

# TwinCAT(EtherCAT) Test Manual



# XML File Save

Confidential

1. Access FASTECH website (www.fastech.co.kr), and click Archive
2. [Set up File] Ezi-SERVO II EtherCAT : Click XML File

The screenshot shows the FASTECH website's Archive page. The top navigation bar includes 'Fastech Archive' which is highlighted with a red box and a red arrow. The main content area displays the title 'Fastech Archive' and a list of files. One file entry is highlighted with a red box and a red arrow: 'FASTECH\_Ezi-SERVO2\_EtherCAT.xml (183.3K) [18] DATE : 2016-02-05 12:14:34'. The page also features a 'Customer Center' sidebar and a 'FASTECH PRODUCTS' section.

TwinCAT automatically read XML information from Ezi-SERVO II EtherCAT but for just in case, here we introduce how to save manually XML file for your information.

# XML File Save

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1. Save XML File
2. Save Path Example)  
Computer-> C : -> **TwinCAT-> Io -> EtherCAT**

## Fastech Archive

New product development of FASTECH and related materials and post an announcement will be shown.

Date : 16-02-05 12:14

Searchlist List Write

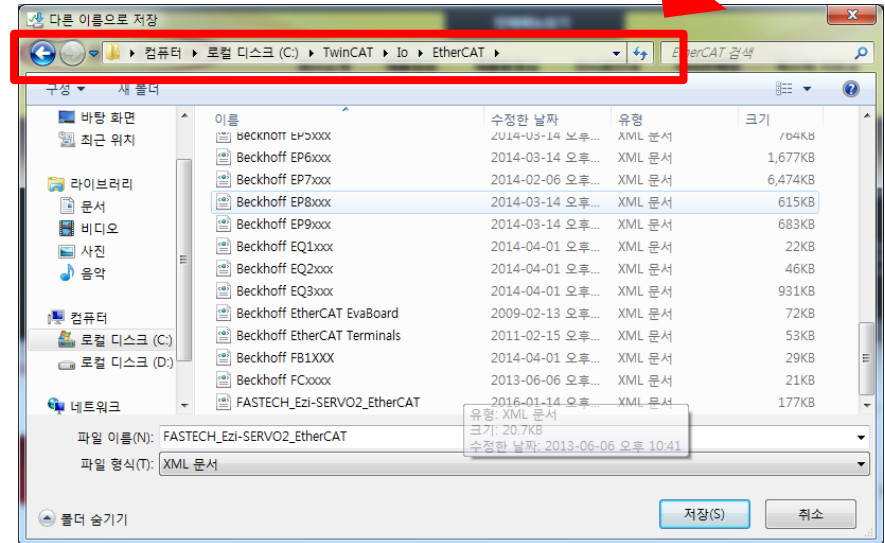
[Software Program] [Setup] Ezi-SERVO II EtherCAT : XML File

Name : 관리자

Hit : 89

FASTECH\_Ezi-SERVO2\_EtherCAT.xml (183.3K) [18] DATE : 2016-02-05 12:14:34

Ezi-SERVO II EtherCAT : XML File

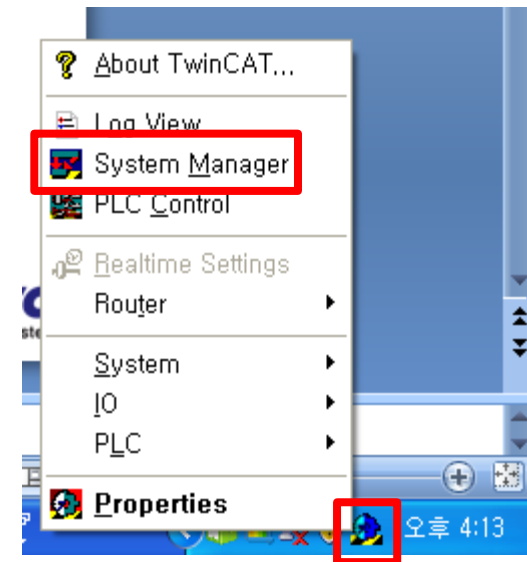


TwinCAT automatically read XML information from Ezi-SERVO II EtherCAT but for just in case, here we introduce how to save manually XML file for your information.

# XML File Application

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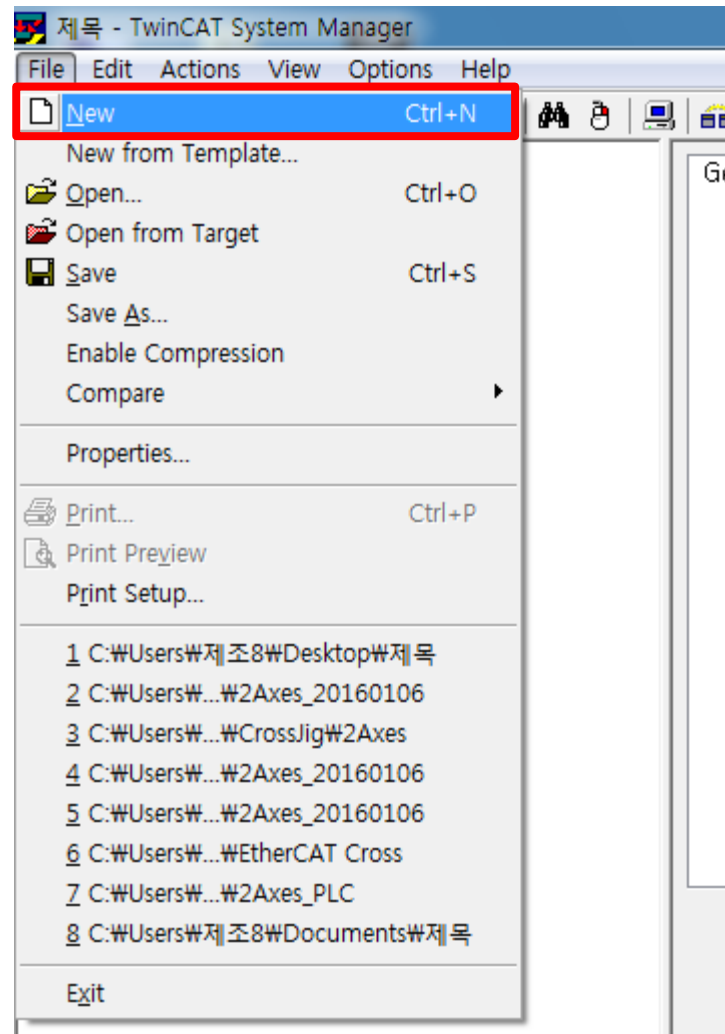
1. Click TwinCAT Icon at the right bottom of screen
2. Click System Manager



