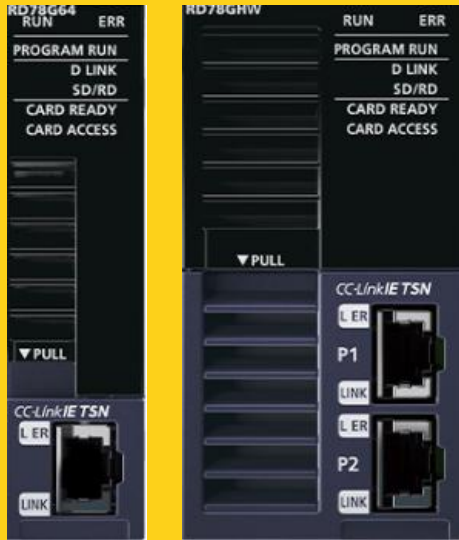




Programmable Controllers  
**MELSEC iQ-R**  
series



**Ezi-ROBO**® CC-Link IE TSN  
Precise Actuator System **IGS**

**Ezi-SERVO**® CC-Link IE TSN  
Closed Loop Stepping System **ALL**

# 접속 가이드

## MELSEC iQ-R RD78G (H) and

**Ezi-ROBO**® CC-Link IE TSN - **Ezi-SERVO**® CC-Link IE TSN  
Precise Actuator System **IGS** Closed Loop Stepping System **ALL**

### 미쓰비시 전기 제품

RD78G4 / RD78G8 / RD78G16  
RD78G32 / RD78G64  
RD78G4HV / RD78GHW

### 파스텍 제품

Ezi-ROBO CC-Link IE TSN IGS  
(Ezi-SERVO CC-Link IE TSN ALL)

# 시작하기 전에

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- 저희 회사의 제품을 이용해 주셔서 감사합니다.
- Ezi-ROBO IGS의 제어부는 Ezi-SERVO CC-Link IE TSN ALL으로 이하 연결 가이드 설명은 Ezi-SERVO CC-Link IE TSN ALL으로 합니다.
- Ezi-SERVO CC-Link IE TSN ALL은 32비트 고성능 ARM 프로세서를 탑재한 드라이브와 다양한 모터로 구성된 스테핑모터 유닛으로, CC-Link IE TSN 네트워크에서 리모트국으로 사용됩니다.
- Ezi-SERVO CC-Link IE TSN ALL은 산업용 제품입니다. 다른 용도로는 사용하지 말아 주십시오. 이를 준수하지 않아 손해가 발생한 경우에 저희 회사에서는 어떠한 책임도 지지 않습니다.
- 저희 회사에서 제공하는 이 접속 가이드는 미쓰비시 전기의 MELSEC iQ-R RD78G(H)에 Ezi-SERVO CC-Link IE TSN ALL을 연결하는 방법을 안내하는 자료로, CSP+ 파일 등록과 시스템 구성, 파라미터 설정, 프로그램 방법 등을 설명합니다.
- PLC 프로그램을 작성하기 전에 이 접속 가이드를 반드시 읽고, 내용을 정확히 이해하신 후 제품을 올바르게 사용하시기 바랍니다.
- 이 접속 가이드는 예고 없이 변경될 수 있습니다. 최신 버전이 필요하신 경우에는 저희 회사의 CC-Link IE TSN 홈페이지 ([cltsn.fastech-motions.com](http://cltsn.fastech-motions.com))를 참고하시기 바랍니다.

# 매뉴얼 정보

- Ezi-SERVO CC-Link IE TSN ALL 매뉴얼은 파스텍 홈페이지에서 다운로드할 수 있습니다.  
<https://cltsn.fastech-motions.com/download/quick>

| 매뉴얼 명칭                                                                    | 매뉴얼 번호 |
|---------------------------------------------------------------------------|--------|
| [매뉴얼][CC-Link IE TSN][Ezi-SERVO ALL] Closed Loop Stepping System          |        |
| [접속가이드][CC-Link IE TSN][MELSEC iQ-R RD78G(H)][Ezi-ROBO IGS Ezi-SERVO ALL] |        |

- MELSEC iQ-R RD78G(H) 매뉴얼은 미쓰비시 전기 홈페이지에서 다운로드할 수 있습니다.  
<https://www.mitsubishielectric.com/fa/index.html>

| Manual Name                                                                                              | Manual Number |
|----------------------------------------------------------------------------------------------------------|---------------|
| MELSEC iQ-R Motion Unit User's Manual (Startup Edition)                                                  | IB-0300405    |
| MELSEC iQ-R Motion Unit User's Manual (Application Edition)                                              | IB-0300410    |
| MELSEC iQ-R Motion Unit User's Manual (Network Edition)                                                  | IB-0300425    |
| MELSEC iQ-R Programming Manual (Motion Unit Instructions/General-Purpose FUN/General-Purpose FB Edition) | IB-0300430    |
| MELSEC iQ-R Programming Manual (Motion Control FB Edition)                                               | IB-0300532    |
| MELSEC iQ-R Motion Unit User's Manual (Simple Motion Mode Applications Edition)                          | IB-0300571    |
| MELSEC iQ-R Motion Unit User's Manual (Simple Motion Mode Advanced Synchronous Control Edition)          | IB-0300574    |
| GX Works3 Operating Manual                                                                               | SH-081214     |

# 용어

- 접속 가이드에서 사용되는 용어와 관련된 내용입니다.

| 용어             | 내용                                                                                                            |
|----------------|---------------------------------------------------------------------------------------------------------------|
| CC-Link IE TSN | 표준 이더넷 규격을 확장한 'TSN(Time-Sensitive Networking)'을 채택하여, 실시간성을 확보한 제어와 다른 오픈 네트워크의 정보를 동시에 처리할 수 있는 오픈 네트워크입니다. |
| 마스터국(매니저국)     | 네트워크 전체를 관리하는 국으로, 모든 국과 사이클릭 전송 및 트랜지언트 전송을 할 수 있습니다. MELSEC iQ-R RD78G(H)가 이에 해당합니다.                        |
| 리모트국           | 비트 단위의 입출력 신호와 워드 단위의 입출력 데이터를 사이클릭 전송하는 국으로, 트랜지언트 전송도 가능합니다. Ezi-SERVO CC-Link IE TSN ALL이 이에 해당합니다.        |
| PDO            | Process Data Object의 약칭입니다. 여러 CANopen 노드 간에 주기적으로 전송되는 애플리케이션 오브젝트의 집합체입니다.                                  |
| 오브젝트           | CANopen에 대응하는 디바이스국이 보유한 다양한 데이터입니다.                                                                          |

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- 3-7. [Ladder] Convert

## 부록

- [동작확인] Axis Monitor
- [동작확인] 원점복귀 방법 변경
- [동작확인] 원점복귀
- [동작확인] Jog 운전
- [동작확인] 트러블 슈팅
- [파라미터] 원점복귀 파라미터 설정

# 1. 개 요

# 1-1. 개요

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- MELSEC iQ-R RD78G(H)와 Ezi-SERVO CC-Link IE TSN ALL 접속 가이드

◆ 마스터국: RD78G4 (4축) / RD78G8 (8축) / RD78G16 (16축) / RD78G32 (32축) / RD78G64 (64축)  
RD78G4HV (128축) / RD78GHW (256축)

**PLCopen®Motion Control FB(Function Block)**

- 국제 표준 규격인 PLCopen Motion Control FB 라이브러리를 사용하여 제어 프로그램을 쉽게 작성할 수 있습니다.
- 이 프로그램은 제3자도 내용을 쉽게 파악할 수 있기 때문에 설계 및 유지보수 시간을 크게 단축할 수 있습니다.

◆ 엔지니어링 소프트웨어

- GX Works3 : Ver. 1.105K 이상
- 모션 제어 설정 기능 : Ver. 1.055H 이상

※ 최신 파일은 미쓰비시 전기 홈페이지를 참조하시기 바랍니다.

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

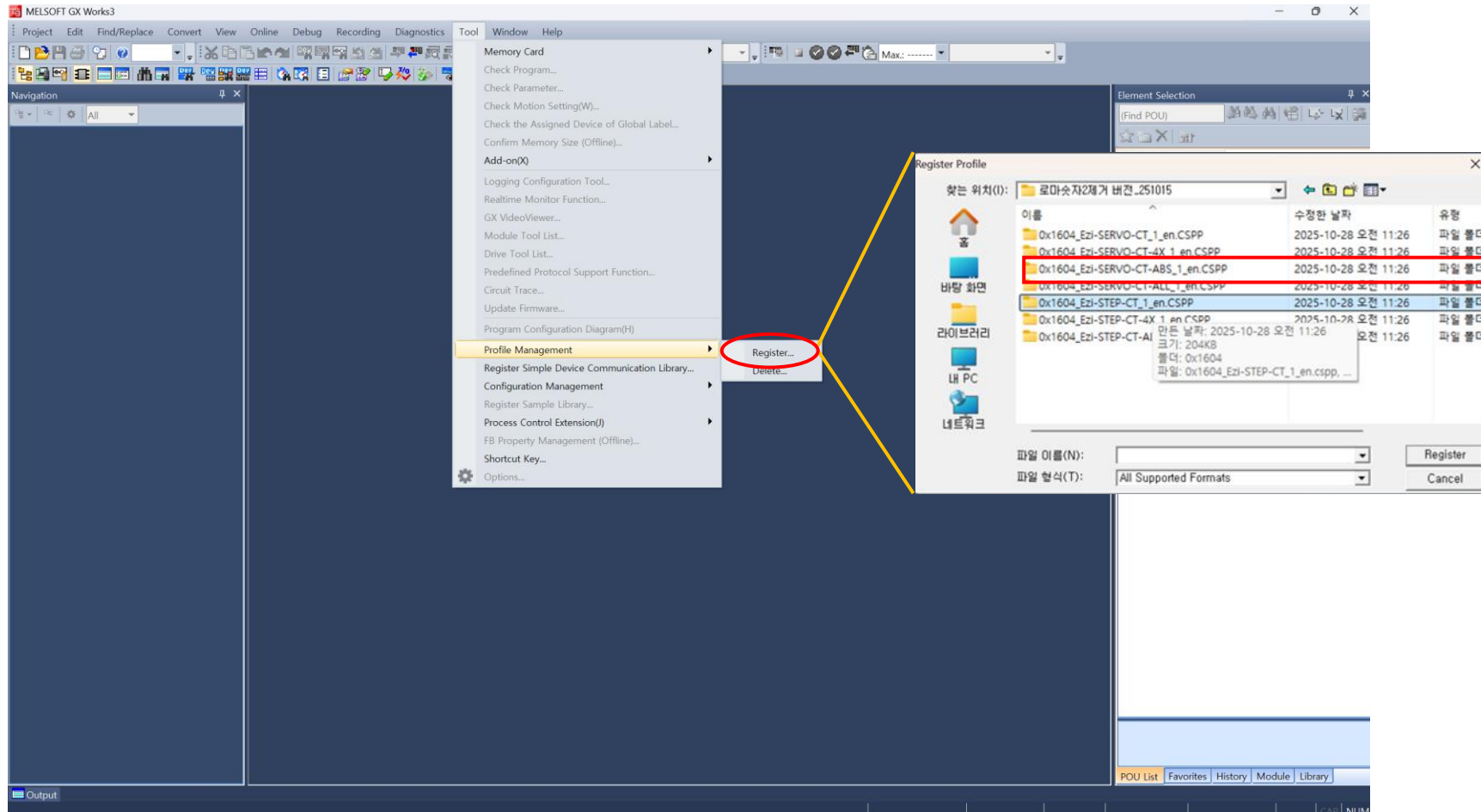
◆ 리모트국: Ezi-SERVO CC-Link IE TSN ALL

- CSP+ 파일 다운로드 주소: <https://cltsn.fastech-motions.com/download/quick>
- 파일명 : 0x1604\_Ezi-SERVO-CT\_ALL\_1\_en\_CSPP

# 1-2. Ezi-SERVO CC-Link IE TSN ALL CSP+ 파일 등록

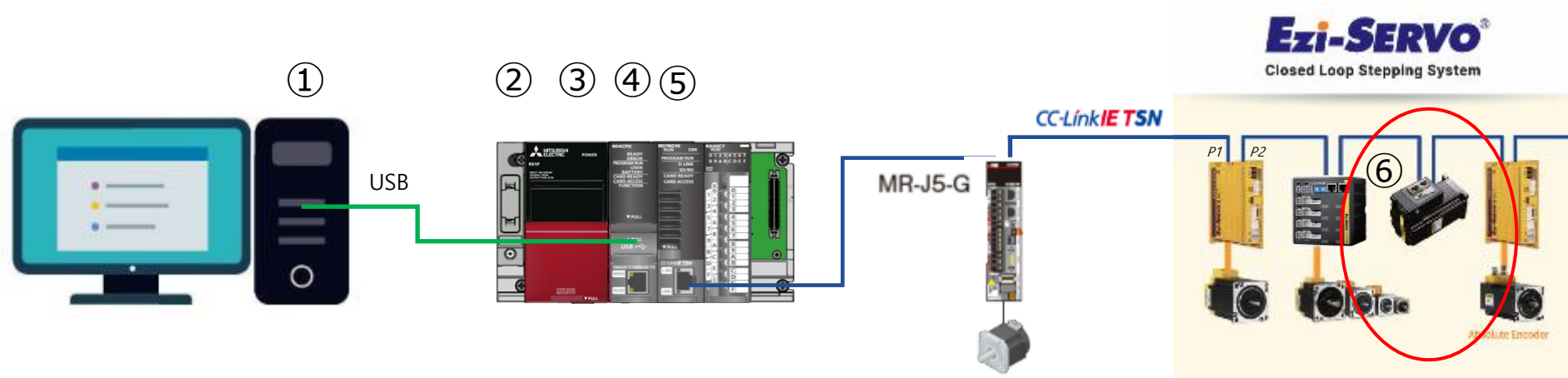
## ● CSP+ 등록

- [GX Works3] Tool / Profile Management / Register ※ Project를 열기 전에만 등록할 수 있습니다.



# 1-3. CC-Link IE TSN 구성

## ● 시스템 구성



| 구성 | 품명          | IP 주소                    |
|----|-------------|--------------------------|
| ①  | 엔지니어링 소프트웨어 | GX Works3                |
| ②  | 기본 베이스      | R33B                     |
| ③  | 전원 모듈       | R61P                     |
| ④  | CPU 모듈      | iQ-R04                   |
| ⑤  | 모션 모듈       | RD78G4                   |
| ⑥  | 드라이브 + 모터   | Ezi-SERVO-CT-ALL-42S-A-R |

## 1-3. CC-Link IE TSN 구성

- Ezi-SERVO 규격

| 항목      |            | 규격                                                                      |
|---------|------------|-------------------------------------------------------------------------|
| 통신 프로토콜 |            | CC-Link IE TSN Class B                                                  |
| 통신 속도   |            | 1Gbps / 100Mbps                                                         |
| 동작 모드   |            | CiA402 드라이브 프로파일 : 사이클릭 동기 위치 모드 (CSP) / 프로파일 위치 모드 (PP) / 원점복귀 모드 (HM) |
| 동기 방식   | 시각 동기 방식   | IEEE1588 / IEEE802.1AS                                                  |
|         | 통신 주기      | 최소 250 $\mu$ s                                                          |
|         | 네트워크 동기 통신 | 동기 통신 (CSP, PP, HM) / 비동기 통신 (PP, HM)                                   |
| 인코더 타입  |            | 인크리멘탈 타입                                                                |

## 1-4. 설정 순서

### ● Ezi-SERVO, RD78G(H) 파라미터 설정

| No. | 항목                                                                                                                   | 내용                                                                                                                                                                                                                                       |
|-----|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Ezi-SERVO 설정<br>                    | 드라이브 설정 프로그램(Ezi-CT Manager)을 이용하여 파라미터를 설정합니다.<br>설정 프로그램과 사용 방법은 <a href="#">(주)파스텍 홈페이지</a> 에서 다운로드하시기 바랍니다.<br>※ 주소: <a href="https://cltsn.fastech-motions.com/download/quick">https://cltsn.fastech-motions.com/download/quick</a> |
| 2   | RD78G(H) 설정<br>                     | GX-Works3를 사용해 RD78G(H)의 프로젝트를 만든 다음, 유닛 파라미터(통신 방식, 접속 대상)와 축 파라미터(모션 제어용)를 설정합니다.                                                                                                                                                      |
| 3   | RD78G(H) + Ezi-SERVO<br>동작 확인<br> | RD78G(H)와 Ezi-SERVO가 올바르게 설정되어 있는지 확인하기 위한 프로그램을 작성합니다.<br>라벨을 조작해 모터가 정상적으로 작동하는지 확인합니다                                                                                                                                                 |

## 1-4. 설정 순서

### ● Ezi-SERVO 설정 참고 사항

| 항목              | 내용                                                                                                                                                                                                                                                                    |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IP 주소 설정        | ① 드라이브의 로터리 스위치로 설정<br>② 로터리 스위치 → '00', IP address (Index: 2101h, Subindex: 01~04h) 값으로 설정                                                                                                                                                                           |
| 드라이브 원점복귀 방법 설정 | ① Homing method (Index: 6098h, Subindex:00h) 설정<br>- '0'(초깃값) → '33' 등 원점복귀 방법 설정 ※ [부록] 원점복귀 방법 참조<br>② Home offset (Index: 607Ch, Subindex:00h) → '0' 설정 필요<br>주의) 0이 아닌 값을 설정하면, 원점복귀가 완료될 때 급가속하거나 급감속하는 경우가 있습니다.                                                |
| 리미트 정지 방법 설정    | ① Limit stop method (Index:2003h, Subindex:00h) 설정<br>- 0: PP, HM → 급정지 / CSP → 정지하지 않음<br>- 1: PP, HM → 감속 정지 / CSP → 정지하지 않음<br>② '0' 또는 '1'이 아닌 값을 설정하면, 하드웨어 스트로크 리미트를 감지할 때 '1ED0H: 드라이브 오류'가 발생할 수 있습니다                                                         |
| 인포지션 범위         | ① In-position range (Index:2B21h, Subindex:00h, Data type:Unsigned32) 설정<br>- 사용 환경을 고려하여 인포지션 범위(5~20000 pulse) 내의 값을 등록<br>② [Md.102: 편차 카운터 값]이 이 설정값보다 작을 경우, [Md.108: 서보 상태 1: 인포지션]이 ON됩니다. 이 오브젝트는 공개하지 않는 것이 원칙이므로 FX5 CPU 모듈의 서보 트랜지언트 전송 기능을 이용하여 설정해 주십시오. |

