



**AC Servo Drive**

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**E-DFASxxE series (EtherCAT type)**

## **Quick Start Guide**

**V 0.1**

## Contents

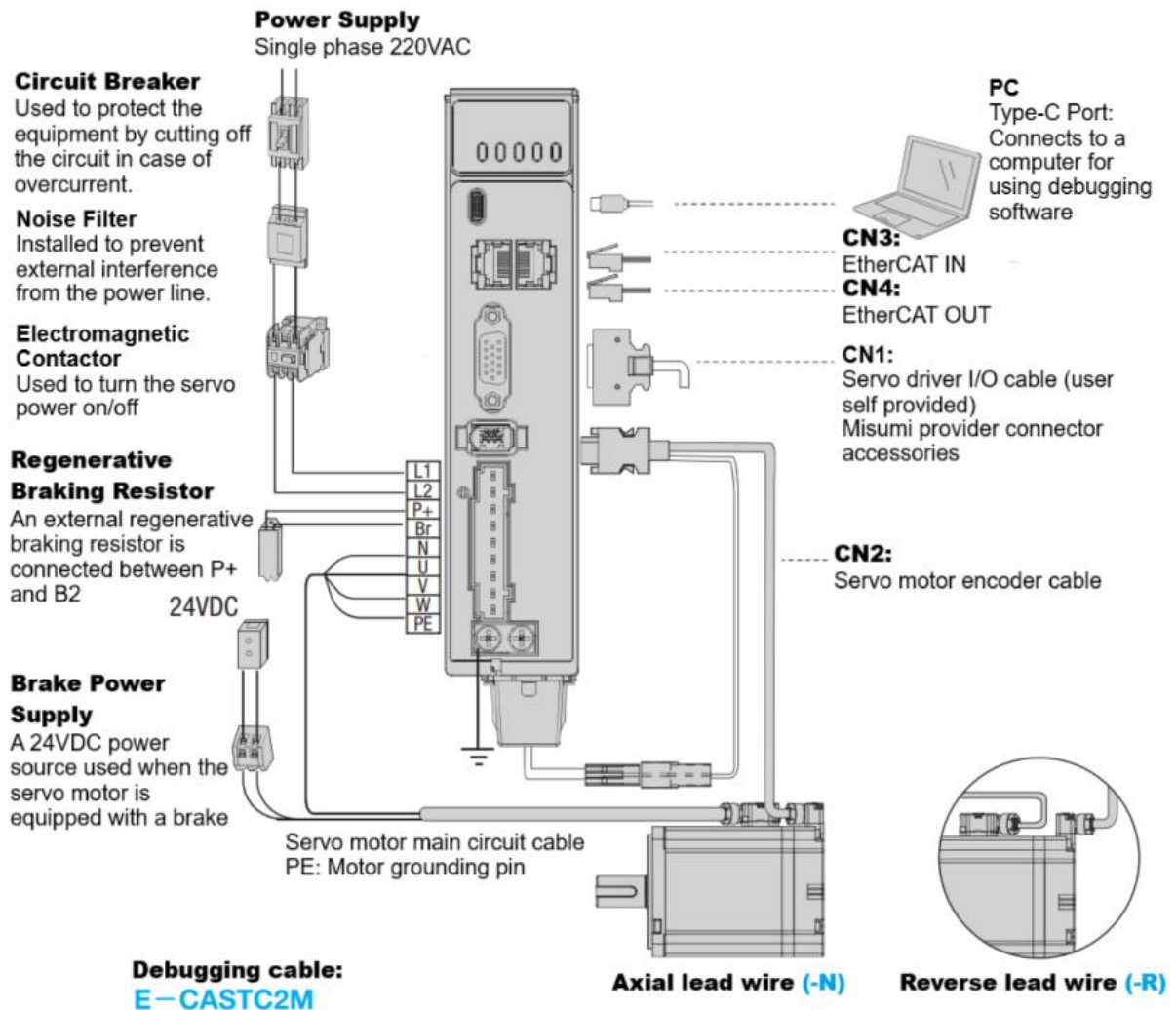
|                                                            |           |
|------------------------------------------------------------|-----------|
| <b>1. Wiring .....</b>                                     | <b>3</b>  |
| <b>Main Circuit Wiring Diagram .....</b>                   | <b>3</b>  |
| <b>Control Signal Connector - CN1 Pin Assignment .....</b> | <b>4</b>  |
| <b>2. Precautions Before Operation .....</b>               | <b>6</b>  |
| <b>3. EDrive Configuration Software .....</b>              | <b>7</b>  |
| <b>Download EDrive Configuration Software.....</b>         | <b>7</b>  |
| <b>Installation .....</b>                                  | <b>7</b>  |
| <b>Open Software .....</b>                                 | <b>7</b>  |
| <b>Connect to PC .....</b>                                 | <b>8</b>  |
| <b>Trial Run .....</b>                                     | <b>8</b>  |
| <b>Auto Tuning .....</b>                                   | <b>10</b> |
| <b>Parameter Backup and Download .....</b>                 | <b>11</b> |
| <b>4. Change Motion Direction .....</b>                    | <b>14</b> |
| <b>5. Change Electronic Gear Ratio .....</b>               | <b>17</b> |
| <b>6. Parameter Setting .....</b>                          | <b>22</b> |
| <b>7. Controller Axis Configuration Precautions .....</b>  | <b>24</b> |
| <b>8. PLC EtherCAT Communication Example.....</b>          | <b>25</b> |

**Version Update Record**

| <b>Version</b> | <b>Update date</b> | <b>Update content</b> |
|----------------|--------------------|-----------------------|
| <b>V1.0</b>    | <b>2025-07</b>     | <b>First release</b>  |
|                |                    |                       |

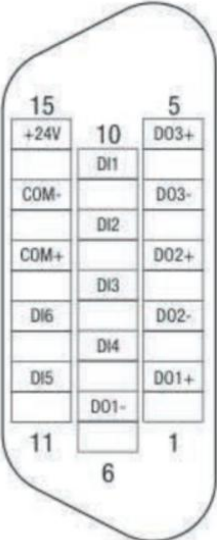
# 1. Wiring

## Main Circuit Wiring Diagram



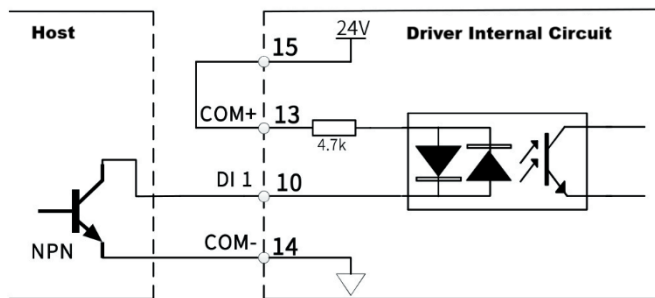
## Control Signal Connector - CN1 Pin Assignment

To ensure I/O signal to not be affected by electromagnetic interference, a **shielded twisted pair cable** is recommended for this application.

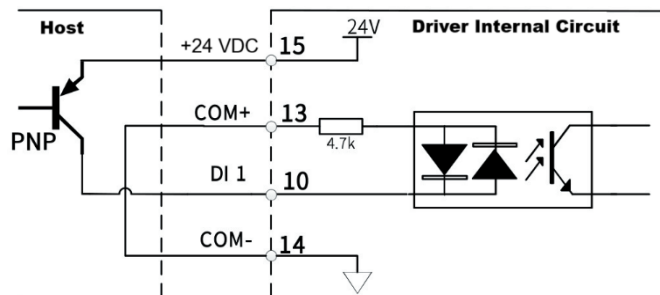
| Diagram<br>(soldering side of<br>the connector)                                    | Function    | Pin | Label | Signal                          | Description (default function)                                                                                                                                                                            |
|------------------------------------------------------------------------------------|-------------|-----|-------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | General     | 15  | +24V  | Internal<br>24V power<br>supply | Internal 24V power supply. Voltage range: +20~28V. Max current: 200mA. (Driver internal 24V power supply cannot be used as motor brake supply, or will trigger internal power supply overload protection) |
|                                                                                    |             | 14  | COM-  |                                 |                                                                                                                                                                                                           |
|                                                                                    | General I/O | 13  | COM+  | DI-COM                          | Common digital input                                                                                                                                                                                      |
|                                                                                    |             | 10  | DI1   | POT                             | Positive limit switch                                                                                                                                                                                     |
|                                                                                    |             | 9   | DI2   | NOT                             | Negative limit switch                                                                                                                                                                                     |
|                                                                                    |             | 8   | DI3   | Home Switch                     | Homing switch                                                                                                                                                                                             |
|                                                                                    |             | 7   | DI4   | EXT 2                           | Probe 2                                                                                                                                                                                                   |
|                                                                                    |             | 11  | DI5   | EXT 1                           | Prob 1                                                                                                                                                                                                    |
|                                                                                    |             | 12  | DI6   | -                               | No default function                                                                                                                                                                                       |
|                                                                                    |             | 1   | DO1+  | SRDY+                           | Servo ready signal output                                                                                                                                                                                 |
|                                                                                    |             | 6   | DO1-  | SRDY-                           |                                                                                                                                                                                                           |
|                                                                                    |             | 3   | DO2+  | ALM+                            | Alarm output                                                                                                                                                                                              |
|                                                                                    |             | 2   | DO2-  | ALM-                            |                                                                                                                                                                                                           |
|                                                                                    |             | 5   | DO3+  | BRK-OFF+                        | External brake released signal                                                                                                                                                                            |
|                                                                                    |             | 4   | DO3-  | BRK-OFF-                        |                                                                                                                                                                                                           |

## 1. General digital input connection

### NPN connection:

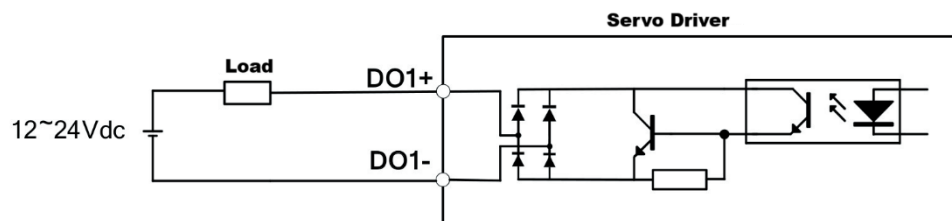


### PNP connection:

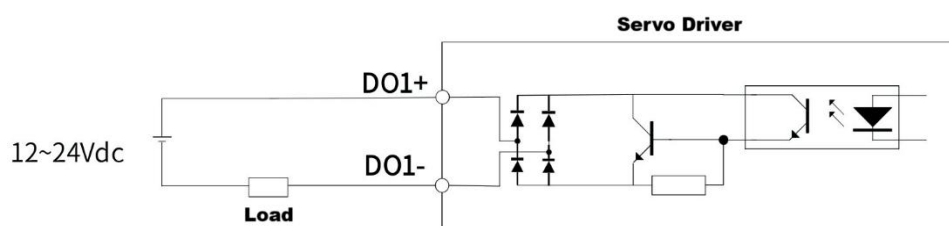


## 2. General digital output circuit

### NPN connection:



### PNP connection:



## **2. Precautions Before Operation**

The driver and servo motor must be reliably grounded. The PE terminal of the driver must be securely connected to the equipment ground.

Ensure all wiring is correct before powering on.

An emergency stop circuit must be integrated to ensure the power supply immediately stops in case of a fault.

After a driver fault alarm, verify that the issue has been resolved before restarting, and ensure the SRV-ON signal is inactive.

Do not touch the driver within at least 5 minutes after power is turned off to prevent electric shock.

If the driver panel is unresponsive after powering on, check whether the input voltage is within the rated range and ensure there are no phase losses.

## 3. EDrive Configuration Software

### Download EDrive Configuration Software.

Download link:

[https://www.misumi.com.cn/linked/archive/me/MISUMI\\_EDrive\\_v1\\_0\\_0.zip](https://www.misumi.com.cn/linked/archive/me/MISUMI_EDrive_v1_0_0.zip)

### Installation

Just unzip or pull the 'MISUMI EDrive\_v1.0.0' folder to the desktop.

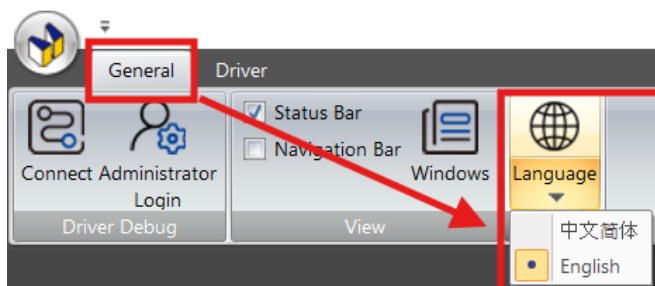
| <input type="checkbox"/> Name                                                                          | Date modified     | Type                 | Size   |
|--------------------------------------------------------------------------------------------------------|-------------------|----------------------|--------|
|  EDriver_v1.1.0_alpha | 7/1/2025 11:44 AM | File folder          |        |
|  E_DFASE_V1.02.xml    | 6/26/2025 5:12 PM | Microsoft Edge HT... | 200 KB |

### Open Software

Double click 'EDrive.exe' to open the software.

| <input type="checkbox"/> Name                                                                         | Date modified      | Type                  | Size      |
|-------------------------------------------------------------------------------------------------------|--------------------|-----------------------|-----------|
|  Driver            | 6/30/2025 10:55 AM | File folder           |           |
|  DriverDefaultPara | 6/30/2025 10:55 AM | File folder           |           |
|  Help              | 6/30/2025 10:55 AM | File folder           |           |
|  Init              | 6/30/2025 10:55 AM | File folder           |           |
|  Log               | 1/3/2025 5:11 PM   | File folder           |           |
|  Motors            | 6/30/2025 10:55 AM | File folder           |           |
|  Pic               | 6/30/2025 10:55 AM | File folder           |           |
|  Record            | 10/21/2024 2:26 PM | File folder           |           |
|  Remark            | 6/30/2025 10:55 AM | File folder           |           |
|  Script            | 6/30/2025 10:55 AM | File folder           |           |
|  Tools             | 6/30/2025 10:55 AM | File folder           |           |
|  DATA.mdb          | 2/14/2025 10:37 AM | Microsoft Access ...  | 19,068 KB |
|  EDrive.exe        | 2/7/2025 11:14 AM  | Application           | 7,085 KB  |
|  inp_num.dll       | 2/7/2025 11:14 AM  | Application extens... | 8 KB      |
|  Interop.dll       | 2/7/2025 11:14 AM  | Application extens... | 78 KB     |

After software opened, go to 'General' and change language to 'English'.

