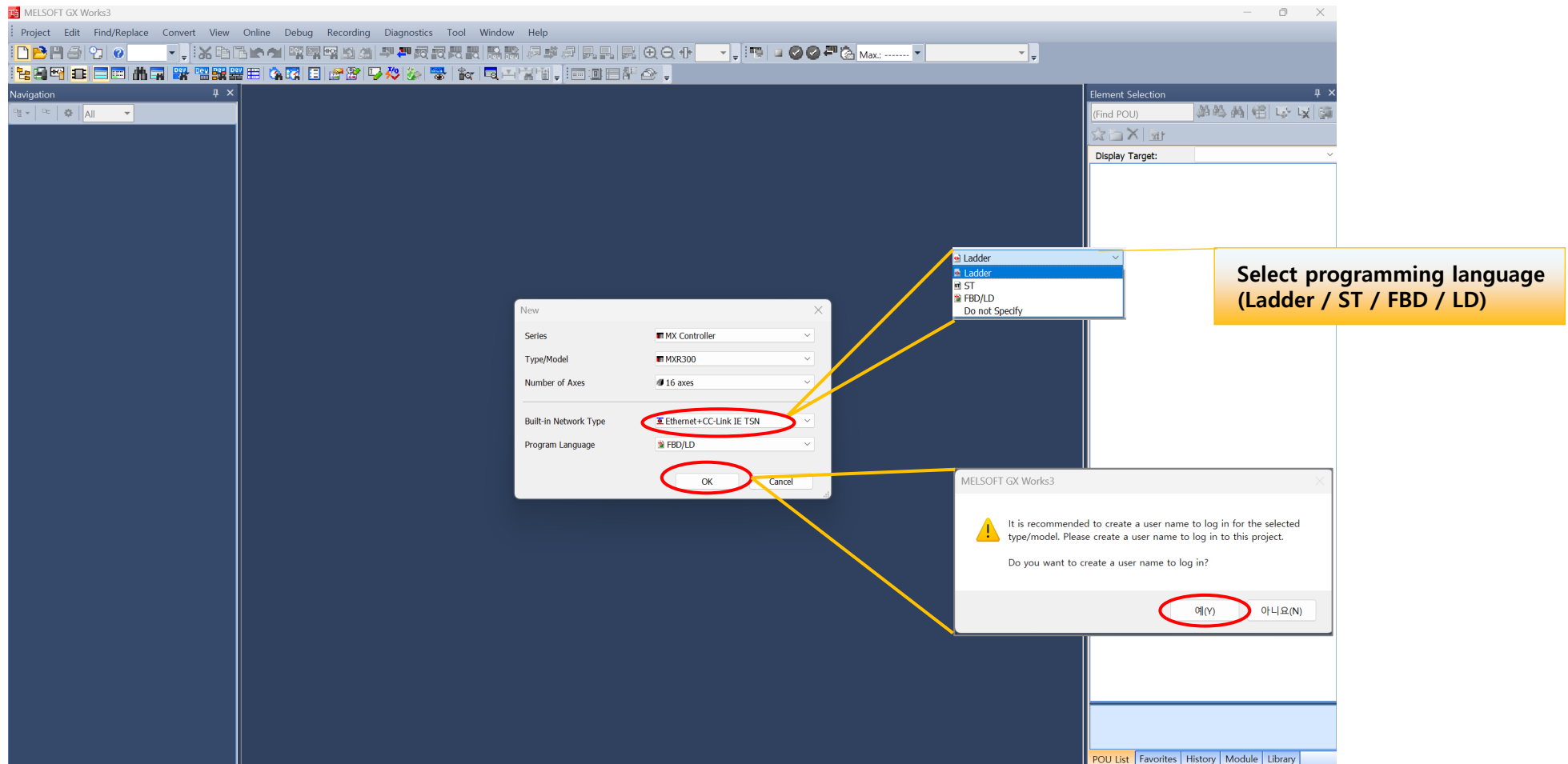
- Ezi-IO DIO and MX Controller Parameter Settings

No.	Item	Description
1	Ezi-IO DIO Configuration 	Set the parameters using the driver configuration program (Ezi-CT Manager). Please download the configuration program and user manual from the FASTECH website. * Address: https://cltsn.fastech-motions.com/en/download/quick
2	MX Controller Configuration 	After creating an MX controller project using GX-Works3, configure the unit parameters (communication method, connection target) and axis parameters (for motion control).
3	MX Controller + Ezi-IO DIO Operation Verification 	Create a program to verify that the MX Controller and Ezi-IO DIO are configured correctly. Use the label to verify that the motor operates normally.