## 1-5. 제약 사항

### ● 모션 제어 기능 제약 사항 (RD78G(H)와 Ezi-SERVO)

| 항목            | 제약 사항                                                                                                                                                                                                                    |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 토크 제한 기능      | 드라이브가 아래 오브젝트를 지원하지 않아 토크 제한 기능을 사용할 수 없습니다. <ul style="list-style-type: none"><li>• Positive torque limit value (Index:60E0h, Subindex:00h)</li><li>• Negative torque limit value (Index:60E1h, Subindex:00h)</li></ul> |
| 절대 위치 시스템     | 인코더가 인크리멘탈 타입이기 때문에 절대 위치 시스템을 사용할 수 없습니다.                                                                                                                                                                               |
| 가상 서보 앰프 기능   | MR-J5-G로 에뮬레이트됩니다.                                                                                                                                                                                                       |
| 마크 검출 기능      | [Pr.800: 마크 검출 신호 설정]에 드라이브의 TPR1(터치 프로브 1)을 사용할 수 없습니다.                                                                                                                                                                 |
| 임의 데이터 모니터 기능 | 임의 데이터 모니터 기능을 사용할 경우, [Pr.91~94: 임의 데이터 모니터 데이터 종류 설정 1~4]와 [Pr.591~594: 임의 데이터 모니터 데이터 종류 확장 설정 1~4]에 모니터링할 오브젝트를 설정해 주십시오. 초깃값은 "0: 미설정"입니다. 따라서 [Md.109~112: 임의 데이터 모니터 출력 1~4]는 '0'이 됩니다.                           |

## 1-5. 제약 사항

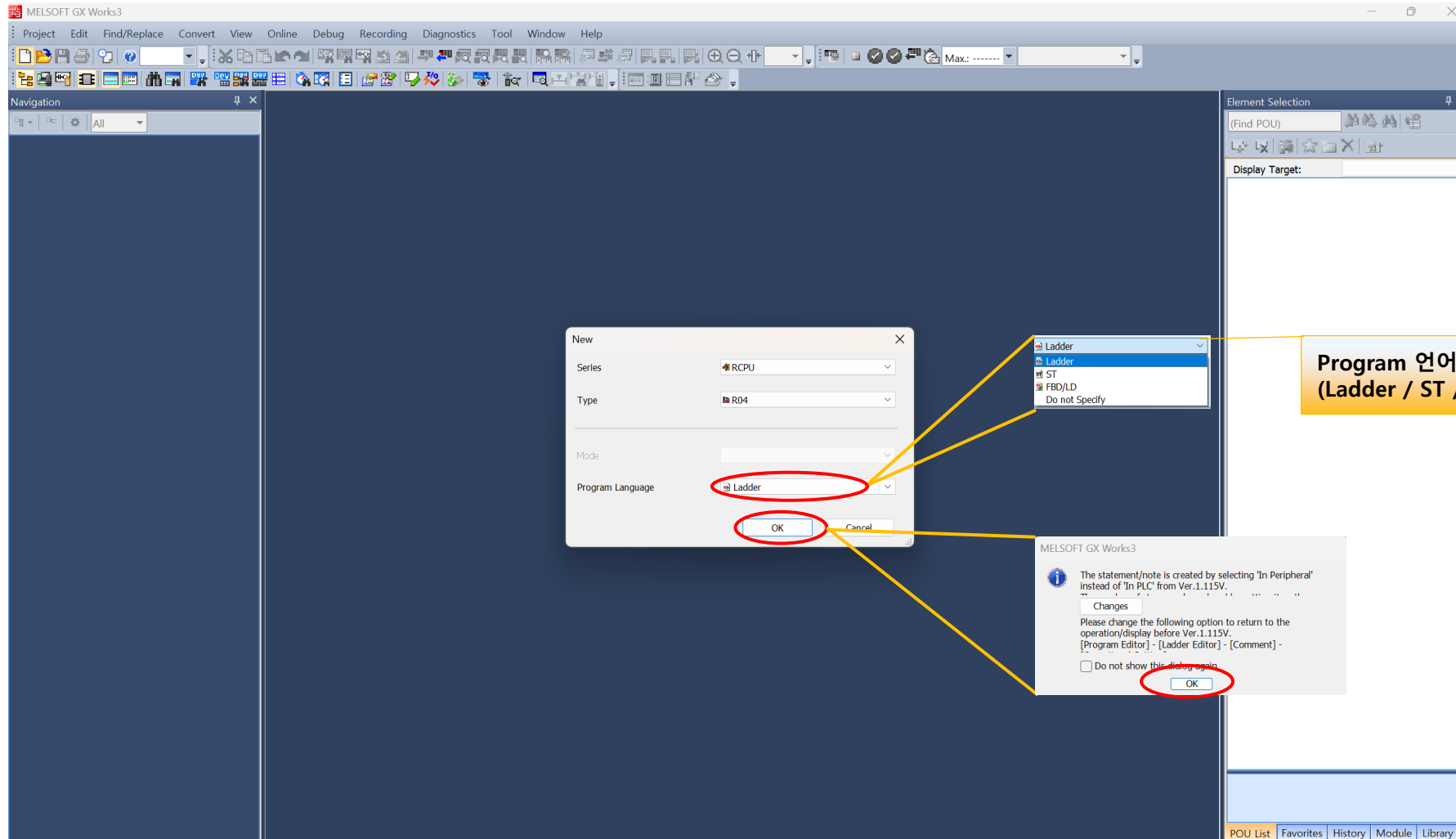
### ● 모션 제어 기능 제약 사항 (RD78G(H)와 Ezi-SERVO)

| 항목                   | 제약 사항                                                                                                                                                                                              |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Md.103: 모터 회전수       | 드라이브가 'SI unit velocity (Index:60A9h, Subindex:00h)'를 지원하지 않기 때문에 pulse/s 단위로 모터 회전수를 출력합니다.                                                                                                       |
| Md.104: 모터 전류값       | 드라이브가 'Torque actual value (Index:6077h, Subindex:00h)'를 지원하지 않기 때문에 항상 "0"으로 표시됩니다.                                                                                                               |
| Md.108: 서보 상태 1      | 모니터 데이터 중 아래 비트는 항상 'OFF' 상태입니다. <ul style="list-style-type: none"><li>· 게인 전환 중 (b4)</li><li>· 풀 클로즈드 제어 전환 중(b5)</li><li>· 토크 제한 중(b13)</li><li>· 절대 위치 소실 중 (b14)</li><li>· 경고 중(b15)</li></ul> |
| Md.119: 서보 상태 2      | 모니터 데이터 중 아래 비트는 항상 'OFF' 상태입니다. <ul style="list-style-type: none"><li>· 영점 통과(b0)</li><li>· 영속도 중(b3)</li><li>· 속도 제한 중(b4)</li><li>· PID 제어 중(b8)</li></ul>                                      |
| Md.115: 서보 알람 상세 번호  | 지원되지 않습니다. 이 모니터 데이터는 항상 '0'으로 표시됩니다                                                                                                                                                               |
| Cd.108: 게인 전환 명령 플래그 | 지원되지 않습니다. MELSERVO만 이 데이터에 대응합니다.                                                                                                                                                                 |
| Cd.133: 세미-풀 전환 요구   | 지원되지 않습니다. MELSERVO만 이 데이터에 대응합니다..                                                                                                                                                                |
| Cd.136: PI-PID 전환 요구 | 지원되지 않습니다. MELSERVO만 이 데이터에 대응합니다.                                                                                                                                                                 |

## 2. RD78G(H) 설정

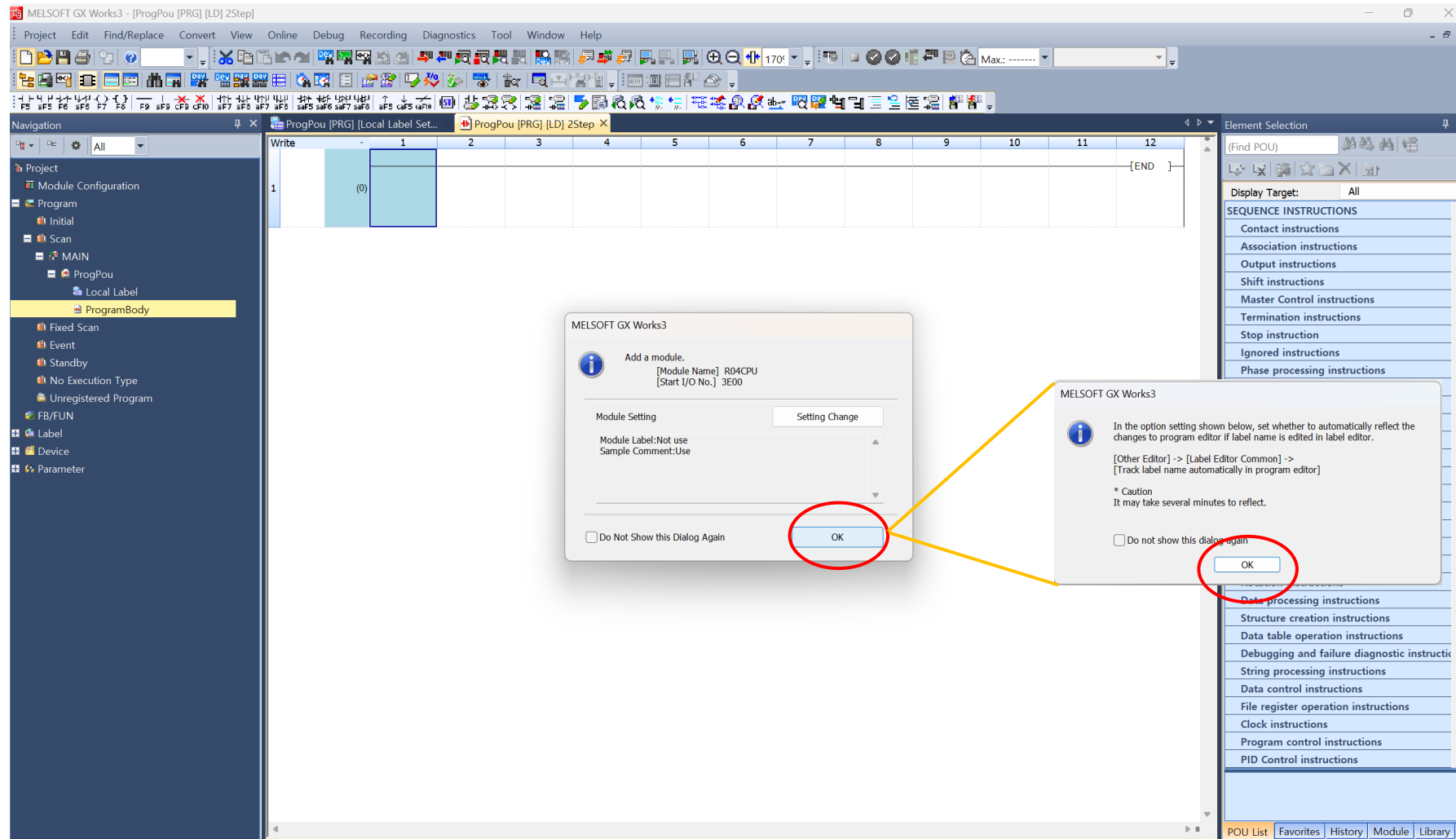
## 2-1. Project 생성

- 신규 Project 생성 시 iQ-R RD78G(H), 모델명, 사용 축수, Program 언어를 선택



## 2-2. Module 등록

- iQ-R CPU 등록



## 2-3. Module Configuration – H/W

- 마우스로 클릭&드래그 하여 Main Base, CPU Module, Power Supply를 구성

MELSOFT GX Works3 (Untitled Project) - [Module Configuration]

Project

- Module Configuration
- Program
- Initial
- Scan
- MAIN
- ProgPou
- Local Label
- ProgramBody
- Fixed Scan

Navigation

ProgPou [PRG] [Local Label Set...]

ProgPou [PRG] [LD] 2Step

Module Configuration

Element Selection

(Find POU)

Display Target: All

iQ-R Series

Main Base

- R32SB 2 Slots (Type requirein)
- R33B 3 Slots (Type requirein)
- R33SB 3 Slots (Type requirein)
- R35B 5 Slots (Type requirein)

SIL2 Process CPU

Safety CPU

C Controller

MELSECWinCPU

Head Module

Motion CPU

NCCPU

Robot CPU

Power Supply

- R61SP 2.5A output (Slim type)
- R62P 3.5A output
- R61P 6.5A output
- R63P 6.5A output

NC Dedicated Module

Sensor Control

Analog Input

Analog Output

Temperature Input

Temperature Control Module

Motion Module

- RD78G4 4 axes CC-Link IE TSN
- RD78G4(S) 4 axes CC-Link IE TSN
- RD78G8 8 axes CC-Link IE TSN
- RD78G8(S) 8 axes CC-Link IE TSN

Network Module

Blank Cover

POU List Favorites History Module Library

1

2

3

4

5

마우스 클릭 & 드래그

[클릭 & 드래그]

1. Main Base
2. Power Supply
3. CPU iQ-R 장착
4. RD78(H) 장착

MELSOFT GX Works3

When you finish editing Module Configuration, fix the parameters to reflect to their respective functions.

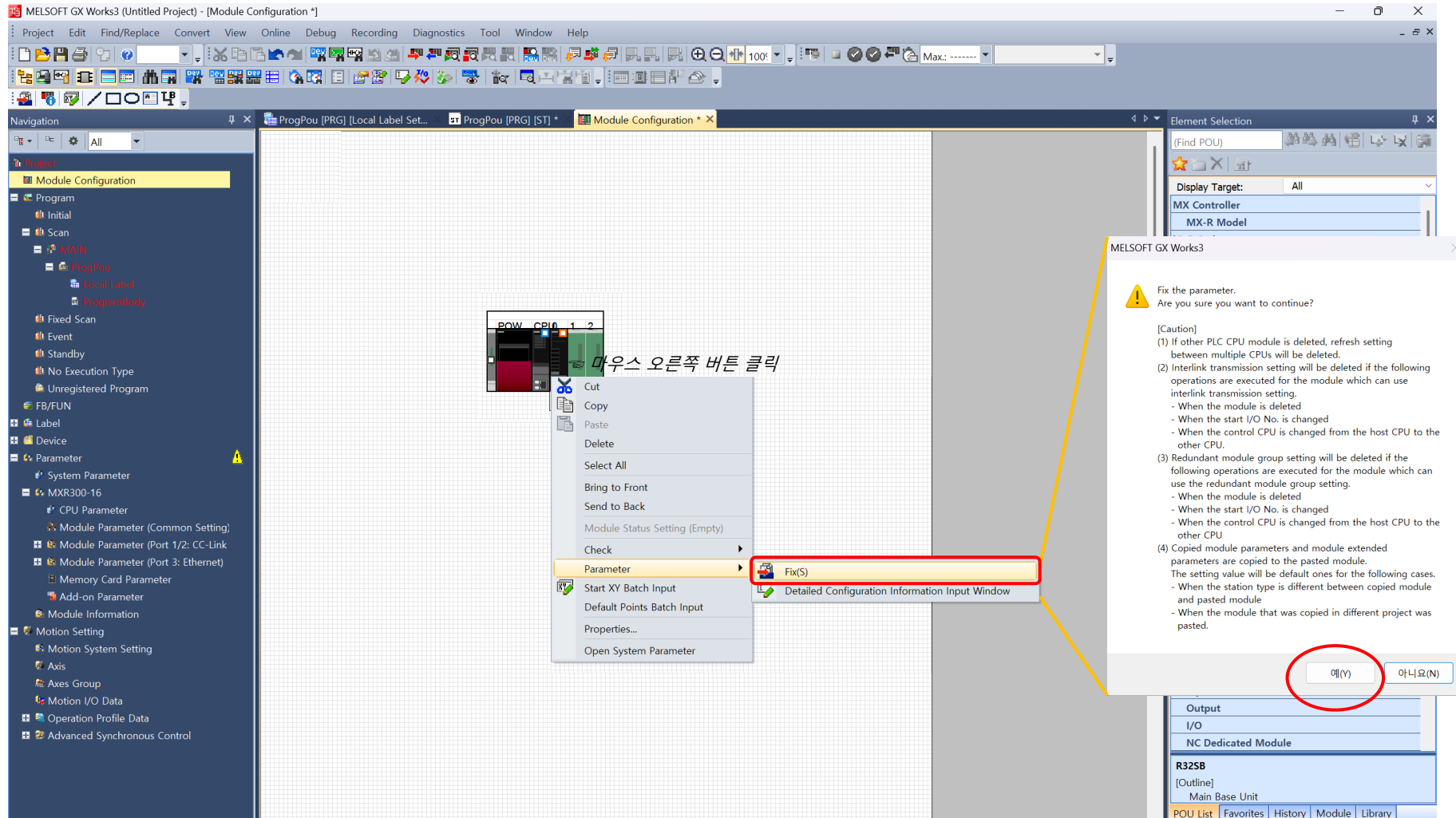
☐ Do not show this dialog again.

You are able to change this setting through the Options menu.