# XML File Application

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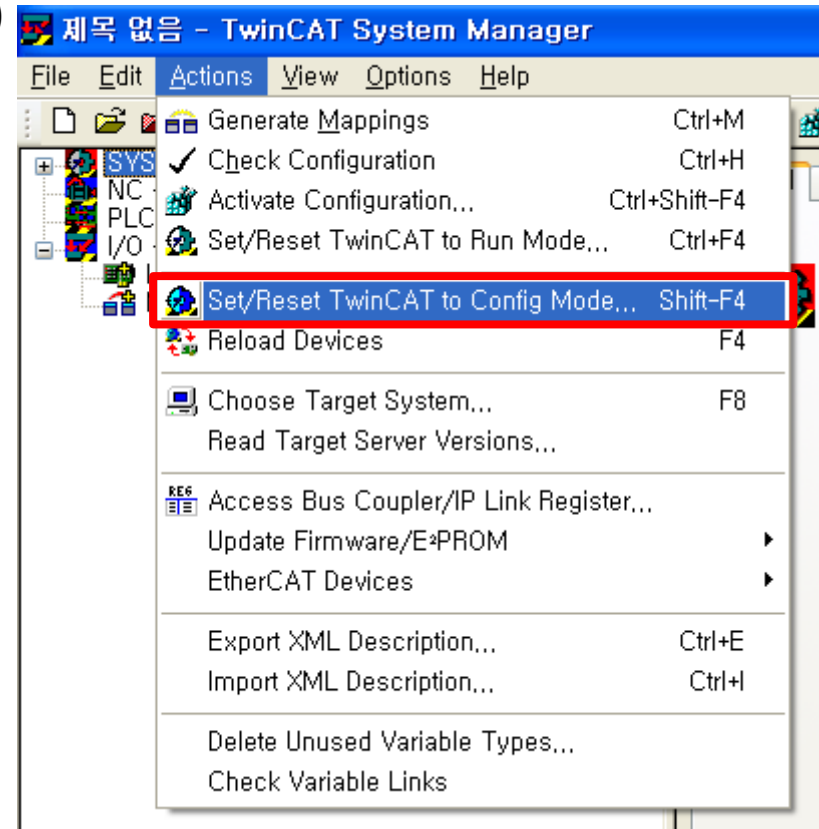
1. "File" – Click "New" (Do not process current project)



# XML File Application

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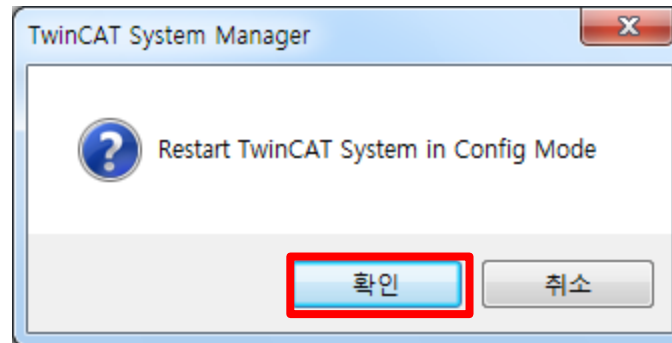
1. "Actions-Set/Reset TwinCAT to Config Mode"  
(Enter into Config Mode to change setting)



# XML File Application

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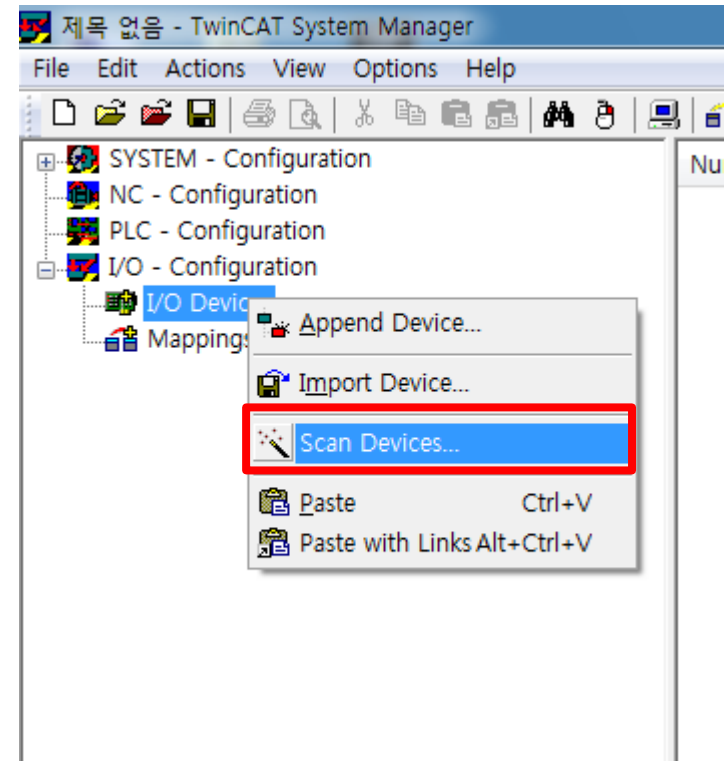
1. Click "YES" when new window pops-up



# XML File Application

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1. "I/O Device" Right button click
2. "Scan Devices.." Click

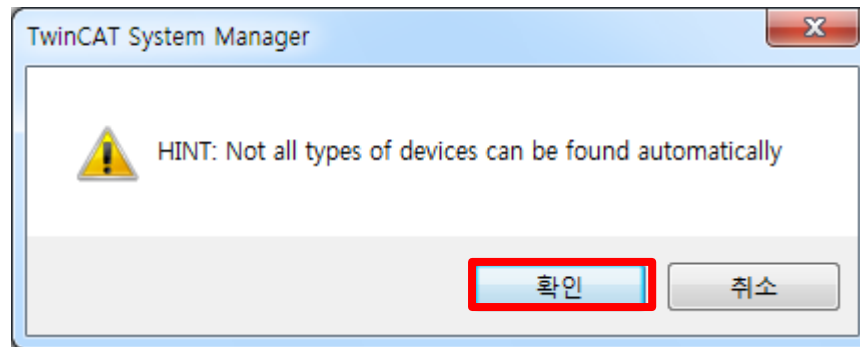




# XML File Application

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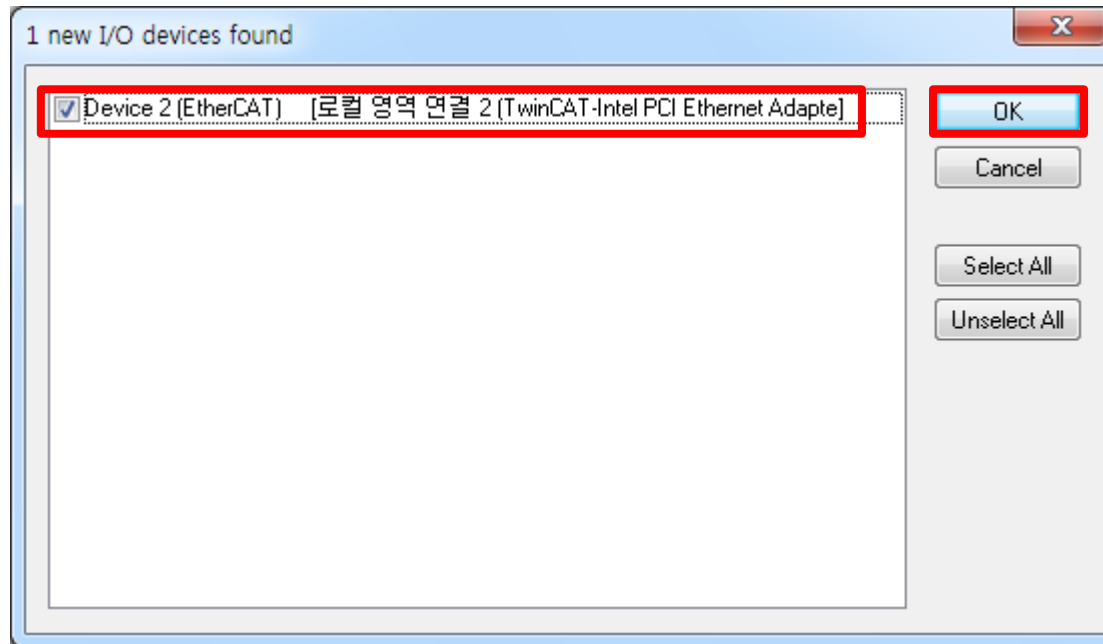
1. Click "YES" when new window pops-up



# XML File Application

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1. Check "EtherCAT" Radio Box(Device2 can be differentiated for PC)
2. Click "OK" button



- \*\* If Ezi-SERVO II EtherCAT is successfully connected, check-box pops-up with as checked.
- \*\* If Ezi-SERVO II EtherCAT is not successfully connected, please check connection status again.