2. MX Controller Configuration

2-1. Creating a Project

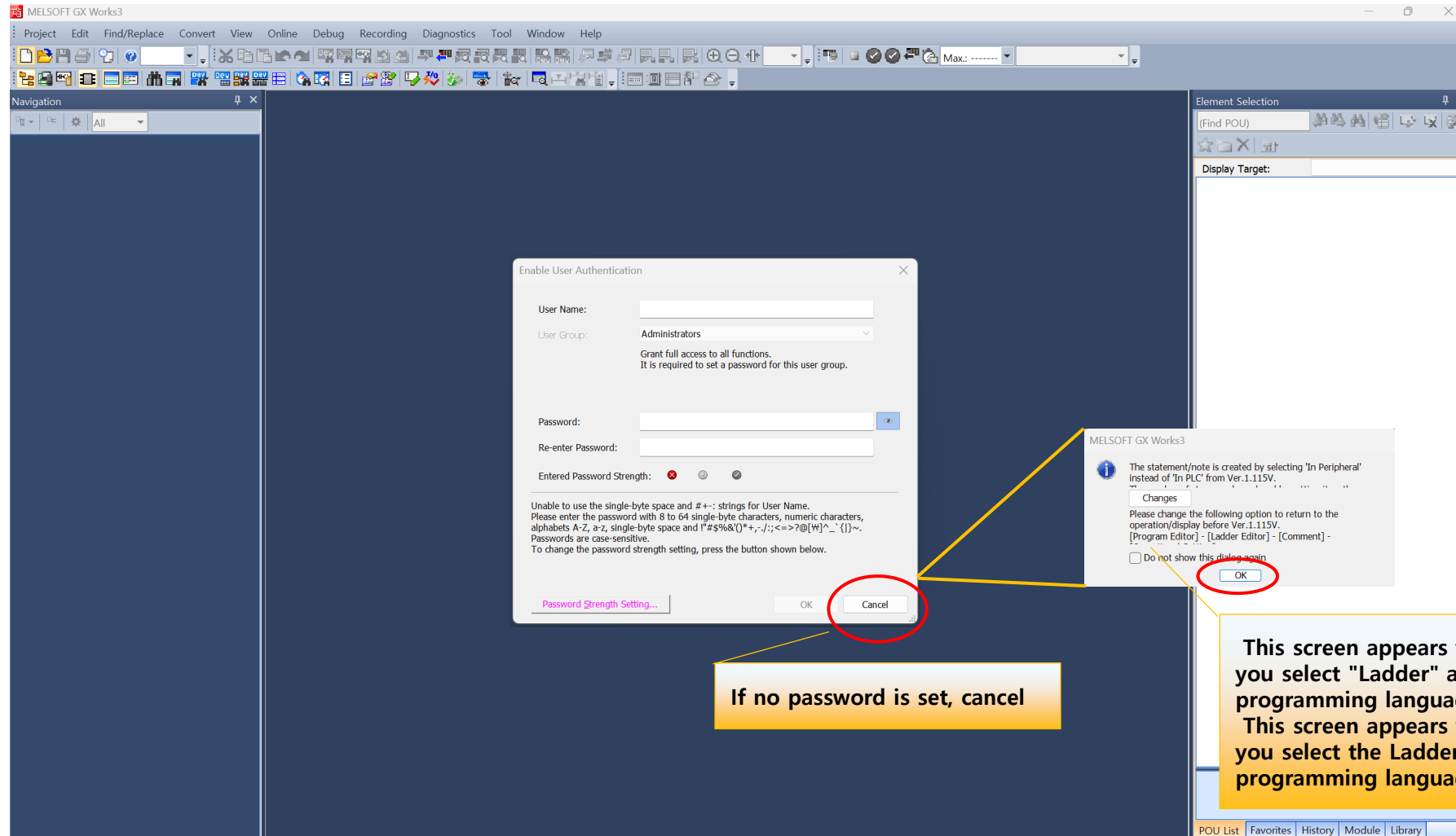
- When creating a new project, select the MX controller, model name, number of axes, and programming language