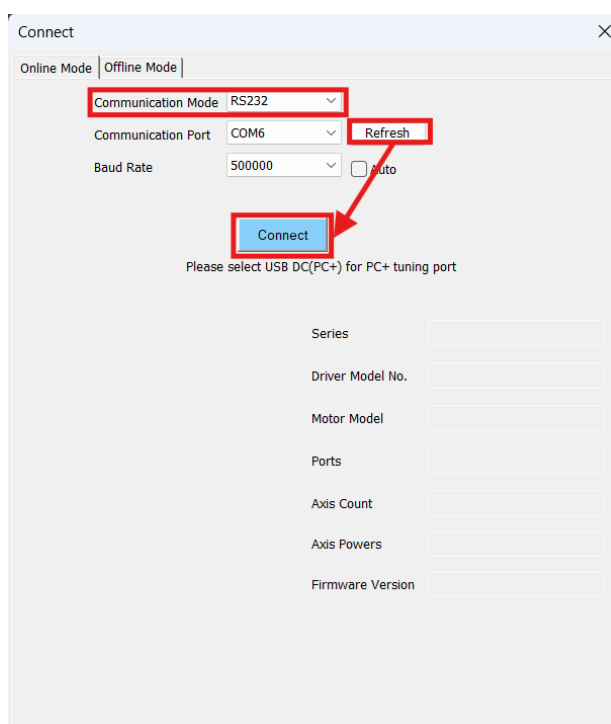


## Connect to PC

Please use cable with one side USB type-A and the other side USB type-C.

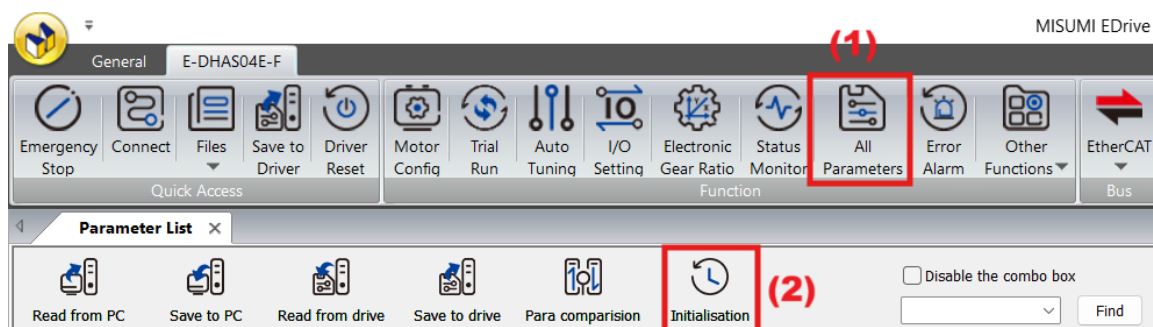


Open EDrive software and start connection. 'Communication Mode' please choose 'RS232', then click 'Refresh', then click 'Connect'.

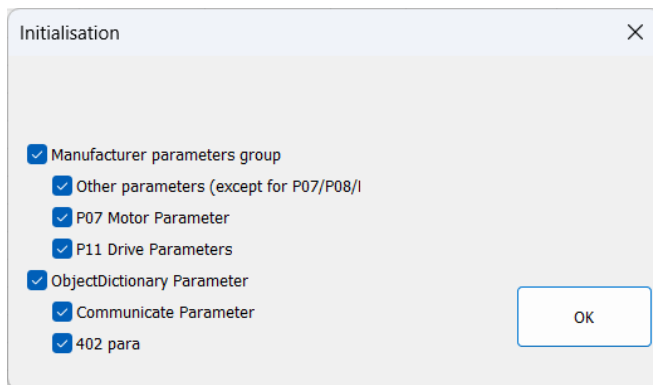


## Trial Run

Before Trial Run, please initialize the driver. Click (1) 'All Parameters', choose (2) 'Initialisation'.

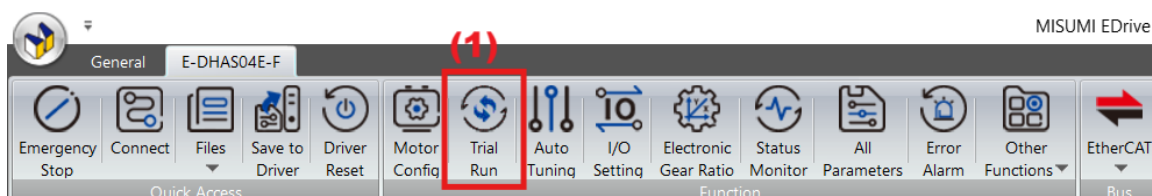


Select all and click 'OK'

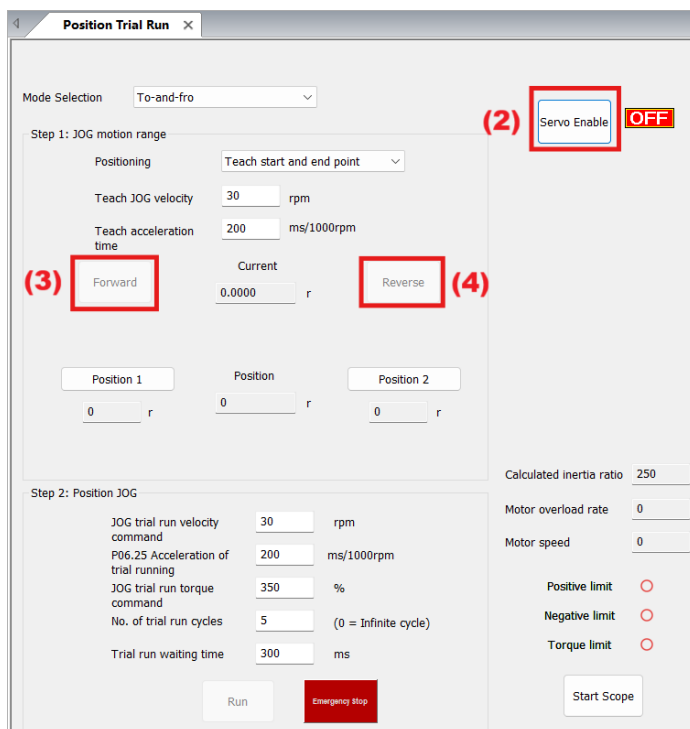


If you encounter motor abnormalities during operation, please power cycle the servo system. If the issue persists, proceed with initializing the system.

Click (1) 'Trial Run'.

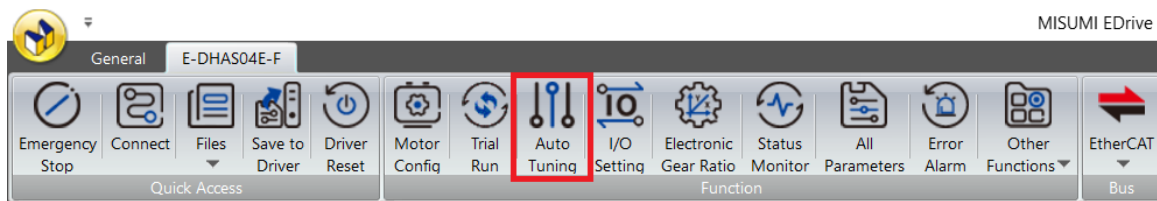


Click (2) 'Servo Enable', then click (3) 'Forward' or (4) 'Reverse', to move the motor.



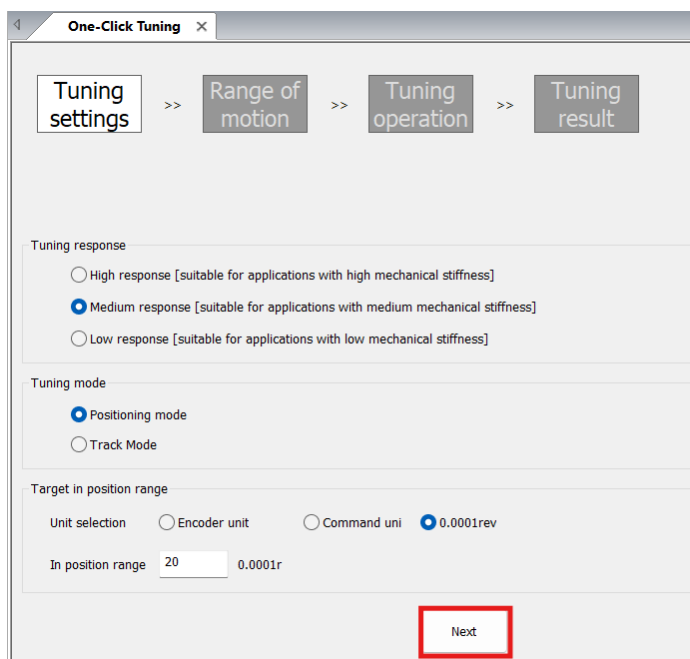
## Auto Tuning

Click 'Auto Tuning'.



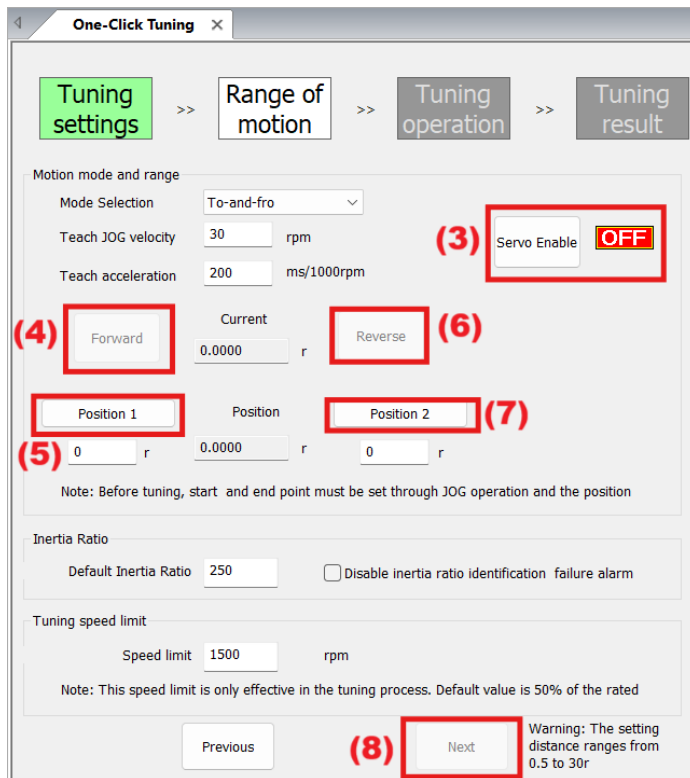
Click (2) 'Next'.

Note: Suggest not to change other parameters if not necessary.

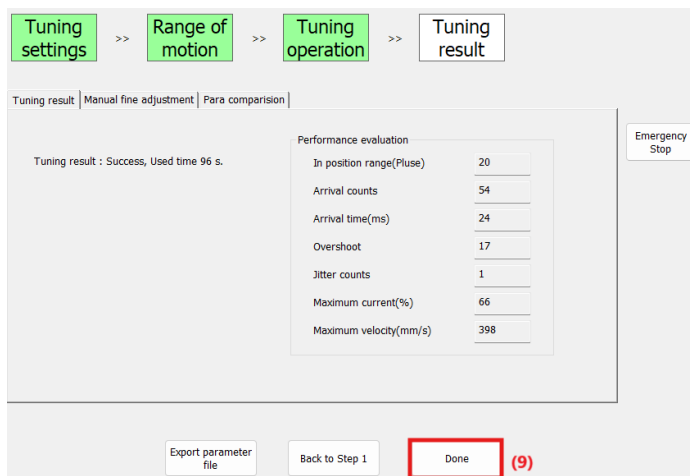


Click (3) 'Servo Enable'. (Note: If driver already connected through EtherCAT, please tick check box 'External enabling disabled')

Click (4) 'Forward'. After motor reaches starting position, click (5) 'Position 1'. Then click (6) 'Reverse'. After motor reaches ending position, click (7) 'Position 2'. (Note: Please always make sure motor is in between of starting position and ending position) Click (8) 'Next', and follow the instruction to finish Auto Tuning.



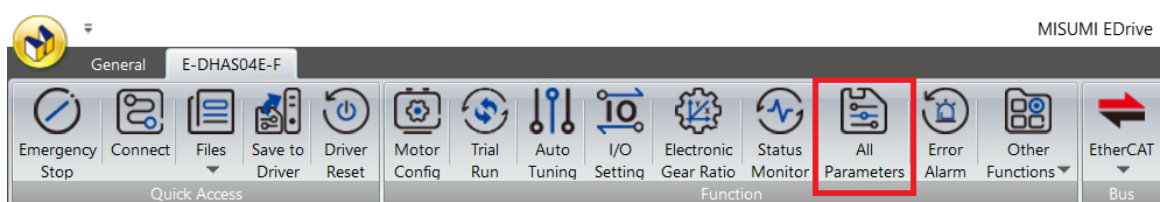
Click (9) 'Done', and follow the instruction to save parameters.



## Parameter Backup and Download

Please refer to following steps to backup parameters.

Click 'All Parameters'.



## E-DFASxxE series (EtherCAT type) Quick Start Guide

Click 'Save to PC' and follow the instruction to finish saving.