# XML File Application

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1st Window : Click "Yes"

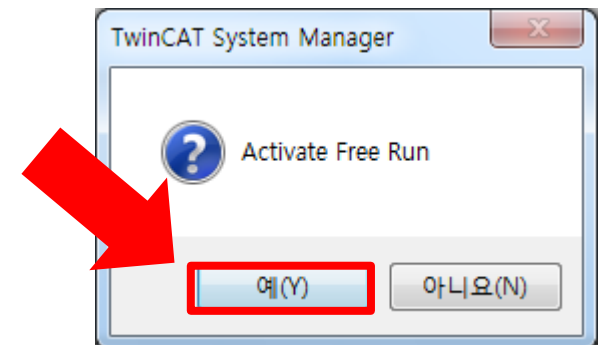
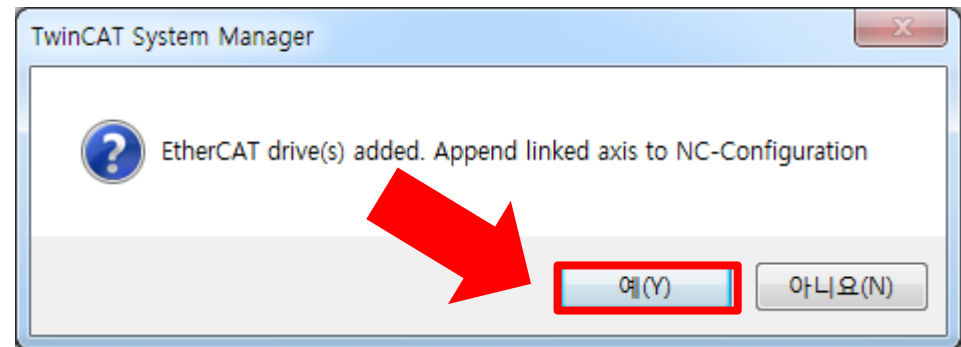
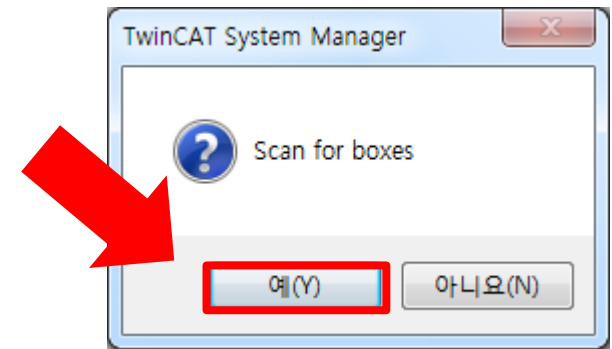
- Scan boxes is connected with EtherCAT

2nd Window : Click "Yes"

- Connect EtherCAT drive(box)

3rd Window : Click "Yes"

- Activate Free run status



# XML File Application

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1. Click "Device" and "Online" Tab
2. Click connected FASTECH Drive (Available to select multi)
3. Click Right mouse button and click "EEPROM Update..."

The screenshot shows the TwinCAT System Manager interface. The left pane displays a tree view of the system configuration, including 'I/O Devices' and two 'Ezi-SERVO2 EtherCAT' drives. The right pane shows the 'Online' tab for the drives, with a table listing their addresses and names. A context menu is open over the drives, and the 'EEPROM Update...' option is highlighted with a red box. A red arrow points to this option.

| No | Addr | Name                          | State | CRC |
|----|------|-------------------------------|-------|-----|
| 1  | 1001 | Drive 1 (Ezi-SERVO2 EtherCAT) | OP    | 0 0 |
| 2  | 1002 | Drive 2 (Ezi-SERVO2 EtherCAT) | OP    | 0 0 |

Actual State: OP

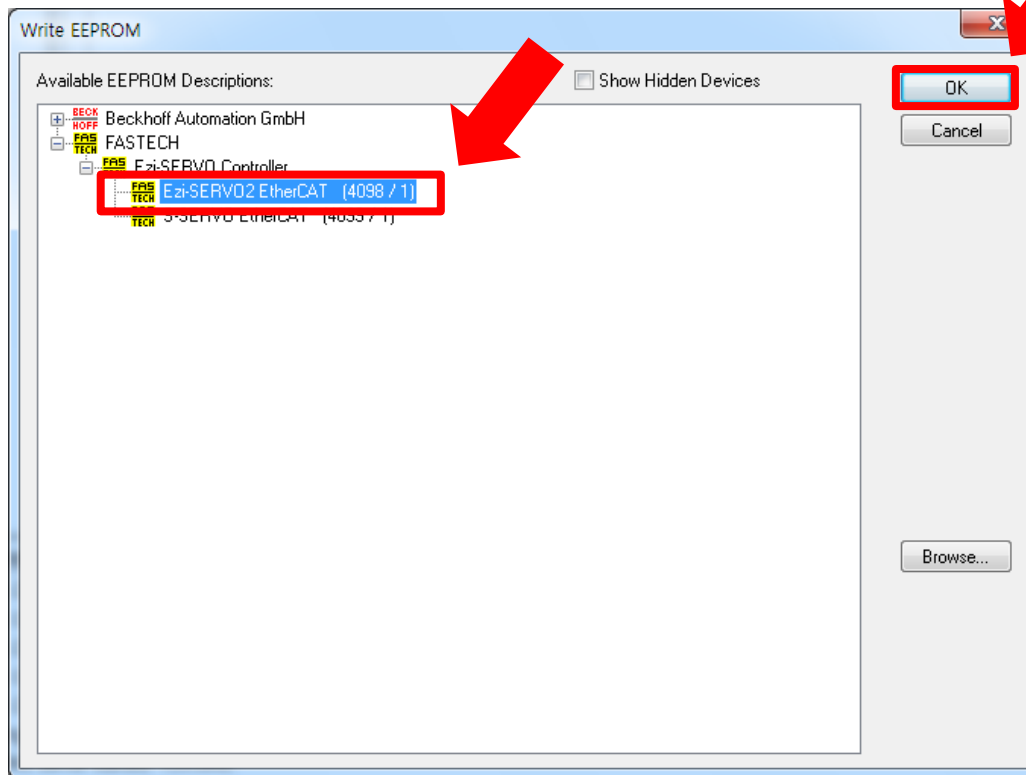
Buttons: Init, Pre-Op, Safe-Op, Op, Clear CRC, Clear Frames

| Counter      | Cyclic | Queued |
|--------------|--------|--------|
| Send Frames  | 36360  | + 6868 |
| Frames / sec | 249    | + 2    |
| Lost Frames  | 0      | + 0    |
| Tx/Rx Errors | 0      | / 1    |

# XML File Application

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1. FASTECH-> Ezi-SERVO Controller-> Click Ezi-SERVO2 EtherCAT
  2. Click "OK" Button
- \*\* Takes 10~20 sec to input XML.