2-2. User Authentication Settings

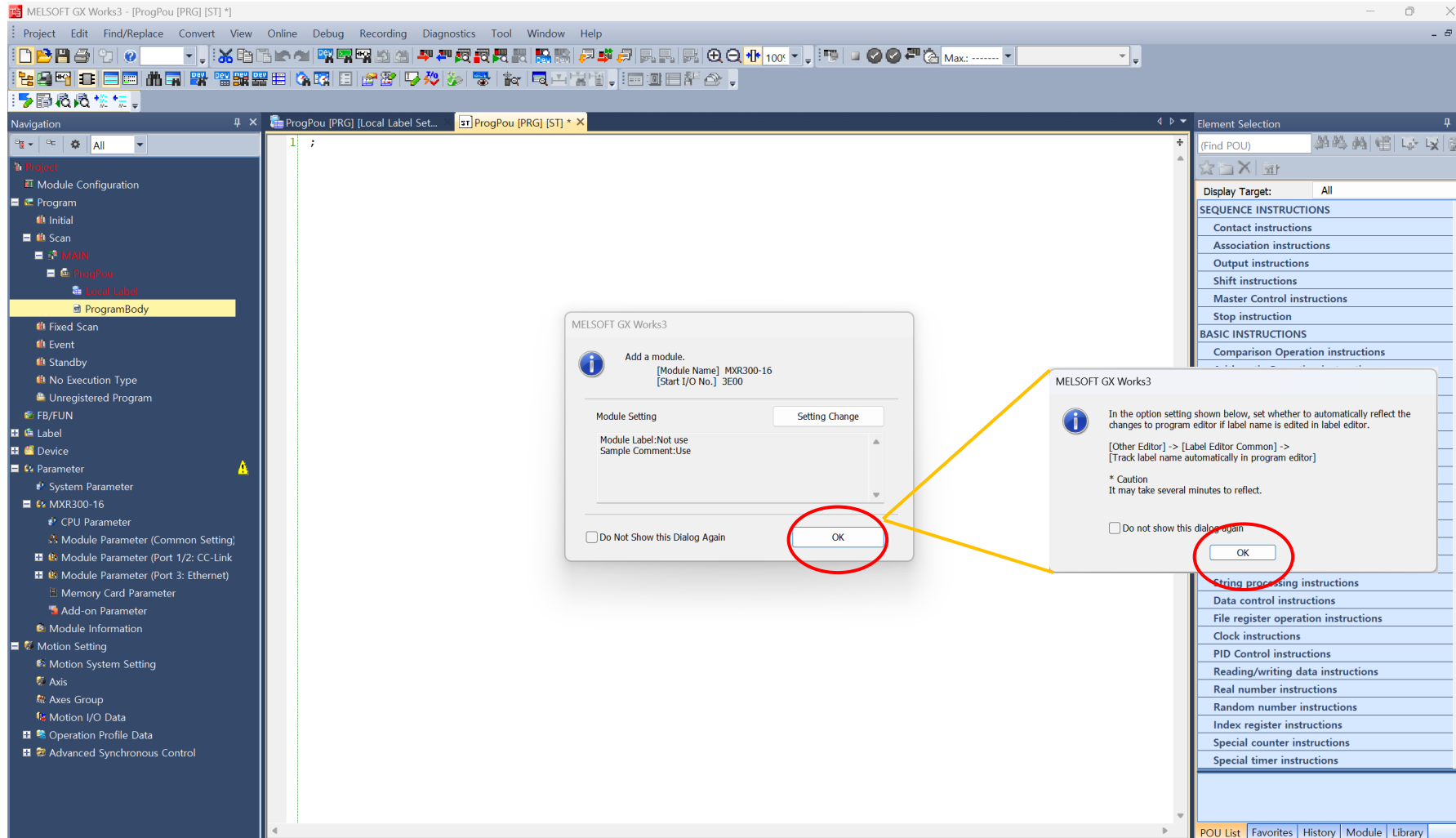
- **Set password**

* In this chapter, the operation is canceled if no password is set.



2-3. Module Registration

- MXR300-xx Registration



2-4. Module Configuration – Hardware

- Click and drag with the mouse to configure the base unit, CPU module, and power supply module

The screenshot displays the MELSOFT GX Works3 software interface for module configuration. The 'Module Configuration' window is open, showing a rack configuration grid. A yellow box labeled '1' highlights the 'Module Configuration' tab in the left sidebar. A yellow box labeled '2' highlights the 'R32SB' module in the 'Main Base' list on the right. A yellow box labeled '3' highlights the 'R61P' power supply module in the 'Power Supply' list on the right. A yellow box labeled '4' highlights the 'Base' module in the rack grid. A yellow box labeled '5' highlights the 'Mouse Click & Drag' instruction in the center of the rack grid. A yellow box labeled '6' highlights the 'Click & Drag' instruction in the bottom center of the rack grid. A yellow box labeled '7' highlights the 'OK' button in the 'MELSOFT GX Works3' dialog box.

