HIWIN® MIKROSYSTEM

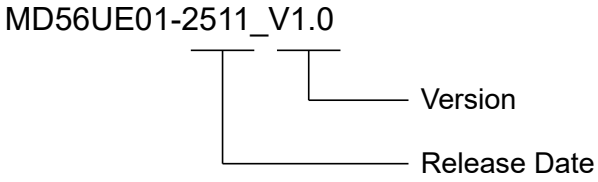
Application Note

E Series EtherCAT Drive Complete Setup with INOVANCE InoProShop

www.hiwinmikro.tw
MD56UE01-2511_V1.0

Revision History

The version of the manual is also indicated on the bottom of the front cover.



Release Date	Version	Applicable Product	Revision Contents
Nov. 20th, 2025	1.0	E Series EtherCAT Drive	First edition.

Related Documents

Through related documents, users can quickly understand the positioning of this manual and the correlation between manuals and products. Go to HIWIN MIKROSYSTEM's official website → Download → Manual Overview for details (https://www.hiwinmikro.tw/Downloads/ManualOverview_EN.htm).

Preface

This manual explains the operation of controller software InoProShop when E series EtherCAT drive is used with INOVANCE AC800 series controller. The contents in this manual, including project creation of controller, communication setup, parameters setup, test run, creation and operation of function blocks, are arranged in accordance with the procedure of complete machine setup. For detailed information on E series servo drive, please refer to the related user manuals.

Specifications of Software/Hardware

Name	Version of Software/Firmware
E1 Series EtherCAT Drive	Software (Thunder): 1.13.7.0 or above Firmware: 2.13.6 or above ESI file: HIWINMIKROSYSTEM_ED1F_20250107 or above
E2 Series EtherCAT Drive	Software (Thunder): 1.13.7.0 or above Firmware: 3.13.6 or above ESI file: HIWINMIKROSYSTEM_ED2F_20250107 or above
INOVANCE AC802	Software (InoProShop): V1.8.1.3 or above Firmware: V1.26.11.4 or above

Table of Contents

1. Communication and Module Setup

1.1 Create new project

1. Open InoProShop and click **New project**.

Figure 1.1.1

2. Select controller model, key in project name, select archive path, and click **OK**.

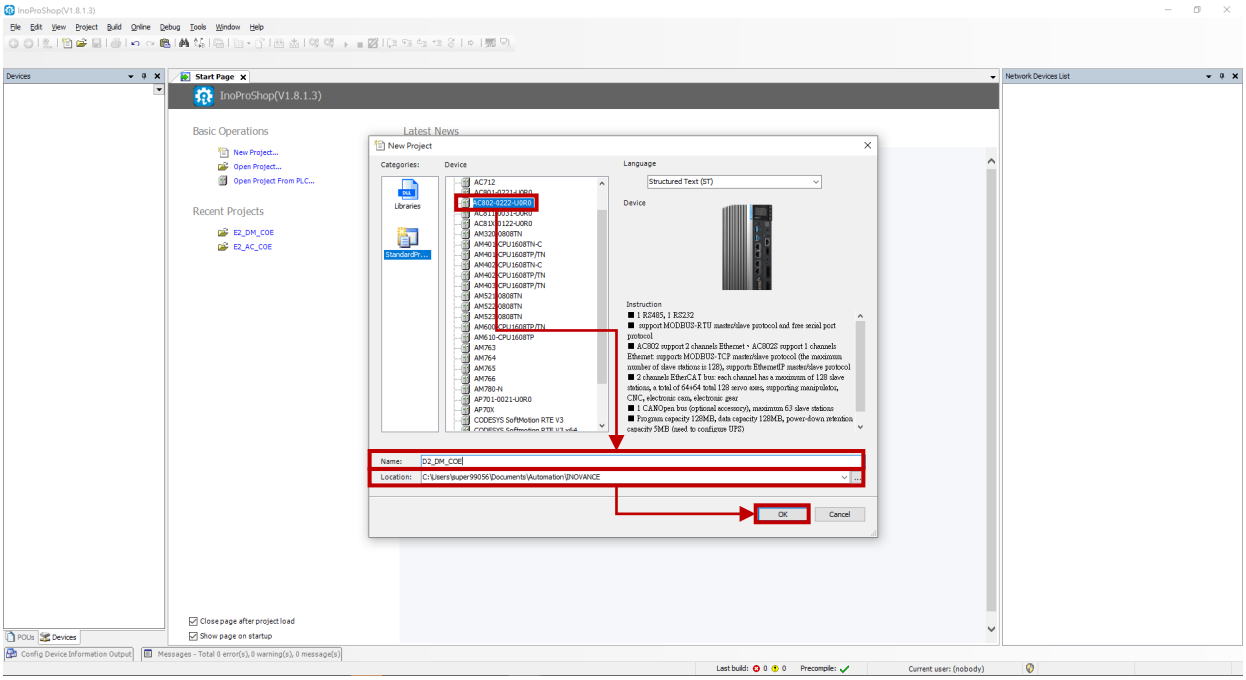


Figure 1.1.2

3. The new project will be successfully created.

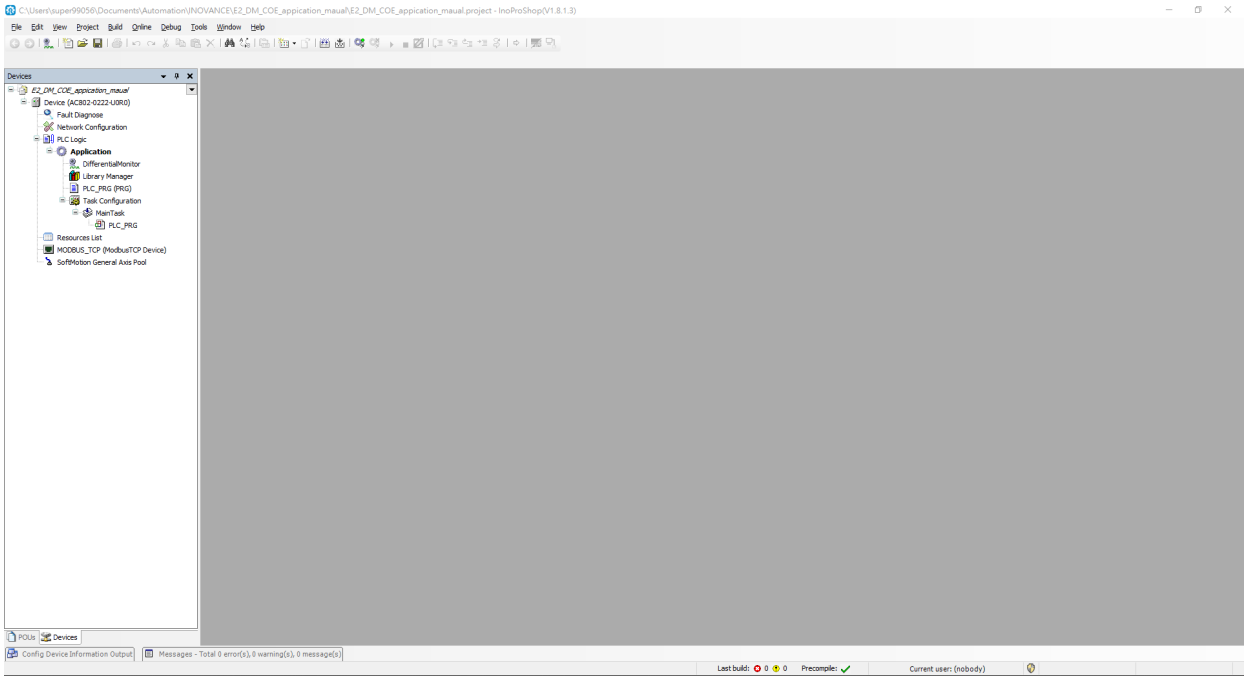


Figure 1.1.3

1.2 Load ESI file

1. Double-click **Network Configuration** and click **Import ECT File** to load E series servo drive's ESI file.

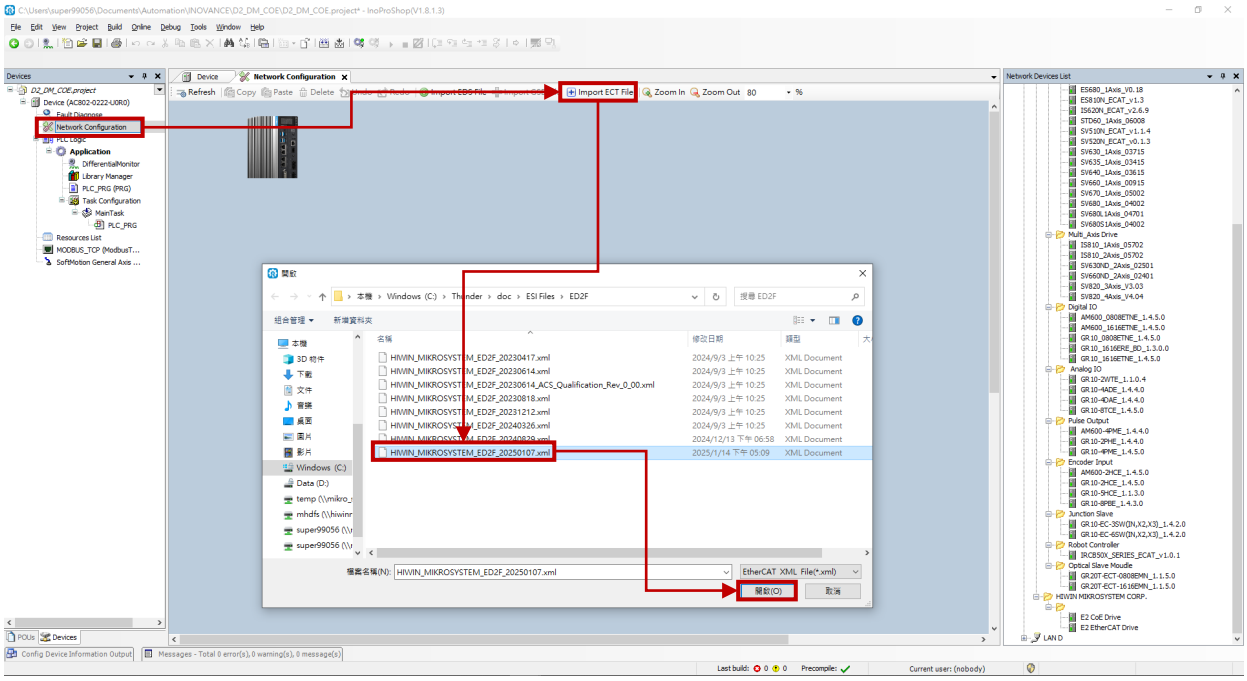


Figure 1.2.1

2. When the loading is completed, the devices of E series servo drives will be displayed at the bottom of "Network Devices List" window.