OK

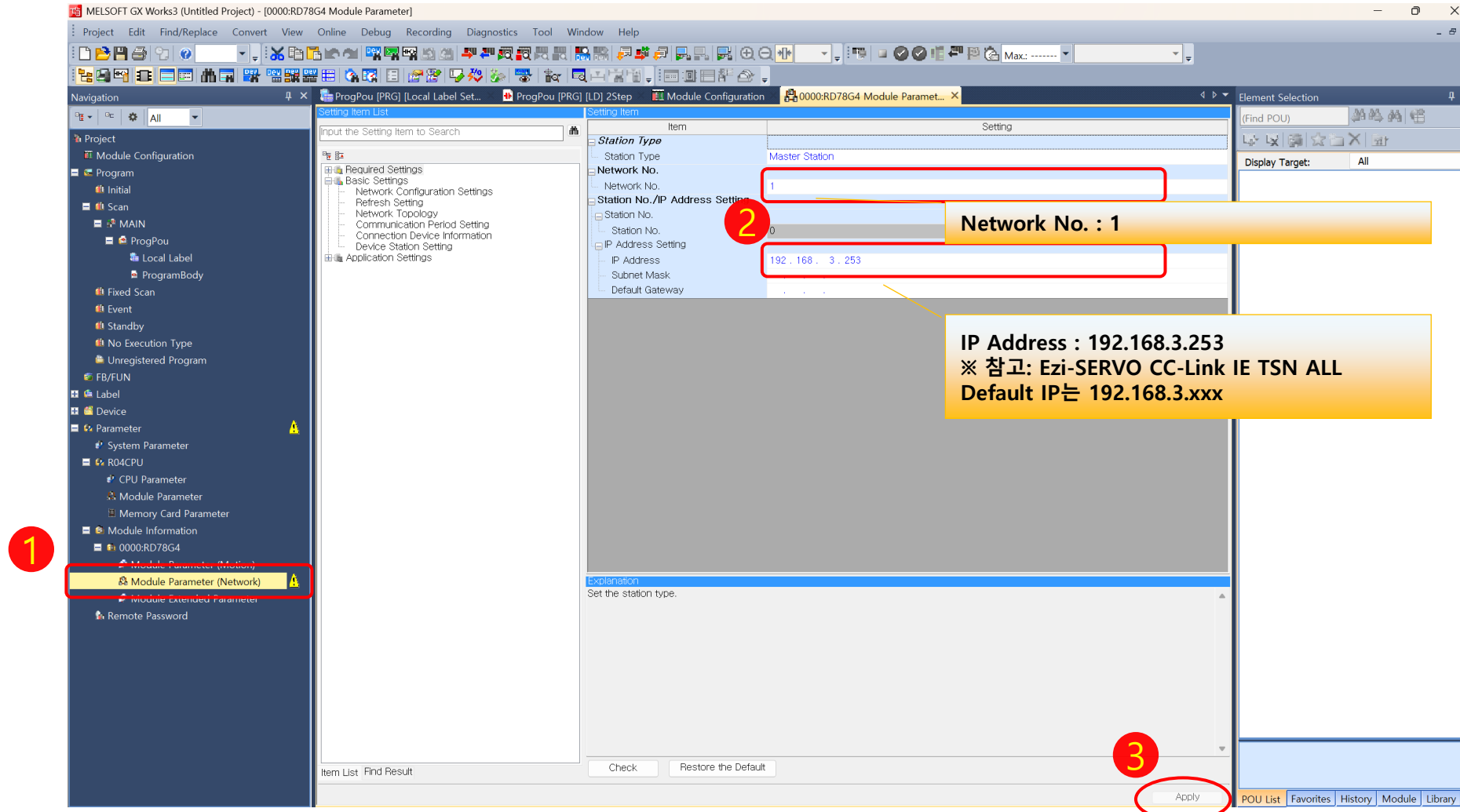
## 2-3. Module Configuration – H/W

- 마우스의 오른쪽 버튼을 클릭하여 Fix(S) 선택으로 Module 구성 완료



## 2-4. Parameter / Module Information / 0000:RD78G4

- Module Parameter(Network) : Station No., IP Address Setting





## 2-4. Parameter / Module Information / 0000:RD78G4

- N/W 미연결 상태 : CC-Link IE TSN Configuration : Module을 수동(클릭&드래그)으로 구성

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

CC-Link IE TSN Configuration Edit View Close with Discarding the Setting Close with Reflecting the Setting

Mode Setting: Online (Unicast Mode) Assignment Method:

| No. | Model Name       | STA# | Station Type   | RX Setting | RY Setting | RW Setting | RWw Setting | Parameter Automatic Setting | PDO Mapping Setting | IP Address    | Subnet Mask | Default Gateway |
|-----|------------------|------|----------------|------------|------------|------------|-------------|-----------------------------|---------------------|---------------|-------------|-----------------|
| 0   | Host Station     | 0    | Master Station |            |            |            |             |                             |                     | 192.168.3.253 |             |                 |
| 1   | Ezi-SERVO CT-ALL | 1    | Remote Station |            |            | 16         | 16          |                             | <Detail Setting>    | 192.168.3.1   |             |                 |
| 2   | Ezi-SERVO CT-ALL | 2    | Remote Station |            |            | 16         | 16          |                             | <Detail Setting>    | 192.168.3.2   |             |                 |
| 3   | Ezi-SERVO CT-ALL | 3    | Remote Station |            |            | 16         | 16          |                             | <Detail Setting>    | 192.168.3.3   |             |                 |

등록에 따라 생성됨

2

[Ezi-SERVO CC-Link IE TSN ALL IP Address 임의로 수정]

1. 192.168.3.1
2. 192.168.3.2
3. 192.168.3.3

※ IP Address 변경 후 전원 RESET 필요

1

마우스 클릭 & 드래그 (반복)

Module List

- CC-Link IE TSN Selection Find Module My
- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi Electr
- 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. L
- BLDC Servo Drive
- Closed-loop Step Drive
- Ezi-SERVO-CT Closed-Loop
- Ezi-SERVO-CT-4X Closed-Loop
- Ezi-SERVO-CT-ABS Closed-Loop
- Ezi-SERVO-CT-ALL Closed-Loop
- Open-loop Step Drive
- Speed Control

[참고] Ezi-SERVO CC-Link IE TSN ALL IP Address 설정 16진수 로터리 스위치

Host Station

STA#0 Master Station

STA#1 Ezi-SERVO CT-ALL

STA#2 Ezi-SERVO CT-ALL

STA#3 Ezi-SERVO CT-ALL

Network Label

Output

Error Warning Information

FASTECH Co. Ltd

[Station Type]

Remote Station

(x16) (x1)

## 2-4. Parameter / Module Information / 0000:RD78G4

- CC-Link IE TSN Configuration : Module을 Motion Control Station 및 Synchronous 선택

The screenshot displays the 'CC-Link IE TSN Configuration' software interface. The main window shows a table of modules with columns for 'Module No.', 'Module Name', 'Motion Control Station', 'Communication Period Interval (Min.)', 'PDO Mapping Setting', 'IP Address', 'Subnet Mask', 'Default Gateway', 'Reserved/Error Invalid Station', 'Network Synchronous Communication', and 'Communication Period Setting'.

Key annotations include:

- 1**: A red circle highlighting the 'Motion Control Station' column for the 'Ezi-SERVO-ALL-CT' module, with a yellow box labeled 'Motion Control Station - Check (마우스 클릭)'.
- 2**: A red circle highlighting the 'Network Synchronous Communication' dropdown menu, which is set to 'Synchronous', with a yellow box labeled 'Synchronous 선택'.

The 'Module List' panel on the right shows a tree view of modules, including 'General CC-Link IE TSN Module', 'CC-Link IE TSN Module (Mitsubishi Elect...', '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', 'EnergyMeasuringUnit', 'Bridge module', 'FPGA module', 'CC-Link IE TSN Module (FASTECH Co. L...', 'Closed-loop Step Drive', 'Ezi-SERVO-CT', 'Open-loop Step Drive', and 'Ezi-STEP-CT'.

The bottom status bar shows the 'Host Station' and 'STAN Master Station' with a total of 3 units. The 'STAN Master Station' is highlighted in green.

The bottom right corner displays the following information:

- [Outline] Step Drive
- [Specification] Open-Loop Step Drive
- Motor: Max. NEMA 24
- Mode: Homing, OSP, FP
- CC-Link IE TSN Class B
- [Manufacturer Name] FASTECH Co. Ltd
- [Station Type] Remote Station

## 2-4. Parameter / Module Information / 0000:RD78G4

- CC-Link IE TSN Configuration : Module PDO Mapping Setting (축별 설정)

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

Connected/Disconnected Module Detection Detailed Display

Mode Setting: Online (Unicast Mode) Assignment Method:

| No. | Model Name       | STA# | Station Type   | RX Setting Points | RY Setting Points | RWr Setting Points | RWw Setting Points | Parameter Automatic Setting | PDO Mapping Setting | IP Address    | Subnet Mask | Default Gateway |
|-----|------------------|------|----------------|-------------------|-------------------|--------------------|--------------------|-----------------------------|---------------------|---------------|-------------|-----------------|
| 0   | Host Station     | 0    | Master Station |                   |                   |                    |                    |                             |                     | 192.168.3.253 |             |                 |
| 1   | Esi-SERVO-ALL-CT | 1    | Remote Station |                   |                   | 16                 | 16                 |                             | <Detail Setting>    | 192.168.3.17  |             |                 |
| 2   | Esi-SERVO-ALL-CT | 2    | Remote Station |                   |                   | 16                 | 16                 |                             | <Detail Setting>    | 192.168.3.18  |             |                 |
| 3   | Esi-SERVO-ALL-CT | 3    | Remote Station |                   |                   | 16                 | 16                 |                             | <Detail Setting>    | 192.168.3.19  |             |                 |

등록에 따라 생성됨

PDO Mapping Setting

Link Device Points

PDO Mapping Parameter

Link Device (RWw) Points

PDO Mapping Pattern Selection (1/2)

Please select the TPDO mapping pattern assigned in link device (RWw).

| No. | Pattern Name                    | Used Points |
|-----|---------------------------------|-------------|
| 1   | 1st TPDO (CSP Mode)             | 8 Points    |
| 2   | 2nd TPDO (ProfilePosition Mode) | 10 Points   |

Back Next Cancel

PDO Mapping Pattern Selection (2/2)

Please select the RPDO mapping pattern assigned in link device (RWw).

| No. | Pattern Name                    | Used Points |
|-----|---------------------------------|-------------|
| 1   | 1st RPDO (CSP Mode)             | 7 Points    |
| 2   | 2nd RPDO (ProfilePosition Mode) | 13 Points   |

Back OK Cancel

Module List

CC-Link IE TSN Selection Find Module My

- General CC-Link IE TSN Module
- CC-Link IE TSN Module (Mitsubishi Electric)
- 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

[Outline]  
Step Drive  
[Specification]  
Closed-Loop Step Drive  
Motor: Max. NEMA 24  
Mode: Homing, CSP, PP  
CC-Link IE TSN Class B  
[Manufacturer Name]  
FASTECH Co. Ltd  
[Station Type]  
Remote Station

Network Label

Output

Error:0 Warning:0 Information:0

## 2-4. Parameter / Module Information / 0000:RD78G4

- CC-Link IE TSN Configuration : Module PDO Mapping Setting (축별 설정)

The screenshot displays the 'CC-Link IE TSN Configuration' software interface. The main window shows a table of modules with columns for No., Model Name, STA#, Station Type, RX Setting, RY Setting, RW Setting, Parameter Automatic Setting, PDO Mapping Setting, IP Address, Subnet Mask, and Default Gateway. A red box highlights the '<Detail Setting>' button in the PDO Mapping Setting column for STA# 1.

A dialog box titled 'PDO Mapping Setting' is open, showing the 'PDO Mapping Parameter' table. The table has columns for Link Device, Index [Hexadecimal], Sub-Index [Hexadecimal], Entry Name, Comment, and Data Type. The 'Link Device' column is highlighted in blue.

An orange callout box contains the text: 'PDO 설정 완료되면 검정색으로 변경됨 <Detail Setting> → <Detail Setting> 반복으로 모든 축 PDO 설정'.

The bottom of the interface shows a 'Network Label' section with a diagram of the network topology, including a Host Station and three Remote Stations (STA#1, STA#2, STA#3). The 'Output' section at the bottom right shows 'Error:0', 'Warning:0', and 'Information:0'.

## 2-4. Parameter / Module Information / 0000:RD78G4

- CC-Link IE TSN Configuration : Module Setting 반영

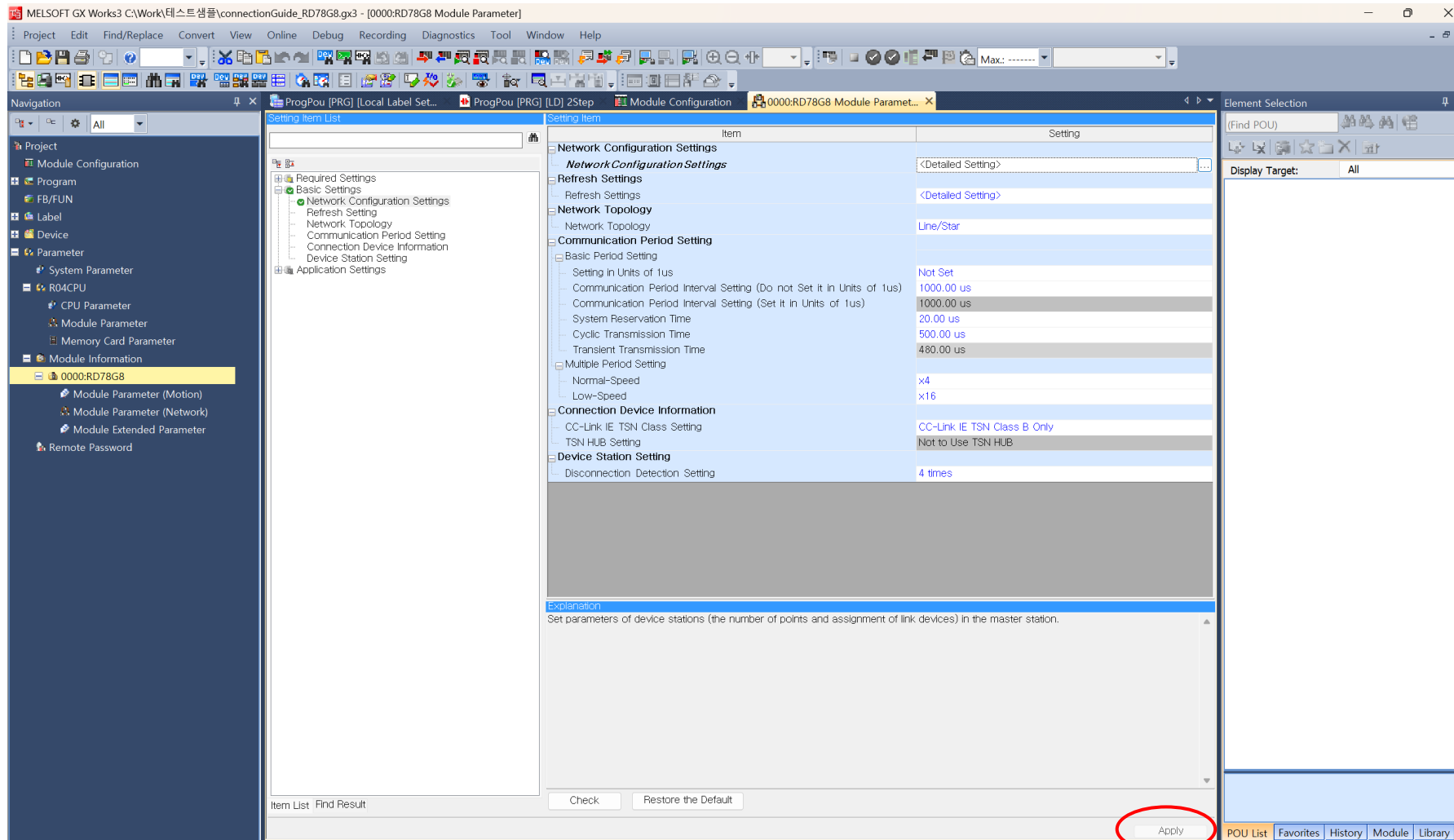
The screenshot displays the 'CC-Link IE TSN Configuration' software window. The main table lists station configurations:

| No. | Model Name       | Station Type   | RX Setting | RY Setting | RWr Setting | RWv Setting | Parameter Automatic Setting | PDO Mapping Setting | IP Address    | Subnet Mask | Default Gateway |
|-----|------------------|----------------|------------|------------|-------------|-------------|-----------------------------|---------------------|---------------|-------------|-----------------|
| 0   | Host Station     | Master Station |            |            |             |             |                             |                     | 192.168.3.253 |             |                 |
| 1   | Ezi-SERVO-ALL-CT | Remote Station |            |            |             | 16          |                             | <Detail Setting>    | 192.168.3.17  |             |                 |
| 2   | Ezi-SERVO-ALL-CT | Remote Station |            |            |             | 16          |                             | <Detail Setting>    | 192.168.3.18  |             |                 |
| 3   | Ezi-SERVO-ALL-CT | Remote Station |            |            |             | 16          |                             | <Detail Setting>    | 192.168.3.19  |             |                 |

A warning dialog box from MELSOFT GX Works3 is overlaid on the screen, asking: "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. A red circle also highlights the 'Close with Reflecting the Setting' option in the software's menu bar. A yellow arrow points from this menu option to the dialog box. The background shows a network diagram with stations STA#0, STA#1, STA#2, and STA#3, and a 'Module List' on the right side.