1 Module Configuration

2 R32SB 2 Slots (Type requiring s)

3 R61P 6.5A output

4 Base

5 Mouse Click & Drag

6 [Click & Drag]

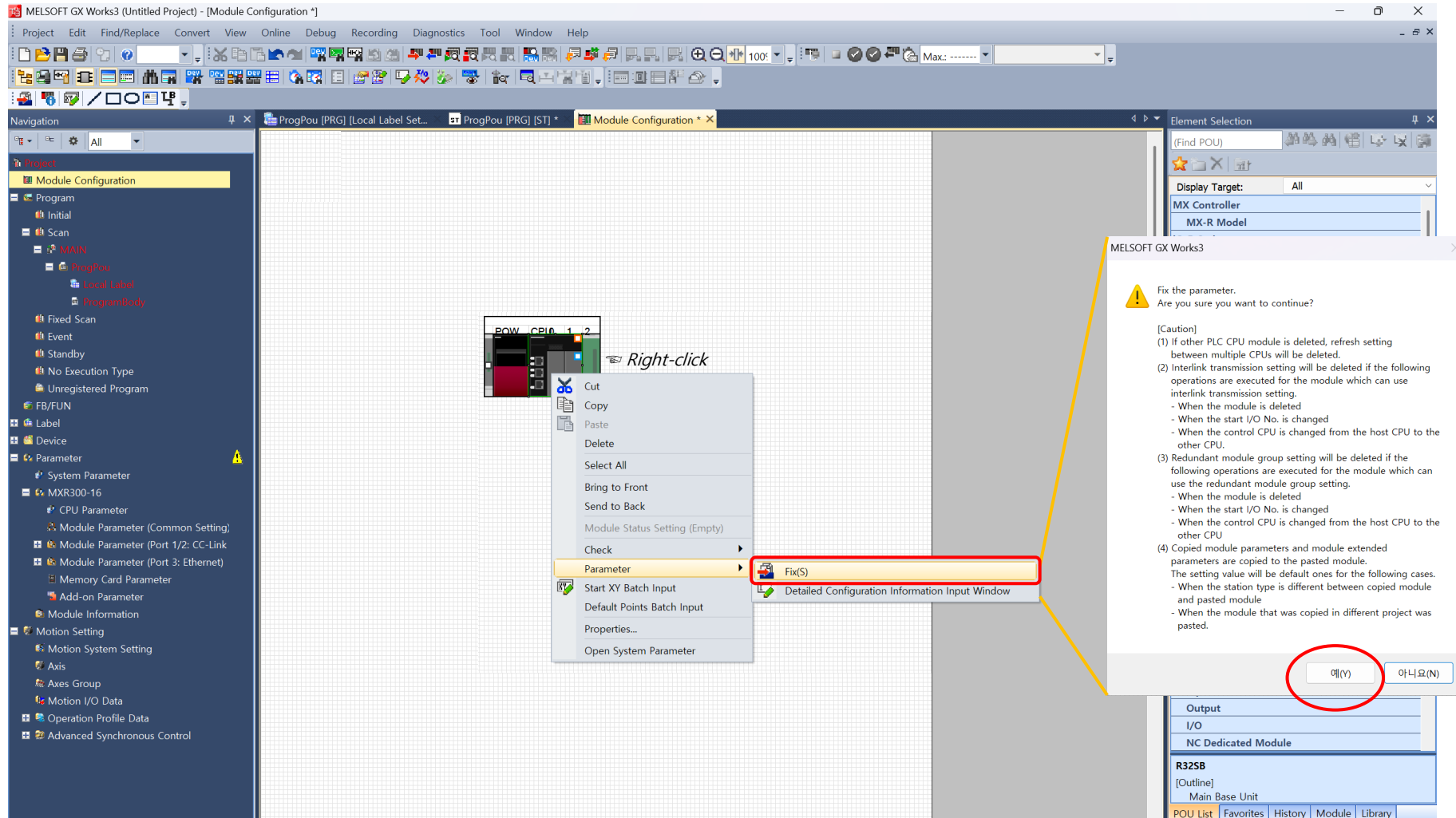
7 OK

Click & Drag

- Base
- Power Module
- Install the MX Controller

2-4. Module Configuration – Hardware

- Right-click the mouse and select "Fix(S)" to complete the module configuration



2-5. Module Parameters

- Station Number/IP Address Settings: Example) IP Address → 192.168.3.253

MELSOFT GX Works3 (Untitled Project) - [MXR300-16 Module Parameter (Port 1/2: CC-Link IE TSN)]

Navigation: All

Project Structure:

- Module Configuration
- Program
- Initial
- Scan
- MAIN
- Program
- Local Label
- Programbody
- Fixed Scan
- Event
- Standby
- No Execution Type
- Unregistered Program
- FB/FUN
- Label
- Device
- Parameter
- System Parameter
- MXR300-16
- CPU Parameter
- Module Parameter (Common Setting)
- Module Parameter (Port 1/2: CC-Link)
- Module Parameter (CC-Link IE TSN)
- Network Label Setting
- Module Parameter (Port 3: Ethernet)
- Memory Card Parameter
- Add-on Parameter
- Module Information
- Motion Setting
- Motion System Setting
- Axis
- Axis Group
- Motion I/O Data
- Operation Profile Data
- Advanced Synchronous Control

Setting Item List:

Item	Setting
Station Type	Master Station
Network No.	1
Parameter Setting Method	Parameter Editor
Station No./IP Address Setting	Parameter Editor
Station No.	0
IP Address	192.168.3.253
Subnet Mask	
Default Gateway	

Element Selection: (Find POU) Display Target: All

IP Address: 192.168.3.253
* Note: Ezi-SERVO default IP: 192.168.3.xxx

Explanation:
Set the IP address for the own node.
Ensure that the own node and the external device to be communicated with have the same class and subnet address.
Set the IP address to use for CC-Link IE TSN communication.