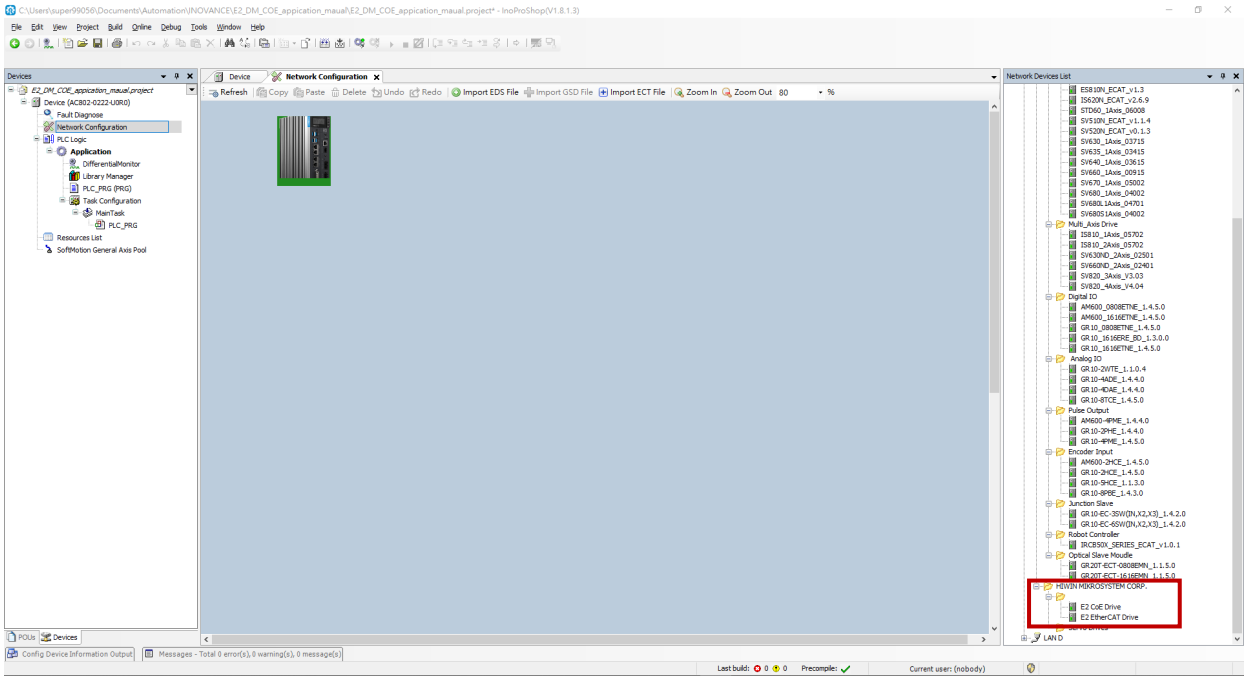


Figure 1.2.2

1.3 Configuration of network connection

1. In “Network Configuration” window, click the controller icon and select the EtherCAT network based on the actual device connection. Here takes “EtherCAT(LAN C)” as an example.

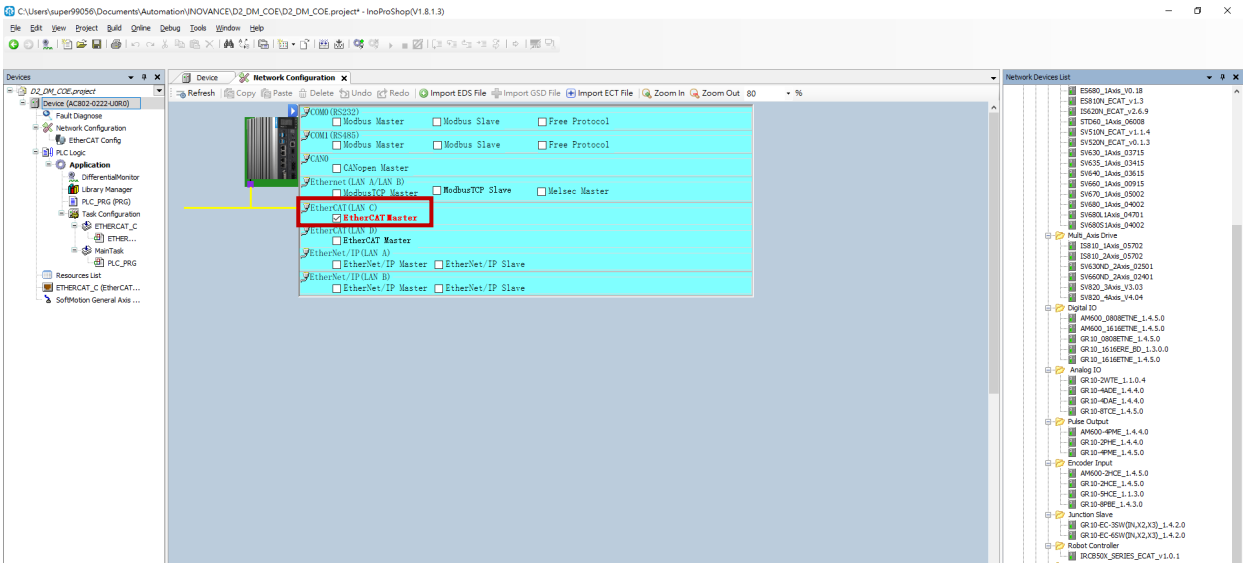


Figure 1.3.1

2. Double-click the drive device at the bottom of “Network Devices List” window. The device will be automatically added to the network configuration window. Here takes “E2 CoE Drive” as an example.

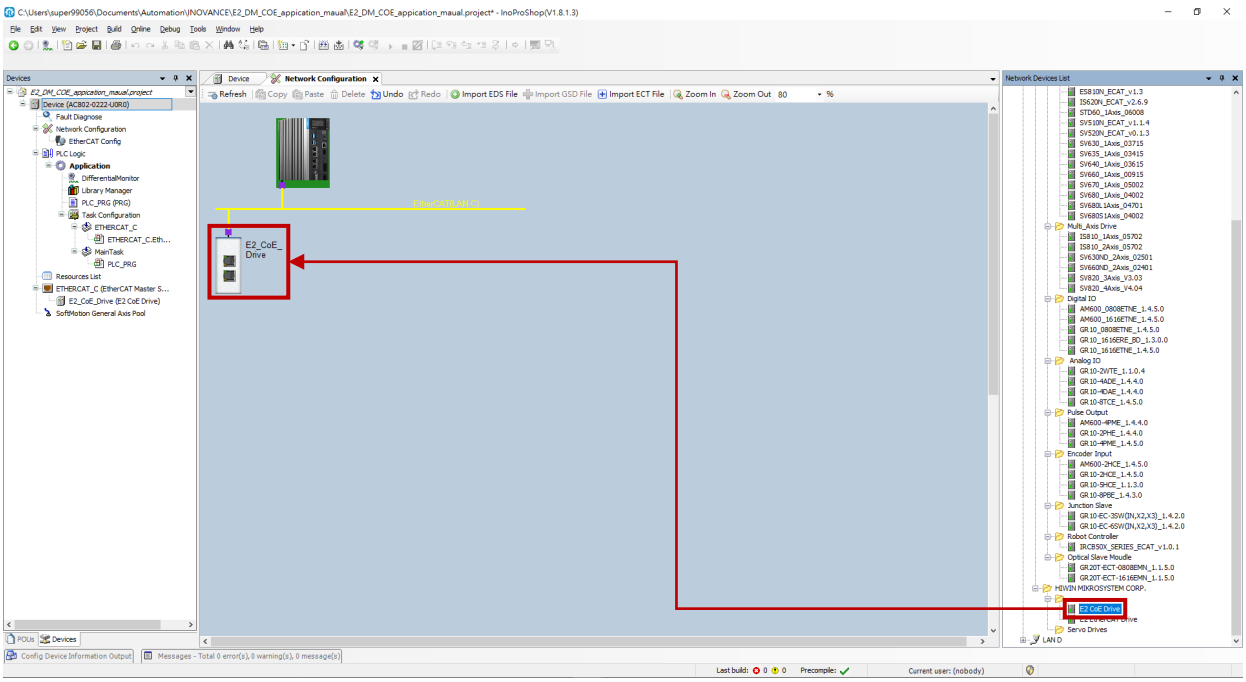


Figure 1.3.2

1.4 Connect device to controller

1. Double-click **Device** and click **Scan network…** in “Communication Settings” tab.

   Note:

   (1) The controller’s default IP address for LAN A is 192.168.1.88, and for LAN B is 192.168.2.88. Set the computer’s IP address based on the actual configuration to ensure the device can be correctly identified.

   (2) If unsure about the controller’s IP setting, check the information via the controller’s panel.