The screenshot shows the 'Parameter List(Offline)' window. The 'Save to PC' button is highlighted with a red box. The window displays a list of parameters with columns: Number, Label, Axis1, Min, Max, Default, Unit, and Activation. The parameters are grouped into categories like P00. Basic Settings, P01. Gain Adjustment, etc.

| Number | Label                         | Axis1                 | Min | Max        | Default | Unit | Activation |
|--------|-------------------------------|-----------------------|-----|------------|---------|------|------------|
| P00.00 | Model Following Control       | 1                     | 0   | 5000       | 1       |      | Immediate  |
| P00.01 | Control Mode                  | 9                     | 0   | 9          | 9       |      | Restart    |
| P00.02 | Auto Gain Tuning Mode         | 0x1: Standard + ...   | 0x0 | 0xFF       | 0x1     |      | Immediate  |
| P00.03 | Stiffness Level               | 13                    | 0   | 31         | 13      |      | Immediate  |
| P00.04 | Inertia Ratio                 | 250                   | 0   | 200000     | 250     |      | Immediate  |
| P00.06 | Command Pulse Polarity        | 0: Reverse            | 0   | 7          | 0       |      | Restart    |
| P00.07 | Command Pulse Mode            | 3: The polarity of... | 0   | 3          | 3       |      | Restart    |
| P00.08 | 1st Command Pulse Count...    | 0                     | 0   | 67108864   | 0       |      | Re-enable  |
| P00.09 | 1st Command Frequency ...     | 1                     | 1   | 2147483647 | 1       |      | Re-enable  |
| P00.10 | 1st Command Frequency ...     | 1                     | 1   | 2147483647 | 1       |      | Re-enable  |
| P00.11 | Encoder Pulse Count per R...  | 2500                  | 0   | 2097152    | 2500    |      | Restart    |
| P00.12 | Pulse Output Logic Inversion  | 0: Forward            | 0   | 1          | 0       |      | Restart    |
| P00.13 | 1st Torque Limit              | 500                   | 0   | 750        | 500     |      | Immediate  |
| P00.14 | Position Deviation Threshold  | 30                    | 0   | 310        | 30      |      | Immediate  |
| P00.15 | Absolute Encoder              | 0: Deactivate mu...   | 0   | 15         | 0       |      | Restart    |
| P00.16 | External Regenerative Resi... | 100                   | 25  | 500        | 100     |      | Immediate  |
| P00.17 | External Regenerative Resi... | 50                    | 20  | 5000       | 50      |      | Immediate  |
| P00.19 | Friction Compensation         | 0                     | 0   | 1000       | 0       |      | Immediate  |
| P00.23 | Slave ID                      | 2                     | 0   | 32767      | 2       |      | Restart    |
| P00.24 | Slave ID Source               | 0                     | 0   | 1          | 0       |      | Restart    |
| P00.25 | Reserved                      | 10                    | 1   | 100        | 10      |      | Immediate  |
| P00.26 | Reserved                      | 50                    | 1   | 2000       | 50      |      | Immediate  |
| P00.27 | Synchronous Mode Comm...      | 0                     | 0   | 50         | 0       |      | Restart    |
| P00.28 | CSP Mode Safety Position      | 10000                 | 500 | 30000      | 10000   |      | Immediate  |
| P00.38 | Z-signal Pulse Input Source   | 0x0                   | 0x0 | 0x3        | 0x0     |      | Immediate  |

The dialog box titled '配分方法' (Distribution Method) shows a list of parameters to be saved. The 'Manufacturer parameters group' is selected, and the 'Other parameters (except for P07/P08/I)' are also selected. The 'OK' button is visible.

- ☒ Manufacturer parameters group
- ☒ Other parameters (except for P07/P08/I)
- ☒ P07 Motor Parameter
- ☒ P11 Drive Parameters

When download parameters, click 'Read from PC'.

The screenshot shows the 'Parameter List(Offline)' window. The 'Read from PC' button is highlighted with a red box. The window displays a list of parameters with columns: Number, Label, Axis1, Min, Max, Default, Unit, and Activation. The parameters are grouped into categories like P00. Basic Settings, P01. Gain Adjustment, etc.

| Number | Label                         | Axis1                 | Min | Max        | Default | Unit | Activation |
|--------|-------------------------------|-----------------------|-----|------------|---------|------|------------|
| P00.00 | Model Following Control       | 1                     | 0   | 5000       | 1       |      | Immediate  |
| P00.01 | Control Mode                  | 9                     | 0   | 9          | 9       |      | Restart    |
| P00.02 | Auto Gain Tuning Mode         | 0x1: Standard + ...   | 0x0 | 0xFF       | 0x1     |      | Immediate  |
| P00.03 | Stiffness Level               | 13                    | 0   | 31         | 13      |      | Immediate  |
| P00.04 | Inertia Ratio                 | 250                   | 0   | 200000     | 250     |      | Immediate  |
| P00.06 | Command Pulse Polarity        | 0: Reverse            | 0   | 7          | 0       |      | Restart    |
| P00.07 | Command Pulse Mode            | 3: The polarity of... | 0   | 3          | 3       |      | Restart    |
| P00.08 | 1st Command Pulse Count...    | 0                     | 0   | 67108864   | 0       |      | Re-enable  |
| P00.09 | 1st Command Frequency ...     | 1                     | 1   | 2147483647 | 1       |      | Re-enable  |
| P00.10 | 1st Command Frequency ...     | 1                     | 1   | 2147483647 | 1       |      | Re-enable  |
| P00.11 | Encoder Pulse Count per R...  | 2500                  | 0   | 2097152    | 2500    |      | Restart    |
| P00.12 | Pulse Output Logic Inversion  | 0: Forward            | 0   | 1          | 0       |      | Restart    |
| P00.13 | 1st Torque Limit              | 500                   | 0   | 750        | 500     |      | Immediate  |
| P00.14 | Position Deviation Threshold  | 30                    | 0   | 310        | 30      |      | Immediate  |
| P00.15 | Absolute Encoder              | 0: Deactivate mu...   | 0   | 15         | 0       |      | Restart    |
| P00.16 | External Regenerative Resi... | 100                   | 25  | 500        | 100     |      | Immediate  |
| P00.17 | External Regenerative Resi... | 50                    | 20  | 5000       | 50      |      | Immediate  |
| P00.19 | Friction Compensation         | 0                     | 0   | 1000       | 0       |      | Immediate  |
| P00.23 | Slave ID                      | 2                     | 0   | 32767      | 2       |      | Restart    |
| P00.24 | Slave ID Source               | 0                     | 0   | 1          | 0       |      | Restart    |
| P00.25 | Reserved                      | 10                    | 1   | 100        | 10      |      | Immediate  |
| P00.26 | Reserved                      | 50                    | 1   | 2000       | 50      |      | Immediate  |
| P00.27 | Synchronous Mode Comm...      | 0                     | 0   | 50         | 0       |      | Restart    |
| P00.28 | CSP Mode Safety Position      | 10000                 | 500 | 30000      | 10000   |      | Immediate  |
| P00.38 | Z-signal Pulse Input Source   | 0x0                   | 0x0 | 0x3        | 0x0     |      | Immediate  |

Choose the parameter file you saved, and it will be shown in a new tab (4). Click (5) 'Save to driver', then click (6) 'Driver Reset'. Follow the instruction to finish saving.

## E-DFASxxE series (EtherCAT type) Quick Start Guide

MISUMI EDrive

General E-DHAS04E-F (3)

Emergency Stop Connect Files Save to Driver Driver Reset Motor Config Trial Run Auto Tuning I/O Setting Electronic Gear Ratio Status Monitor All Parameters Error Alarm Other Functions EtherCAT Bus

Quick Access

Parameter List Par\_B.msm x (4)

Read from PC Save to PC Save to drive (5) Para comparison Help

☐ Disable the combo box

|                              | Number | Label                           | Axis1                | Min | Max        | Default | Unit   | Activation |
|------------------------------|--------|---------------------------------|----------------------|-----|------------|---------|--------|------------|
| All parameters               |        |                                 |                      |     |            |         |        |            |
| P00. Basic settings          | P00.00 | Model-following bandwidth       | 1                    | 0   | 5000       | 1       | 0.1Hz  | Immediate  |
| P01. Gain adjustment         | P00.01 | Control Mode Settings           | 9                    | 0   | 9          | 9       | model  | Restart    |
| P02. Vibration Suppression   | P00.02 | Real time Auto Gain Adjus...    | 0x1: Standard + ...  | 0x0 | 0xFF       | 0x1     | --     | Immediate  |
| P03. Velocity / Torque Contr | P00.03 | Real time auto stiffness a...   | 13                   | 0   | 31         | 13      | --     | Immediate  |
| P04. I/O Monitoring Settings | P00.04 | Inertia ratio                   | 250                  | 0   | 200000     | 250     | %      | Immediate  |
| P05. Extension settings      | P00.06 | Probe signal polarity settin... | 0: The comman...     | 0   | 7          | 0       | --     | Restart    |
| P06. Special Settings        | P00.07 | Command pulse counts p...       | 3: Probe 1 and P...  | 0   | 3          | 3       | --     | Restart    |
| P07. Motor parameters        | P00.08 | 1st command pulse count...      | 0                    | 0   | 67108864   | 0       | --     | Re-enable  |
| P0C. Position Comparison     | P00.09 | 1st command frequency d...      | 1                    | 1   | 2147483647 | 1       | --     | Re-enable  |
| P0D. Gantry settings         | P00.10 | 1st command frequency d...      | 1                    | 1   | 2147483647 | 1       | --     | Re-enable  |
| P0E. Precision compensation  | P00.11 | Encoder pulse output per r...   | 2500                 | 0   | 2097152    | 2500    | P/rev  | Restart    |
| P11. Drive parameters        | P00.12 | Pulse output logic inversion    | 0: No Reversal       | 0   | 1          | 0       | --     | Restart    |
|                              | P00.13 | 1st Torque Limit                | 350                  | 0   | 500        | 350     | %      | Immediate  |
|                              | P00.14 | Excessive Position Deviato...   | 30                   | 0   | 310        | 30      | 0.1rev | Immediate  |
|                              | P00.15 | Absolute Encoder settings       | 0: Disable mult-t... | 0   | 15         | 0       | --     | Restart    |
|                              | P00.16 | Regenerative resistance         | 100                  | 25  | 500        | 100     | Ω      | Immediate  |
|                              | P00.17 | Regenerative resistor pow...    | 50                   | 20  | 5000       | 50      | W      | Immediate  |
|                              | P00.19 | Friction compensation setti...  | 0                    | 0   | 1000       | 0       | --     | Immediate  |
|                              | P00.23 | Slave Alias                     | 2                    | 0   | 32767      | 2       | --     | Restart    |
|                              | P00.24 | Slave Alias Source              | 0: The master st...  | 0   | 1          | 0       | --     | Restart    |
|                              | P00.25 | Retain Parameters               | 10                   | 1   | 100        | 10      | --     | Immediate  |
|                              | P00.26 | Retain Parameters               | 50                   | 1   | 2000       | 50      | --     | Immediate  |
|                              | P00.27 | Synchronization mode co...      | 0                    | 0   | 50         | 0       | --     | Restart    |
|                              | P00.28 | CSP mode safe selfrunnin...     | 10000                | 500 | 30000      | 10000   | --     | Immediate  |
|                              | P00.30 | Encoder feedback mode           | 2                    | 0   | 3          | 2       | --     | Restart    |

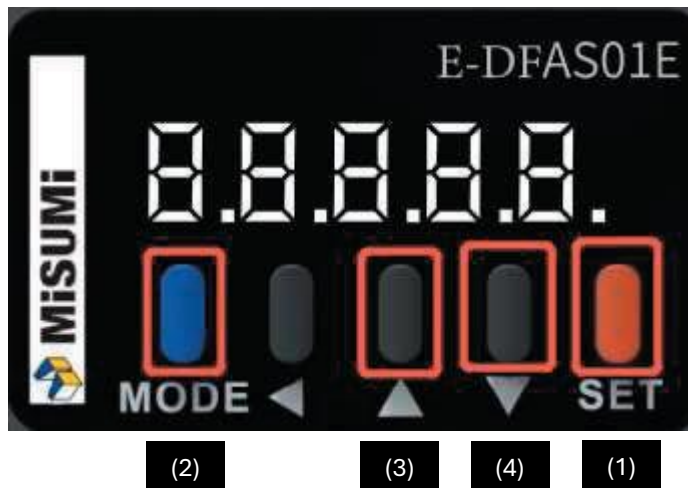
## 4. Change Motion Direction

If controller pulse train or command is positive direction, but motor moves to negative direction, direction change is needed.

| P00.06 | Label                                                 | Command Pulse Polarity                                                                                         |      |   |         |   | Valid mode(s) |         |       | F     |
|--------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------|---|---------|---|---------------|---------|-------|-------|
|        | Range                                                 | 0~1                                                                                                            | Unit | - | Default | 0 | Activation    | Restart | Index | 2006h |
|        | Used to change the rotational direction of the motor. |                                                                                                                |      |   |         |   |               |         |       |       |
|        | Set value                                             | Details                                                                                                        |      |   |         |   |               |         |       |       |
|        | 0                                                     | Polarity of the command is not inverted. The direction of rotation is consistent with the polarity of command. |      |   |         |   |               |         |       |       |
|        | 1                                                     | Polarity of command is inverted. The direction of rotation is opposite to the polarity of command.             |      |   |         |   |               |         |       |       |

### Method 1: Set with Front Panel

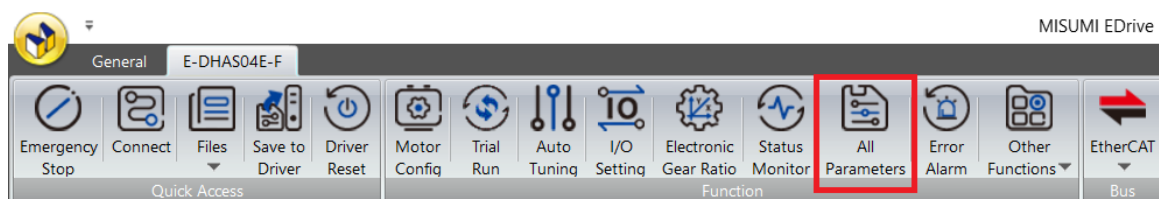
1. Press (1) 'S' button, front panel shows 'd345E'. Press (2) 'M' button, front panel shows 'P00.00'. Press (3) ↑ button and change to 'P00.06', then press (1) 'S' button to show the current 'Command Pulse Polarity' setting.