# PDO Mapping

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1. Click "Drive" at left side window
2. Click "Process Data" at right side window

The screenshot shows the TwinCAT System Manager interface. The left sidebar displays a tree view of the system configuration, with 'Drive 1 (Ezi-SERVO2 EtherCAT)' selected and highlighted by a red box and arrow. The main window has several tabs, with 'Process Data' selected and highlighted by a red box and arrow. The 'Process Data' tab contains the following sections:

**Sync Manager:**

| SM | Size | Type    | Flags |
|----|------|---------|-------|
| 0  | 128  | Mbx...  |       |
| 1  | 128  | MbxIn   |       |
| 2  | 6    | Outp... |       |
| 3  | 6    | Inputs  |       |

**PDO List:**

| Index  | Size | Name    | Flags | SM | SU |
|--------|------|---------|-------|----|----|
| 0x1A00 | 6,0  | Inputs  |       | 3  | 0  |
| 0x1600 | 6,0  | Outputs |       | 2  | 0  |

**PDO Assignment (0x1C12):**

- 0x1600

**PDO Content (0x1A00):**

| Index     | Size | Offs | Name            | Type | Default (h... |
|-----------|------|------|-----------------|------|---------------|
| 0x6041... | 2,0  | 0,0  | Status Word     | UINT |               |
| 0x6064... | 4,0  | 2,0  | Actual Position | DINT |               |
|           |      | 6,0  |                 |      |               |

**Download:**

- PDO Assignment
- PDO Configuration

**Predefined PDO Assignment:** (none)

**Buttons:** Load PDO info from device, Sync Unit Assignment...

# PDO Mapping

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1. Click Inputs
2. Click right mouse button as picture as below
3. Click "Insert..."

The screenshot shows the TwinCAT System Manager interface. On the left, the project tree shows 'I/O Devices' expanded to 'Device 2 (EtherCAT)', with sub-items for 'Inputs', 'Outputs', and 'InfoData'. The main window displays the 'PDO List' and 'PDO Content (0x1A00)' tables. The 'PDO List' table has the following data:

| Index  | Size | Name    | Flags | SM | SU |
|--------|------|---------|-------|----|----|
| 0x1A00 | 6,0  | Inputs  |       | 3  | 0  |
| 0x1B00 | 6,0  | Outputs |       | 2  | 0  |

The 'PDO Content (0x1A00)' table has the following data:

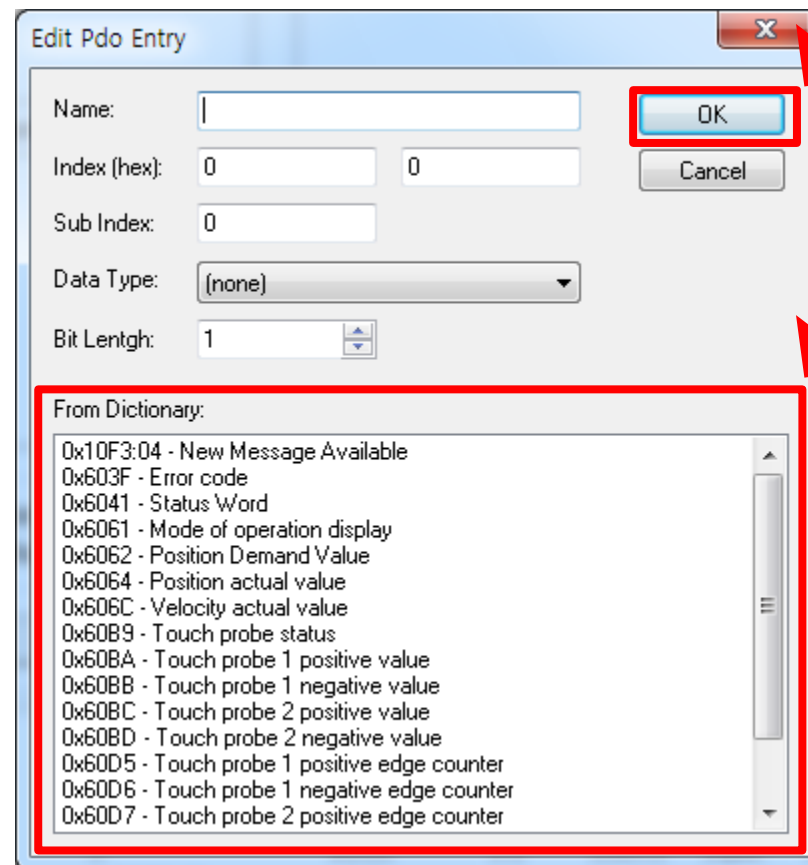
| Index     | Size | Offs | Name            | Type | Default (h... |
|-----------|------|------|-----------------|------|---------------|
| 0x6041... | 2,0  | 0,0  | Status Word     | UINT |               |
| 0x6064... | 4,0  | 2,0  | Actual Position | DINT |               |
|           | 6,0  |      |                 |      |               |

A context menu is open over the 'Actual Position' row, with the 'Insert...' option selected. The 'PDO Assignment (0x1C12)' table shows '0x1600' checked. The 'Download' section has 'PDO Assignment' and 'PDO Configuration' checked.

# PDO Mapping

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1. Click Input object what user requires
2. Click "OK" Button



The image shows a screenshot of the 'Edit Pdo Entry' dialog box. The dialog box has a title bar with a close button (X). The main area contains several input fields: 'Name:' (empty), 'Index (hex):' (0), 'Sub Index:' (0), 'Data Type:' (none), and 'Bit Length:' (1). There are 'OK' and 'Cancel' buttons. A red arrow points to the 'OK' button. Below the input fields is a list box titled 'From Dictionary:' containing a list of entries. A red arrow points to this list box. The list box is highlighted with a red border.

From Dictionary:

- 0x10F3:04 - New Message Available
- 0x603F - Error code
- 0x6041 - Status Word
- 0x6061 - Mode of operation display
- 0x6062 - Position Demand Value
- 0x6064 - Position actual value
- 0x606C - Velocity actual value
- 0x60B9 - Touch probe status
- 0x60BA - Touch probe 1 positive value
- 0x60BB - Touch probe 1 negative value
- 0x60BC - Touch probe 2 positive value
- 0x60BD - Touch probe 2 negative value
- 0x60D5 - Touch probe 1 positive edge counter
- 0x60D6 - Touch probe 1 negative edge counter
- 0x60D7 - Touch probe 2 positive edge counter



# PDO Mapping

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1. Click Outputs
2. Click Right mouse button as below
3. Click "Insert..."