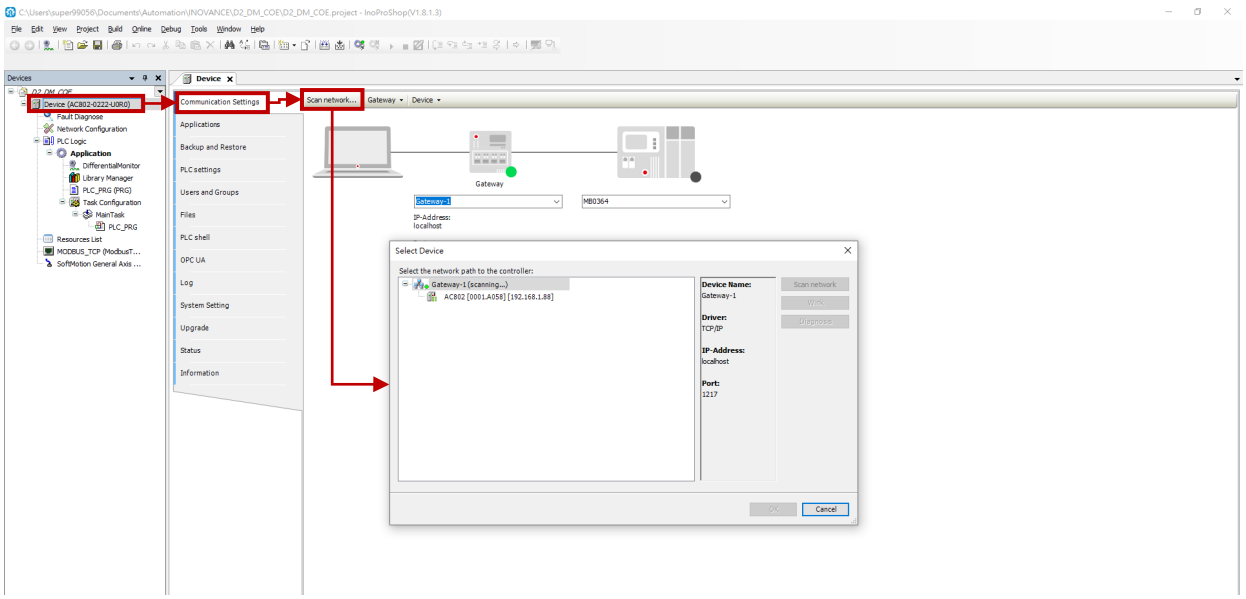


Figure 1.4.1

2. Select the device identified in “Select Device” window and click **OK**.

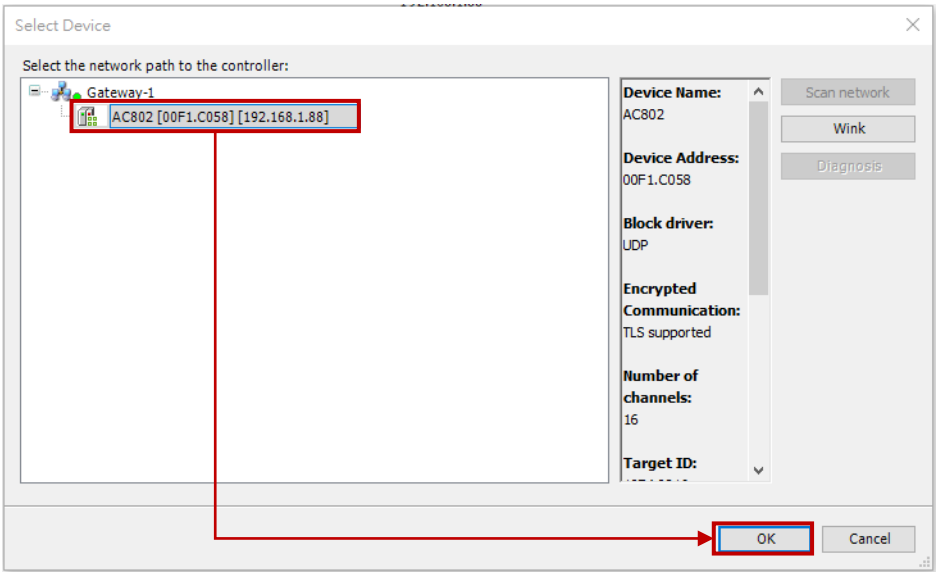


Figure 1.4.2

3. Ensure that the controller device displays a green light. It indicates that the controller has been successfully identified.

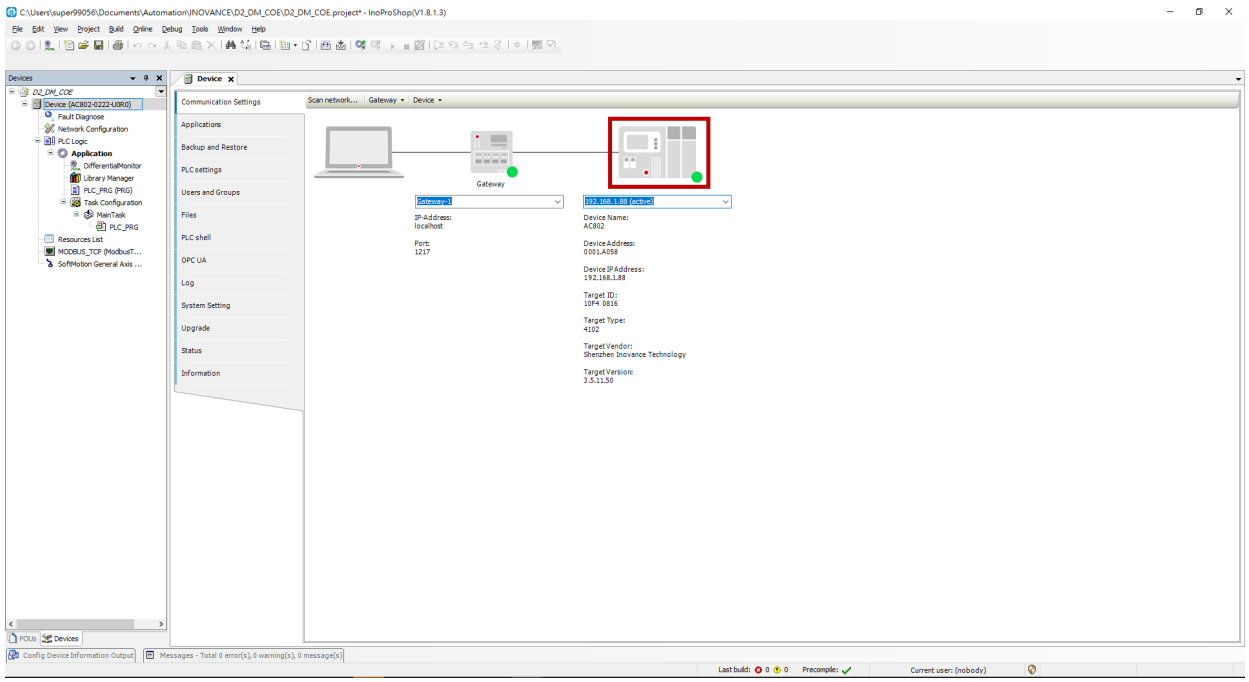


Figure 1.4.3

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2. Parameters Setup

2.1 Add CiA402

Right-click **E2_CoE_Drive (E2 CoE Drive)** on the main screen and select **Add CiA402 Axis.**.
When it is done, the device of Axis (Axis) will be generated below E2_CoE_Drive.

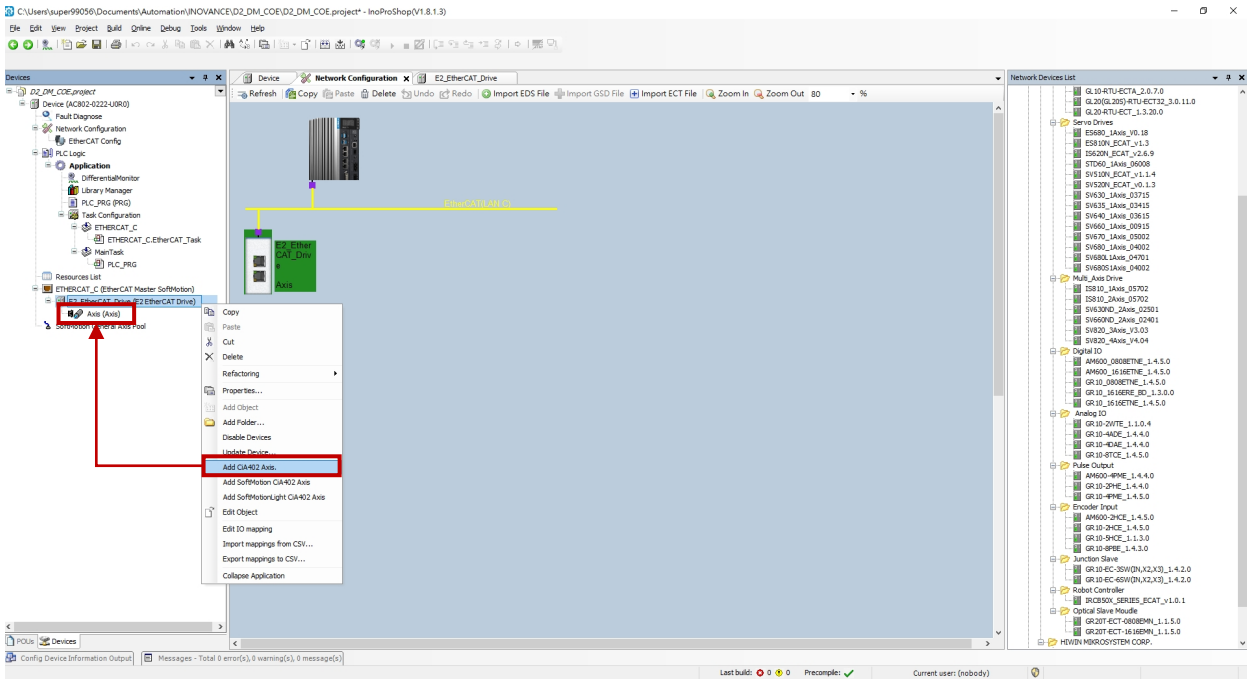

Figure 2.1.1

2.2 Set synchronous mode

Double-click **E2_CoE_Drive (E2 CoE Drive)** on the main screen and set the distributed clock in “General” tab. The default is DC Synchronous. To adjust the synchronization cycle, check **Enable Expert Settings**.

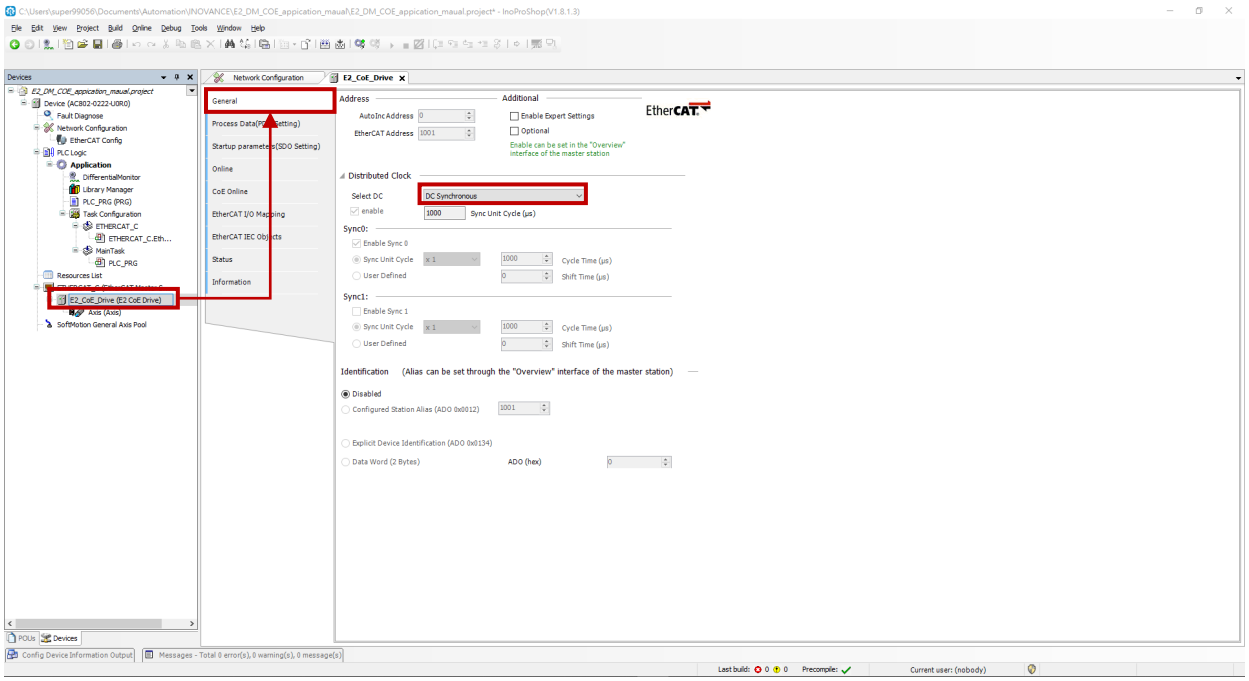

Figure 2.2.1

2.3 Configure PDO objects

1. Double-click **E2_CoE_Drive (E2 CoE Drive)** on the main screen and configure PDO objects in “Process Data(PDO Setting)” tab. The default is the first set of PDO. Adjust it based on the actual requirement.