2. If now 'Command Pulse Polarity' setting is '0', press (3) ↑ button and change to '1'. If it's '1', then press (4) ↓ button and change to '0'.
3. After changing the parameter, restart the driver to activate the setting.

### Method 2: Change through 'All Parameters' in EDrive software

1. Click 'All Parameters'.



- Change value of (2) P00.06 'Command Pulse Polarity' from '0: Reverse' to '1: Forward' or vice versa. Then click (3) 'Save to drive', and click (4) 'Driver Reset'.

Parameter List

| Number | Label                          | Axis1                 | Min | Max        | Default | Unit   | Activation |
|--------|--------------------------------|-----------------------|-----|------------|---------|--------|------------|
| P00.00 | Model-following bandwidth      | 1                     | 0   | 5000       | 1       | 0.1Hz  | Immediate  |
| P00.01 | Control Mode Settings          | 9                     | 0   | 9          | 9       | model  | Restart    |
| P00.02 | Real time Auto Gain Adjus...   | 0x1: Standard + ...   | 0x0 | 0xFF       | 0x1     | --     | Immediate  |
| P00.03 | Real time auto stiffness a...  | 13                    | 0   | 31         | 13      | --     | Immediate  |
| P00.04 | Inertia ratio                  | 250                   | 0   | 200000     | 250     | %      | Immediate  |
| P00.06 | Probe signal polarity setti... | 0: The command ...    | 0   | 7          | 0       | --     | Restart    |
| P00.07 | Command pulse counts p...      | 1                     | 1   | 2147483647 | 1       | --     | Re-enable  |
| P00.08 | 1st command pulse count...     | 1                     | 1   | 2147483647 | 1       | --     | Re-enable  |
| P00.09 | 1st command frequency d...     | 1                     | 1   | 2147483647 | 1       | --     | Re-enable  |
| P00.10 | 1st command frequency d...     | 1                     | 1   | 2147483647 | 1       | --     | Re-enable  |
| P00.11 | Encoder pulse output per r...  | 2500                  | 0   | 2097152    | 2500    | P/rev  | Restart    |
| P00.12 | Pulse output logic inversion   | 0: No Reversal        | 0   | 1          | 0       | --     | Restart    |
| P00.13 | 1st Torque Limit               | 350                   | 0   | 500        | 350     | %      | Immediate  |
| P00.14 | Excessive Position Deviat...   | 30                    | 0   | 310        | 30      | 0.1rev | Immediate  |
| P00.15 | Absolute Encoder settings      | 0: Disable multi-t... | 0   | 15         | 0       | --     | Restart    |
| P00.16 | Regenerative resistance        | 100                   | 25  | 500        | 100     | Ω      | Immediate  |
| P00.17 | Regenerative resistor pow...   | 50                    | 20  | 5000       | 50      | W      | Immediate  |
| P00.19 | Friction compensation setti... | 0                     | 0   | 1000       | 0       | --     | Immediate  |
| P00.23 | Slave Alias                    | 2                     | 0   | 32767      | 2       | --     | Restart    |
| P00.24 | Slave Alias Source             | 0: The master st...   | 0   | 1          | 0       | --     | Restart    |
| P00.25 | Retain Parameters              | 10                    | 1   | 100        | 10      | --     | Immediate  |
| P00.26 | Retain Parameters              | 50                    | 1   | 2000       | 50      | --     | Immediate  |
| P00.27 | Synchronization mode co...     | 0                     | 0   | 50         | 0       | --     | Restart    |
| P00.28 | CSP mode safe selfrunn...      | 10000                 | 500 | 30000      | 10000   | --     | Immediate  |
| P00.30 | Encoder feedback mode          | 2                     | 0   | 3          | 2       | --     | Restart    |

### Method 3: Change Object 607E in EDrive software

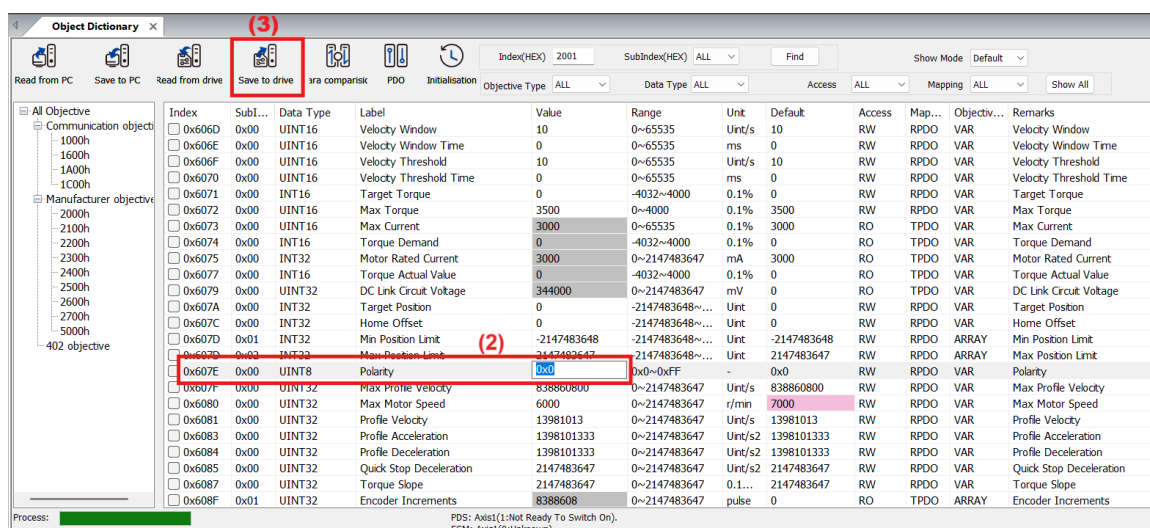
- Click 'EtherCAT' and open 'Object Dictionary'.

EtherCAT

- Object Dictionary
- 402 Observer
- Diagnostics
- Object Dictionary Tool
- Mapping Files

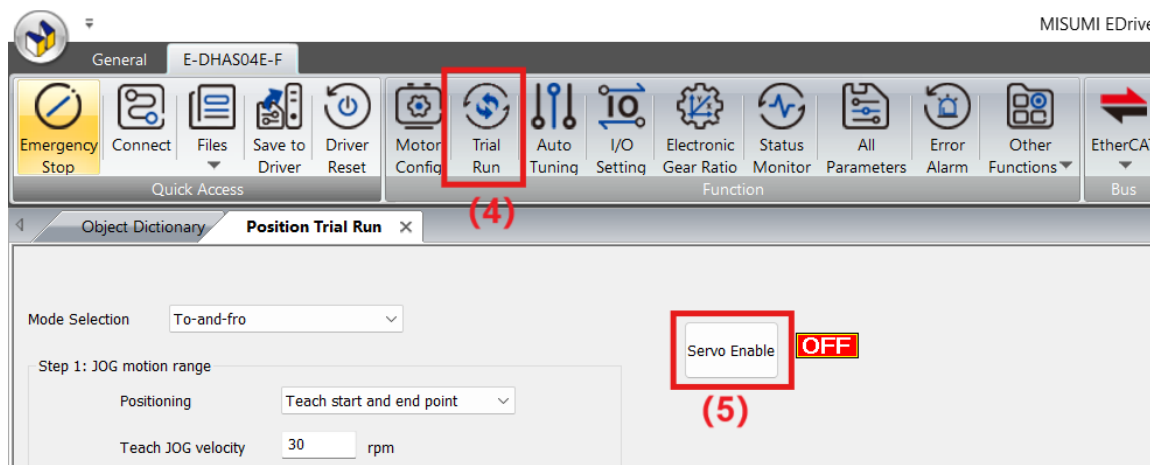
- Click (2) to change the value of Object 607E following below table, then click (3) 'Save to drive'.

## E-DFASxxE series (EtherCAT type) Quick Start Guide



| Mode          |     | Setting Value                                          |
|---------------|-----|--------------------------------------------------------|
| Position Mode | PP  | 0: Rotary direction same as command direction          |
|               | HM  | 128: Rotary direction different from command direction |
|               | CSP |                                                        |
| Velocity Mode | PV  | 0: Rotary direction same as command direction          |
|               | CSV | 64: Rotary direction different from command direction  |
| Torque Mode   | PT  | 0: Rotary direction same as command direction          |
|               | CST | 32: Rotary direction different from command direction  |
| All Mode      | F   | 0: Rotary direction same as command direction          |
|               |     | 224: Rotary direction different from command direction |

3. Click (4) 'Trial Run' to open the trial run page and click (5) 'Servo Enable' to servo ON.



**Note:** The motion direction can be changed through object 607E, and suggest changing through 607E.

However, the priority of Parameter P00.06 is higher than Object 607E, which means that Object 607E is active when P00.06 = 0, and Object 607E is inactive when P00.06 = 1.

## 5. Change Electronic Gear Ratio

If the upper controller's pulse count is insufficient and the speed cannot meet the requirement, the motor command pulse count must be adjusted.

When setting the numerator and denominator for pulse input scaling, set P00.08 to 0 first.

|                                                                                                                                                                                                                                          |              |                                         |             |   |                |   |                      |           |              |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------|-------------|---|----------------|---|----------------------|-----------|--------------|-------|
| <b>P00.08</b>                                                                                                                                                                                                                            | <b>Label</b> | 1st Command Pulses Count per Revolution |             |   |                |   | <b>Valid mode(s)</b> |           |              | F     |
|                                                                                                                                                                                                                                          | <b>Range</b> | 0~67108864                              | <b>Unit</b> | - | <b>Default</b> | 0 | <b>Activation</b>    | Re-enable | <b>Index</b> | 2008h |
| This parameter sets the number of command pulses required for one full revolution of the motor.<br>Note: This setting can also be configured via the object dictionary entries 608F, 6091, and 6092, but P00.08 takes priority when set. |              |                                         |             |   |                |   |                      |           |              |       |

|                                                                                                                                                                                                                                                                                     |              |                                                    |             |   |                |   |                      |           |              |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------|-------------|---|----------------|---|----------------------|-----------|--------------|-------|
| <b>P00.09</b>                                                                                                                                                                                                                                                                       | <b>Label</b> | 1st Command Frequency Divider/Multiplier Numerator |             |   |                |   | <b>Valid mode(s)</b> |           |              | F     |
|                                                                                                                                                                                                                                                                                     | <b>Range</b> | 0~2147483647                                       | <b>Unit</b> | - | <b>Default</b> | 0 | <b>Activation</b>    | Re-enable | <b>Index</b> | 2009h |
| This parameter sets the numerator for scaling the input command pulses (for frequency division or multiplication).<br>Corresponds to object dictionary 6091-01.<br>Can be modified directly on the control panel to update the value of 6091-01.<br>Effective only when P00.08 = 0. |              |                                                    |             |   |                |   |                      |           |              |       |

|                                                                                                                                                                                                                                                 |              |                                                      |             |   |                |   |                      |           |              |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------------------------------------------------|-------------|---|----------------|---|----------------------|-----------|--------------|-------|
| <b>P00.10</b>                                                                                                                                                                                                                                   | <b>Label</b> | 1st Command Frequency Divider/Multiplier Denominator |             |   |                |   | <b>Valid mode(s)</b> |           |              | F     |
|                                                                                                                                                                                                                                                 | <b>Range</b> | 0~2147483647                                         | <b>Unit</b> | - | <b>Default</b> | 0 | <b>Activation</b>    | Re-enable | <b>Index</b> | 2010h |
| This parameter sets the denominator for scaling the input command pulses.<br>Also corresponds to object dictionary 6091-01.<br>Can be modified directly on the control panel to update the value of 6091-01.<br>Effective only when P00.08 = 0. |              |                                                      |             |   |                |   |                      |           |              |       |

### Method 1: Set with Front Panel

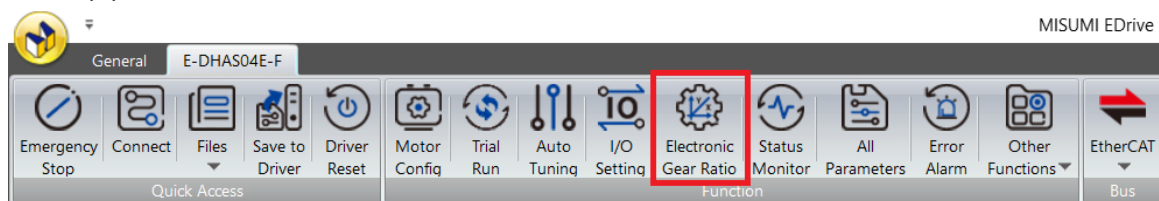
1. Press (1) 'S', display shows d345E. Press (2) 'M', display shows P00.00. Press (3) ↑ to scroll to P00.08. Press (1) 'S' again to enter the parameter setting for command pulses per motor revolution.



2. P00.08 must be set as an integer. To apply pulse input scaling (division/multiplication), first set P00.08 = 0, then configure P00.09: Numerator of the scaling ratio, P00.10: Denominator of the scaling ratio.
3. After modifying parameters, power cycle the driver for changes to take effect.