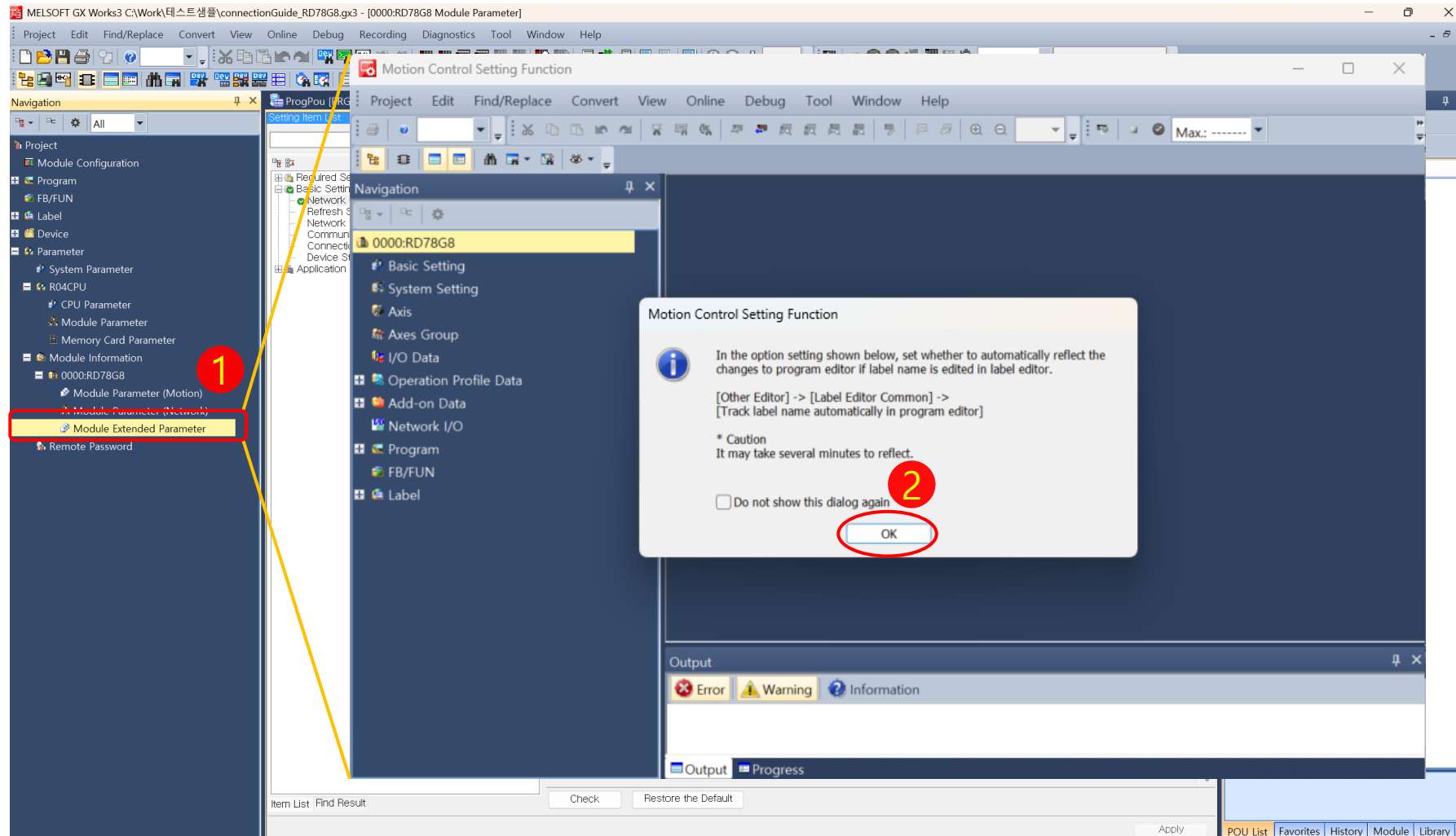
## 2-4. Parameter / Module Information / 0000:RD78G4

### ● Network Configuration Settings 적용



## 2-5. Module Extended Parameter – Motion Control Setting Function

- Module Extended Parameter



## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis - Axis0001 생성

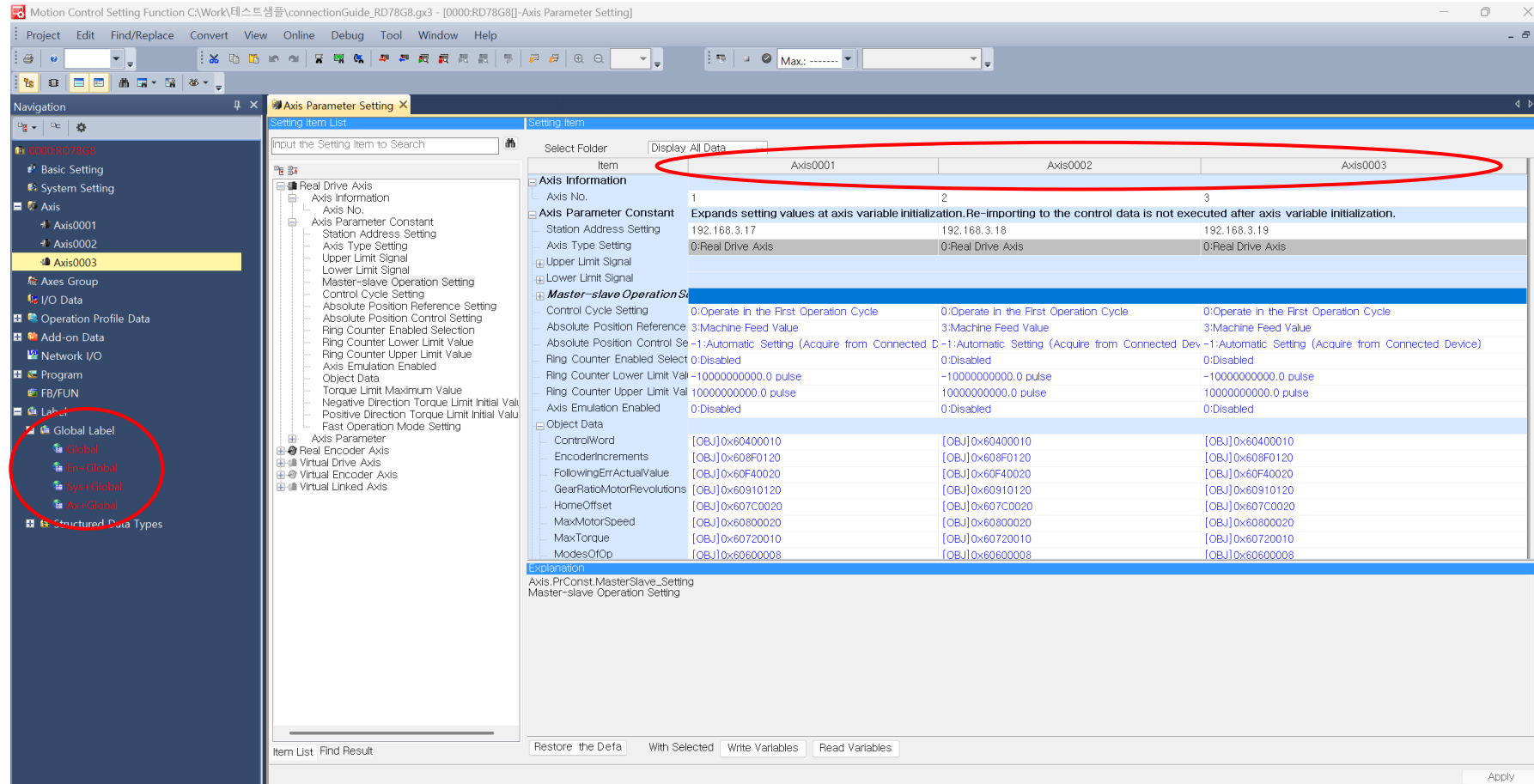
마우스 오른쪽 클릭

The screenshot displays the 'Motion Control Setting Function' software interface. The 'Navigation' pane on the left shows the project structure, with the 'Axis' folder highlighted. A red circle labeled '1' is placed over the 'Axis' folder. A yellow callout box with the text '마우스 오른쪽 클릭' (Right-click mouse) points to this folder. A red circle labeled '2' is placed over the 'Add New Data...' button in the context menu. A red circle labeled '3' is placed over the 'OK' button in the 'New Data' dialog box. The 'New Data' dialog box shows the 'Basic Setting' tab with 'Data Type' set to 'Axis' and '(Data Name)' set to 'Axis0001'. The 'Detailed Setting' tab is also visible, showing 'Axis Information' with 'Axis No.' set to '1'. A fourth dialog box, 'Station Address Setting', is shown in the foreground, indicating the next step in the process. The 'Station Address Setting' dialog box contains a table with the following data:

| IP Address  | Model Name       | Alias |
|-------------|------------------|-------|
| 192.168.3.1 | Ezi-SERVO-ALL-CT |       |
| 192.168.3.1 | Ezi-SERVO-ALL-CT |       |
| 192.168.3.1 | Ezi-SERVO-ALL-CT |       |

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis - Axis0001, Axis0002, Axis0003 생성 (반복)



## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis - Axis0001... - Object Data Setting (Ezi-SERVO CC-Link IE TSN ALL Object Data로 설정)

Motion Control Setting Function C:\Work\테스트샘플\connectionGuide\_RD78G8.gx3 - [0000:RD78G8]-Axis Parameter Setting

Navigation: 0000:RD78G8, Basic Setting, System Setting, Axis, Axis0001, Axis0002, Axis0003, Axes Group, I/O Data, Operation Profile Data, Add-on Data, Network I/O, Program, FB/FUN, Label, Global Label, Global, Em Global, Sys Global, As Global, Structured Data Types

Setting Item List: Input the Setting Item to Search

Select Folder: Display All Data

| Item                           | Axis0001             | Axis0002             | Axis0003             |
|--------------------------------|----------------------|----------------------|----------------------|
| Ring Counter Lower Limit Value | -10000000000.0 pulse | -10000000000.0 pulse | -10000000000.0 pulse |
| Ring Counter Upper Limit Value | 10000000000.0 pulse  | 10000000000.0 pulse  | 10000000000.0 pulse  |
| Axis Emulation Enabled         | 0:Disabled           | 0:Disabled           | 0:Disabled           |
| Object Data                    |                      |                      |                      |
| ControlWord                    | [OBJ]0x60400010      | [OBJ]0x60400010      | [OBJ]0x60400010      |
| EncoderIncrements              | [OBJ]0x608F0120      | [OBJ]0x608F0120      | [OBJ]0x608F0120      |
| FollowingErrorActualValue      | [OBJ]0x60F40020      | [OBJ]0x60F40020      | [OBJ]0x60F40020      |

Object Data Setting (Axis0001)

Target Device: Ezi-SERVO-CT

Changing the object data is not required when MELSERVO has been used. Please set it to the generic default value by pressing Restore the Default Settings button when the non-MELSERVO device has been used. It can be changed individually when the device inherent object data has been set.

| Item                      | Axis0001        | Axis0002        | Axis0003        |
|---------------------------|-----------------|-----------------|-----------------|
| ControlWord               | [OBJ]0x60400010 | [OBJ]0x60400010 | [OBJ]0x60400010 |
| EncoderIncrements         | [OBJ]0x608F0120 | [OBJ]0x608F0120 | [OBJ]0x608F0120 |
| FollowingErrorActualValue | [OBJ]0x60F40020 | [OBJ]0x60F40020 | [OBJ]0x60F40020 |
| GearRatioMotorRevolutions | [OBJ]0x60910120 | [OBJ]0x60910120 | [OBJ]0x60910120 |
| HomeOffset                | [OBJ]0x607C0020 | [OBJ]0x607C0020 | [OBJ]0x607C0020 |
| MaxMotorSpeed             | [OBJ]0x60800020 | [OBJ]0x60800020 | [OBJ]0x60800020 |
| MaxTorque                 | [OBJ]0x60720010 | [OBJ]0x60720010 | [OBJ]0x60720010 |
| ModesOfOp                 | [OBJ]0x60600008 | [OBJ]0x60600008 | [OBJ]0x60600008 |
| ModesOfOpDisolav          | [OBJ]0x60610008 | [OBJ]0x60610008 | [OBJ]0x60610008 |
| NegativeTorqueLimitValue  | [OBJ]0x60E10010 | [OBJ]0x60E10010 | [OBJ]0x60E10010 |
| Polarity                  | [OBJ]0x607E0008 | [OBJ]0x607E0008 | [OBJ]0x607E0008 |
| PosActualValue            | [OBJ]0x60640020 | [OBJ]0x60640020 | [OBJ]0x60640020 |

StatusWord: [OBJ]0x60410010, [OBJ]0x60410010, [OBJ]0x60410010

SupportedDriveModes: [OBJ]0x65020020, [OBJ]0x65020020, [OBJ]0x65020020

Explanation: Request the drive unit to switch status. The setting values depending on the drive unit connected. Check the manual of product data settings.

Buttons: Import..., Export..., Restore the Default, OK, Cancel

MELSOFT GX Works3

The specified station address refers to a non-MELSERVO device. Do you want to set to generic default values?

Yes: Set to generic default values  
No: Set to default values for MELSERVO

Buttons: 예(Y), 아니요(N), 취소

Ezi-SERVO CC-Link IE TSN ALL Object Data

Restore the Default, With Selected, Write Variables, Read Variables

Output: Parameter Check, Error: 0, Warning: 0, Information, CheckWarning: 0

No. Result Data Name Category Content

Error Code

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis - Axis0001... - Object Data Setting (Ezi-SERVO CC-Link IE TSN ALL Object Data로 설정)

The screenshot displays the 'Motion Control Setting Function' software interface. The 'Axis Parameter Setting' window is open, showing the 'Object Data' section for Axis0003. The 'ControlWord' parameter is highlighted, and three red circles are drawn around the '[OBJ]' values for Axis0001, Axis0002, and Axis0003. A yellow callout box points to the first circle with the text '[OBJ] 변경된 내용 확인'.

| Item                           | Axis0001             | Axis0002             | Axis0003             |
|--------------------------------|----------------------|----------------------|----------------------|
| Ring Counter Lower Limit Value | -10000000000.0 pulse | -10000000000.0 pulse | -10000000000.0 pulse |
| Ring Counter Upper Limit Value | 10000000000.0 pulse  | 10000000000.0 pulse  | 10000000000.0 pulse  |
| Axis Emulation Enabled         | 0:Disabled           | 0:Disabled           | 0:Disabled           |
| Object Data                    |                      |                      |                      |
| ControlWord                    | [OBJ] 0x60400010     | [OBJ] 0x60400010     | [OBJ] 0x60400010     |
| EncoderIncrements              | [OBJ] 0x608F0120     | [OBJ] 0x608F0120     | [OBJ] 0x608F0120     |
| FollowingErrorActualValue      | [OBJ] 0x60F40020     | [OBJ] 0x60F40020     | [OBJ] 0x60F40020     |
| GearRatioMotorRevolutions      |                      |                      |                      |
| HomeOffset                     | [OBJ] 0x607C0020     | [OBJ] 0x607C0020     | [OBJ] 0x607C0020     |
| MaxMotorSpeed                  | [OBJ] 0x60800020     | [OBJ] 0x60800020     | [OBJ] 0x60800020     |
| MaxTorque                      | [OBJ] 0x60720010     | [OBJ] 0x60720010     | [OBJ] 0x60720010     |
| ModesOfOp                      | [OBJ] 0x60600008     | [OBJ] 0x60600008     | [OBJ] 0x60600008     |
| ModesOfOpDisp                  | [OBJ] 0x60610008     | [OBJ] 0x60610008     | [OBJ] 0x60610008     |
| NegativeTorqueLimitValue       | [OBJ] 0x60E10010     | [OBJ] 0x60E10010     | [OBJ] 0x60E10010     |
| Polarity                       | [OBJ] 0x607E0008     | [OBJ] 0x607E0008     | [OBJ] 0x607E0008     |
| PosActualValue                 | [OBJ] 0x60640020     | [OBJ] 0x60640020     | [OBJ] 0x60640020     |
| PosEncoderResolution           | [OBJ] 0x608F0008     | [OBJ] 0x608F0008     | [OBJ] 0x608F0008     |
| PosEncoderResolutionMot        | [OBJ] 0x608F0220     | [OBJ] 0x608F0220     | [OBJ] 0x608F0220     |
| PositiveTorqueLimitValue       | [OBJ] 0x60E00010     | [OBJ] 0x60E00010     | [OBJ] 0x60E00010     |
| ShaftRevolutions               |                      |                      |                      |
| SiUnitPos                      | [OBJ] 0x60A80020     | [OBJ] 0x60A80020     | [OBJ] 0x60A80020     |
| SiUnitVel                      | [OBJ] 0x60A90020     | [OBJ] 0x60A90020     | [OBJ] 0x60A90020     |
| StatusWord                     | [OBJ] 0x60410010     | [OBJ] 0x60410010     | [OBJ] 0x60410010     |
| SupportedDriveModes            | [OBJ] 0x65020020     | [OBJ] 0x65020020     | [OBJ] 0x65020020     |

Explanation  
Request the drive unit to switch status.  
The setting values depending on the drive unit connected. Check the manual of object data settings.

[OBJ] 변경된 내용 확인

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis – Position Command Unit (기어비 설정) ※ Ezi-SERVO CC-Link IE TSN ALL 인코더 10,000ppr

**Ezi-SERVO CC-Link IE TSN ALL의 Encoder Resolution Setting Range는 10,000pulse/rev**

**기어비 설정 방법은 기존방법과 동일함**

**Setting Item List**

Input the Setting Item to Search

Select Folder Display All Data

Item

Axis0001

Axis0002

Acceleration Limit Value

Oper Electronic Gear Setting Axis0001

Com Entry

Select the machine components, and enter the machine data to automatically set the axis parameters (position command unit, driver unit conversion numerator and driver unit conversion denominator).

Machine Component Rotary Table

Position Command Unit degree

One Revolution 360.0000 [degree]

Reduction Ratio (NL/NM) = 1 / 1

Calculate reduction ratio by teeth or diameters to

Encoder Resolution 10000 [pulse/rev]

Calculate Axis Para

**Calculation Result**

Axis Parameters

Position Command Unit degree

Driver Unit Conversion Numerator 1

Driver Unit Conversion Denominator 3

Movement Amount per Driver Unit Command 0.0 [degree]

\* The electronic gear on driver side is calculated as 1/3.

As a result of calculation, no error occurs in the movement amount.

Applying the calculation result above, the error for ev 0.0 [degree] (movement amount) you perform is a 0.0 [degree]

Click OK to reflect to the axis parameters.

Position Command Unit degree

Velocity Command Unit U/s

Velocity Bias Value 0.0 degree/s

Position Command Unit String

Velocity Command Unit String

Velocity Bias Value

Negative Direction Velocity Limit Value

Operation Setting at Velocity Limit Value

Positive Direction Velocity Limit Value

Item List Find Result

Restore the Defa With Selected Write Variables Read Variables

Output

Parameter Check Error: 0 Warning: 0 Information CheckWarning: 0

No. Result Data Name Category Content

Output Progress

Error Code

**5**

Reflects the calculation result to the axis parameters.

Values currently set will be deleted and updated to the values of calculation result.

Are you sure?