[Setting Range]
0.0.0.1 to 223.255.255.254 (00.00.00.01 to FF.FF.FF.FE)

Item List Find Result

Check Restore the Default

Apply

2-5. Module Parameters – Network Settings

● Network Configuration Settings

The screenshot displays the MELSOFT GX Works3 interface for configuring the MXR300-16 module. The main window is titled 'MELSOFT GX Works3 (Untitled Project) - [MXR300-16 Module Parameter (Port 1/2: CC-Link IE TSN)]'. The left sidebar shows the project structure, with 'Module Parameter (Port 1/2: CC-Link)' selected under the 'Parameter' folder. The main area is divided into three panes: 'Setting Item List', 'Setting Item', and 'Element Selection'. The 'Setting Item List' pane shows a tree view of settings, with 'Basic Settings' selected. The 'Setting Item' pane displays a table of network configuration settings for 'CC-Link IE TSN Configuration'. The 'Element Selection' pane shows a list of modules, with 'CC-Link IE TSN Module (Mitsubishi Ele)' selected. A yellow arrow points from the 'Detailed Setting' link in the 'Setting Item' table to the 'CC-Link IE TSN Configuration' dialog box. The dialog box shows 'Mode Settings' and a 'Module List' on the right. A 'Network Label' dialog box is also visible at the bottom.

1. Navigation pane: Module Parameter (Port 1/2: CC-Link)

2. Setting Item List: Basic Settings

3. Setting Item: Network Configuration Settings (CC-Link IE TSN Configuration)

Setting Item Table:

Item	Setting
Network Configuration Settings (CC-Link IE TSN Configuration)	
Refresh Settings	<Detailed Setting>
Network Topology	<Detailed Setting>
Communication Period Setting	
Basic Period Setting	
Setting in Units of 1us	Not Set
Communication Period Interval Setting (Do not Set it in Units of 1us)	2000.00 us
Communication Period Interval Setting (Set it in Units of 1us)	2000.00 us
System Reservation Time	20.00 us
Cyclic Transmission Time	1000.00 us
Transient Transmission Time	980.00 us
Multiple Period Setting	
Normal-Speed	x4
Low-Speed	x16
Connection Device Information	
CC-Link IE TSN Class Setting	CC-Link IE TSN Class B Only
CC-Link IE TSN Class A Group Send Upper Limit Size Setting	2K bytes
TSN HUB Setting	Not to Use TSN HUB
Device Station Setting	
Disconnection Detection Setting	4 times

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

Mode Settings: Online (Unicast Mode)

Module List:

- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi Ele)
- Master/Local Module
- Motion Module
- GOT3000 Series
- GOT2000 Series
- General-Purpose AC Servo
- General purpose Inverter
- DC Input
- Transistor Output
- I/O Combined
- Analog Input

Network Label:

Network Label Usage Status: Unused in All Stations

*The network label only can be used by the remote station.

2-5. Module Parameters – CC-Link IE TSN Configuration

- **Offline:** **Manually** configure **the CC-Link IE TSN module (click and drag)**

The screenshot displays the 'CC-Link IE TSN Configuration' software window. The main table lists modules for three stations (STA#1, STA#2, STA#3). STA#1 is a Master Station, while STA#2 and STA#3 are Remote Stations. The table includes columns for RX, RY, RWr, and RWw settings, as well as LB settings.

No.	Model Name	STA#	Station Type	Network Label	RX Setting	RY Setting	RWr Setting	RWw Setting	LB Setting					
					Points	Start	End	Points	Start	End	Points	Start	End	Points
0	Host Station	0	Master Station											
1	Ezi-IO CC-Link TSN IN32	1	Remote Station		32	0000	001F				4	0000	0003	
2	Ezi-IO CC-Link TSN IN16OUT16	2	Remote Station		16	0020	002F	16	0020	002F				
3	Ezi-IO CC-Link TSN OUT32	3	Remote Station					32	0030	004F				

[Ezi-SERVO CC-Link IE TSN IP Address arbitrarily modified]