## Method 2: Change through 'Electronic Gear Ratio' in EDrive software

1. Click (1) 'Electronic Gear Ratio'.



2. Select (2) 'Pulse Per Revolution' to set the parameter, then click (3) 'OK'..

**Electronic Gear Ratio**

☒ Pulses Per Revolution 6092-I    8388608    P    **(2)**

☐ Electronic Gear Ratio

Numerator 6091-01    1

Denominator 6091-02    1

Lead screw transmission:

Pulses per revolution = Screw lead/pulse equivalent

Gear transmission:

Pulses per revolution = ( modulus\*number of pinion\*Helical Angle\*3.1415927 )/(ge ratio\*pulse equivalent)

**OK**    **(3)**

- To apply pulse input scaling, select (4) 'Electronic Gear Ratio', set parameters 'Numerator' and Denominator'. Click (5) 'OK'.

**Electronic Gear Ratio**

☐ Pulses Per Revolution 6092-I    8388608    P

☒ **Electronic Gear Ratio**    **(4)**

Numerator 6091-01    1

Denominator 6091-02    1

Lead screw transmission:

Pulses per revolution = Screw lead/pulse equivalent

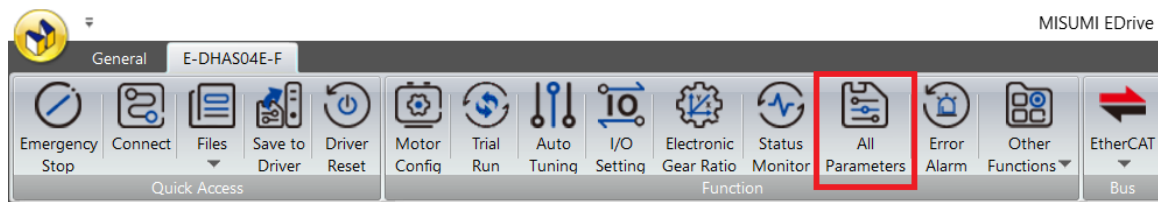
Gear transmission:

Pulses per revolution = ( modulus\*number of pinion\*Helical Angle\*3.1415927 )/(ge ratio\*pulse equivalent)

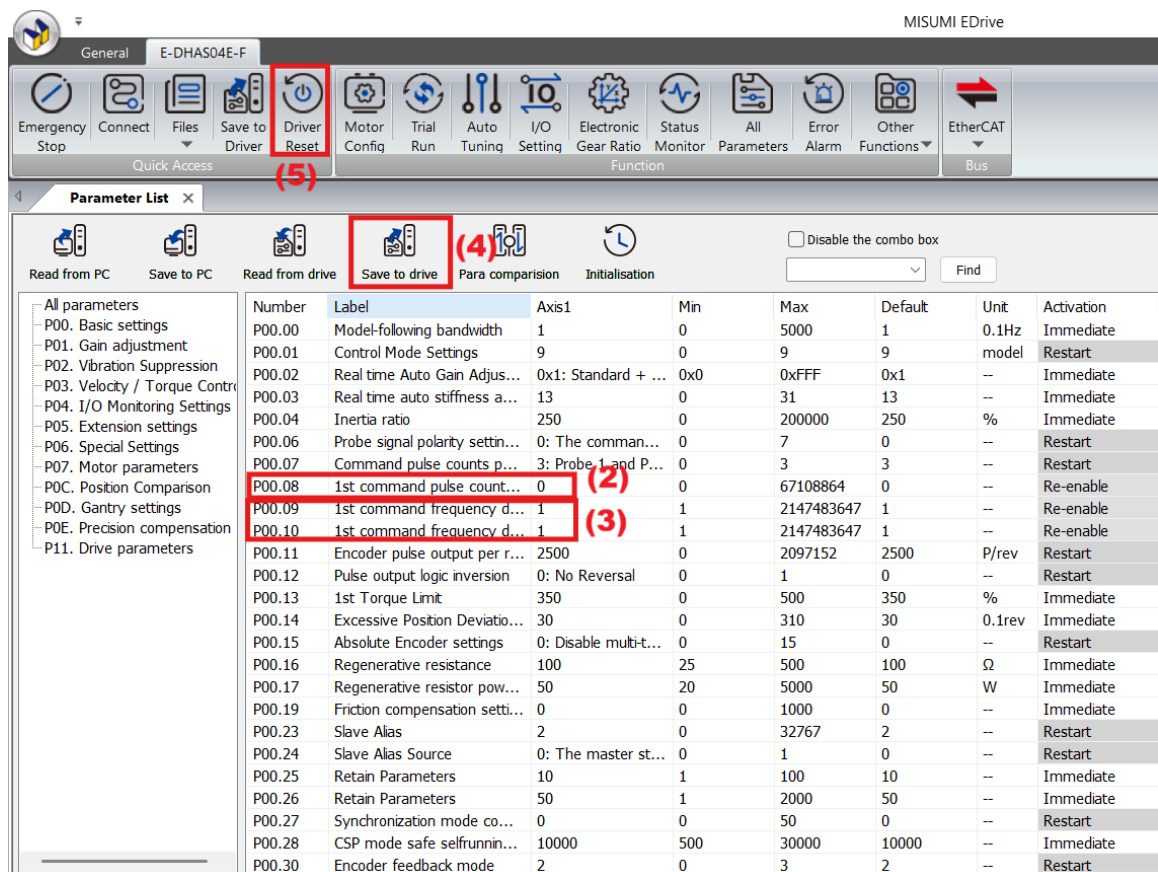
**OK**    **(5)**

### Method 3: Change through 'All Parameters' in EDrive software

- Click 'All Parameters'.



2. Modify (2) P00.08 '1<sup>st</sup> Command Pulses Count per Revolution'. If setting scaling ratio, first set (2) P00.08 to 0, then configure (3) P00.09 '1<sup>st</sup> Command Frequency Divider/Multiplier Numerator' and P00.10 '1<sup>st</sup> Command Frequency Divider/Multiplier Denominator'. Click (4) 'Save to drive', then (5) 'Driver Reset'.



#### Method 4: Send Object Dictionary from Host

When  $P00.08 \neq 0$ , parameter P00.08 is effective. When  $P00.08 = 0$ , Object 6092-01h is effective.

If Host cannot recognize parameter P00.08, need to set P00.08 as 0 and use 6092-01h.

The range of Electronic Gear Ratio is between 0.001 to 8000 (23-bit encoder) or 0.001 to 125 (17-bit encoder). When setting the number of command pulses required per motor revolution, the following formula must be satisfied:

$$\text{Command pulses per motor revolution} \geq \text{Encoder pulses per revolution} / 8000$$

608Fh is Internal encoder resolution (read-only). 6092-01h is Command pulses per motor revolution (effective after disabling/enabling). 6091-01h and 6091-02h are Real-time effective scaling parameters.

When 6092-01h  $\neq$  608Fh:

Electronic Gear Ratio = Encoder resolution/6092-01h

When 6092-01h = 608Fh:

Electronic Gear Ratio = 6092-01h/6092-02h

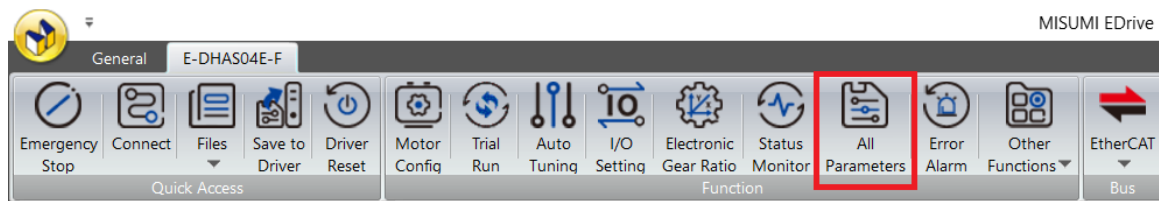
## 6. Parameter Setting

### Method 1: Set with Front Panel

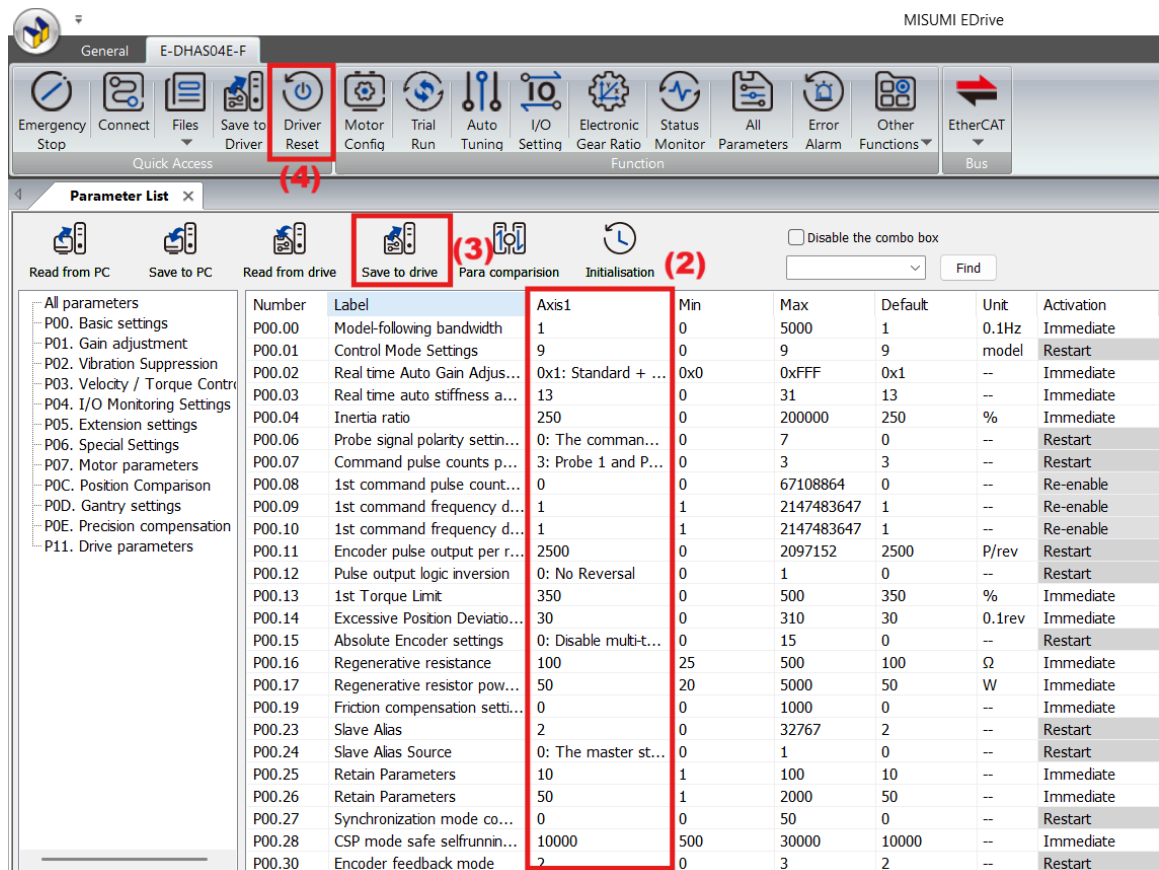
After the servo drive is powered on, Press button 'S', the display shows 'd34 5E'. Press button 'M', the display shows 'P00.00'. Scroll to the parameter code you want to adjust and press button 'S' again to enter the parameter setting page.

### Method 2: Change through 'All Parameters' in EDrive software

1. Click 'All Parameters'.



2. In the (2) 'Axis 1' column, modify the desired parameter. After modification, click (3) 'Save to drive'. Then click (4) 'Driver Reset' to apply the changes.



### Method 3: Change through EtherCAT BUS from Host

1. Connect the PLC to the servo driver.

2. Run the PLC.
3. In the programming software, use EtherCAT communication to monitor and control PDO mapping parameters.

| Object Index      | Object Sub-index      | Mapping Content | Mapping Content Break Down |           |             | Mapping Content Name            |
|-------------------|-----------------------|-----------------|----------------------------|-----------|-------------|---------------------------------|
|                   |                       |                 | Index                      | Sub-index | bits        |                                 |
| RXPDO1<br>(1600h) | 01h                   | 60400010h       | 6040h                      | 00h       | 10h (16bit) | 01h                             |
|                   | 02h                   | 607A0020h       | 607Ah                      | 00h       | 20h (32bit) | 02h                             |
|                   | 03h                   | 60B80010h       | 60B8h                      | 00h       | 10h (16bit) | 03h                             |
| RXPDO2<br>(1601h) | 01h                   | 60400010h       | 6040h                      | 00h       | 10h (16bit) | Control Word                    |
|                   | 02h                   | 60FF0020h       | 60FFh                      | 00h       | 20h (32bit) | Target Velocity                 |
|                   | 03h                   | 60B20010h       | 60B2h                      | 00h       | 10h (16bit) | Torque Offset                   |
| RXPDO3<br>(1602h) | 01h                   | 60400010h       | 6040h                      | 00h       | 10h (16bit) | Control Word                    |
|                   | 02h                   | 60710010h       | 6071h                      | 00h       | 10h (16bit) | Target Torque                   |
|                   | 03h                   | 60870020h       | 6087h                      | 00h       | 20h (32bit) | Torque Slop                     |
| RXPDO4<br>(1603h) | 01h                   | 60400010h       | 6040h                      | 00h       | 10h (16bit) | Control Word                    |
|                   | 02h                   | 60980008h       | 6098h                      | 00h       | 08h (8bit)  | Homing Method                   |
|                   | 03h                   | 60990120h       | 6099h                      | 01h       | 20h (32bit) | Speed During Search For Switch  |
|                   | 04h                   | 60990220h       | 6099h                      | 02h       | 20h (32bit) | Speed During Search For Zero    |
|                   | 05h                   | 609A0020h       | 609Ah                      | 00h       | 20h (32bit) | Homing Acceleration             |
|                   | 06h                   | 607C0020h       | 607Ch                      | 00h       | 20h (32bit) | Home Offset                     |
|                   | 07h                   | 60600008h       | 6060h                      | 00h       | 08h (8bit)  | Mode of Operation               |
| TXPDO1<br>(1A00h) | 01h                   | 603F0010h       | 603Fh                      | 00h       | 10h (16bit) | Error Code                      |
|                   | 02h                   | 60410010h       | 6041h                      | 00h       | 10h (16bit) | Status Word                     |
|                   | 03h                   | 60610008h       | 6061h                      | 00h       | 08h (8bit)  | Mode of Operation Display       |
|                   | 04h                   | 60640020h       | 6064h                      | 00h       | 20h (32bit) | Position Actual Value           |
|                   | 05h                   | 60B90010h       | 60B9h                      | 00h       | 10h (16bit) | Touch Probe Status              |
|                   | 06h                   | 60BA0020h       | 60BAh                      | 00h       | 20h (32bit) | Touch Probe 1 Positive Position |
|                   | 07h                   | 60FD0020h       | 60FDh                      | 00h       | 20h (32bit) | Digital Inputs                  |
| TXPOD2<br>(1A01h) | No Mapping by Default |                 |                            |           |             |                                 |

## 7. Controller Axis Configuration Precautions

EtherCAT ESI file is contained in the EDrive software zip file.