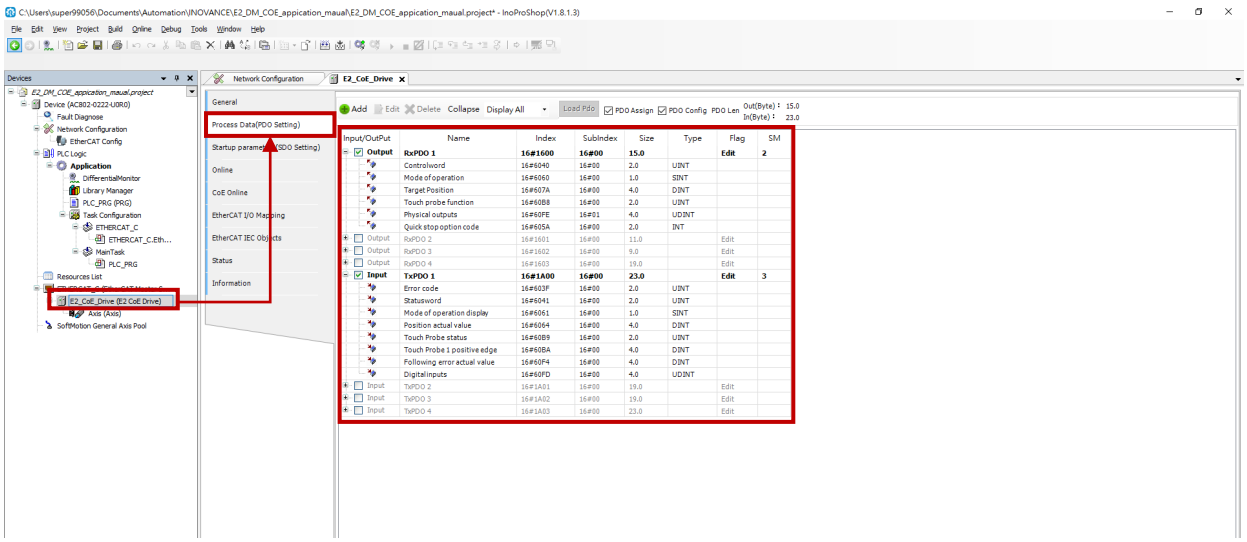

Figure 2.3.1

2. Double-click **Axis (Axis)** on the main screen and check **Automatic mapping** in “Mapping” tab. Ensure that each configured PDO object has the corresponding address.

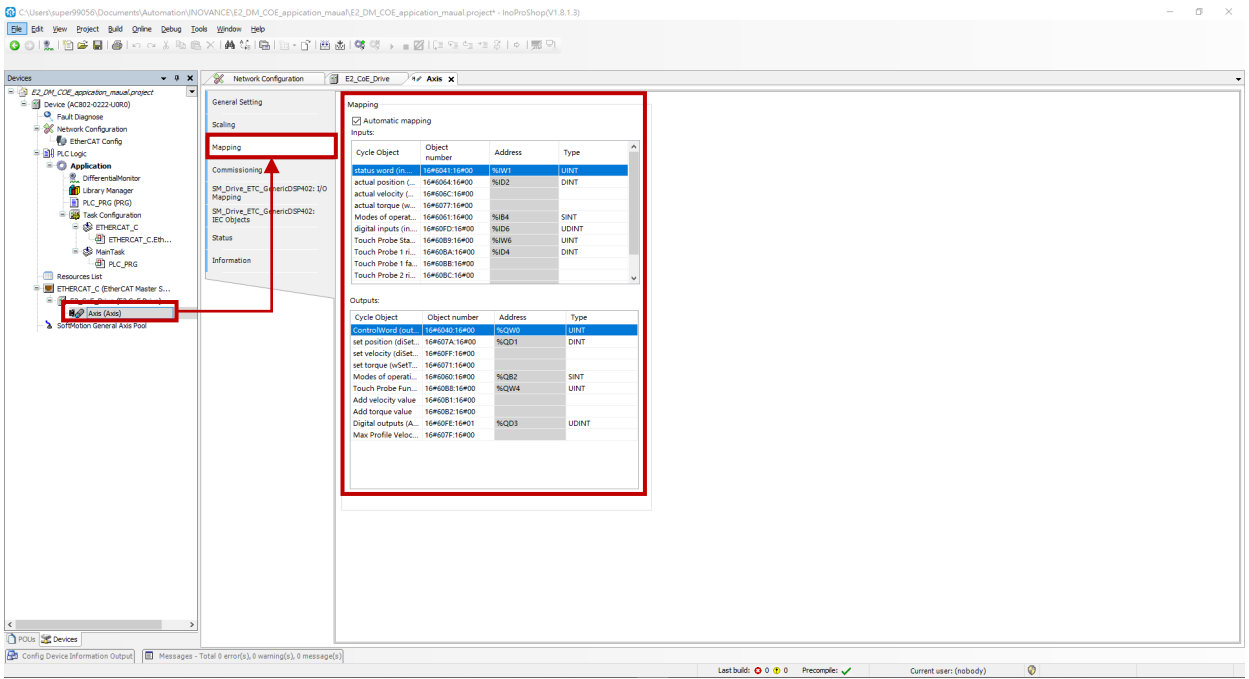

Figure 2.3.2

2.4 Motion parameters and limits

Double-click **Axis (Axis)** on the main screen and set the encoder type in “General Setting” tab. Here takes “incremental encoder” as an example. Select **Modulo** or **Finite** based on the requirement and complete the setting of its limits.

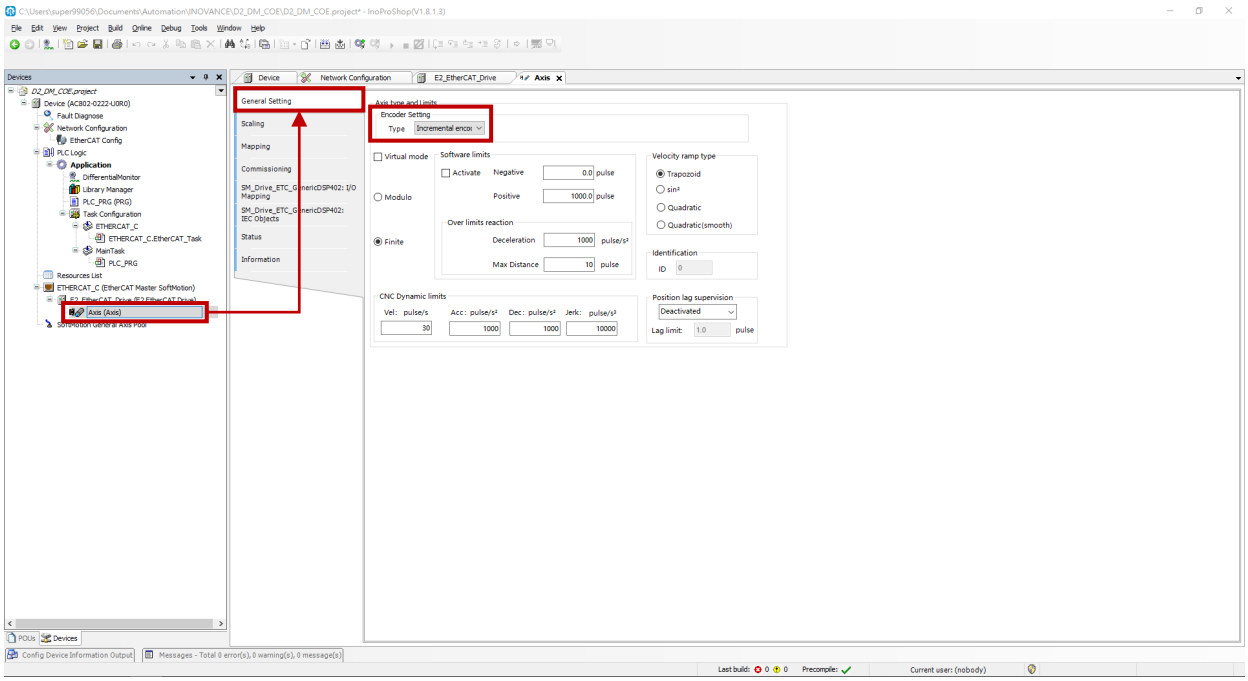

Figure 2.4.1

2.5 Set operating unit

Double-click **Axis (Axis)** on the main screen and set the operating unit and resolution in “Scaling” tab. Here takes “4325376 control unit/rev” as an example. If a transmission mechanism is used, complete the setup on this page as well.