1. 192.168.3.1
2. 192.168.3.2
3. 192.168.3.3

※ Power reset is required after changing the IP address

Module List

- CC-Link IE TSN Selection
- Find Module
- My Favorites
- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi Electric Corporation)
- Master/Local Module
- Motion Module
- GOT3000 Series
- GOT2000 Series
- General-Purpose AC Servo
- General purpose Inverter
- DC Input
- Transistor Output
- I/O Combined
- Analog Input
- Analog Output
- Network Interface Board
- EnergyMeasuringUnit
- Bridge module
- FPGA module
- CC-Link IE TSN Module (FASTECH Co., Ltd.)
- Analog Input
- BLDG Servo Drive
- Closed-loop Step Drive
- Digital Input
- Ezi-IO CC-Link TSN IN32
- Digital Input/Output
- Ezi-IO CC-Link TSN IN16OUT16
- Digital Output
- Ezi-IO CC-Link TSN OUT32
- Ezi-VAS-CT-SVR12
- Open-loop Step Drive
- Speed Control

[Outline]
Digital output module (e-CON connector type)
[Specification]
CC-Link IE TSN Class B
24VDC, 32 point open-collector output
e-CON connector, 3-wire/point
[Manufacturer Name]
FASTECH Co., Ltd.
[Station Type]
Remote Station

Network Diagram

Host Station

STA#1 STA#2 STA#3

Ezi-IO CC-Link TSN IN32 Ezi-IO CC-Link TSN IN16 OUT16 Ezi-IO CC-Link TSN OUT32

Mouse click and drag (repeatedly)

2-5. Module Parameters – CC-Link IE TSN Configuration

- Apply CC-Link IE TSN Module Settings

The screenshot displays the 'CC-Link IE TSN Configuration' window. At the top, the 'Close with Reflecting the Setting' button is circled in red. A yellow arrow points from this button to a warning dialog box titled 'MELSOFT GX Works3'. The dialog box contains the text: 'Warning(s) in the CC-Link IE TSN Configuration. Are you sure you want to close the CC-Link IE TSN Configuration window?'. The '예(Y)' (Yes) button is circled in red.

The main configuration table is as follows:

No.	Model Name	STA#	Station Type	Network Label	RX Setting			RY Setting			RWr Setting			RWw Setting			LB Setting
					Points	Start	End	Points	Start	End	Points	Start	End	Points	Start	End	
0	Host Station	0	Master Station														
1	Ezi-IO CC-Link TSN IN32	1	Remote Station	☒	32	0000	001F							4	0000	0003	
2	Ezi-IO CC-Link TSN IN16OUT16	2	Remote Station	☒	16	0020	002F	16	0020	002F				4	0004	0007	
3	Ezi-IO CC-Link TSN OUT32	3	Remote Station	☒				32	0030	004F							

At the bottom, a network diagram shows a 'Host Station' connected to three 'Remote Stations' (STA#1, STA#2, STA#3). STA#3 is highlighted with a green box. The diagram includes labels for 'Ezi-IO CC-Link TSN IN32', 'Ezi-IO CC-Link TSN IN16OUT16', and 'Ezi-IO CC-Link TSN OUT32'.

On the right side, the 'Module List' panel shows a tree structure of modules. The 'CC-Link IE TSN Module (FASTECH Co., Ltd.)' is expanded, showing various modules like 'Analog Input', 'Digital Input', 'Digital Output', etc. The 'Digital Output' module is selected.

At the bottom right, the 'Outline' panel shows the following information:

- [Outline]** Digital output module (e-CON connector type)
- [Specification]** CC-Link IE TSN Class B, 24VDC, 32 point open-collector output, e-CON connector, 3-wire/point
- [Manufacturer Name]** FASTECH Co., Ltd.
- [Station Type]** Remote Station

2-5. Module Parameters – CC-Link IE TSN Configuration

- CC-Link IE TSN Module IO Label Settings

The screenshot displays the MELSOFT GX Works3 interface for Network Label Setting. The main window shows a table of parameters for the CC-Link IE TSN module. The 'Labeling Target' column is highlighted with a red circle and the number 1. A confirmation dialog box is open, asking 'Start creating the label on the basis of the setting content. Are you sure you want to continue?'. The dialog has two buttons: '예(Yes)' (Yes) and '아니요(No)'. The '예(Yes)' button is circled in red with the number 3. A yellow arrow points from the 'Create Label' button at the bottom of the main window to the '예(Yes)' button in the dialog. The 'Create Label' button is circled in red with the number 2.