예(Y) 아니요(N)

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis – Position Command Unit (기어비 설정) ※ Ezi-SERVO CC-Link IE TSN ALL 인코더 10,000ppr

**Ezi-SERVO CC-Link IE TSN ALL Encoder 10,000pulse/rev**

**모터 1회전당 이동 거리/각도 설정**

**Robot or Stage 이동 단위 선택**

| Item                                      | Axis0001                                | Axis0002                                | Axis0003                                |
|-------------------------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|
| Acceleration Limit Value                  | 2147483647.0 degree/s <sup>2</sup>      | 2147483647.0 pulse/s <sup>2</sup>       | 2147483647.0 pulse/s <sup>2</sup>       |
| Operation Selection at Start Acceleration | -1:Error (Not Started)                  | -1:Error (Not Started)                  | -1:Error (Not Started)                  |
| Command In-position Width                 | 100.0 degree                            | 100.0 pulse                             | 100.0 pulse                             |
| Deceleration Limit Value                  | 2147483647.0 degree/s <sup>2</sup>      | 2147483647.0 pulse/s <sup>2</sup>       | 2147483647.0 pulse/s <sup>2</sup>       |
| Driver Unit Conversion Numerator          | 10000                                   | 1                                       | 1                                       |
| Driver Unit Conversion Denominator        | 360 degree                              | pulse                                   | 1 pulse                                 |
| Forced Stop Signal                        |                                         |                                         |                                         |
| Homing Required or Not                    | 1:Homing Required                       | 1:Homing Required                       | 1:Homing Required                       |
| Jerk Limit Value                          | 2147483647.0 degree/s <sup>3</sup>      | 2147483647.0 pulse/s <sup>3</sup>       | 2147483647.0 pulse/s <sup>3</sup>       |
| Operation Setting at Overrun              | 1:Immediate Stop                        | 1:Immediate Stop                        | 1:Immediate Stop                        |
| Start Permission at Homing Uncomplete     | 0:Disabled                              | 0:Disabled                              | 0:Disabled                              |
| Deceleration at Stop                      | 0.0 degree/s <sup>2</sup>               | 0.0 pulse/s <sup>2</sup>                | 0.0 pulse/s <sup>2</sup>                |
| Stop Selection at Deceleration to Stop    | 1:Recreate Deceleration Curve           | 1:Recreate Deceleration Curve           | 1:Recreate Deceleration Curve           |
| Stop Selection at Stop Cause Occurrence   | 3:Alternative Acceleration/Deceleration | 3:Alternative Acceleration/Deceleration | 3:Alternative Acceleration/Deceleration |
| Stop Selection at H/W Stroke Limit Error  | 1:Immediate Stop                        | 1:Immediate Stop                        | 1:Immediate Stop                        |
| Process Selection at Servo OFF Correction | 0:Ignore                                | 0:Ignore                                | 0:Ignore                                |
| Stop Selection at S/W Stroke Limit Error  | 1:Immediate Stop                        | 1:Immediate Stop                        | 1:Immediate Stop                        |
| Driver Command Discard Detection Signal   | 1:Detection Enabled                     | 1:Detection Enabled                     | 1:Detection Enabled                     |
| Stop Signal                               |                                         |                                         |                                         |
| Signal                                    |                                         |                                         |                                         |
| Target                                    |                                         |                                         |                                         |
| Signal Detection Method                   | 0:Detection at TRUE                     | 0:Detection at TRUE                     | 0:Detection at TRUE                     |
| Compensation Time                         | 0.0 s                                   | 0.0 s                                   | 0.0 s                                   |
| Filter Time                               | 0.0 s                                   | 0.0 s                                   | 0.0 s                                   |
| Software Stroke Limit Lower Value         | -10000000000.0 degree                   | -10000000000.0 pulse                    | -10000000000.0 pulse                    |
| Software Stroke Limit Target              | -1:Invalid                              | -1:Invalid                              | -1:Invalid                              |
| Software Stroke Limit Upper Value         | 10000000000.0 degree                    | 10000000000.0 pulse                     | 10000000000.0 pulse                     |
| Position Command Unit                     | degree                                  | pulse                                   | pulse                                   |
| Position Command Unit String              |                                         |                                         |                                         |
| Velocity Command Unit                     | U/s                                     | U/s                                     | U/s                                     |
| Velocity Bias Value                       | 0.0 degree/s                            | 0.0 pulse/s                             | 0.0 pulse/s                             |

Apply

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Axis – Absolute Position Control Setting : Disable로 설정

**Ezi-SERVO CC-Link IE TSN ALL은 Disable Absolute Position System으로 선택**

| Item                                                                                                                                          | Axis0001                                             | Axis0002                                             | Axis0003                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| <b>Axis Information</b>                                                                                                                       |                                                      |                                                      |                                                      |
| Axis No.                                                                                                                                      | 1                                                    | 2                                                    | 3                                                    |
| <b>Axis Parameter Constant</b>                                                                                                                |                                                      |                                                      |                                                      |
| Expands setting values at axis variable initialization. Re-importing to the control data is not executed after axis variable initialization.  |                                                      |                                                      |                                                      |
| Station Address Setting                                                                                                                       | 192.168.3.17                                         | 192.168.3.18                                         | 192.168.3.19                                         |
| Axis Type Setting                                                                                                                             | 0:Real Drive Axis                                    | 0:Real Drive Axis                                    | 0:Real Drive Axis                                    |
| Upper Limit Signal                                                                                                                            |                                                      |                                                      |                                                      |
| Lower Limit Signal                                                                                                                            |                                                      |                                                      |                                                      |
| Master-slave Operation Setting                                                                                                                | 0:Operate in the First Operation Cycle               | 0:Operate in the First Operation Cycle               | 0:Operate in the First Operation Cycle               |
| Control Cycle Setting                                                                                                                         | 3:Machine Feed Value                                 | 3:Machine Feed Value                                 | 3:Machine Feed Value                                 |
| Absolute Position Reference Setting                                                                                                           | 0:Disable Absolute Position System                   | -1:Automatic Setting (Acquire from Connected Device) | -1:Automatic Setting (Acquire from Connected Device) |
| Ring Counter Enabled Selection                                                                                                                | 0:Disabled                                           | 0:Disabled                                           | 0:Disabled                                           |
| Ring Counter Lower Limit Value                                                                                                                | 1:Enable Absolute Position System                    | 100000.0 mm                                          | -10000000000.0 mm                                    |
| Ring Counter Upper Limit Value                                                                                                                | -1:Automatic Setting (Acquire from Connected Device) | 10000.0 mm                                           | 10000000000.0 mm                                     |
| Axis Emulation Enabled                                                                                                                        | 0:Disabled                                           | 0:Disabled                                           | 0:Disabled                                           |
| <b>Object Data</b>                                                                                                                            |                                                      |                                                      |                                                      |
| Torque Limit Maximum Value                                                                                                                    | 1000.0 %                                             | 1000.0 %                                             | 1000.0 %                                             |
| Negative Direction Torque Limit Initial                                                                                                       | 300.0 %                                              | 300.0 %                                              | 300.0 %                                              |
| Positive Direction Torque Limit Initial                                                                                                       | 300.0 %                                              | 300.0 %                                              | 300.0 %                                              |
| Fast Operation Mode Setting                                                                                                                   | 0000                                                 | 0000                                                 | 0000                                                 |
| <b>Axis Parameter</b>                                                                                                                         |                                                      |                                                      |                                                      |
| Expands initial values at axis variable initialization. Re-importing to the control data is also executed after axis variable initialization. |                                                      |                                                      |                                                      |
| Acceleration Limit Value                                                                                                                      | 2147483647.0 degree/s <sup>2</sup>                   | 2147483647.0 mm/s <sup>2</sup>                       | 2147483647.0 mm/s <sup>2</sup>                       |
| Operation Selection at Start Acceleration                                                                                                     | -1:Error (Not Started)                               | -1:Error (Not Started)                               | -1:Error (Not Started)                               |
| Position Command Unit                                                                                                                         | 100.0 degree                                         | 100.0 mm                                             | 100.0 mm                                             |
| Velocity Command Unit                                                                                                                         | 2147483647.0 degree/s <sup>2</sup>                   | 2147483647.0 mm/s <sup>2</sup>                       | 2147483647.0 mm/s <sup>2</sup>                       |
| Velocity Bias Value                                                                                                                           | 10000                                                | 10000                                                | 10000                                                |
| Negative Direction Velocity Limit Value                                                                                                       | 360 degree                                           | 5 mm                                                 | 10 mm                                                |
| Operation Setting at Overrun                                                                                                                  | 1:Homming Required                                   | 1:Homming Required                                   | 1:Homming Required                                   |
| Start Permission at Homming                                                                                                                   | 2147483647.0 degree/s <sup>3</sup>                   | 2147483647.0 mm/s <sup>3</sup>                       | 2147483647.0 mm/s <sup>3</sup>                       |
| Operation Setting at Velocity Limit                                                                                                           | 1:Immediate Stop                                     | 1:Immediate Stop                                     | 1:Immediate Stop                                     |
| Positive Direction Velocity Limit Value                                                                                                       | 0:Flashlight                                         | 0:Flashlight                                         | 0:Flashlight                                         |

Apply

## 2-5. Module Extended Parameter – Motion Control Setting Function

### ● Network I/O Setting – 축별 Digital In/Output 설정

The screenshot shows the 'Network I/O' configuration window in the Motion Control Setting Function software. The window displays a table with columns for IP Address, Model Name, Device Label, Data Type, Labeling Target, Data Type, Label Name, and Comment. The table is divided into three sections for different devices: Ezi-SERVO..., Ezi-SERVO..., and Ezi-STEP....

Red circles and numbers 1, 2, and 3 highlight specific settings and actions:

- 1**: Points to the 'Labeling Target' column, specifically the 'Digital Output' section.
- 2**: Points to the 'Create Label' button at the bottom right of the window.
- 3**: Points to the '예(Y)' (Yes) button in the confirmation dialog box.

Annotations on the right side of the window:

- Digital Output 라벨 설정** (Digital Output Label Setting)
- Digital Input 라벨 설정 - Limit +/-, ORG, Input** (Digital Input Label Setting - Limit +/-, ORG, Input)

Explanation text at the bottom of the window:

Registers the I/O data for cyclic communication between the motion module and the device stations under its management, as labels.

Executing 'Create Label' registers only 'Labeling Target' data to the global label list (NW+Global). After executing 'Create Label', you are unable to restore the label registration data before creation.

Contents edited in this window are not saved in the project and are only kept while the project is open. After the project is re-opened, the label registration data on the global label list (NW+Global) will be reflected in the displayed data.

Output section at the bottom:

Parameter Check Error: 0 Warning: 0 Information CheckWarning: 0

No. Result Data Name Category Content Error Code

## 2-5. Module Extended Parameter – Motion Control Setting Function

### ● Axis – Upper/Lower Limit Signal – Signal Detection Method 설정

**Ezi-SERVO CC-Link IE TSN ALL +Limit Switch 설정은 Ezi\_SERVO\_CT\_001\_DigitalInputs.1**

**Ezi-SERVO CC-Link IE TSN ALL -Limit Switch 설정은 Ezi\_SERVO\_CT\_001\_DigitalInputs.0**

주) Ezi\_SERVO\_CT\_xxx\_DigitalInputs.x 라벨 설정이 안될 경우  
1. Network Setting 확인 (27page)

Apply

Output  
Parameter Check Error: 0 Warning: 0 Information CheckWarning: 0  
No. Result Data Name Category Content  
Error Code

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Label – Global Label – Sys+Global

1

2

GX Works3에서 Label을 사용하려면 Enable 지정

| Label Name | Data Type                  | Class                          | Initial Value | Constant            | English(Display Target) | Rem | Public Label | Motion Control Attribute |
|------------|----------------------------|--------------------------------|---------------|---------------------|-------------------------|-----|--------------|--------------------------|
| 1          | System                     | SYSTEM                         | VAR_GLOBAL    | <Detailed Settings> | Constant                |     | Enabled      | -                        |
| 2          | MotionControl_AdvancedSync | MotionControl_AdvancedSync_SYS | VAR_GLOBAL    | <Detailed Settings> |                         |     | Disabled     | -                        |
| 3          |                            |                                |               |                     |                         |     |              |                          |

| Label Name                        | Data Type                              | Comment                           | Initial Value | Public Label |
|-----------------------------------|----------------------------------------|-----------------------------------|---------------|--------------|
| MotionControl_AdvancedSync_System | MotionControl_AdvancedSync_SYS         | System Parameter Constant         | Disabled      | Disabled     |
| ADDON_PARAM                       | ADDON_PARAM                            | Add-on MotionControl_AdvancedSync | Disabled      | Disabled     |
| RamSizeMax                        | Double Word (Unsigned) Bit String [32] | Maximum RAM Size                  | 2048          | Disabled     |
| BackupRamSizeMax                  | Double Word (Unsigned) Bit String [32] | Maximum Backup RAM Size           | 16            | Disabled     |
| Md                                | Md                                     | System Monitor Data               | Disabled      | Disabled     |
| ADDON_MONI                        | ADDON_MONI                             | System Memory Usage               | Disabled      | Disabled     |
| RamUsage                          | Double Word (Unsigned) Bit String [32] | RAM Usage                         | Disabled      | Disabled     |
| RamMaxUsage                       | Double Word (Unsigned) Bit String [32] | RAM Usage Maximum                 | Disabled      | Disabled     |
| BackupRamUsage                    | Double Word (Unsigned) Bit String [32] | Backup RAM Usage                  | Disabled      | Disabled     |
| BackupRamMaxUsage                 | Double Word (Unsigned) Bit String [32] | Backup RAM Usage Maximum          | Disabled      | Disabled     |

Extd Dspl

Progress

Assigning global label...

Error: 0, Warning: 0

===== Rebuild All Ends Error: 0, Warning: 0, End Time: 2026/01/16 19:49:54, Processing Time (Seconds): 5.475 =====

----- Rebuild All/Parameter Check Starts Start Time: 2026/01/16 19:50:25 -----

--- Start checking: Target: Basic Setting ---

Checking Basic Setting...

--- Start checking: Target: System Setting ---

Checking System Setting...

--- Start checking: Target: Axis ---

Checking Axis...

--- Start checking: Target: Operation Profile Data ---

Checking Operation Profile Data...

--- Start checking: Target: I/O Data ---

Checking I/O Data...

--- Start checking: Target: Advanced Synchronous Control ---

===== Rebuild All/Parameter Check Ends Error: 0, Warning: 0, End Time: 2026/01/16 19:50:29, Processing Time: 4 Seconds =====

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Label – Global Label – Ax+Global

1

2

GX Works3에서 Label을 사용하려면 Enable 지정

| Label Name | Data Type | Class      | Initial Value       | Constant | English(Display Target) | Rem |
|------------|-----------|------------|---------------------|----------|-------------------------|-----|
| 1 Axis0001 | AXIS_REAL | VAR_GLOBAL | <Detailed Settings> |          |                         |     |
| 2 Axis0002 | AXIS_REAL | VAR_GLOBAL | <Detailed Settings> |          |                         |     |
| 3 Axis0003 | AXIS_REAL | VAR_GLOBAL | <Detailed Settings> |          |                         |     |
| 4          |           |            |                     |          |                         |     |

| Label Name               | Data Type                           | Comment                 | Initial Value | Public Label |
|--------------------------|-------------------------------------|-------------------------|---------------|--------------|
| Axis0003                 | AXIS_REAL                           |                         |               | Enabled      |
| AxisRef                  | AXIS_REF                            | Axis Information        |               | Enabled      |
| AxisNo                   | Word [Unsigned/Bit String [16-bit]] | Axis No.                | 3             | Enabled      |
| StartIO                  | Word [Unsigned/Bit String [16-bit]] | IO Number               | 0             | Enabled      |
| PrConst                  | AXIS_REAL_PRM_CONST                 | Axis Parameter Constant |               | Disabled     |
| AddressOfStation         | String [Unicode](53)                | Station Address Setting | 192.168       | Disabled     |
| AxisType                 | Word [Signed]                       | Axis Type Setting       | 0             | Disabled     |
| HasStrokeLimit_FlxSignal | SIGNAL_SELECT                       | Upper Limit Signal      |               | Disabled     |
| Source                   | TARGET_REF                          | Signal                  |               | Disabled     |
| StartIO                  | Word [Unsigned/Bit String [16-bit]] | IO Number               | 0             | Disabled     |
| Target                   | String [Unicode](53)                | Target                  |               | Disabled     |

Extd Dspl

Progress

Assigning global label...

Error: 0, Warning: 0

==== Rebuild All/Parameter Check Starts Start Time: 2026/01/16 19:49:54, Processing Time (Seconds): 5.475 =====

--- Start checking: Target: Basic Setting ---

Checking Basic Setting...

--- Start checking: Target: System Setting ---

Checking System Setting...

--- Start checking: Target: Axis ---

Checking Axis...

--- Start checking: Target: Operation Profile Data ---

Checking Operation Profile Data...

--- Start checking: Target: I/O Data ---

Checking I/O Data...

--- Start checking: Target: Advanced Synchronous Control ---

==== Rebuild All/Parameter Check Ends Error: 0, Warning: 0, End Time: 2026/01/16 19:50:29, Processing Time: 4 Seconds =====

## 2-5. Module Extended Parameter – Motion Control Setting Function

- Label – Global Label – Sys+Global

1

2

| Label Name            | Data Type                            | Class      | Initial Value | Constant | ReadWrite | English(Display Target) | Rem | Public Label | Motion Control Attribute |
|-----------------------|--------------------------------------|------------|---------------|----------|-----------|-------------------------|-----|--------------|--------------------------|
| ExL_SERVO_CT_001_Phys | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | WRITE (← Motion) R/W     |
| ExL_SERVO_CT_001_Digi | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | READ (Motion →) R/W      |
| ExL_SERVO_CT_002_Phys | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | WRITE (← Motion) R/W     |
| ExL_SERVO_CT_002_Digi | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | READ (Motion →) R/W      |
| ExL_STEP_CT_001_Phys  | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | WRITE (← Motion) R/W     |
| ExL_STEP_CT_001_Digi  | Double Word (Unsigned) Bit String B3 | VAR_GLOBAL |               |          | R/W/S     |                         |     | Enabled      | READ (Motion →) R/W      |

Global Label Setting

| Label Name | Data Type | Comment | Initial Value |
|------------|-----------|---------|---------------|
|------------|-----------|---------|---------------|