The screenshot shows the TwinCAT System Manager interface. The left sidebar displays the project tree under 'I/O - Configuration' with 'Device 2 (EtherCAT)' expanded. The main window is in the 'Process Data' tab, showing the 'PDO List' and 'PDO Content' tables. The 'PDO List' table has a row for '0x1600 6.0 Outputs' highlighted in blue. A red arrow points to this row. The 'PDO Content' table has a row for '0x607A... 4.0 2.0 Target Position' highlighted in blue. A context menu is open over this row, with the 'Insert...' option selected. A red arrow points to the 'Insert...' option. The 'PDO Assignment (0x1C12)' section shows '0x1600' checked. The 'Download' section has 'PDO Assignment' and 'PDO Configuration' checked.

| Index  | Size | Name    | Flags | SM | SU |
|--------|------|---------|-------|----|----|
| 0x1400 | 6.0  | Inputs  |       | 3  | 0  |
| 0x1600 | 6.0  | Outputs |       | 2  | 0  |

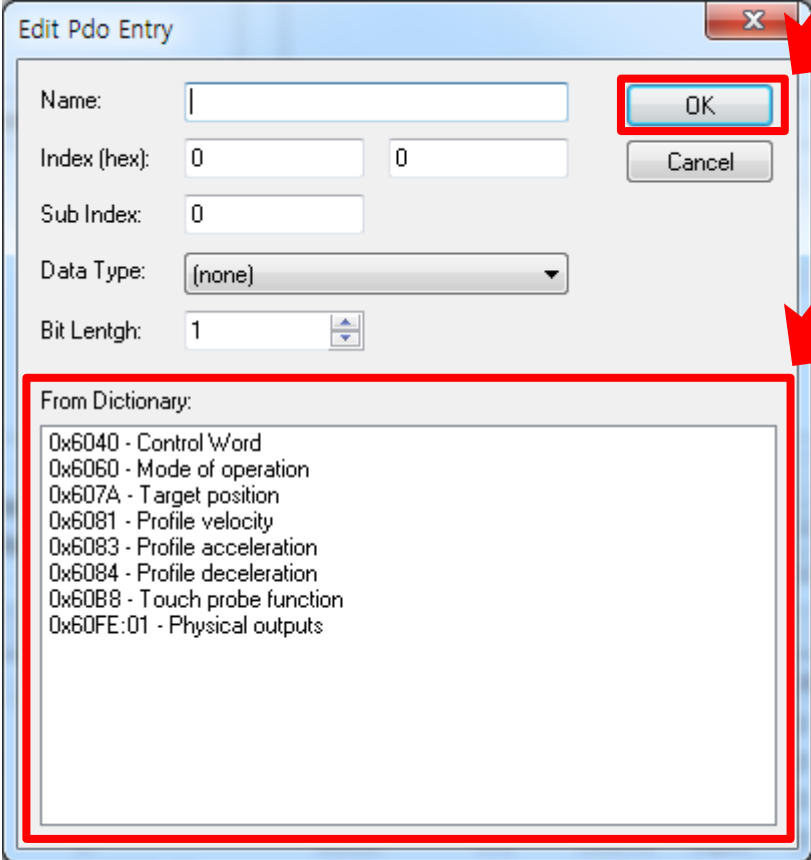
  

| Index     | Size | Offs | Name            | Type | Default (h...) |
|-----------|------|------|-----------------|------|----------------|
| 0x6040... | 2.0  | 0.0  | Control Word    | UINT |                |
| 0x607A... | 4.0  | 2.0  | Target Position | DINT |                |
| ...       | 6.0  | ...  | ...             | ...  | ...            |

# PDO Mapping

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1. Click object what user requires to use
2. Click "OK" button



The image shows a software dialog box titled "Edit Pdo Entry". The dialog contains several input fields and buttons. A red box highlights the "OK" button, and a red arrow points to it from the top right. Another red arrow points to the "From Dictionary" list box from the right side. The "From Dictionary" list contains the following items:

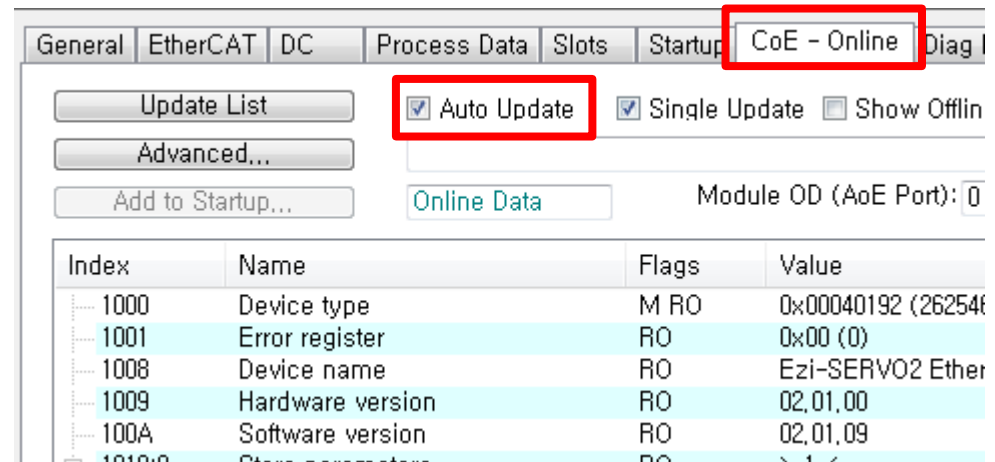
- 0x6040 - Control Word
- 0x6060 - Mode of operation
- 0x607A - Target position
- 0x6081 - Profile velocity
- 0x6083 - Profile acceleration
- 0x6084 - Profile deceleration
- 0x60B8 - Touch probe function
- 0x60FE:01 - Physical outputs

The dialog also includes fields for Name, Index (hex), Sub Index, Data Type (set to (none)), and Bit Length (set to 1). A "Cancel" button is also present.

# IO test

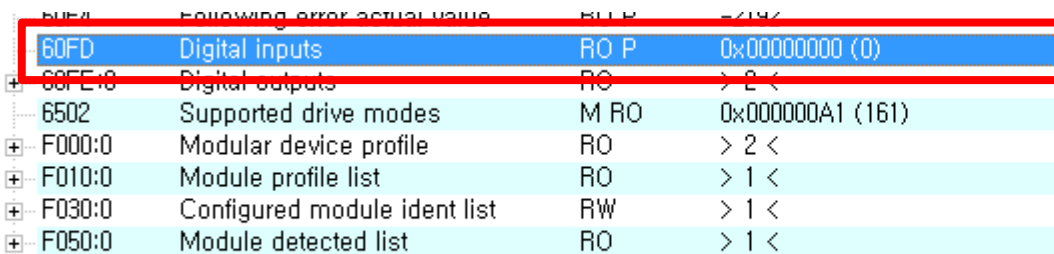
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1. Check "Auto Update" Radio Box Check of "CoE-Online"  
(TwinCAT can monitor I/O and etc as a real-time)



## Input Signal Test Method

1. Scroll down and check "Digital Inputs" parameters.
2. Able to check changing of parameter value thru input signal.



The screenshot shows a list of parameters in a software interface. The parameter '60FD Digital inputs' is highlighted with a red rectangular box. The table below represents the data shown in the screenshot.