No.	IP Address	Model Name	Device Label/Structured Data Type Definition Name	Data Type	Labeling Target	Arrayed Target	Data Type	Label Name
1	192.168.3.1	Ezi-IO CC-Link TSN IN32	Ezi-IOCC_LinkTSNIN32_001	Entire Device	☒	☐	-	-
				Rx0	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx2	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx3	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx4	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx5	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx6	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx7	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx8	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx9	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxA	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxB	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxC	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxD	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxE	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				RxF	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx10	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx11	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx12	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx13	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx14	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx15	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx16	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx17	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx18	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx19	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1A	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1B	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1C	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1D	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001
				Rx1E	☒	☐	Bit	Ezi-IOCC_LinkTSNIN32_001

Explanation
The I/O data exchanged between the device stations of built-in CC-Link IE TSN and the CPU module by cyclic communication can be registered as a label.
If 'Create Label' is executed, the label selected in 'Labeling Target' will be registered to the global label list (NW+Global).

[Caution]
- If 'Create Label' is executed, the all labels/structured data types created from this window last time will be deleted and new labels/structured data types will be created.
- The background of 'No.' in the window will be displayed in yellow for the device for which addition/change exists in the network configuration after creating the label last time. Please execute 'Create Label' again if necessary.
- If 'Create Label' is not executed, the edited content in this window will not be saved in the project.

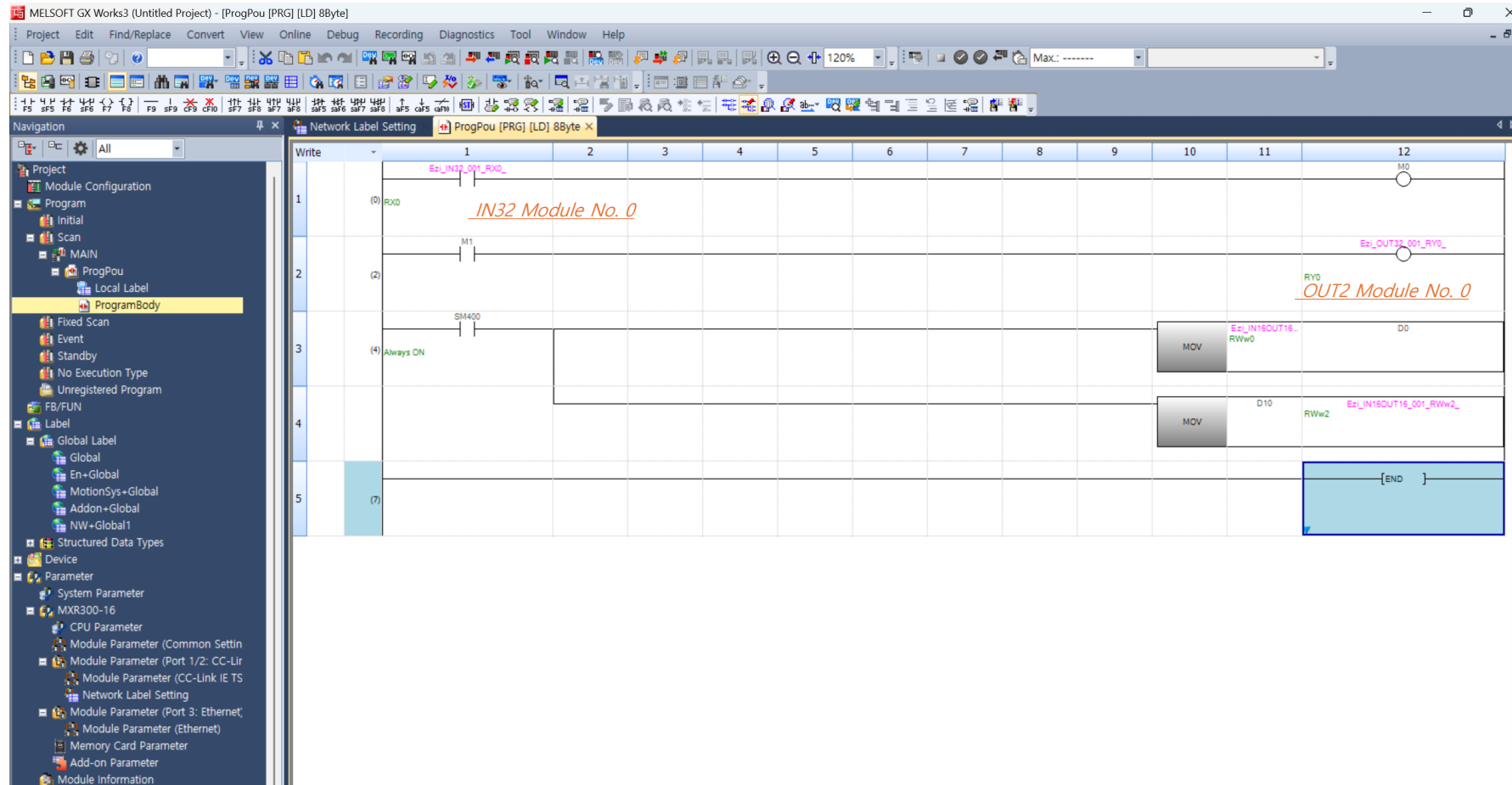
Buttons: Structure Array Setting..., Update Network Configuration Info, **Create Label**