E-RME\_V1.01\_EtherCAT\_ESI file

| <input type="checkbox"/> Name                                                                          | Date modified     | Type                 | Size   |
|--------------------------------------------------------------------------------------------------------|-------------------|----------------------|--------|
|  EDriver_v1.1.0_alpha | 7/1/2025 11:44 AM | File folder          |        |
|  E_DFASE_V1.02.xml    | 6/26/2025 5:12 PM | Microsoft Edge HT... | 200 KB |

ESI file predefined PDO

RPDO1: Position control mode related PDOs

RPDO2: Velocity control mode related PDOs

RPDO3: Torque control mode related PDOs

RPDO4: Homing mode related PDOs

TPDO1: Controller feedback message related PDOs

Example: If use positioning control mode, click RPDO1 and TPDO1, then can achieve positioning control.

## 8. PLC EtherCAT Communication Example

PLC monitor and modify Servo Driver Object Dictionary via EtherCAT.

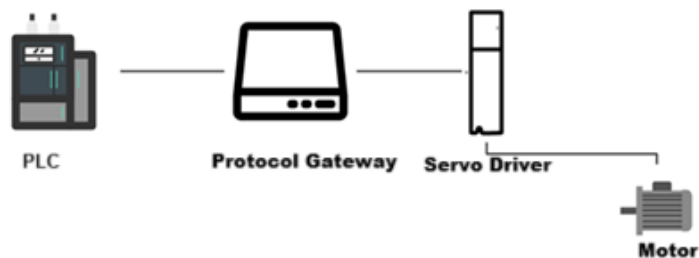
Hardware Used in This Case:

Servo Drive: Misumi E-DHAS01E-F

PLC: Siemens S7-1200, TIA Portal V20

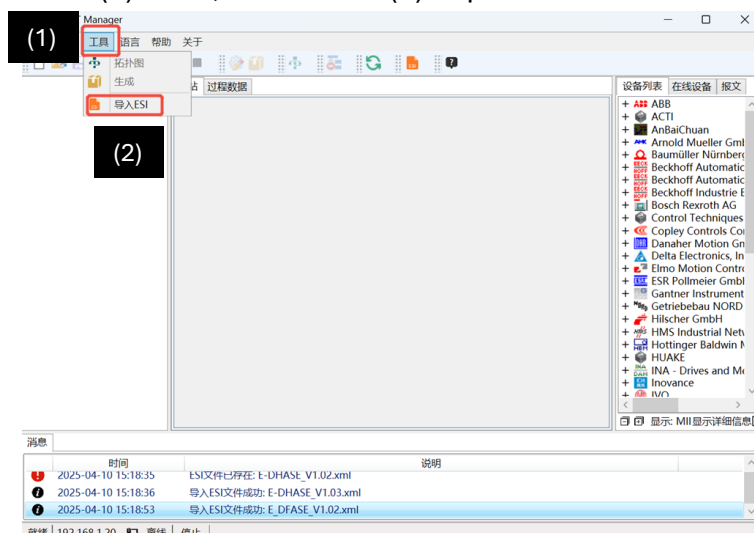
Protocol Conversion Gateway: KJ Smart KJ-PN-ECATM

### System wiring diagram



### EtherCAT Manager Software Configuration

1. Click (1) Tools, then select (2) Import ESI.



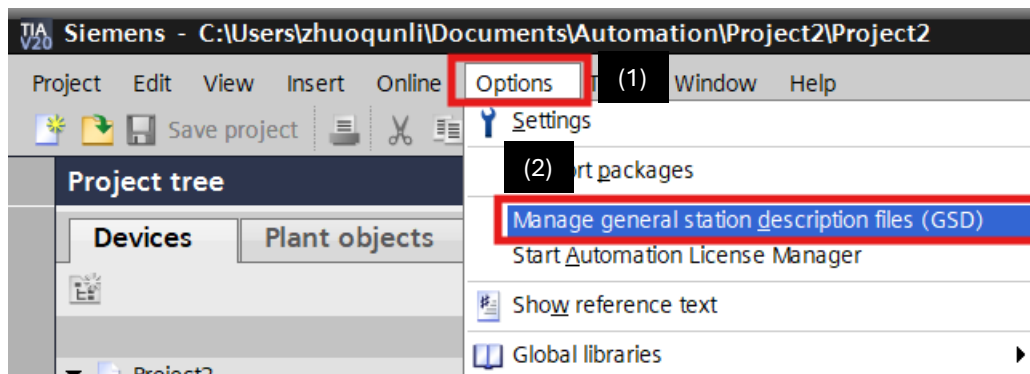
2. Import the axis configuration file.

Note: Run the software as administrator when importing ESI files.

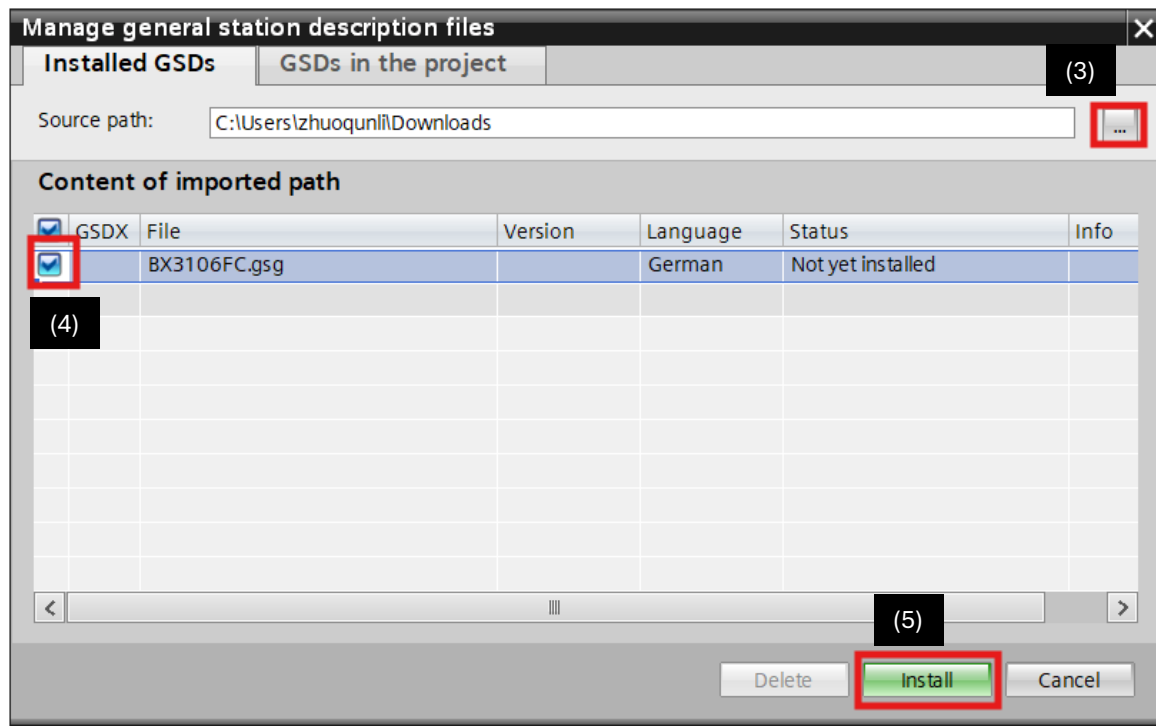
| <input type="checkbox"/> Name | Date modified      | Type                 | Size   |
|-------------------------------|--------------------|----------------------|--------|
| EDriver_v1.1.0_alpha          | 6/30/2025 10:55 AM | File folder          |        |
| E-DHASE_V1.03.xml             | 6/26/2025 5:06 PM  | Microsoft Edge HT... | 157 KB |

## TIA Portal (Siemens STEP 7) Configuration

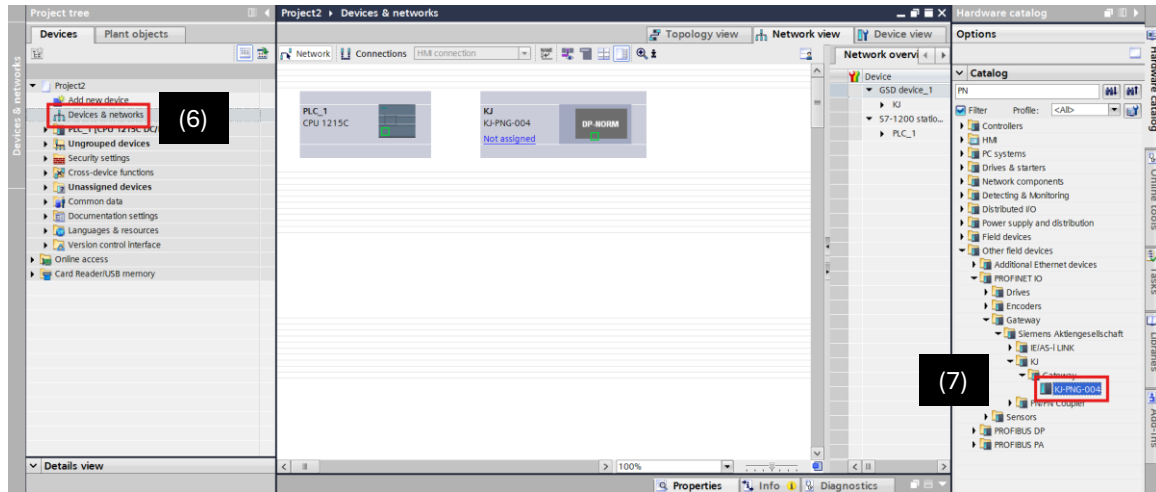
1. In TIA Portal, install the GSD file for the protocol conversion gateway: Click (1) Options, then (2) Manage General Station Description Files (GSD).



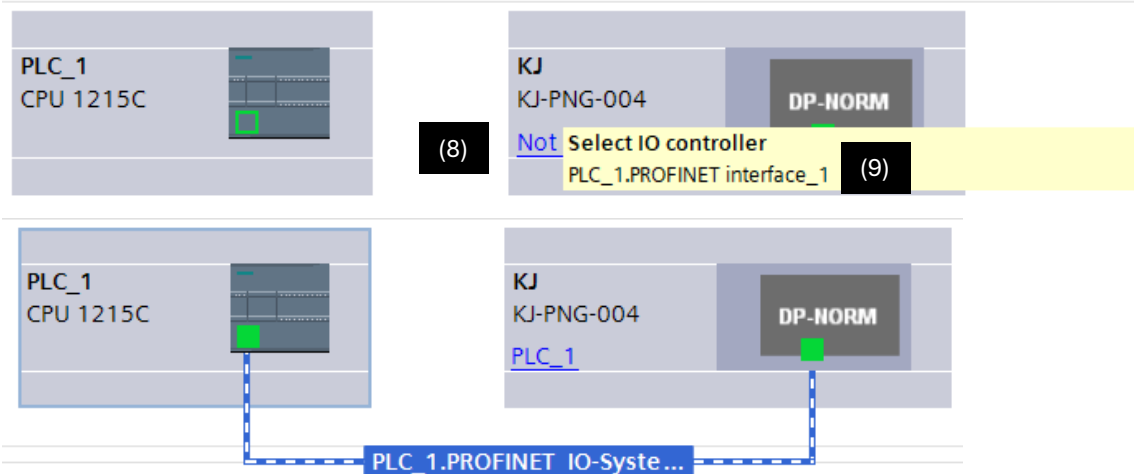
2. Click (3) Browse to locate the downloaded GSD file and click 'Install'. Check (4) and click (5) 'Install'.



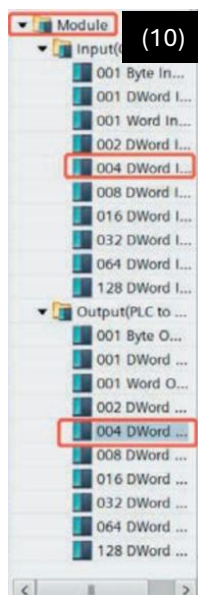
- Open (6) Devices and Networks, find added device, and double click to add the protocol conversion device.



- Click (8) 'Not assigned', then select (9) IO Controller to link the PLC with the gateway.