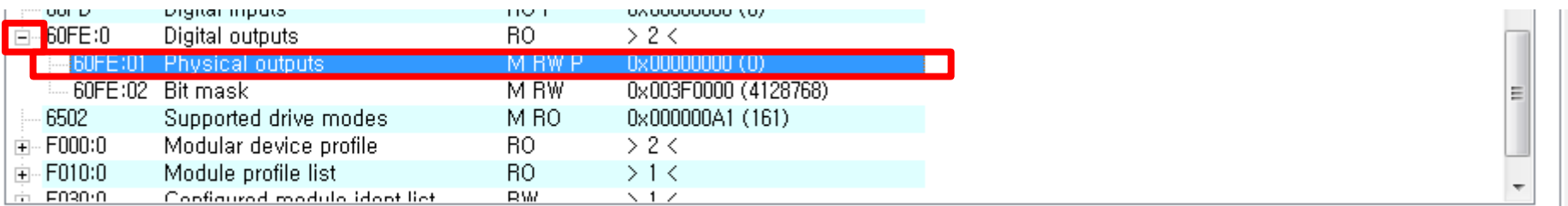
| PARAMETER | DESCRIPTION                  | ACCESS | VALUE            |
|-----------|------------------------------|--------|------------------|
| 60FD      | Digital inputs               | RO P   | 0x00000000 (0)   |
| 60FE:0    | Digital outputs              | RO     | > 2 <            |
| 6502      | Supported drive modes        | M RO   | 0x000000A1 (161) |
| F000:0    | Modular device profile       | RO     | > 2 <            |
| F010:0    | Module profile list          | RO     | > 1 <            |
| F030:0    | Configured module ident list | RW     | > 1 <            |
| F050:0    | Module detected list         | RO     | > 1 <            |

# IO test

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Output signal test method

1. "+" click and expand "Digital Outputs".
2. Double click "Physical outputs"

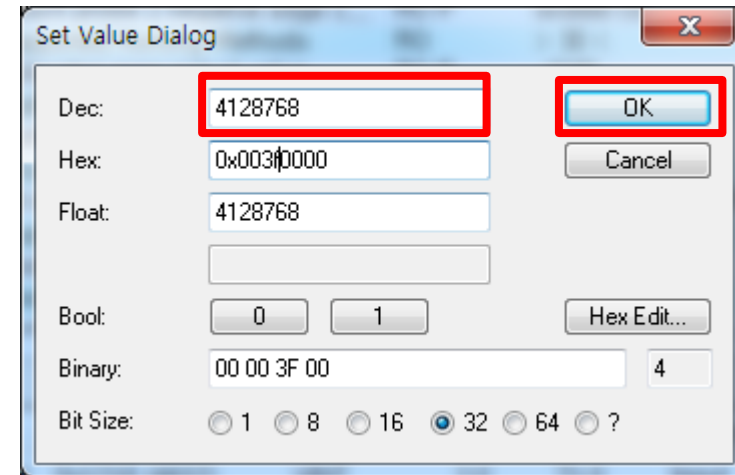


|         |                              |         |                      |
|---------|------------------------------|---------|----------------------|
| 60FE:0  | Digital outputs              | RO      | > 2 <                |
| 60FE:01 | Physical outputs             | M R W P | 0x00000000 (0)       |
| 60FE:02 | Bit mask                     | M R W   | 0x003F0000 (4128768) |
| 6502    | Supported drive modes        | M RO    | 0x000000A1 (161)     |
| F000:0  | Modular device profile       | RO      | > 2 <                |
| F010:0  | Module profile list          | RO      | > 1 <                |
| F030:0  | Configured module ident list | RW      | \ 1 /                |

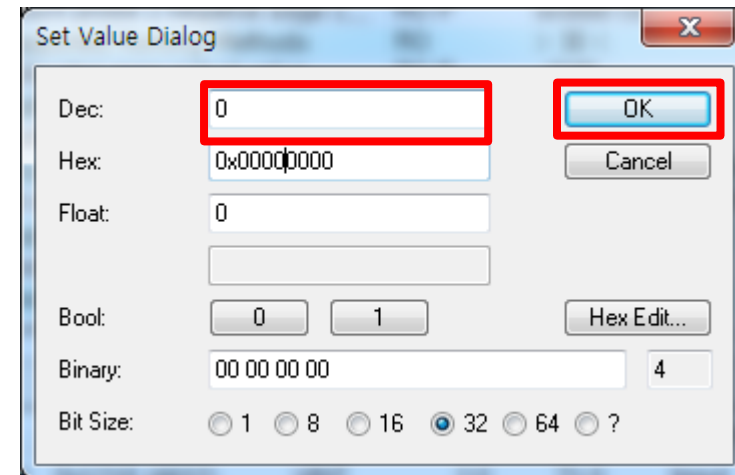
# IO test

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1. Input "4128768" at Dec and click "OK"
2. Able to check all output signals are ON (except brake signal)



1. Input "0" at Dec and click "OK"
2. Able to check all output signals are OFF (except brake signal)

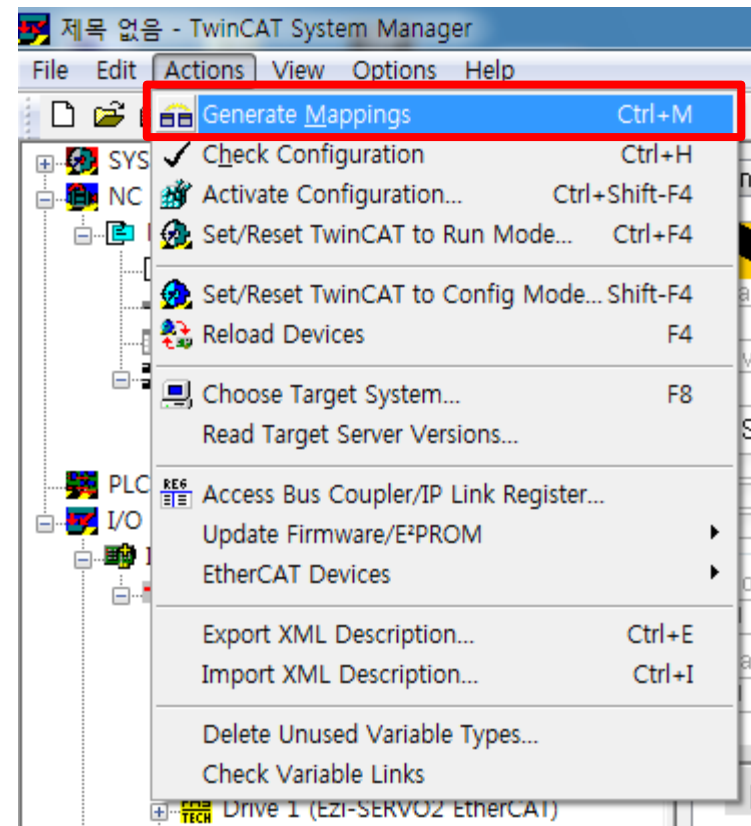


# Motor Operation

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## Motor Operation

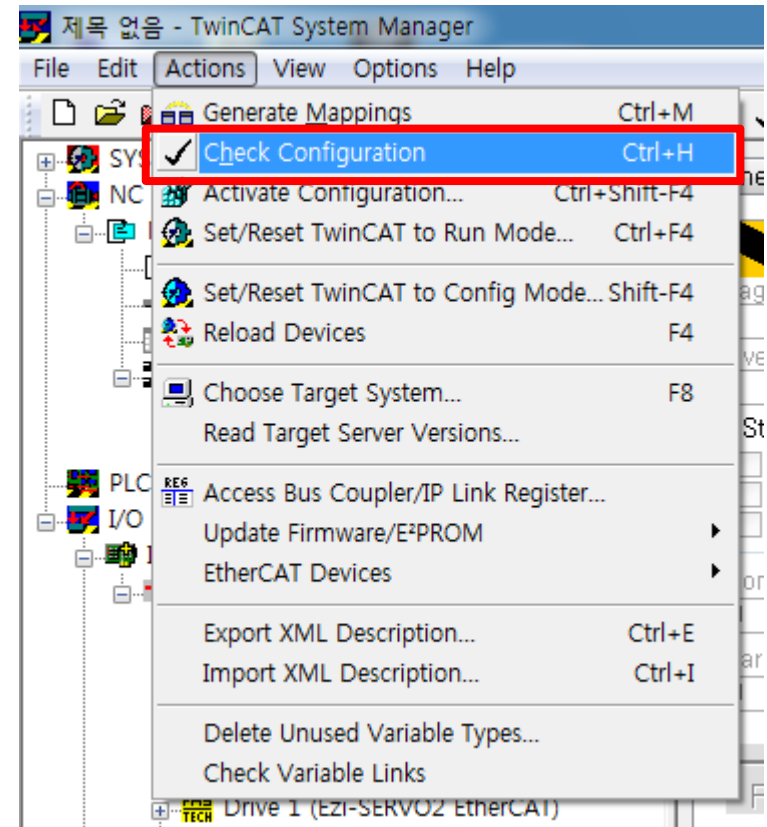
1. Click "generate Mappings" of "Actions"