Dialog Box: MELSOFT GX Works3
Start creating the label on the basis of the setting content.
Are you sure you want to continue?
Buttons: **예(Yes)**, 아니요(No)

3. Running the Program

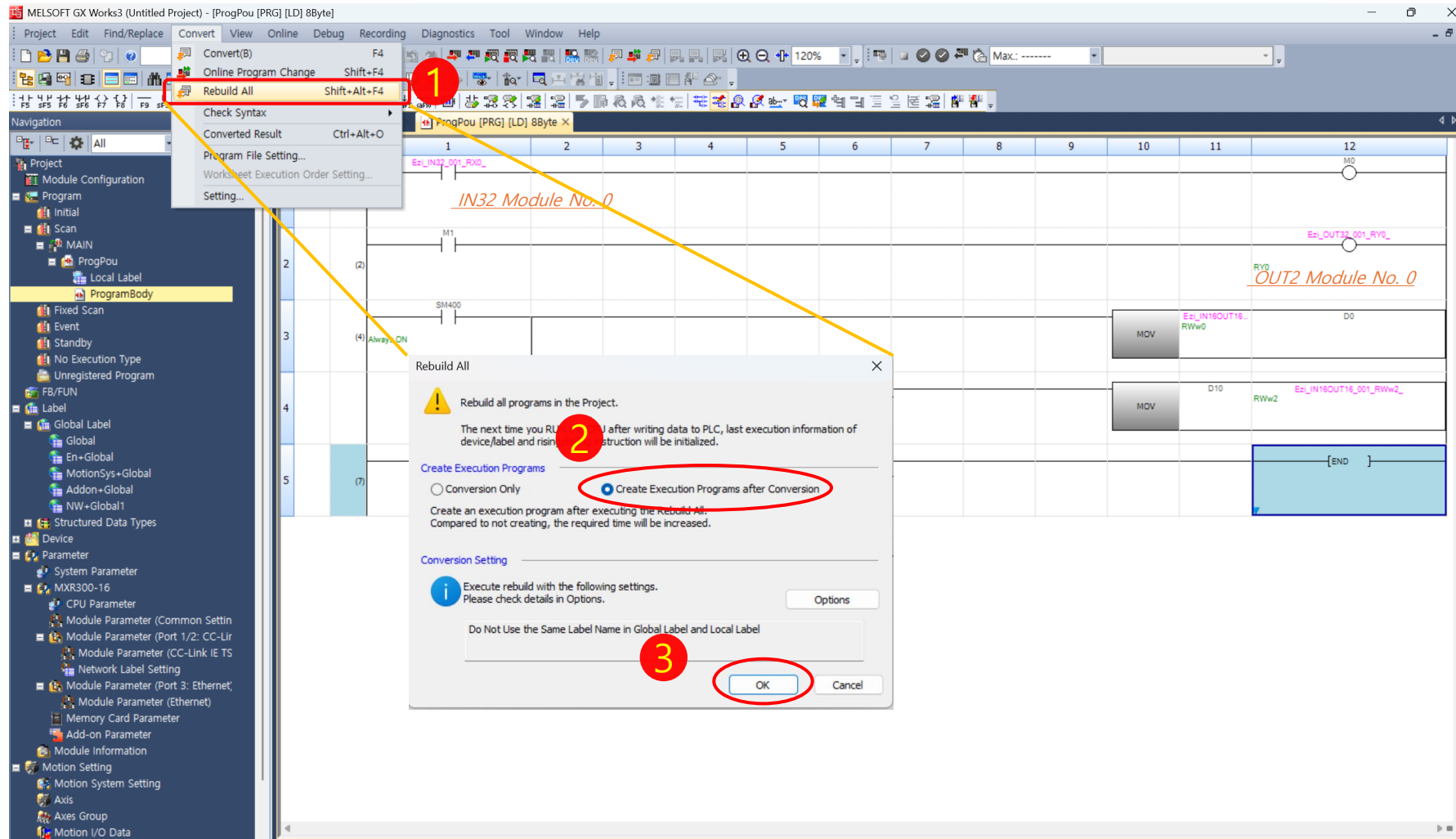
3-1. Explanation of IO Control Commands

- IO, MOV Commands – Element Selection (Left Menu)



3-2. IO Control Program Convert

- IO, MOV Commands – Element Selection (Left Menu)





Fast Accurate Smooth Motion

Accelerating the construction of Smart Factories with

CC-Link*IE***TSN**

Ezi-SERVO[®] **25th** ANNIVERSARY
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Closed Loop Stepping System

Ezi-STEP[®]
Micro Stepping System

Ezi-POS[®]
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Network Input/Output