- Double-click the protocol conversion device, then in the right panel. Click (10) Module, select Input 004 DWord and Output 004 DWord to view their addresses.



|                    |   |      |         |                  |       |
|--------------------|---|------|---------|------------------|-------|
| PN-ECAT            | 0 | 0    |         | PN-ECAT          | ETxxx |
| Interface          | 0 | 0 X1 |         | PN-ECAT          |       |
| 004 DWord Input_1  | 0 | 1    | 68...83 | 004 DWord Input  |       |
| 004 DWord Output_1 | 0 | 2    | 68...83 | 004 DWord Output |       |

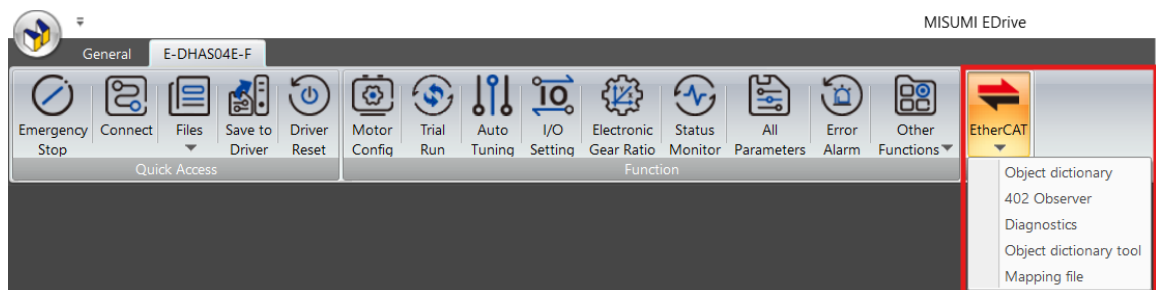
## Servo ON steps

Write the values of PDO parameter 6041 in the following order: 6—7—15

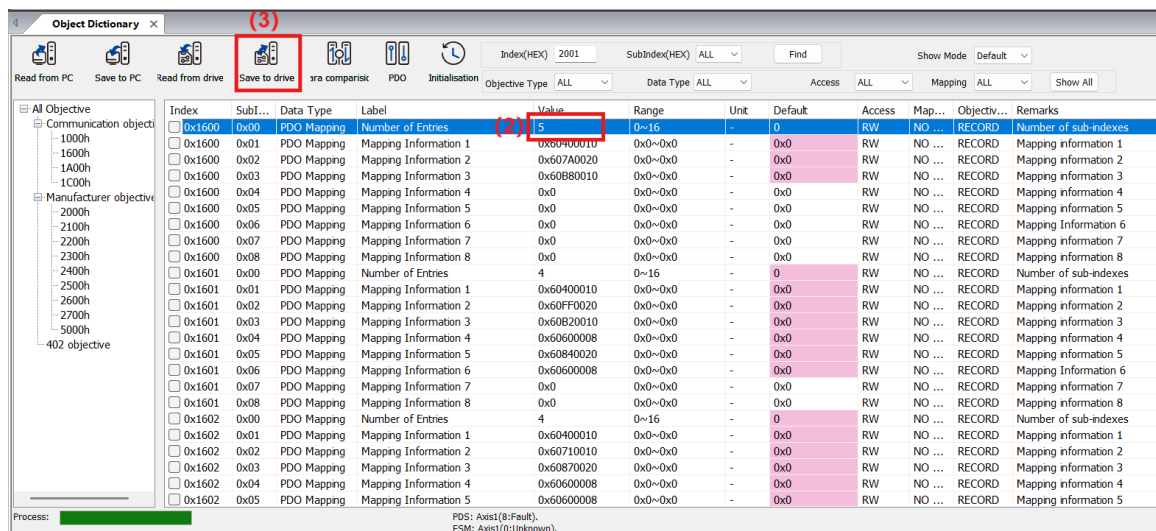
| Convert Command | Combination of bit 7 and 0~3 |                  |               |                          | 0: Start | 6040h Typical Value | 402 State Machine Transition |
|-----------------|------------------------------|------------------|---------------|--------------------------|----------|---------------------|------------------------------|
|                 | 7: Fault reset               | 3: Servo running | 2: Quick stop | 1: Main circuit power on |          |                     |                              |
| Power OFF       | 0                            | X                | 1             | 1                        | 0        | 0006h               | 2, 6, 8                      |
| Start           | 0                            | 0                | 1             | 1                        | 1        | 0007h               | 3                            |
| Start           | 0                            | 1                | 1             | 1                        | 1        | 000Fh               | 3                            |

## Writing Parameter Values

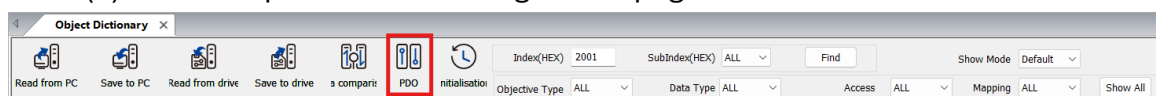
1. Open the debugging software and connect to the servo drive. Click 'EtherCAT' and open 'Object Dictionary'.



2. In (2) 'Value', enter the number of parameters to read, then click (3) 'Save to drive'.



3. Click (4) 'PDO' to open the PDO configuration page.



4. Click (5) 'Receive PDO 1', then (6) 'Add'.

Tip: Double click to edit PDO

Tip: EtherCAT can only check two groups per axis

5. Select the sub-index to add (7), then click (8) 'OK'.

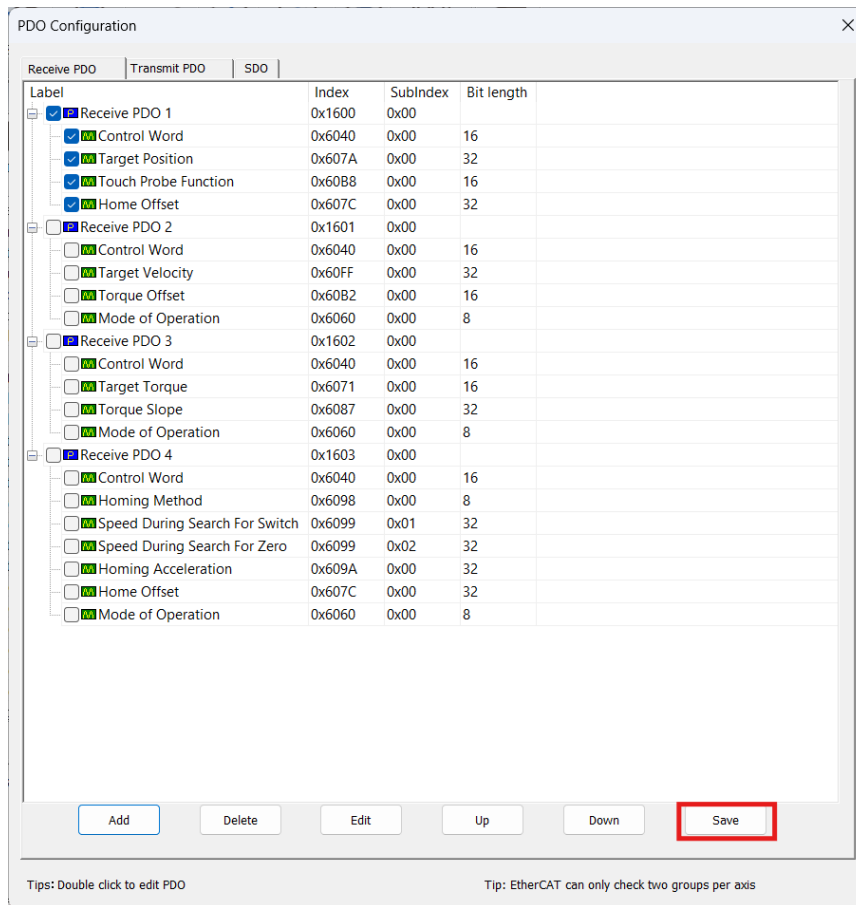
Label : Home Offset

Index : 0x607C

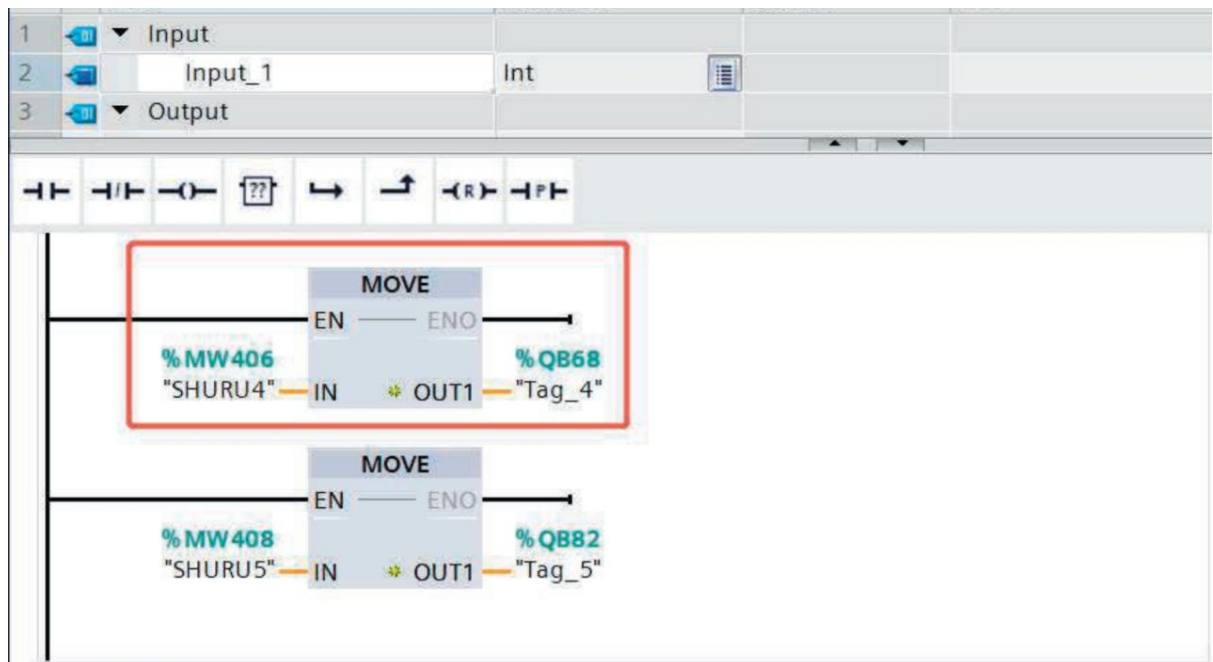
SubIndex : 00

Bit length : 32

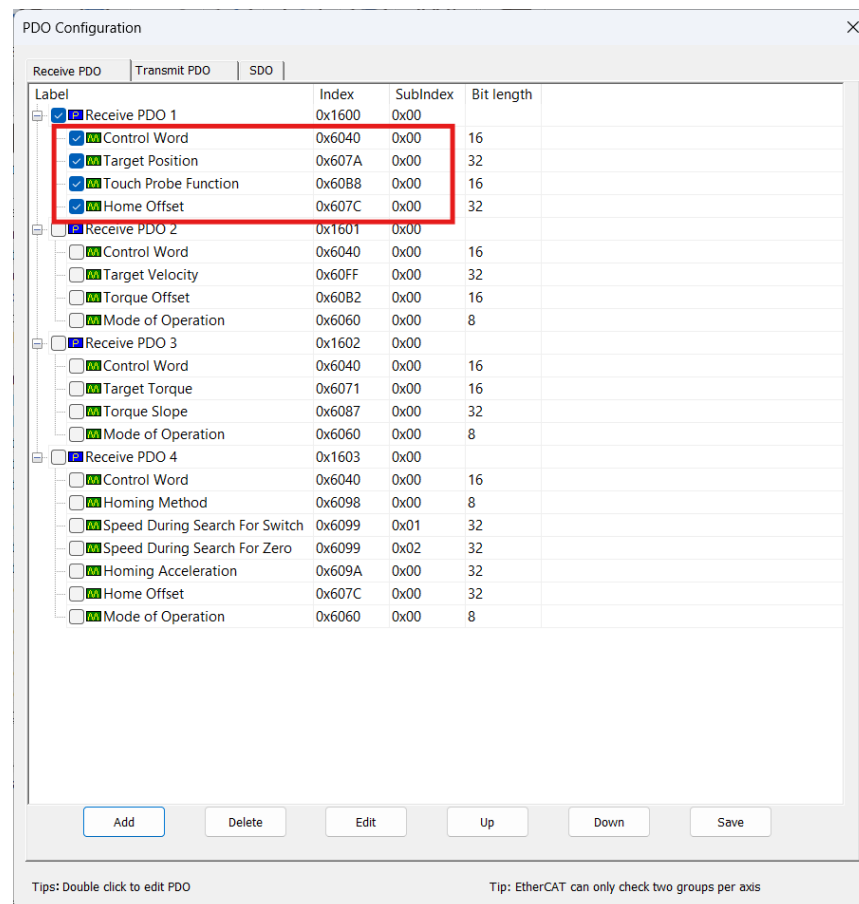
- Click (9) 'Save' to write into driver.



- In TIA Portal, create a new INT variable as input. Use a MOVE instruction to write values into the servo drive parameters.



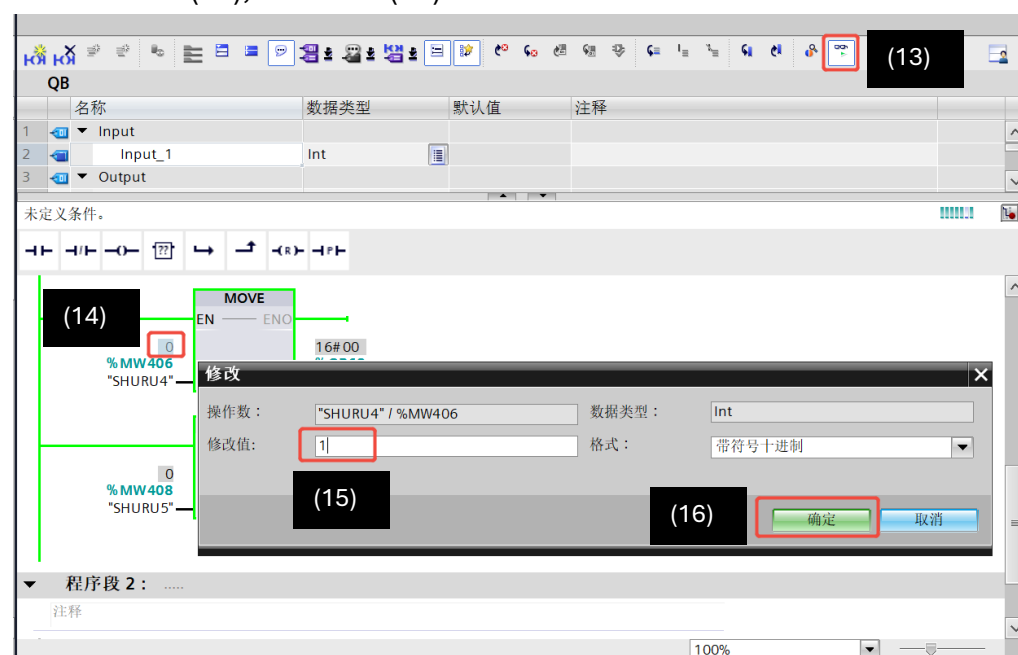
Addresses are arranged according to the PDO order.