Extd Dsp

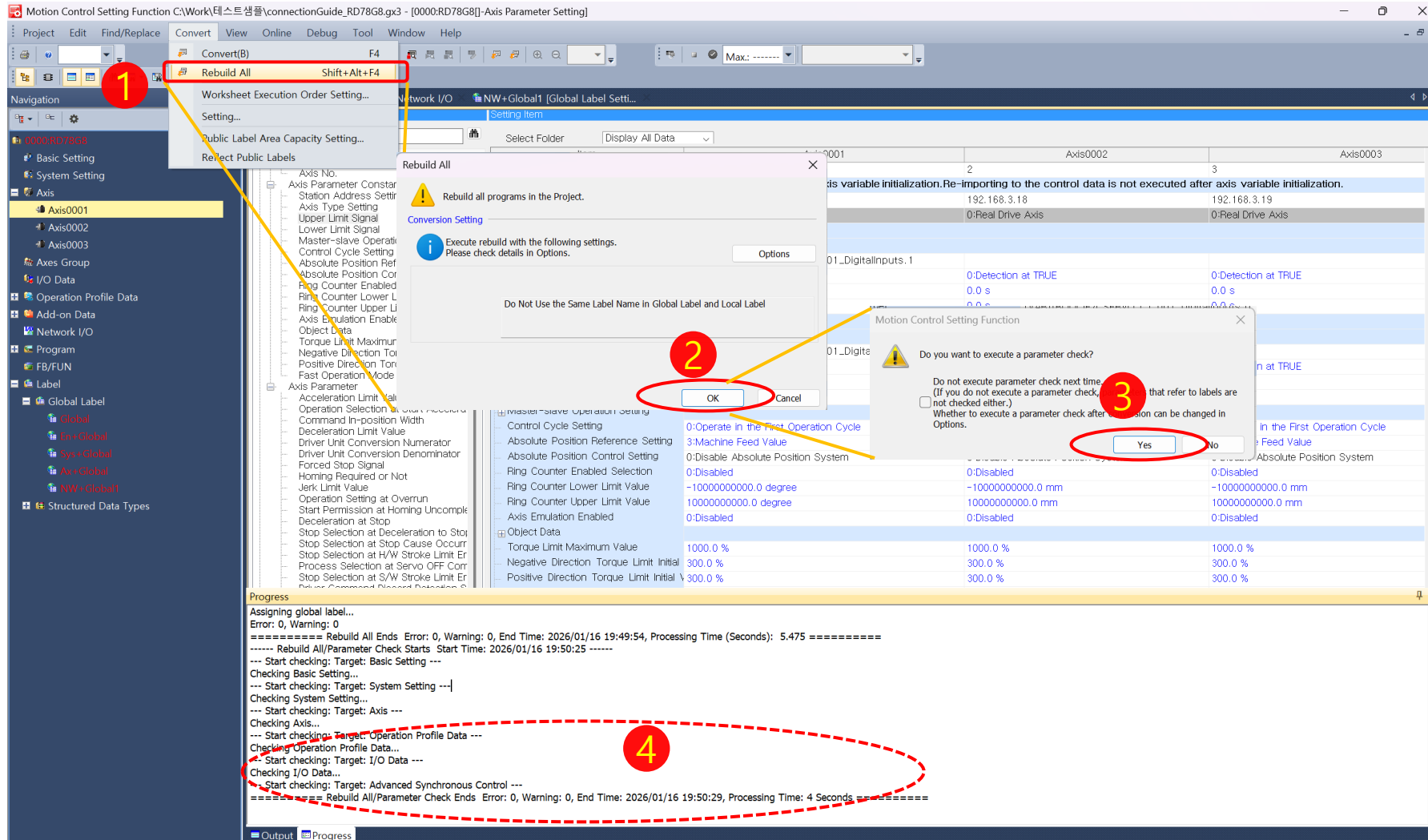
Progress

Assigning global label...  
Error: 0, Warning: 0  
===== Rebuild All Ends Error: 0, Warning: 0, End Time: 2026/01/16 19:49:54, Processing Time (Seconds): 5.475 =====  
----- Rebuild All/Parameter Check Starts Start Time: 2026/01/16 19:50:25 -----  
--- Start checking: Target: Basic Setting ---  
Checking Basic Setting...  
--- Start checking: Target: System Setting ---  
Checking System Setting...  
--- Start checking: Target: Axis ---  
Checking Axis...  
--- Start checking: Target: Operation Profile Data ---  
Checking Operation Profile Data...  
--- Start checking: Target: I/O Data ---  
Checking I/O Data...  
--- Start checking: Target: Advanced Synchronous Control ---  
===== Rebuild All/Parameter Check Ends Error: 0, Warning: 0, End Time: 2026/01/16 19:50:29, Processing Time: 4 Seconds =====

GX Works3에서 Label을 사용하려면 Enable 지정

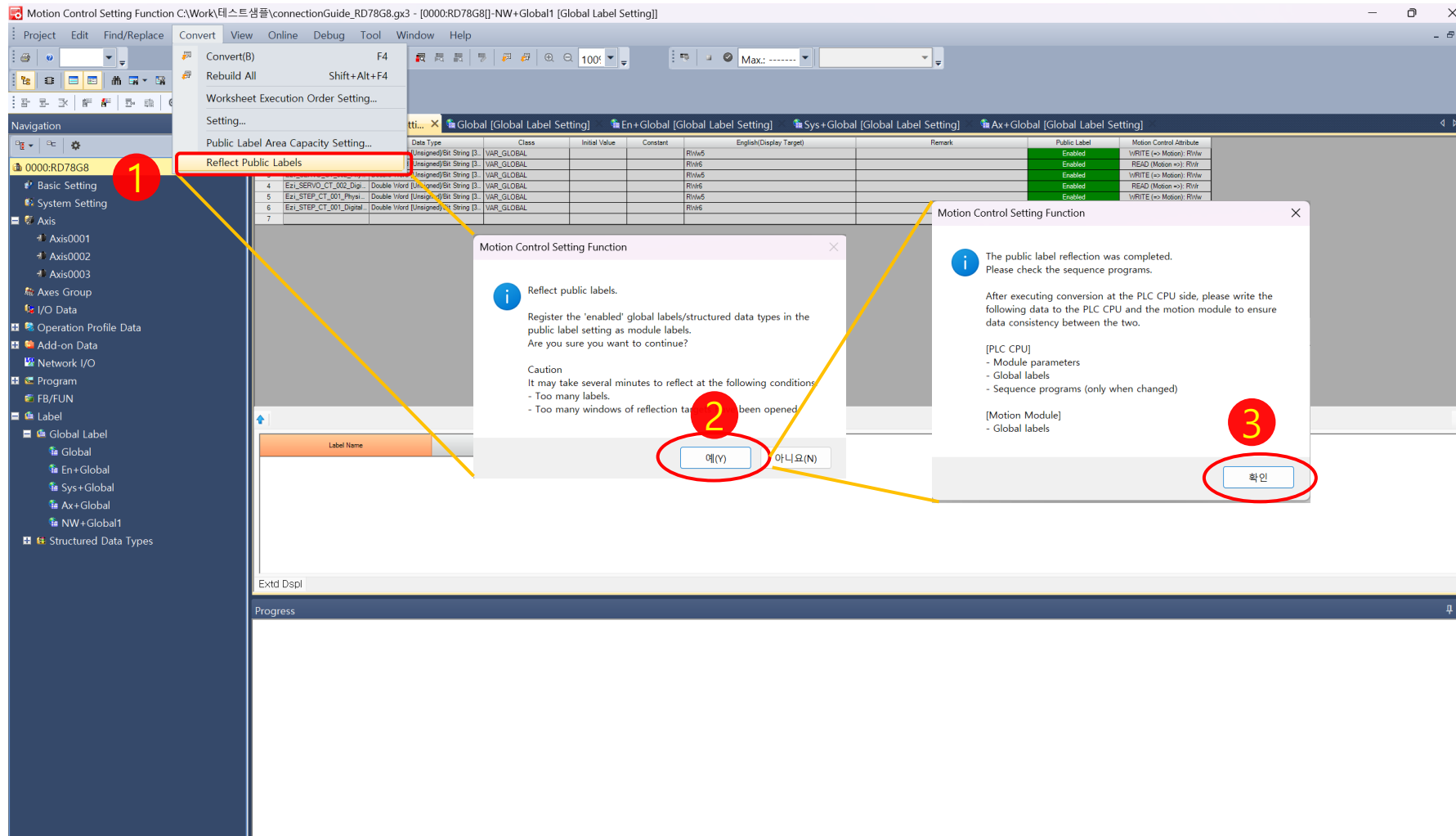
## 2-5. Module Extended Parameter – Motion Control Setting Function

- Convert – Rebuild All → Parameter Check



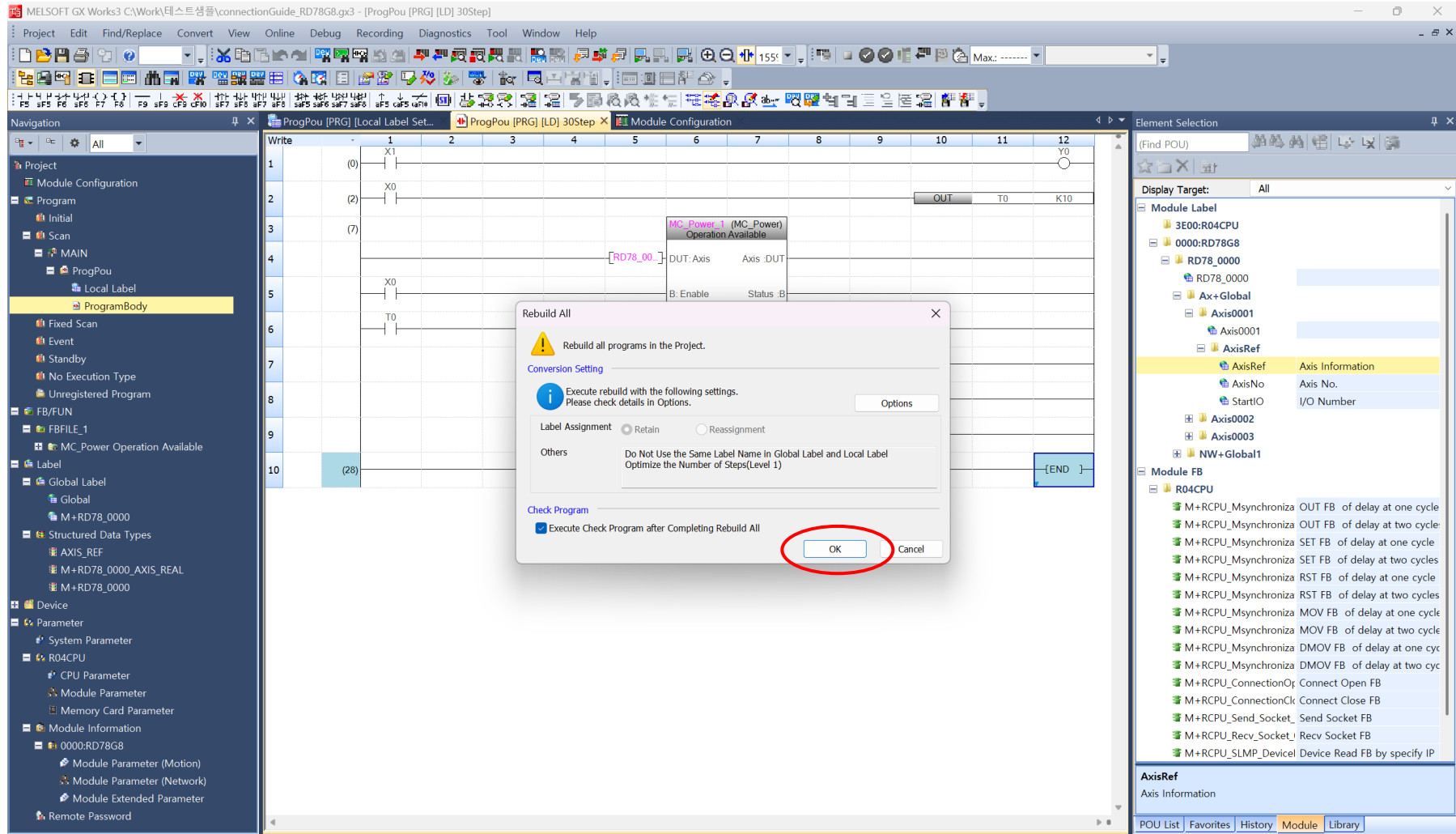
## 2-5. Module Extended Parameter – Motion Control Setting Function

### ● Reflect Public Labels



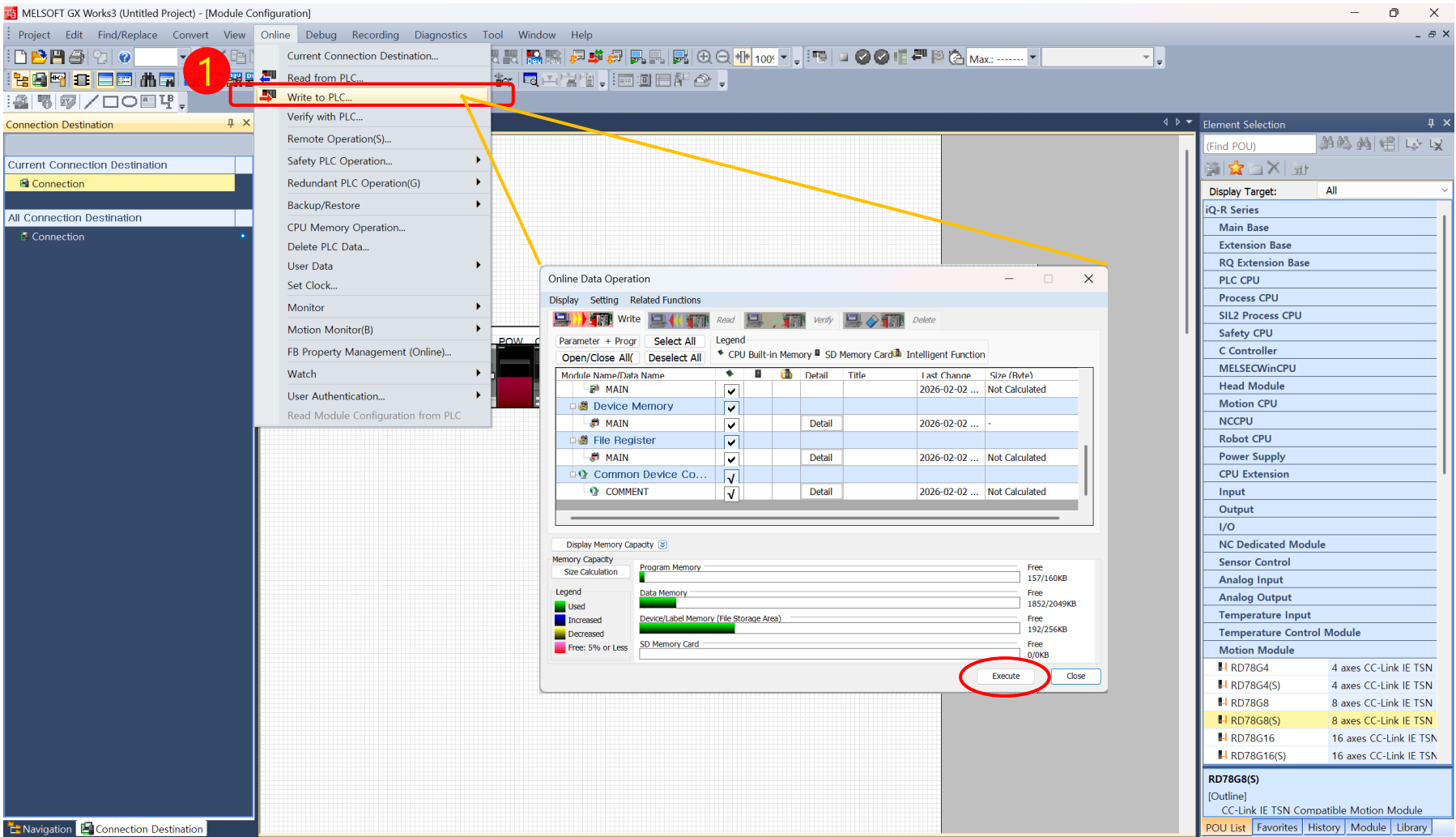
## 2-6. Convert

- Convert – Rebuild All



# 2-7. Write to PLC

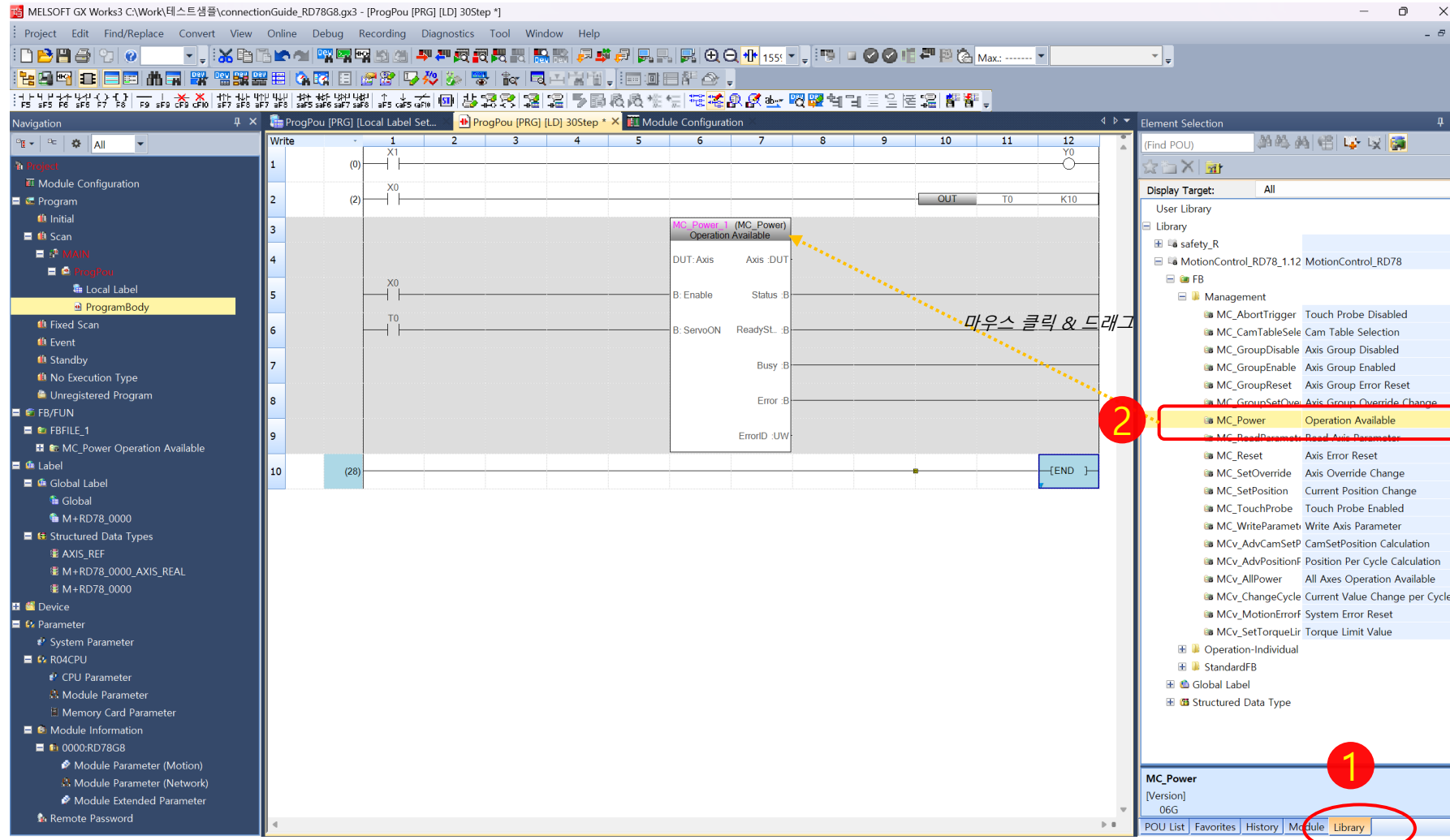
- Online Data Operation



### **3. Program 따라 하기**

# 3-1. Motion 제어 명령어 살펴보기

## ● Motion Control Function/Function Block 명령어 – Element Selection – Axis0001.AxisRef



- **Ezi-SERVO CC-Link IE TSN Enable/SERVO ON Program**



### 3-3. [Ladder] Ezi-SERVO 원점복귀 방법 지정

- 원점복귀 방법 지정 하기 (MC\_WriteParameter, 33: Homing index pulse)

원점복귀 방법은 Homing method(6098h)에 설정한 값에 따라 다음과 같이 분류됩니다.

| 설정값 | 내용                                                                        |
|-----|---------------------------------------------------------------------------|
| 1   | Homing on negative limit switch and index pulse                           |
| 2   | Homing on positive limit switch and index pulse                           |
| 7   | Homing on home switch (positive direction, negative edge) and index pulse |
| 10  | Homing on home switch (positive direction, positive edge) and index pulse |
| 11  | Homing on home switch (negative direction, positive edge) and index pulse |
| 14  | Homing on home switch (negative direction, negative edge) and index pulse |
| 17  | Homing on negative limit switch                                           |
| 18  | Homing on positive limit switch                                           |
| 24  | Homing on home switch (positive direction, negative edge)                 |
| 25  | Homing on home switch (positive direction, positive edge)                 |
| 28  | Homing on home switch (negative direction, positive edge)                 |
| 29  | Homing on home switch (negative direction, negative edge)                 |
| 33  | Homing index pulse (negative direction)                                   |
| 34  | Homing index pulse (positive direction)                                   |
| 35  | Set the current position origin                                           |
| 37  | Set the current position origin and reset current position                |
| -3  | Homing on negative mechanical limit                                       |
| -4  | Homing on positive mechanical limit                                       |
| -5  | Homing on negative mechanical limit and index pulse                       |
| -6  | Homing on positive mechanical limit and index pulse                       |

**원점복귀 파라미터 주소 : H60980008**  
**원점복귀 방법 : 33 (Homing index pulse (negative direction))**

**FB : MC\_WriteParameter**

MC\_WriteParameter\_1 (MC\_...)