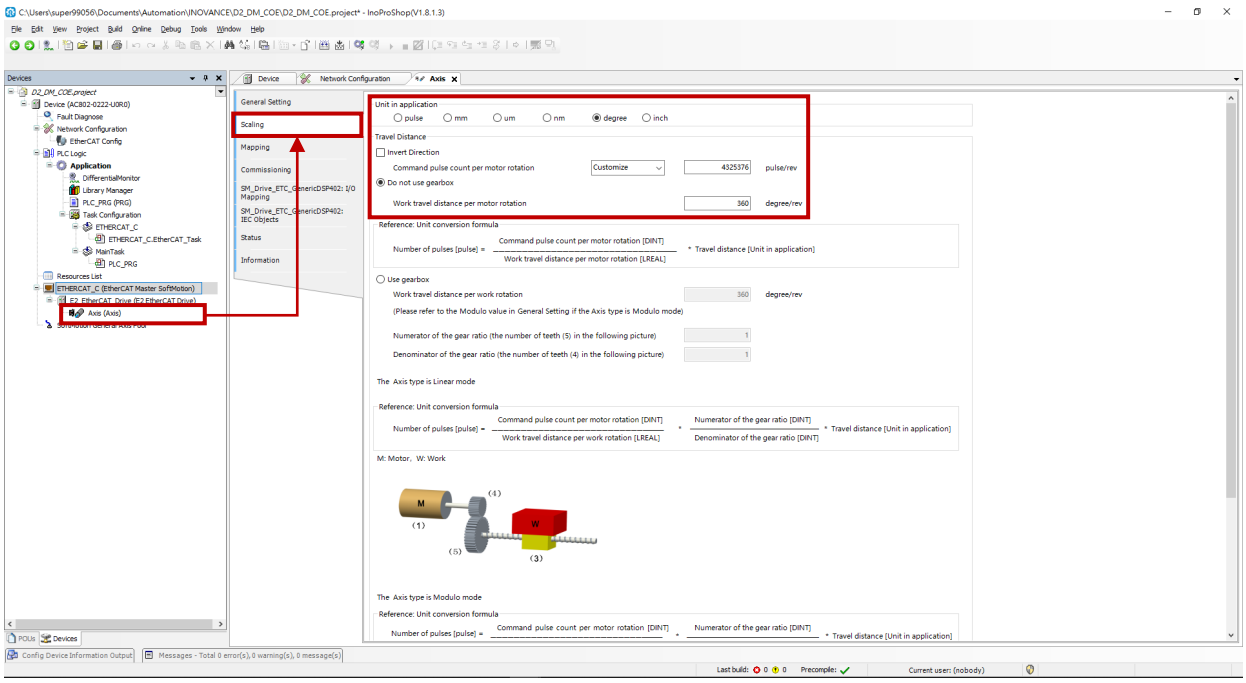

Figure 2.5.1

2.6 Download parameters setup to controller

1. Click “Check Application” and “Build” icons in sequence to ensure that no alarms are displayed in Messages.

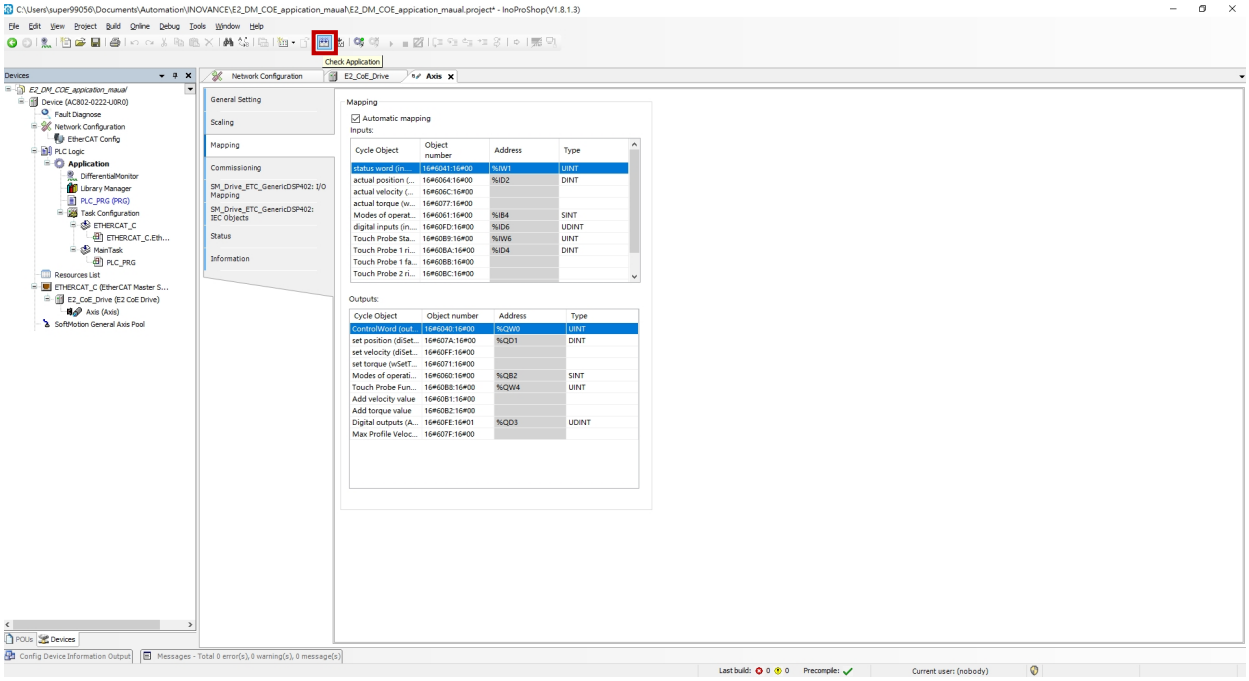

Figure 2.6.1

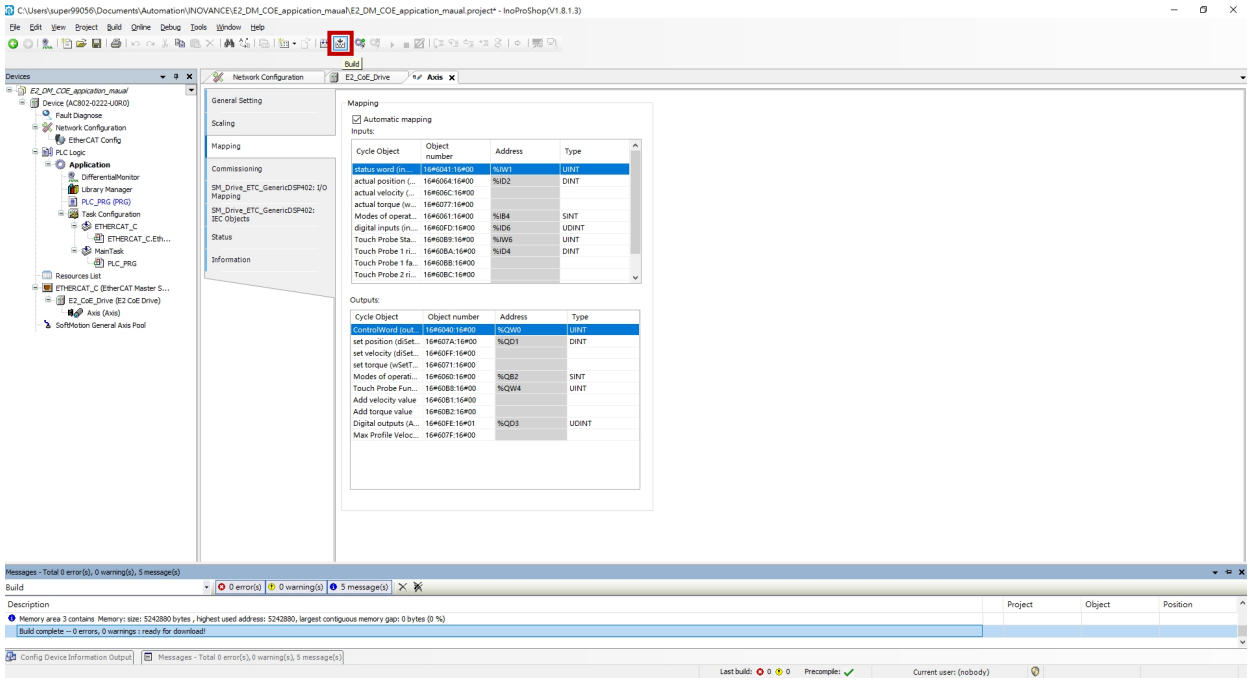

Figure 2.6.2

2. Click “Login” icon and click **YES** in the pop-up window to write the set parameters to the controller.

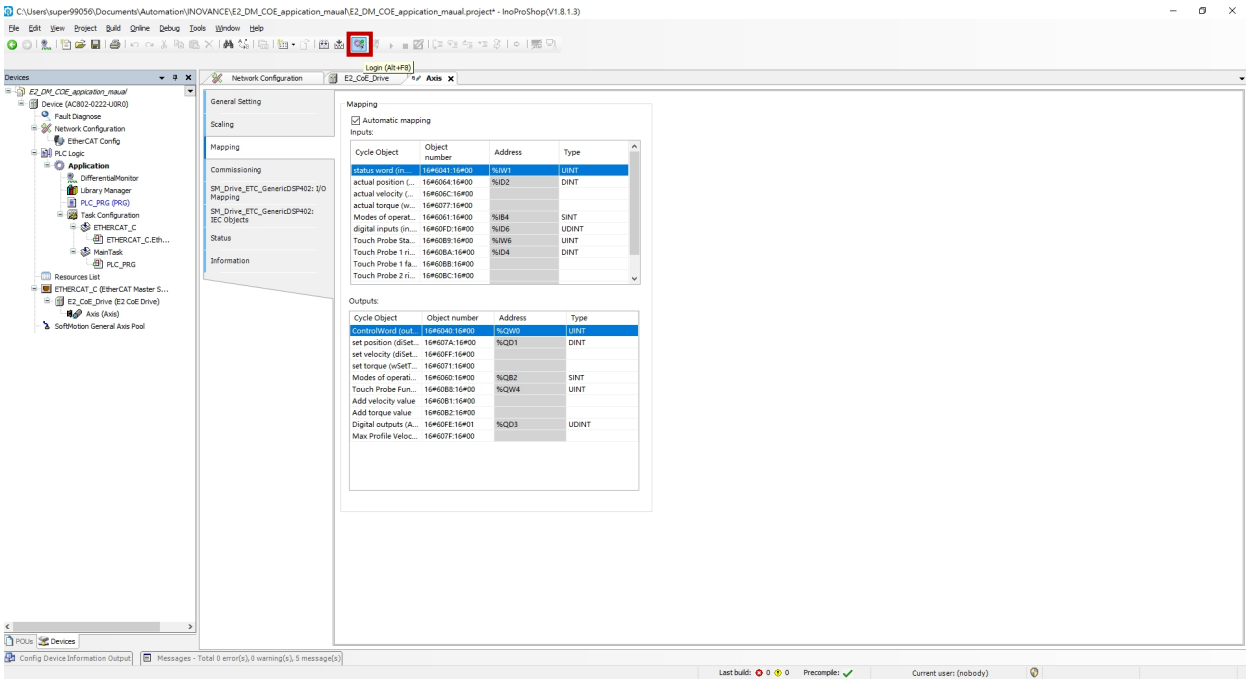

Figure 2.6.3

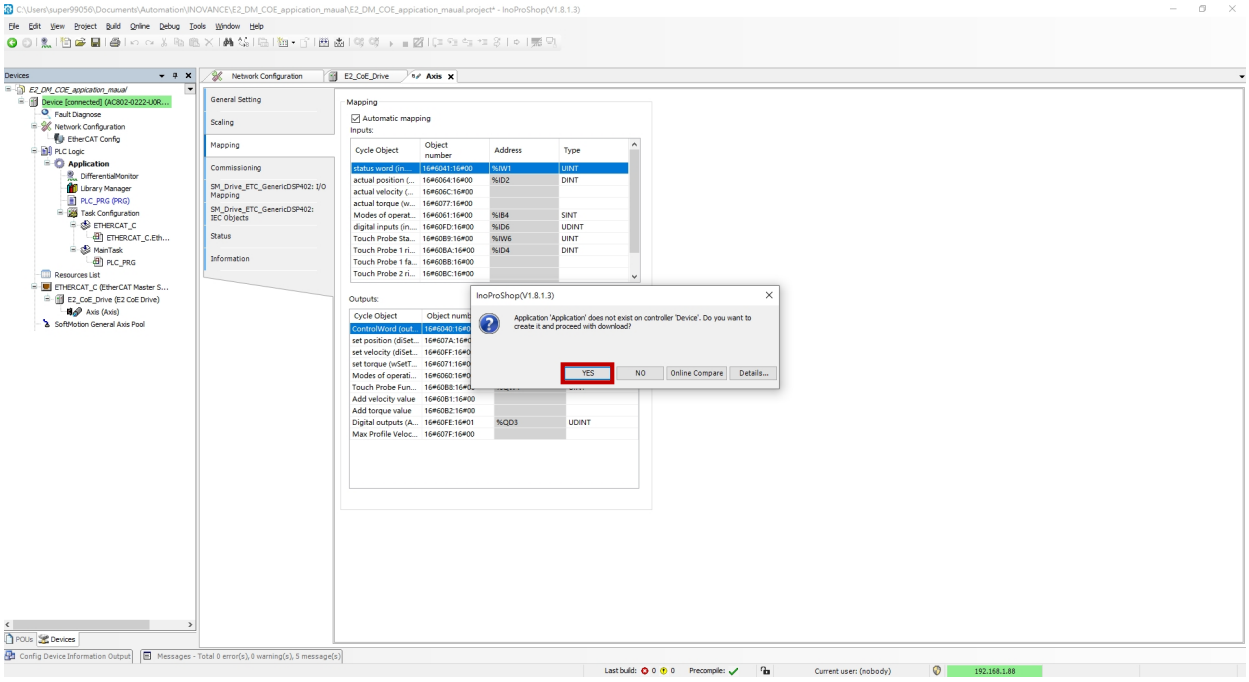

Figure 2.6.4