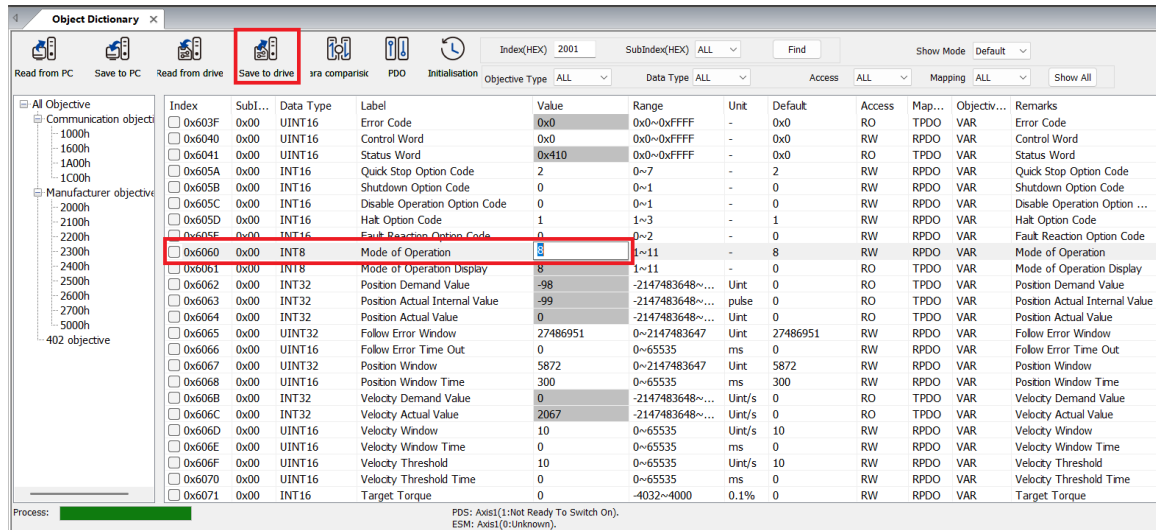
8. Click (10) Download Program to CPU, then (11) Go Online, and (12) Run CPU.



9. Click (13) Monitor Program, double-click (14) to modify parameter values, enter the new value in (15), and click (16) Confirm.

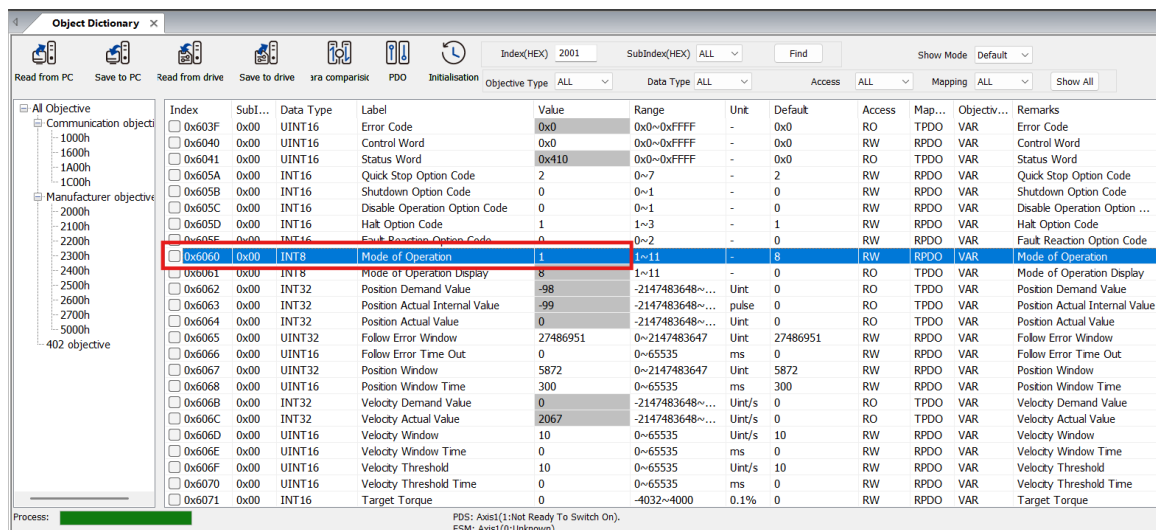


10. In this case, the PDO mapped to %68 is 0x6060. You can see the current value is 8. Click (17) 'Read from drive' to write the parameter value from the PLC to the drive.



| Index  | SubIndex | Data Type | Label                          | Value    | Range           | Unit   | Default  | Access | Map... | Objectiv... | Remarks                        |
|--------|----------|-----------|--------------------------------|----------|-----------------|--------|----------|--------|--------|-------------|--------------------------------|
| 0x603F | 0x00     | UINT16    | Error Code                     | 0x0      | 0x0~0xFFFF      | -      | 0x0      | RO     | TPDO   | VAR         | Error Code                     |
| 0x6040 | 0x00     | UINT16    | Control Word                   | 0x0      | 0x0~0xFFFF      | -      | 0x0      | RW     | RPDO   | VAR         | Control Word                   |
| 0x6041 | 0x00     | UINT16    | Status Word                    | 0x410    | 0x0~0xFFFF      | -      | 0x0      | RO     | TPDO   | VAR         | Status Word                    |
| 0x605A | 0x00     | INT16     | Quick Stop Option Code         | 2        | 0~7             | -      | 2        | RW     | RPDO   | VAR         | Quick Stop Option Code         |
| 0x605B | 0x00     | INT16     | Shutdown Option Code           | 0        | 0~1             | -      | 0        | RW     | RPDO   | VAR         | Shutdown Option Code           |
| 0x605C | 0x00     | INT16     | Disable Operation Option Code  | 0        | 0~1             | -      | 0        | RW     | RPDO   | VAR         | Disable Operation Option ...   |
| 0x605D | 0x00     | INT16     | Halt Option Code               | 1        | 1~3             | -      | 1        | RW     | RPDO   | VAR         | Halt Option Code               |
| 0x605E | 0x00     | INT16     | Fault Reaction Option Code     | 0        | 0~2             | -      | 0        | RW     | RPDO   | VAR         | Fault Reaction Option Code     |
| 0x6060 | 0x00     | INT8      | Mode of Operation              | 8        | 1~11            | -      | 8        | RW     | RPDO   | VAR         | Mode of Operation              |
| 0x6061 | 0x00     | INT8      | Mode of Operation Display      | 8        | 1~11            | -      | 0        | RO     | TPDO   | VAR         | Mode of Operation Display      |
| 0x6062 | 0x00     | INT32     | Position Demand Value          | -98      | -2147483648~... | Unit   | 0        | RO     | TPDO   | VAR         | Position Demand Value          |
| 0x6063 | 0x00     | INT32     | Position Actual Internal Value | -99      | -2147483648~... | pulse  | 0        | RO     | TPDO   | VAR         | Position Actual Internal Value |
| 0x6064 | 0x00     | INT32     | Position Actual Value          | 0        | -2147483648~... | Unit   | 0        | RO     | TPDO   | VAR         | Position Actual Value          |
| 0x6065 | 0x00     | UINT32    | Follow Error Window            | 27486951 | 0~2147483647    | Unit   | 27486951 | RW     | RPDO   | VAR         | Follow Error Window            |
| 0x6066 | 0x00     | UINT16    | Follow Error Time Out          | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Follow Error Time Out          |
| 0x6067 | 0x00     | UINT32    | Position Window                | 5872     | 0~2147483647    | Unit   | 5872     | RW     | RPDO   | VAR         | Position Window                |
| 0x6068 | 0x00     | UINT16    | Position Window Time           | 300      | 0~65535         | ms     | 300      | RW     | RPDO   | VAR         | Position Window Time           |
| 0x606B | 0x00     | INT32     | Velocity Demand Value          | 0        | -2147483648~... | Unit/s | 0        | RO     | TPDO   | VAR         | Velocity Demand Value          |
| 0x606C | 0x00     | INT32     | Velocity Actual Value          | 2067     | -2147483648~... | Unit/s | 0        | RO     | TPDO   | VAR         | Velocity Actual Value          |
| 0x606D | 0x00     | UINT16    | Velocity Window                | 10       | 0~65535         | Unit/s | 10       | RW     | RPDO   | VAR         | Velocity Window                |
| 0x606E | 0x00     | UINT16    | Velocity Window Time           | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Velocity Window Time           |
| 0x606F | 0x00     | UINT16    | Velocity Threshold             | 10       | 0~65535         | Unit/s | 10       | RW     | RPDO   | VAR         | Velocity Threshold             |
| 0x6070 | 0x00     | UINT16    | Velocity Threshold Time        | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Velocity Threshold Time        |
| 0x6071 | 0x00     | INT16     | Target Torque                  | 0        | -4032~4000      | 0.1%   | 0        | RW     | RPDO   | VAR         | Target Torque                  |

11. The value of 0x6060 changes to 1, indicating the parameter has been successfully written.



| Index  | SubIndex | Data Type | Label                          | Value    | Range           | Unit   | Default  | Access | Map... | Objectiv... | Remarks                        |
|--------|----------|-----------|--------------------------------|----------|-----------------|--------|----------|--------|--------|-------------|--------------------------------|
| 0x603F | 0x00     | UINT16    | Error Code                     | 0x0      | 0x0~0xFFFF      | -      | 0x0      | RO     | TPDO   | VAR         | Error Code                     |
| 0x6040 | 0x00     | UINT16    | Control Word                   | 0x0      | 0x0~0xFFFF      | -      | 0x0      | RW     | RPDO   | VAR         | Control Word                   |
| 0x6041 | 0x00     | UINT16    | Status Word                    | 0x410    | 0x0~0xFFFF      | -      | 0x0      | RO     | TPDO   | VAR         | Status Word                    |
| 0x605A | 0x00     | INT16     | Quick Stop Option Code         | 2        | 0~7             | -      | 2        | RW     | RPDO   | VAR         | Quick Stop Option Code         |
| 0x605B | 0x00     | INT16     | Shutdown Option Code           | 0        | 0~1             | -      | 0        | RW     | RPDO   | VAR         | Shutdown Option Code           |
| 0x605C | 0x00     | INT16     | Disable Operation Option Code  | 0        | 0~1             | -      | 0        | RW     | RPDO   | VAR         | Disable Operation Option ...   |
| 0x605D | 0x00     | INT16     | Halt Option Code               | 1        | 1~3             | -      | 1        | RW     | RPDO   | VAR         | Halt Option Code               |
| 0x605E | 0x00     | INT16     | Fault Reaction Option Code     | 0        | 0~2             | -      | 0        | RW     | RPDO   | VAR         | Fault Reaction Option Code     |
| 0x6060 | 0x00     | INT8      | Mode of Operation              | 1        | 1~11            | -      | 8        | RW     | RPDO   | VAR         | Mode of Operation              |
| 0x6061 | 0x00     | INT8      | Mode of Operation Display      | 8        | 1~11            | -      | 0        | RO     | TPDO   | VAR         | Mode of Operation Display      |
| 0x6062 | 0x00     | INT32     | Position Demand Value          | -98      | -2147483648~... | Unit   | 0        | RO     | TPDO   | VAR         | Position Demand Value          |
| 0x6063 | 0x00     | INT32     | Position Actual Internal Value | -99      | -2147483648~... | pulse  | 0        | RO     | TPDO   | VAR         | Position Actual Internal Value |
| 0x6064 | 0x00     | INT32     | Position Actual Value          | 0        | -2147483648~... | Unit   | 0        | RO     | TPDO   | VAR         | Position Actual Value          |
| 0x6065 | 0x00     | UINT32    | Follow Error Window            | 27486951 | 0~2147483647    | Unit   | 27486951 | RW     | RPDO   | VAR         | Follow Error Window            |
| 0x6066 | 0x00     | UINT16    | Follow Error Time Out          | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Follow Error Time Out          |
| 0x6067 | 0x00     | UINT32    | Position Window                | 5872     | 0~2147483647    | Unit   | 5872     | RW     | RPDO   | VAR         | Position Window                |
| 0x6068 | 0x00     | UINT16    | Position Window Time           | 300      | 0~65535         | ms     | 300      | RW     | RPDO   | VAR         | Position Window Time           |
| 0x606B | 0x00     | INT32     | Velocity Demand Value          | 0        | -2147483648~... | Unit/s | 0        | RO     | TPDO   | VAR         | Velocity Demand Value          |
| 0x606C | 0x00     | INT32     | Velocity Actual Value          | 2067     | -2147483648~... | Unit/s | 0        | RO     | TPDO   | VAR         | Velocity Actual Value          |
| 0x606D | 0x00     | UINT16    | Velocity Window                | 10       | 0~65535         | Unit/s | 10       | RW     | RPDO   | VAR         | Velocity Window                |
| 0x606E | 0x00     | UINT16    | Velocity Window Time           | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Velocity Window Time           |
| 0x606F | 0x00     | UINT16    | Velocity Threshold             | 10       | 0~65535         | Unit/s | 10       | RW     | RPDO   | VAR         | Velocity Threshold             |
| 0x6070 | 0x00     | UINT16    | Velocity Threshold Time        | 0        | 0~65535         | ms     | 0        | RW     | RPDO   | VAR         | Velocity Threshold Time        |
| 0x6071 | 0x00     | INT16     | Target Torque                  | 0        | -4032~4000      | 0.1%   | 0        | RW     | RPDO   | VAR         | Target Torque                  |