Parameters:

- DUT: Axis
- UD: Param...
- L: Value
- W: Execution...
- UD: Options

Comparison Table:

| Comparison                             |                         |
|----------------------------------------|-------------------------|
| Time Data Type                         | Single Numeric Variable |
| Selection                              | String                  |
| Bit Shift                              | Edge Detection          |
| Counter                                | Timer                   |
| Bistable                               |                         |
| Motion Control Function/Function Block |                         |
| Administrative                         |                         |
| MC_AbortTrigger                        | Touch Probe Disabled    |
| MC_CamTableSelect                      | Cam Table Selection     |
| MC_DigitalCamSwitch                    | Outputs the digital ca  |
| MC_GroupDisable                        | Axes Group Disabled     |
| MC_GroupEnable                         | Axes Group Enabled      |
| MC_GroupReset                          | Axes Group Error Res    |
| MC_GroupSetOverri                      | Axes Group Override     |
| MC_Power                               | Operation Available     |
| MC_ReadParameter                       | Parameter Read          |
| MC_Reset                               | Axis Error Reset        |
| MC_SetOverride                         | Override Value Setting  |
| MC_SetPosition                         | Current Position Chan   |
| MC_TouchProbe                          | Touch Probe Enabled     |
| MC_WriteParameter                      | Parameter Write         |

**MC\_WriteParameter**  
 [Version]  
 00A

POU List Favorites History Module Library

## 3-4. [Ladder] Ezi-SERVO 원점복귀 실행

- 원점복귀 실행 (MC\_Home)

The screenshot displays the MELSOFT GX Works3 interface for a ladder logic program. The main workspace shows a ladder logic diagram for the 'MC\_Home' function. The program is organized into a project tree on the left, with 'ProgramBody' selected. The ladder logic consists of several rungs, with a dashed yellow box highlighting the 'MC\_Home' function block. The function block is labeled 'MC\_Home\_1 (MC\_Home)' and includes parameters for 'DUT: Axis', 'B: Execute', 'L: Position', 'UD: Options', and 'ErrorID'. The 'L: Position' parameter is set to '0.0'. The 'UD: Options' parameter is set to 'H0'. The 'ErrorID' parameter is set to 'ErrorID\_UW'. The function block is connected to a 'bAx1Home' output. The right side of the screen shows the 'Element Selection' panel, which lists various function blocks and parameters. The 'MC\_Home' function block is highlighted in the list.

Navigation: Project, Module Configuration, Program, Initial, Scan, MAIN, ProgPou, 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, Axis0001, Axis0002, Axis0003, Axes Group, Motion I/O Data, Operation Profile Data.

Element Selection: (Find POU), Display Target: All, CC-Link IE TSN Network module, Add-on instructions, Standard Function/Function Block, Bit Type Boolean, Type Conversion, Arithmetic Operation, Comparison, Time Data Type, Single Numeric Variable, Selection, String, Bit Shift, Edge Detection, Counter, Timer, Bistable, Motion Control Function/Function Block, Administrative, Motion - Individual, MC\_CamIn, Cam Operation Start, MC\_CombineAxes, Addition/Subtraction I, MC\_GearIn, Gear Operation Start, MC\_GroupStop, Group Forced Stop, MC\_Home, OPR, MC\_MoveAbsolute, Absolute Value Positic, MC\_MoveRelative, Relative Value Positor, MC\_MoveVelocity, Speed Control, MC\_Stop, Forced Stop, MC\_TorqueControl, Torque Control, MCv\_AdvancedSync, Advanced Synchronou, MCv\_BacklashComp, Backlash Compensatic, MCv\_CyclicPosition, Motion Cyclic Positor.

MC\_Home [Version] 00A

POU List Favorites History Module Library

## 3-5. [Ladder] Ezi-SERVO 이동 동작 실행

- 이동 동작 실행 (MC\_MoveAbsolute)

임의 설정 이동 Position

- bAx1PosPos1 ON → 3600.0
- bAx1PosPos1 ON → 0.0
- ※ 3,600 – 10회전

The screenshot displays the MELSOFT GX Works3 interface. The main window shows a ladder logic program for the MC\_MoveAbsolute function block. The program is organized into steps (1-12) and a final END step. The left sidebar shows the project structure, including the ProgramBody and its components. The right sidebar shows the Element Selection menu, which is currently open, displaying various motion control function blocks. The MC\_MoveAbsolute block is highlighted in the list.

## 3-6. [Ladder] Ezi-SERVO DIO 동작 실행

- Digital Input, Output 동작 실행

MELSOFT GX Works3 C:\Work\테스트샘플\connectionGuide.gx3 - [MoveProgram [PRG] [LD] 57Byte]

Navigation: Project, Module Configuration, Program, Initial, Scan, MAIN, ProgPou, Local Label, ProgramBody, MoveProgram, 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, Axis0001, Axis0002, Axis0003.

Write: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

13: [ 180000.0 ] L: Decelerati... ErrorID :UW

14: [ 0.0 ] L: Jerk

15: [ K3 ] W: Direction

16: W: BufferMode

17: UD: Options

18: (30) SM400

19: (32) D1.4

20: (34) D1.5

21: (36) D1.6

22: (38) D1.7

23: (40) D1.8

24: (42) D1.9

25: (44) bAx1Out[0]

26: (46) bAx1Out[1]

27: (48) bAx1Out[2]

28: (50) bAx1Out[3]

29: (52) bAx1Out[4]

30: (54) SM400

31: DMOV D0 Ezi\_SERVO...

32: DMOV D2 Ezi\_SERVO...

Element Selection: (Find POU), Display Target: All, Serial Communication Module, MODBUS/TCP Interface Module, MODBUS Interface Module, High-Speed Data Transfer Module.

File operation instructions: CC-Link IE TSN Network module, Add-on instructions, Standard Function/Function Block, Bit Type Boolean, Type Conversion, Arithmetic Operation, Comparison, Time Data Type, Single Numeric Variable, Selection, String, Bit Shift, Edge Detection, Counter, Timer, Bistable, Motion Control Function/Function Block, Administrative, Motion - Individual, MC\_CamIn, Cam Operation Start, MC\_CombineAxes, Addition/Subtraction I, MC\_GearIn, Gear Operation Start, MC\_MoveAbsolute, Absolute Value Posit, MC\_MoveAbsolute.

MC\_MoveAbsolute [Version] 00A

POU List Favorites History Module Library

## 3-6. [Ladder] Ezi-SERVO DIO 동작 실행 : 맵 참조

- Digital Inputs

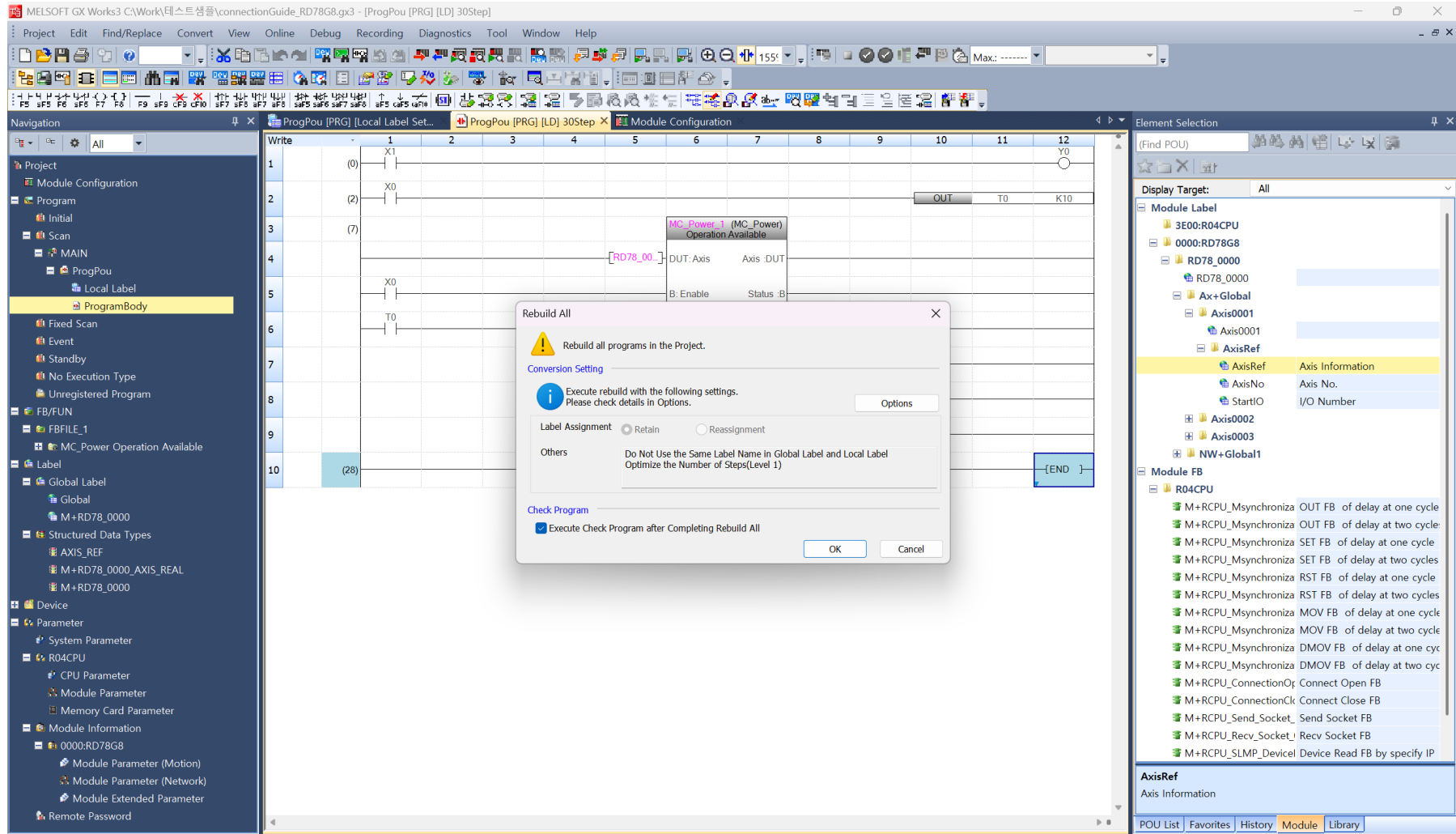
| 비트 31        | 비트 30        | 비트 29        | 비트 28        | 비트 27    | 비트 26         | 비트 25                 | 비트 24                 |
|--------------|--------------|--------------|--------------|----------|---------------|-----------------------|-----------------------|
| -            | Motor Power  | TQOFF2       | TQOFF1       | -        | -             | User input 6          | User input 5          |
| 비트 23        | 비트 22        | 비트 21        | 비트 20        | 비트 19    | 비트 18         | 비트 17                 | 비트 16                 |
| User input 4 | User input 3 | User input 2 | User input 1 | Reserved | Reserved      | Reserved              |                       |
| 비트 15        | 비트 14        | 비트 13        | 비트 12        | 비트 11    | 비트 10         | 비트 9                  | 비트 8                  |
| -            | -            | -            | -            | -        | -             | -                     | -                     |
| 비트 7         | 비트 6         | 비트 5         | 비트 4         | 비트 3     | 비트 2          | 비트 1                  | 비트 0                  |
| -            | -            | -            | -            | -        | Origin switch | Positive limit switch | Negative limit switch |

- Physical Outputs

| 비트 31 | 비트 30 | 비트 29 | 비트 28         | 비트 27         | 비트 26         | 비트 25         | 비트 24         |
|-------|-------|-------|---------------|---------------|---------------|---------------|---------------|
| -     | -     | -     | -             | -             | -             | -             | -             |
| 비트 23 | 비트 22 | 비트 21 | 비트 20         | 비트 19         | 비트 18         | 비트 17         | 비트 16         |
| -     | -     | -     | User output 5 | User output 4 | User output 3 | User output 2 | User output 1 |
| 비트 15 | 비트 14 | 비트 13 | 비트 12         | 비트 11         | 비트 10         | 비트 9          | 비트 8          |
| -     | -     | -     | -             | -             | -             | -             | -             |
| 비트 7  | 비트 6  | 비트 5  | 비트 4          | 비트 3          | 비트 2          | 비트 1          | 비트 0          |
| -     | -     | -     | -             | -             | -             | -             | Set brake     |

## 3-7. [Ladder] Convert

- Convert – Rebuild All



## 부 록

# [동작 확인] Axis Monitor

- 각 축의 상태, 위치, 원점복귀, Error 등을 모니터

**Axis Monitor (CPU (PLC No. 1) Start I/O No. 3E00)**

Display Selection: Upper Pane  
Monitor Type: Real Drive Axis  
Monitor Item Selection  
Monitor Axis Selection

Font Size: 9pt

Display Selection: Lower Pane  
Monitor Type: Real Drive Axis  
Monitor Item Selection  
Monitor Axis Selection

|                                                | Axis #1                | Axis #2               | Axis #3               | Axis #4               | Axis #5               |
|------------------------------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Axis Name                                      | Axis0001               | Axis0002              | Axis0003              | Axis0004              | Axis0005              |
| Axis Status                                    | 4:Standstill           | 4:Standstill          | 4:Standstill          | 4:Standstill          | 4:Standstill          |
| Control Cycle                                  | 1                      | 1                     | 1                     | 1                     | 1                     |
| Position Command Unit Display                  | degree                 | degree                | degree                | degree                | degree                |
| Velocity Command Unit Display                  | degree/s               | degree/s              | degree/s              | degree/s              | degree/s              |
| Set Position                                   | 0.10058283805847 d...  | 0.0 degree            | 0.0 degree            | 0.0 degree            | 0.0 degree            |
| Actual Position                                | 0.1003303527832 de...  | 0.0 degree            | 0.0 degree            | 0.0 degree            | 0.0 degree            |
| Commanded Position                             | 0.0 degree             | 0.0 degree            | 0.0 degree            | 0.0 degree            | 0.0 degree            |
| Set Velocity                                   | 0.0 degree/s           | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          |
| Actual Velocity                                | -0.31650066375732 d... | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          |
| Commanded Velocity                             | 0.0 degree/s           | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          | 0.0 degree/s          |
| Negative Direction Velocity Limit Value        | 2500000000.0 degree/s  | 2500000000.0 degree/s | 2500000000.0 degree/s | 2500000000.0 degree/s | 2500000000.0 degree/s |
| Positive Direction Velocity Limit Value        | 2500000000.0 degree/s  | 2500000000.0 degree/s | 2500000000.0 degree/s | 2500000000.0 degree/s | 2500000000.0 degree/s |
| Automatically Decelerating Command In-position | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Negative Direction Torque Limit Value          | 300.0 %                | 300.0 %               | 300.0 %               | 300.0 %               | 300.0 %               |
| Positive Direction Torque Limit Value          | 300.0 %                | 300.0 %               | 300.0 %               | 300.0 %               | 300.0 %               |
| Execution Profile ID No.                       | 0                      | 0                     | 0                     | 0                     | 0                     |
| Homing Completed                               | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Homing Request                                 | TRUE                   | TRUE                  | TRUE                  | TRUE                  | TRUE                  |
| Start Permission at Homing Uncompleted         | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Upper Limit Signal Status                      | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Lower Limit Signal Status                      | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Forced Stop Cancelling                         | TRUE                   | TRUE                  | TRUE                  | TRUE                  | TRUE                  |
| Axis Error Detection                           | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Axis Error Code                                | H0000                  | H0000                 | H0000                 | H0000                 | H0000                 |
| Axis Warning Detection                         | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Axis Warning Code                              | H0000                  | H0000                 | H0000                 | H0000                 | H0000                 |
| Driver Ready On Status                         | TRUE                   | TRUE                  | TRUE                  | TRUE                  | TRUE                  |
| Driver Servo On Status                         | TRUE                   | TRUE                  | TRUE                  | TRUE                  | TRUE                  |
| Driver Status                                  | 6:Operation Enable     | 6:Operation Enable    | 6:Operation Enable    | 6:Operation Enable    | 6:Operation Enable    |
| Drive Unit Error Detection                     | FALSE                  | FALSE                 | FALSE                 | FALSE                 | FALSE                 |
| Drive Unit Error Code                          | H0000                  | H0000                 | H0000                 | H0000                 | H0000                 |
| Drive Unit Error Detail Code                   | H0000                  | H0000                 | H0000                 | H0000                 | H0000                 |