3. When the parameters are successfully written and it is successfully connected to the controller, “Logout” icon is clickable, and Device displays a green light. Check if Axis (Axis) displays a green light. If it does, it indicates that communication between the controller and the drive is successfully established.

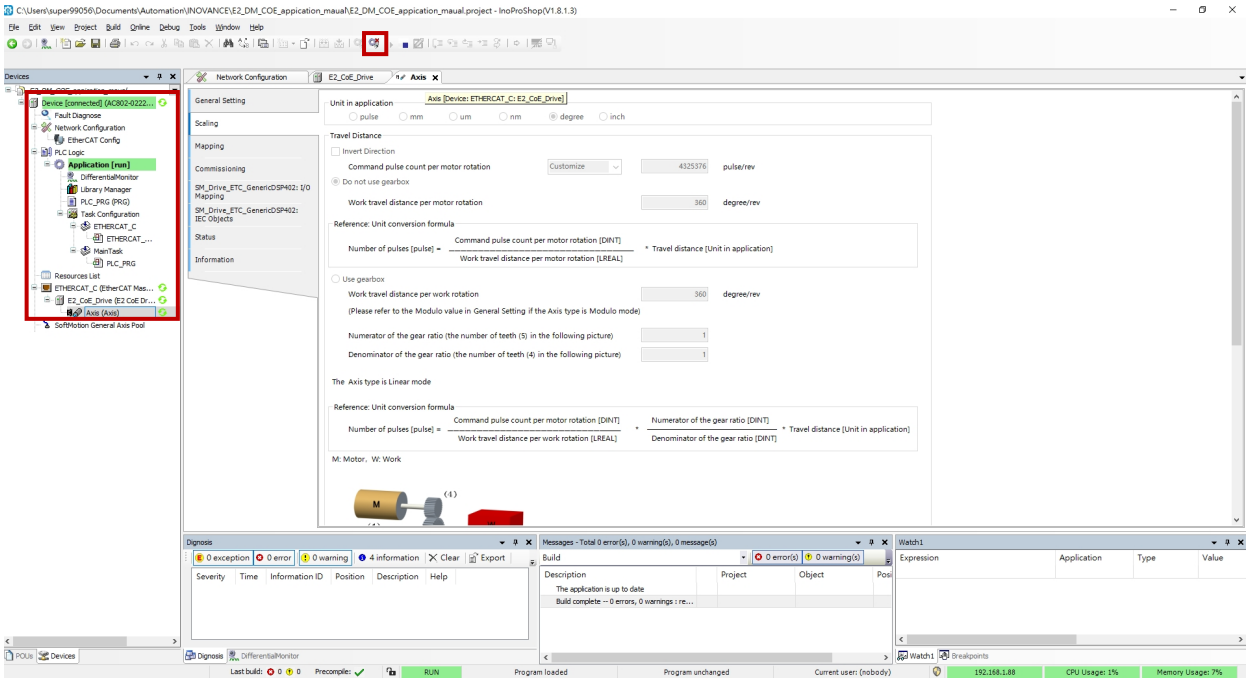

Figure 2.6.5

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3. Test Run

3.1 Online config mode

1. Click “Logout” icon to switch the controller to offline mode. Click **Project→Online Config Mode…** and click the Confirm button in the pop-up window.