# Motor Operation

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1. Click "Check Configuration" of "Actions"

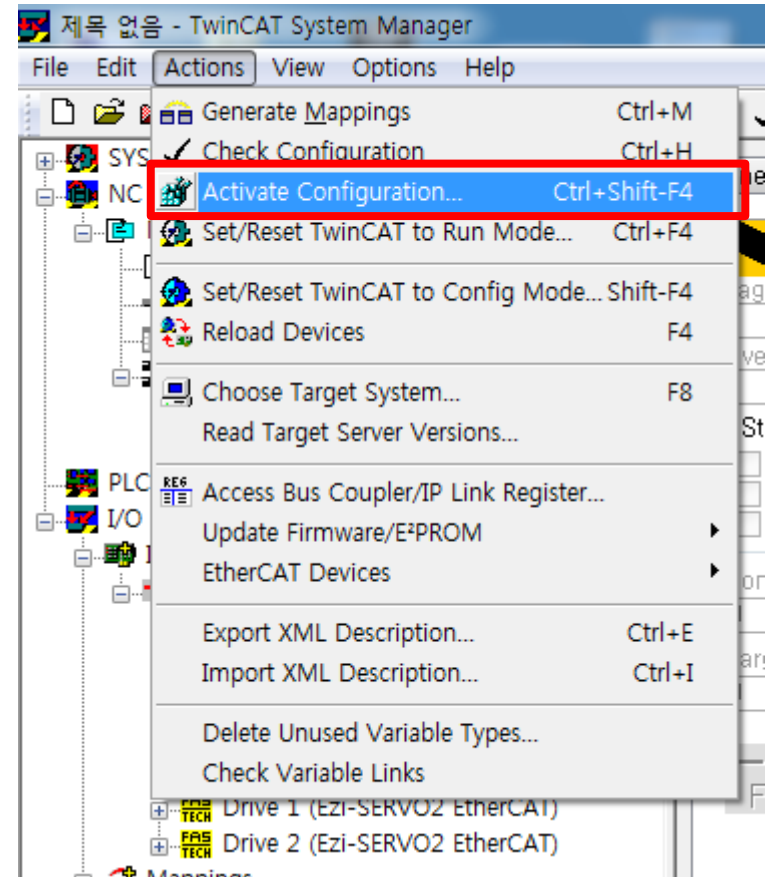




# Motor Operation

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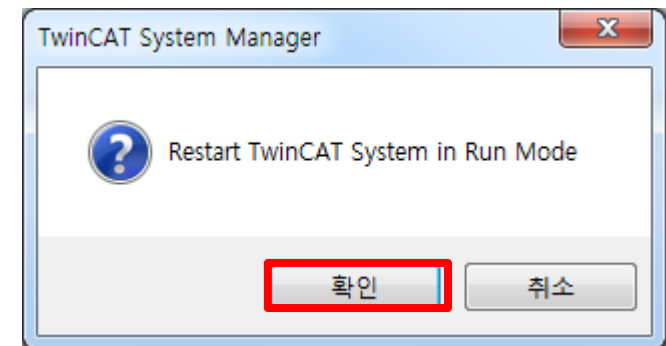
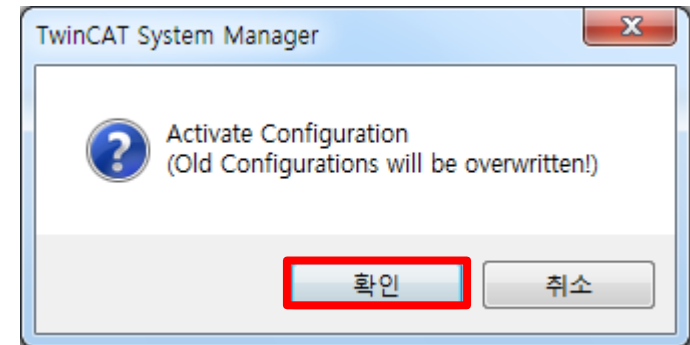
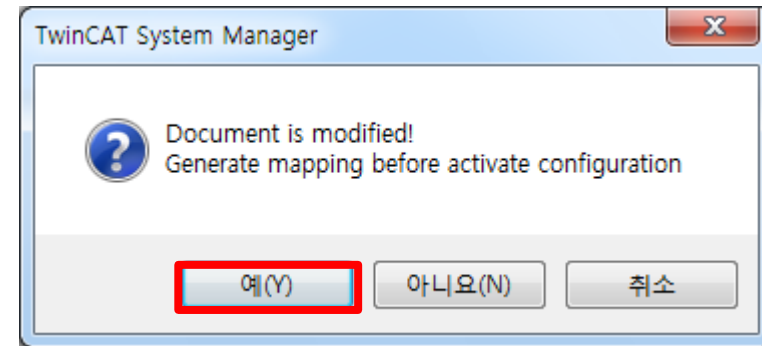
1. Click "Activate Configuration" of "Actions"



# Motor Operation

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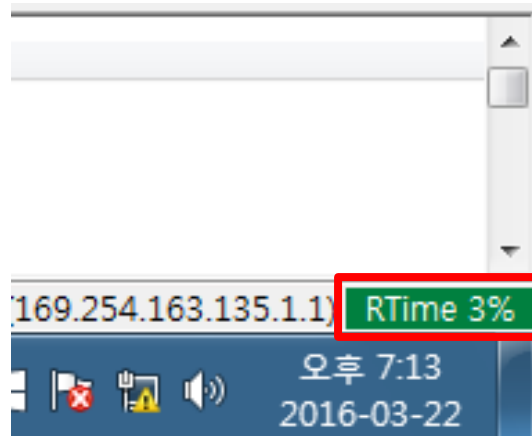
1. Click all "YES" for all 3 windows  
1<sup>st</sup> window : Mapping modified information.  
2<sup>nd</sup> window : Apply modified information.  
3<sup>rd</sup> window : Re-start under Run Mode