**Motion Common Monitor**

Monitor Item Selection

- Ready
- Synchronization flag
- Operation Cycle Monitor[1].Processing Time: 41000 ns
- Operation Cycle Monitor[1].Maximum Processing Time: 69960 ns
- Operation Cycle Monitor[1].Setting Cycle: 2000000 ns
- Operation Cycle Monitor[1].Cycle Over
- Operation Cycle Monitor[2].Processing Time: 36800 ns
- Operation Cycle Monitor[2].Maximum Processing Time: 73120 ns
- Operation Cycle Monitor[2].Setting Cycle: 8000000 ns
- Operation Cycle Monitor[2].Cycle Over
- Operation Cycle Monitor[3].Processing Time: 44440 ns
- Operation Cycle Monitor[3].Maximum Processing Time: 95960 ns
- Operation Cycle Monitor[3].Setting Cycle: 32000000 ns
- Operation Cycle Monitor[3].Cycle Over
- Forced Stop Cancelling
- Motion Area System Error Detection
- Latest Motion Area System Error Code: H0000
- Motion Area System Warning Detection
- Latest Motion Area System Warning Code: H0000

[Version] 00A  
POU List Favorites History Module Library

# [동작 확인] 원점복귀 방법 변경

- 모션제어 FB을 사용하여 원점복귀 방식 변경 가능

- ① ParameterNumber 지정 : H60980008
- ② Value(Homing Method) 지정 : 33.0
- ③ ExcutionMode : TRUE (쓰기)
- ④ Done : TRUE가 됨

원점복귀 방법은 Homing method(6098h)에 설정한 값에 따라 다음과 같이 분류됩니다.

| 설정값 | 내용                                                                        |
|-----|---------------------------------------------------------------------------|
| 1   | Homing on negative limit switch and index pulse                           |
| 2   | Homing on positive limit switch and index pulse                           |
| 7   | Homing on home switch (positive direction, negative edge) and index pulse |
| 10  | Homing on home switch (positive direction, positive edge) and index pulse |
| 11  | Homing on home switch (negative direction, positive edge) and index pulse |
| 14  | Homing on home switch (negative direction, negative edge) and index pulse |
| 17  | Homing on negative limit switch                                           |
| 18  | Homing on positive limit switch                                           |
| 24  | Homing on home switch (positive direction, negative edge)                 |
| 25  | Homing on home switch (positive direction, positive edge)                 |
| 28  | Homing on home switch (negative direction, positive edge)                 |
| 29  | Homing on home switch (negative direction, negative edge)                 |
| 33  | Homing index pulse (negative direction)                                   |
| 34  | Homing index pulse (positive direction)                                   |
| 35  | Set the current position origin                                           |
| 37  | Set the current position origin and reset current position                |
| -3  | Homing on negative mechanical limit                                       |
| -4  | Homing on positive mechanical limit                                       |
| -5  | Homing on negative mechanical limit and index pulse                       |
| -6  | Homing on positive mechanical limit and index pulse                       |

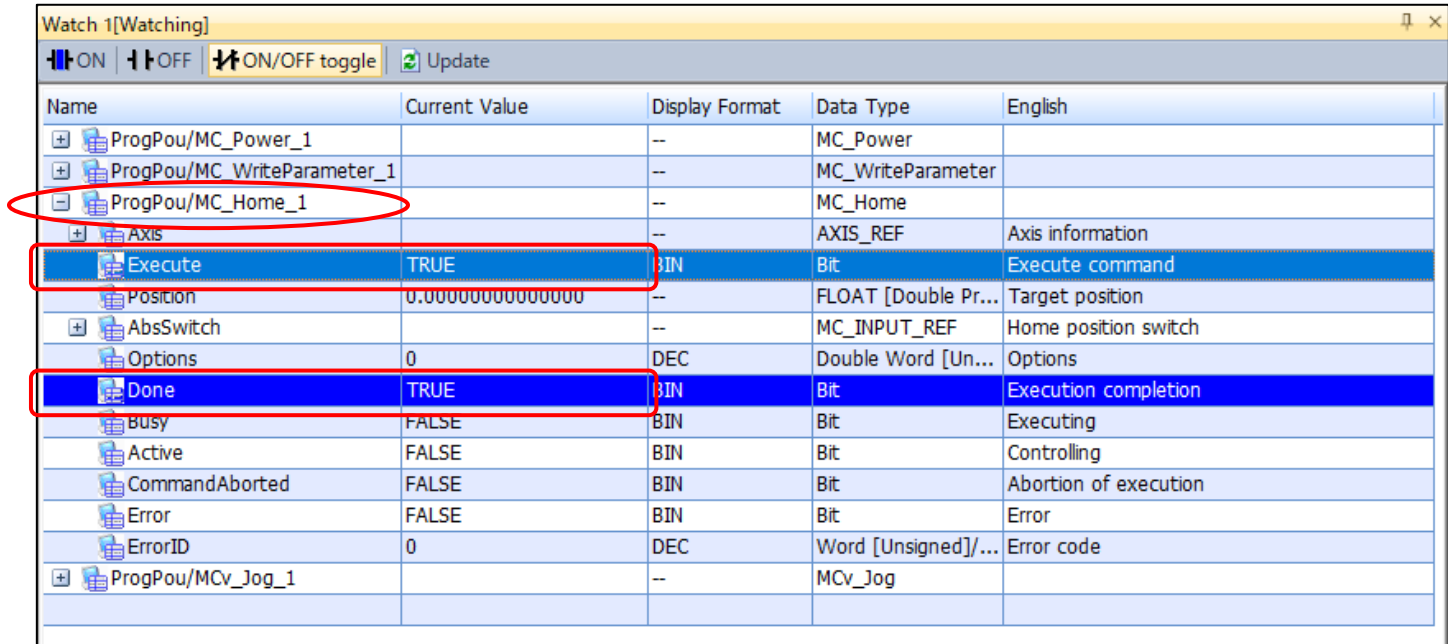
| Watch 1[Watching]           |                   |                |                     |                      |
|-----------------------------|-------------------|----------------|---------------------|----------------------|
| ON OFF ON/OFF toggle Update |                   |                |                     |                      |
| Name                        | Current Value     | Display Format | Data Type           | English              |
| ProgPou/MC_Power_1          |                   | --             | MC_Power            |                      |
| ProgPou/MC_WriteParameter_1 |                   | --             | MC_WriteParameter   |                      |
| Axis                        |                   | --             | AXIS_REF            | Axis information     |
| Execute                     | TRUE              | BIN            | Bit                 | Execute command      |
| ParameterNumber             | H60980008         | HEX            | Word [Unsigned]/... | Setting value        |
| Value                       | 37.00000000000000 | BIN            | Double Word [Un...  | Setting value        |
| ExecutionMode               | 0                 | DEC            | Word [Signed]       | Execution mode       |
| Options                     | 0                 | DEC            | Double Word [Un...  | Options              |
| Done                        | TRUE              | BIN            | Bit                 | Execution completion |
| Busy                        | FALSE             | BIN            | Bit                 | Executing            |
| Error                       | FALSE             | BIN            | Bit                 | Error                |
| ErrorID                     | H0000             | HEX            | Word [Unsigned]/... | Error code           |
| SDOErrorID                  | H00000000         | HEX            | Double Word [Un...  | Transient error code |
| SDOStatus                   | 1                 | DEC            | Word [Unsigned]/... | SDO transfer status  |
| ProgPou/MC_Home_1           |                   | --             | MC_Home             |                      |
| ProgPou/MCv_Jog_1           |                   | --             | MCv_Jog             |                      |

표시 형식 : HEX 선택

## [동작 확인] 원점복귀

- 모션제어 FB을 사용하여 원점복귀 실행

- ① Execute → TRUE (쓰기)
- ② Done → TRUE가 됨



| Name                        | Current Value      | Display Format | Data Type           | English               |
|-----------------------------|--------------------|----------------|---------------------|-----------------------|
| ProgPou/MC_Power_1          |                    | --             | MC_Power            |                       |
| ProgPou/MC_WriteParameter_1 |                    | --             | MC_WriteParameter   |                       |
| ProgPou/MC_Home_1           |                    | --             | MC_Home             |                       |
| Axis                        |                    | --             | AXIS_REF            | Axis information      |
| Execute                     | TRUE               | BIN            | Bit                 | Execute command       |
| Position                    | 0.0000000000000000 | --             | FLOAT [Double Pr... | Target position       |
| AbsSwitch                   |                    | --             | MC_INPUT_REF        | Home position switch  |
| Options                     | 0                  | DEC            | Double Word [Un...  | Options               |
| Done                        | TRUE               | BIN            | Bit                 | Execution completion  |
| Busy                        | FALSE              | BIN            | Bit                 | Executing             |
| Active                      | FALSE              | BIN            | Bit                 | Controlling           |
| CommandAborted              | FALSE              | BIN            | Bit                 | Abortion of execution |
| Error                       | FALSE              | BIN            | Bit                 | Error                 |
| ErrorID                     | 0                  | DEC            | Word [Unsigned]/... | Error code            |
| ProgPou/MCv_Jog_1           |                    | --             | MCv_Jog             |                       |

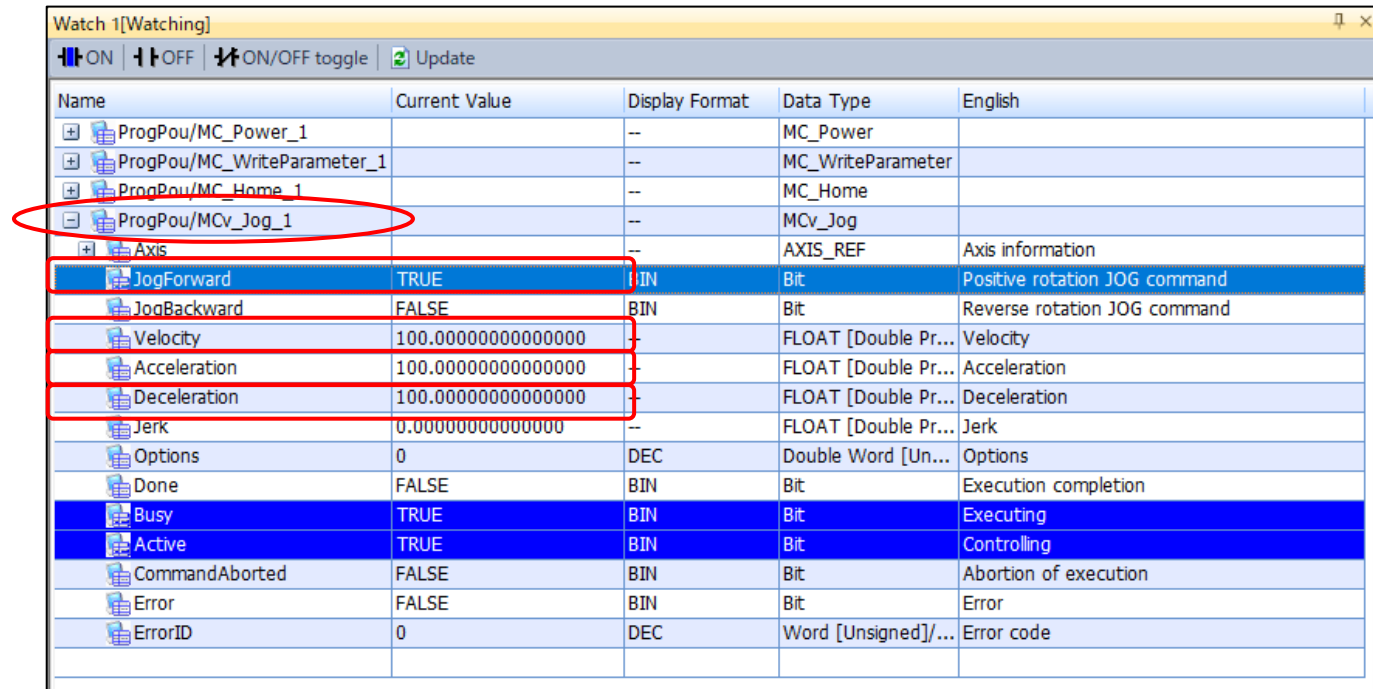
- Ezi-SERVO CC-Link IE TSN ALL의 LIMIT+ / LIMIT- 신호를 하드웨어 스트로크 리밋으로 사용하는 경우, 기동(시작) 전에 아래의 축 제어 데이터를 설정해 주십시오.

[AxisName.Cd.HwStrokeLimit\_Override] → 'DISABLE'

# [동작 확인] Jog 운전

- 모션제어 FB을 사용하여 Jog 운전 실행

- ① Velocity → 100.0
- ② Acceleration → 100.0
- ③ Deceleration → 100.0
- ④ JogForward → TRUE (쓰기)



| Name                        | Current Value      | Display Format | Data Type           | English                       |
|-----------------------------|--------------------|----------------|---------------------|-------------------------------|
| ProgPou/MC_Power_1          |                    | --             | MC_Power            |                               |
| ProgPou/MC_WriteParameter_1 |                    | --             | MC_WriteParameter   |                               |
| ProgPou/MC_Home_1           |                    | --             | MC_Home             |                               |
| ProgPou/MCv_Jog_1           |                    | --             | MCv_Jog             |                               |
| Axis                        |                    | --             | AXIS_REF            | Axis information              |
| JogForward                  | TRUE               | BIN            | Bit                 | Positive rotation JOG command |
| JogBackward                 | FALSE              | BIN            | Bit                 | Reverse rotation JOG command  |
| Velocity                    | 100.00000000000000 |                | FLOAT [Double Pr... | Velocity                      |
| Acceleration                | 100.00000000000000 |                | FLOAT [Double Pr... | Acceleration                  |
| Deceleration                | 100.00000000000000 |                | FLOAT [Double Pr... | Deceleration                  |
| Jerk                        | 0.00000000000000   | --             | FLOAT [Double Pr... | Jerk                          |
| Options                     | 0                  | DEC            | Double Word [Un...  | Options                       |
| Done                        | FALSE              | BIN            | Bit                 | Execution completion          |
| Busy                        | TRUE               | BIN            | Bit                 | Executing                     |
| Active                      | TRUE               | BIN            | Bit                 | Controlling                   |
| CommandAborted              | FALSE              | BIN            | Bit                 | Abortion of execution         |
| Error                       | FALSE              | BIN            | Bit                 | Error                         |
| ErrorID                     | 0                  | DEC            | Word [Unsigned]/... | Error code                    |

# [동작 확인] 트러블슈팅

- 에러 발생 시에는 이벤트 이력(기록)에서 원인을 확인

① [Online] -> [Motion Monitor] -> [Event History]

The screenshot shows the 'Motion Control Setting Function (Untitled Project)' window. The 'Motion Monitor' menu is open, and 'Event History' is selected. The 'Event History: [0000RD78G64]' window is displayed, showing a table of events. A yellow callout box points to the 'Detailed Information' section of the event log.

| No.   | Occurrence Date         | Error Type | Status | Error Code | Description                             |
|-------|-------------------------|------------|--------|------------|-----------------------------------------|
| 00001 | 2024/10/15 15:15:07.512 | System     | OK     | 00000      | Homing Request (H-TO-DR)                |
| 00002 | 2024/10/15 15:15:07.512 | System     | OK     | 00000      | Current Position Restoration Completion |
| 00003 | 2024/10/15 15:15:07.512 | System     | OK     | 00000      | servo System Emergency Start            |
| 00004 | 2024/10/15 15:15:07.512 | Operation  | OK     | 00000      | Follow-up Release Detection             |

**Detailed Information**

Axis Type: Dual Drive Axis  
Error Occurrence Mode/Axis Group: 1  
Error Code: 00000

**00000**

Motion request was OK.  
- Absolute position error in driver mode was detected. (Error code: 00000)  
- An absolute position error in the driver mode was detected. (Error code: 00000)  
- The axis type was changed. (Error code: 00000)  
- Drive object: 'Polarity (00000)' b7 position polarity was changed. (Error code: 00000)  
- Change of the drive of motion request was detected. (Error code: 00000)  
- Machine homing was detected. (Error code: 00000)  
- Driver unit connection (communication) of the axis was detected. (Error code: 00000)  
- Machine homing has been detected after the system started. (Error code: 00000)

이벤트를 상세하게 확인

## [동작 확인] 트러블슈팅

---

- “SLMP 통신 이상”(1C43h) 이 발생한 경우  
→ 축 파라미터 설정을 참조하여 오브젝트 데이터를 설정해 주십시오.
- “MELSERVO 이외의 드라이브 유닛 접속 설정 오류 경고”(0D4Ch) 가 발생한 경우  
→ 축 파라미터 설정을 참조하여 절대 위치 시스템을 비활성화해 주십시오.
- MC\_Home을 기동하면 “제어 모드 전환 이상”(1A1Dh) 이 발생하는 경우  
→ 네트워크 구성 설정(드라이버 추가)에서  
Network Synchronous Communication을 \*\*“Synchronous”\*\*로 설정해 주십시오.
- 드라이버의 **LIMIT+ / -** 신호를 사용하는 방식으로 **MC\_Home**을 기동하면, 상/하한 리밋 신호를 검출하여 정지  
→ [AxisName.Cd.HwStrokeLimit\_Override] 를 ‘DISABLE’ 로 설정하고,축 제어 데이터를 프로그램 등에서 설정해 주십시오.

## [파라미터] 원점복귀 파라미터 설정

- 원점복귀와 관련된 각종 설정은 다음 오브젝트에서 수행
  - MC\_WriteParameter를 사용하여 설정값을 기록합니다.
  - 각 오브젝트의 상세 내용은 Ezi-SERVO CC-Link IE TSN ALL 매뉴얼을 참조해 주십시오.

| 오브젝트 명              | Index: Subindex | 설정 내용                      |
|---------------------|-----------------|----------------------------|
| Home offset         | Obj.607C: 00h   | 기계 좌표계의 제로 위치와 원점복귀 위치의 차이 |
| Homing method       | Obj.6098: 00h   | 원점복귀 방식                    |
| Homing speeds       | Obj.6099: 01h   | 원점복귀 속도                    |
| Homing speeds       | Obj.6099: 02h   | 원점복귀 중 Cliff 속도            |
| Homing acceleration | Obj.609A: 00h   | 원점복귀 중 가속도                 |



Fast Accurate Smooth Motion

스마트 팩토리 구축 가속화를 위한

# CC-Link *IE* TSN

**Ezi-SERVO<sup>®</sup>** **25<sup>th</sup>** ANNIVERSARY  
2001-2026  
Closed Loop Stepping System

**Ezi-STEP<sup>®</sup>**  
Micro Stepping System

**Ezi-POS<sup>®</sup>**  
Servo Control System

**Ezi-SPEED<sup>®</sup>**  
BLDC Motor Speed Control System

**Ezi-ROBO<sup>®</sup>**  
Precise Actuator System

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Network Input/Output