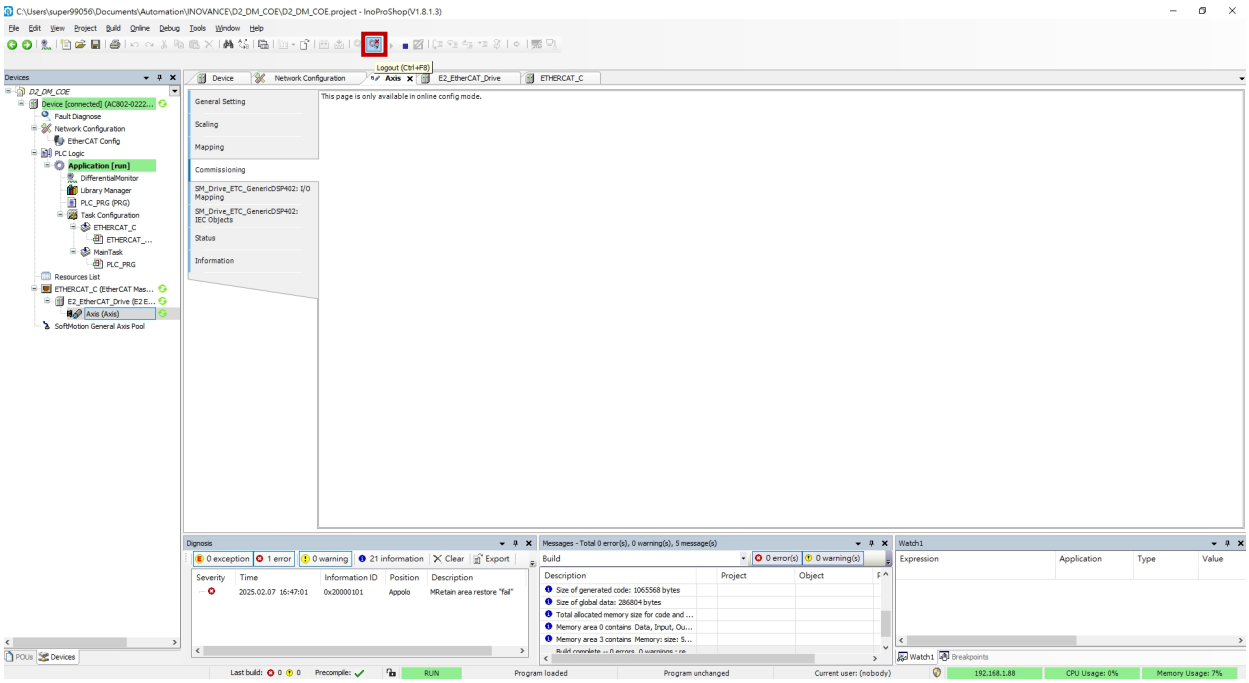

Figure 3.1.1

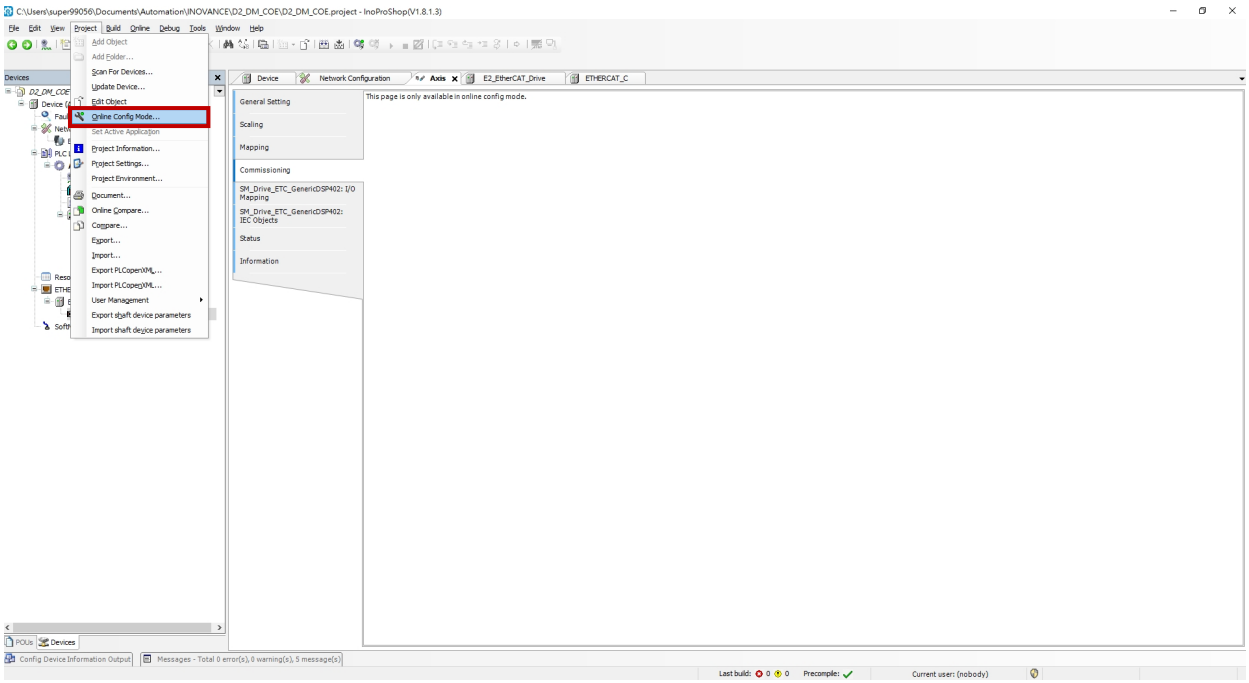

Figure 3.1.2

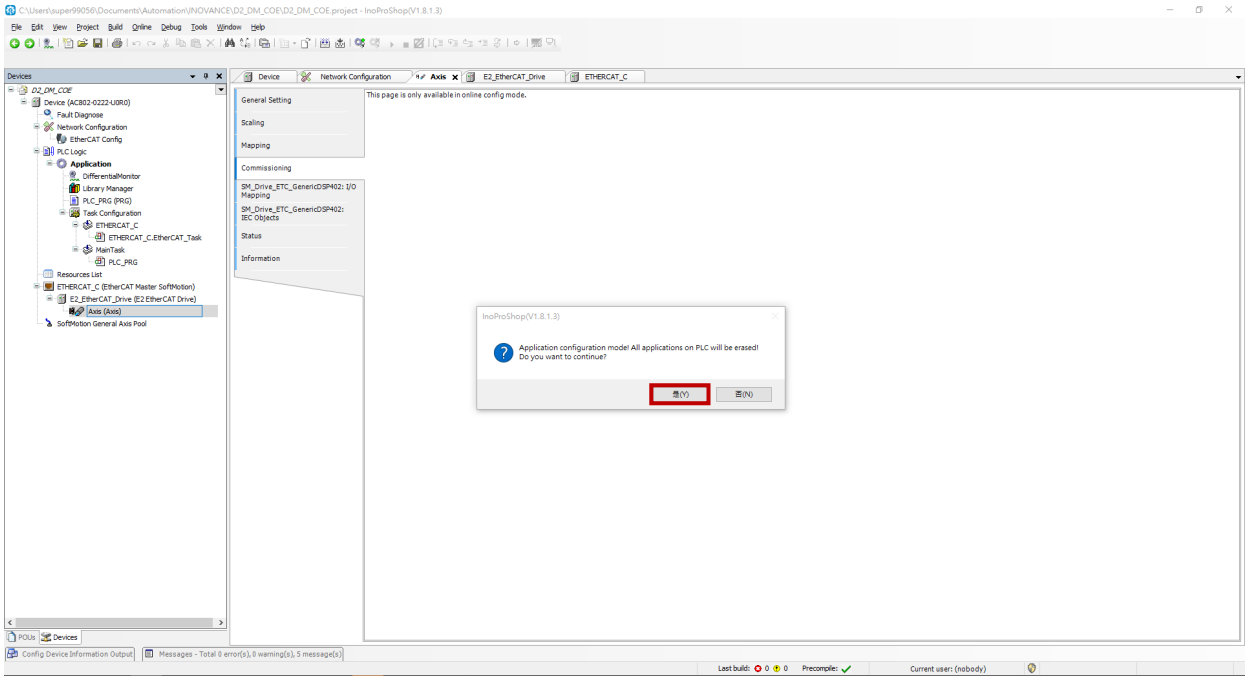

Figure 3.1.3

2. Double-click **Axis (Axis)** on the main screen, select “Commissioning” tab, and click the Confirm button in the pop-up window.

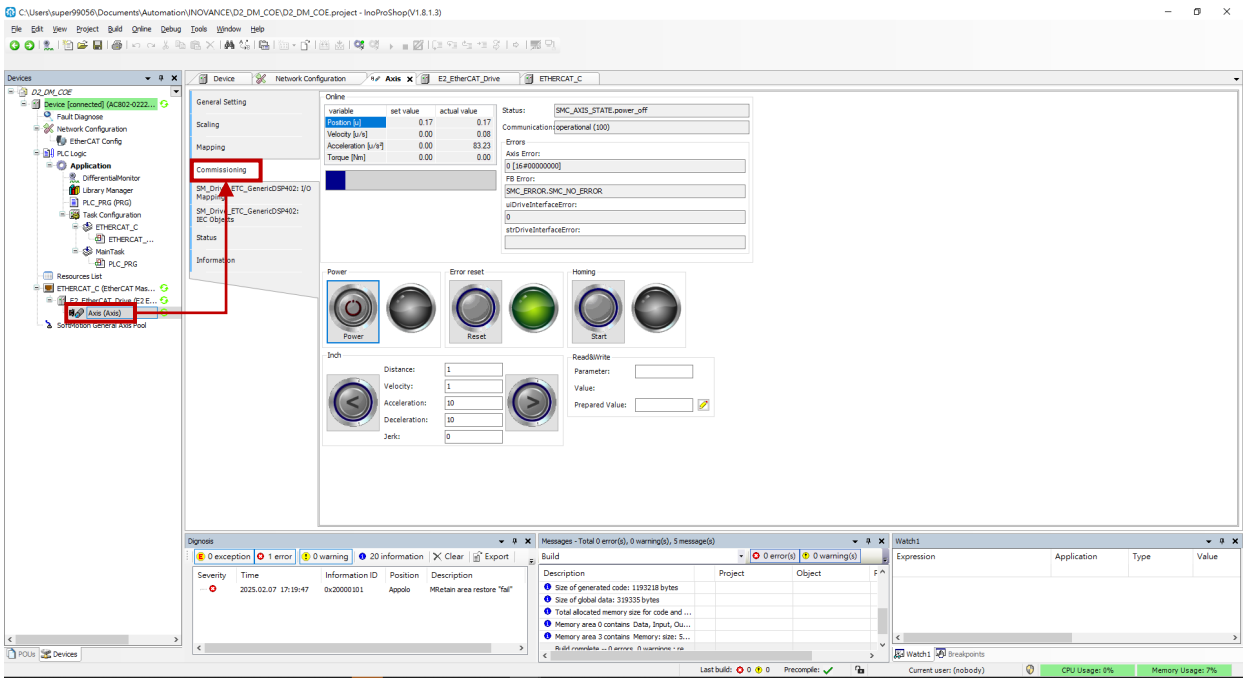

Figure 3.1.4

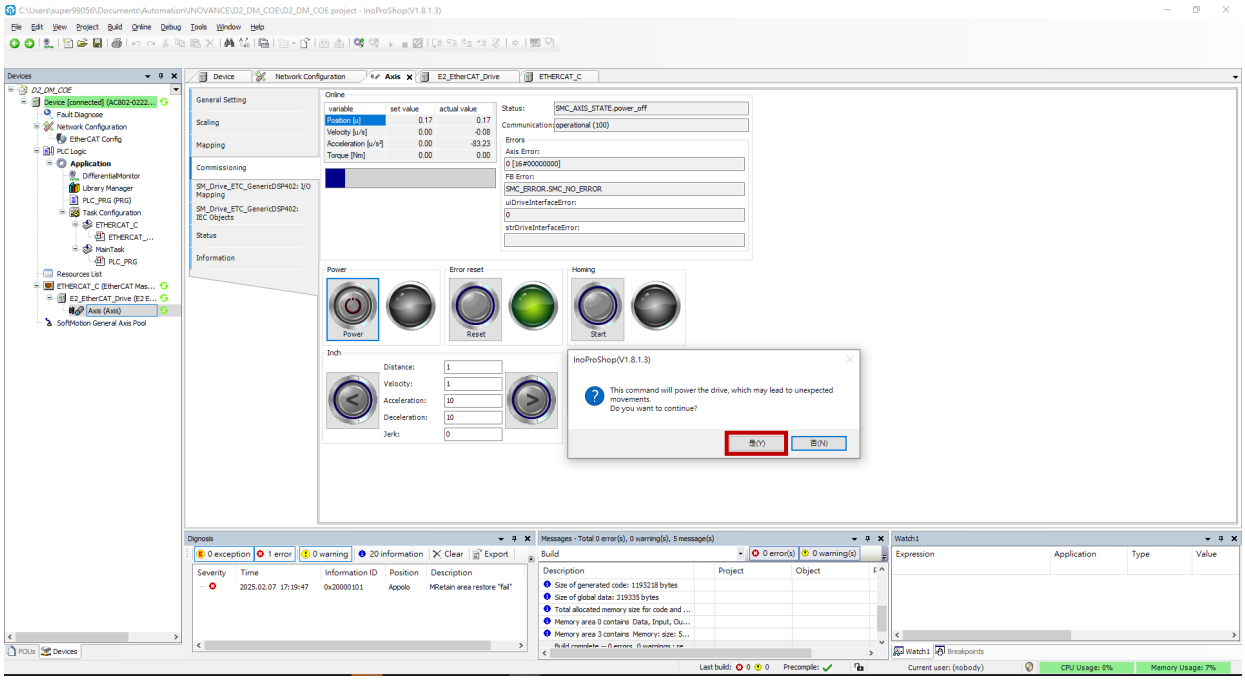

Figure 3.1.5

3. “Commissioning” window supports the functions such as enabling, error clearing, homing, and incremental movement, suitable for drive testing of slave devices.

■ Enabling (“Power” area)

Click **Power** and ensure that the indicator light displays blue.