# Motor Operation

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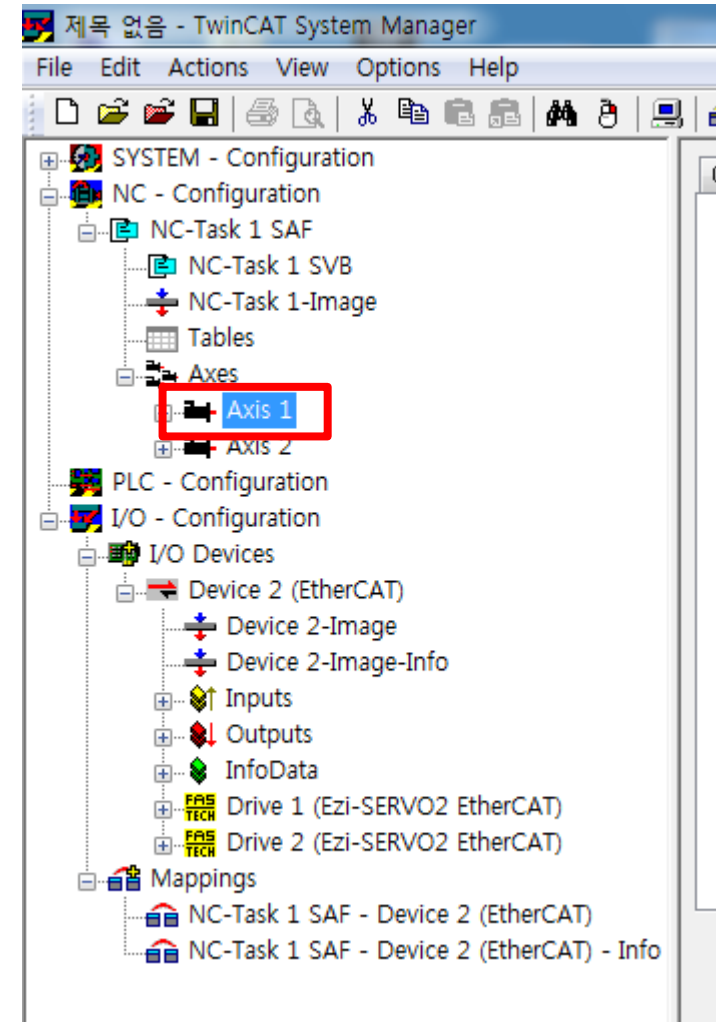
1. If it has successfully applied, able to check green color part at the bottom of screen.
2. After Rtime, 2%, 3% things describe share of CPU



# Motor Operation

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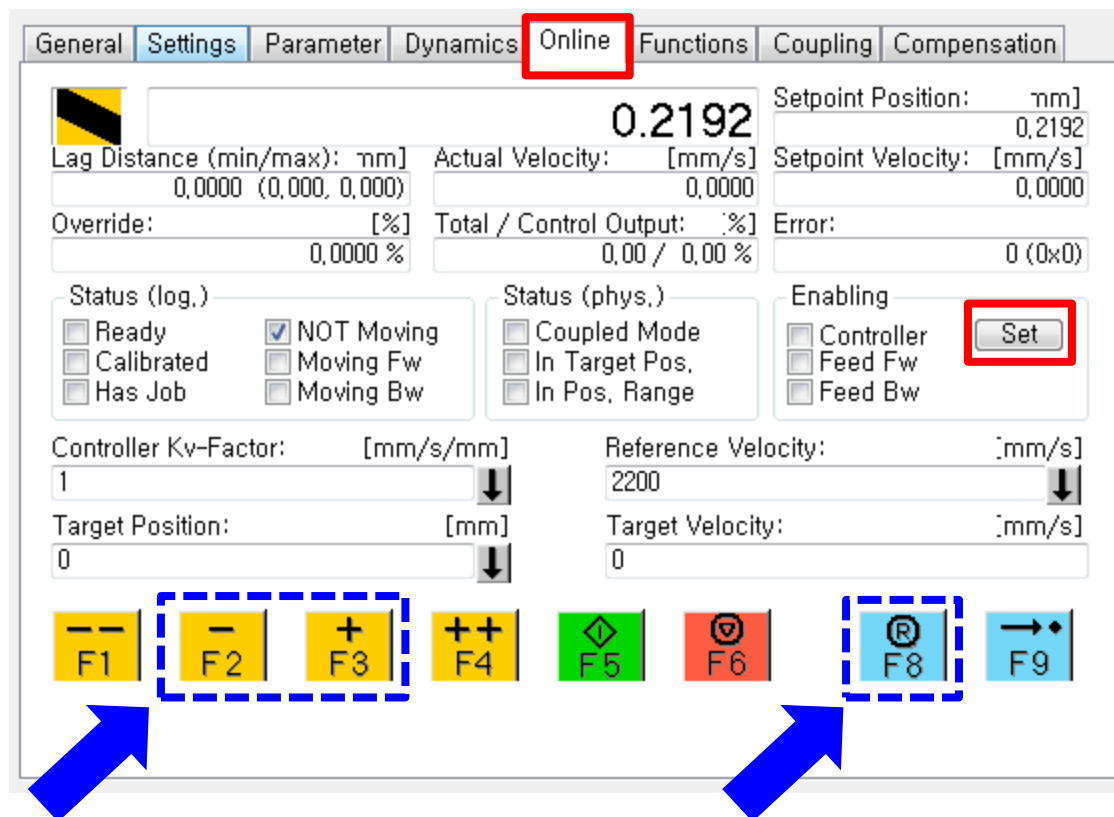
1. Click "Axis 1" of "NC-Configuration"



# Motor Operation

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1. Click "Set" Button of "Online"



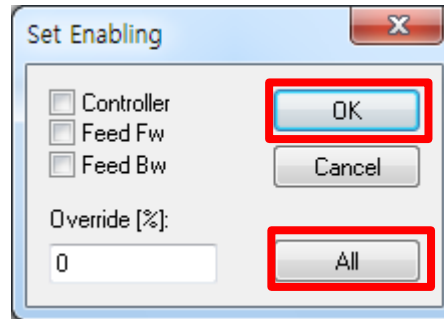
<Jog - / + Button>

<Alarm reset Button>

# Motor Operation

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1. Click "ALL" button and click "OK" button



**After click "Ok" button, able to check Motor goes Servo On.**

# Motor Operation

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## Repeat Operation Method

1. Click "Functions" tab and select "Reversing Sequence"
2. Input "10" at Position1
3. Input "10" at Target Velocity
4. Input "10" at Target Position 2
5. Click "Start" Button

After click "Start" button and able to check motor runs repeatedly.

The screenshot displays the 'Functions' tab of the Ezzi-Servo control interface. The 'Start Mode' is set to 'Reversing Sequence'. The 'Start' button is highlighted. The 'Target Position1' is set to 10 [mm], 'Target Velocity' is 10 [mm/s], and 'Target Position2' is 0 [mm]. The 'Setpoint Position' is 5,5667 [mm]. The 'Raw Drive Output' is set to 'Percent' mode with an 'Output Value' of 0 [%]. The 'Set Actual Position' and 'Set Target Position' are both set to 'Absolute' mode with a value of 0.

| Field               | Value              | Unit   |
|---------------------|--------------------|--------|
| Current Position    | 5.6763             | [mm]   |
| Setpoint Position   | 5,5667             | [mm]   |
| Start Mode          | Reversing Sequence |        |
| Target Position1    | 10                 | [mm]   |
| Target Velocity     | 10                 | [mm/s] |
| Target Position2    | 0                  | [mm]   |
| Idle Time           | 0                  | s      |
| Last Time           | 1,13200            | [s]    |
| Output Mode         | Percent            |        |
| Output Value        | 0                  | [%]    |
| Set Actual Position | 0                  |        |
| Set Target Position | 0                  |        |

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우리는 40년 Stepping Motor의 역사를 바꾸는 주인공입니다!!



세계로!!

세계로!!



Fast, Accurate, Smooth Motion Control