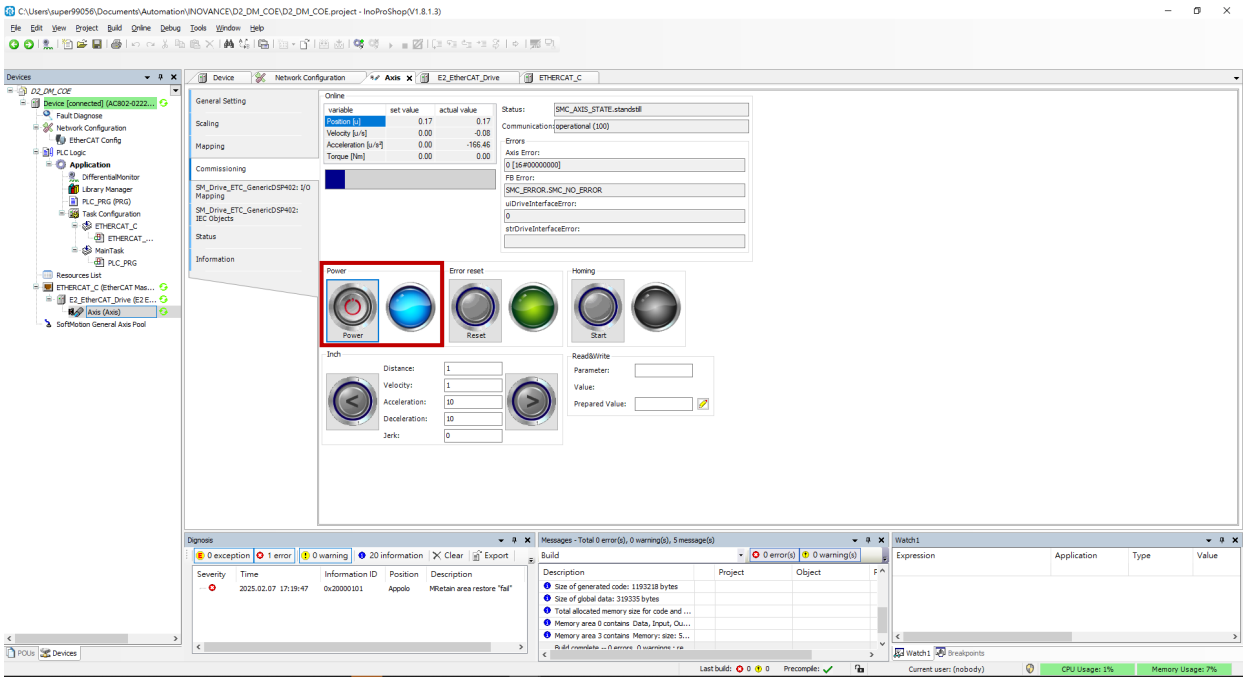

Figure 3.1.6

- Error clearing (“Error reset” area)

  When an error occurs, the indicator light displays red.

  Click **Reset** to clear the error; the indicator light will then display green.

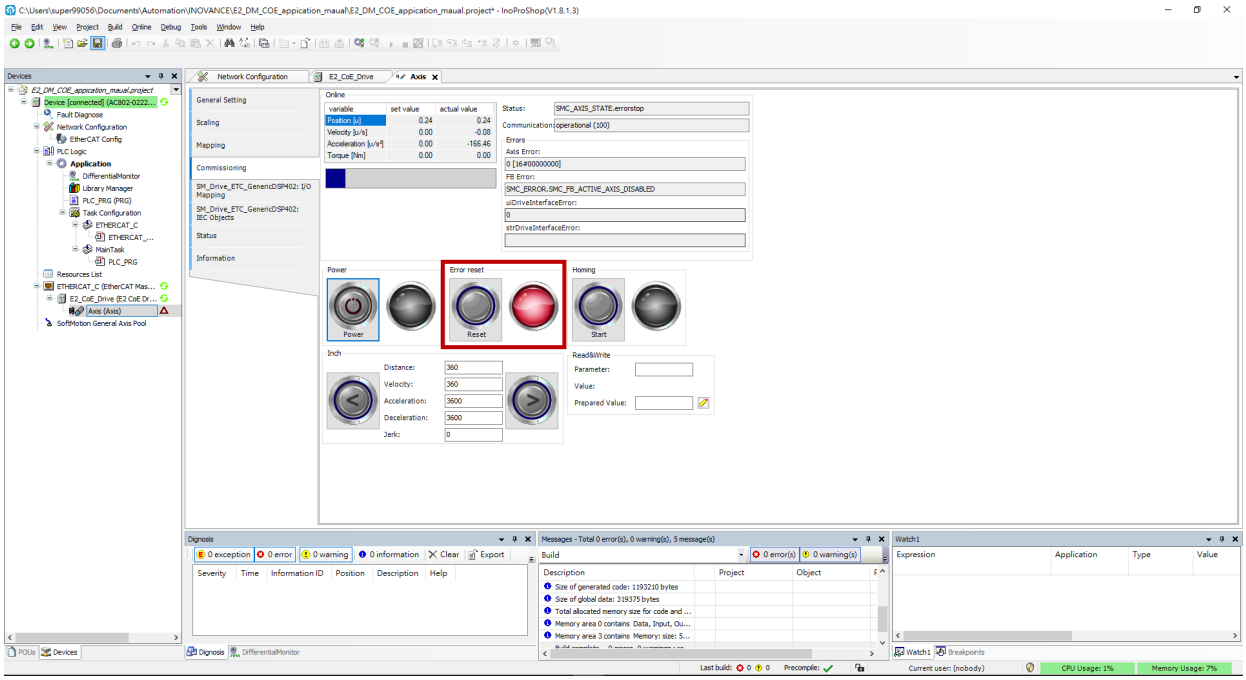

Figure 3.1.7

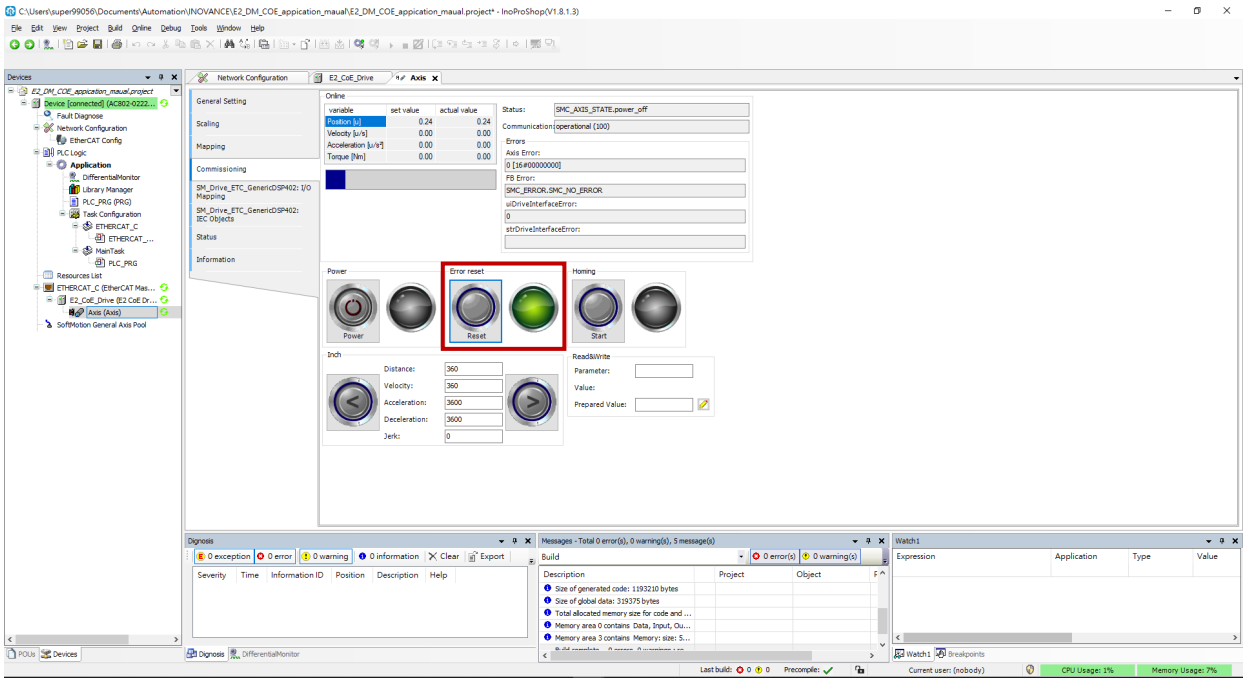

Figure 3.1.8

- Homing (“Homing” area)

  Click **Start** to execute internal homing of the drive; the indicator light displays orange. After the homing procedure is completed, the indicator light will turn off, and the position feedback will display 0.

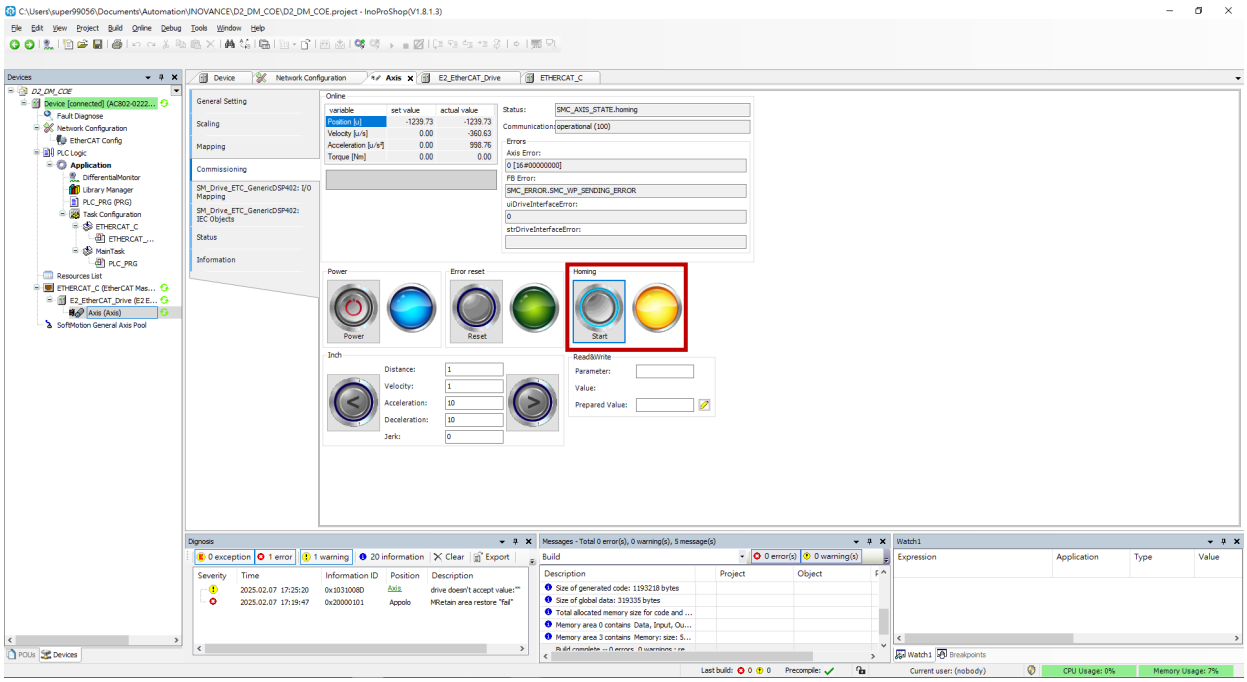

Figure 3.1.9

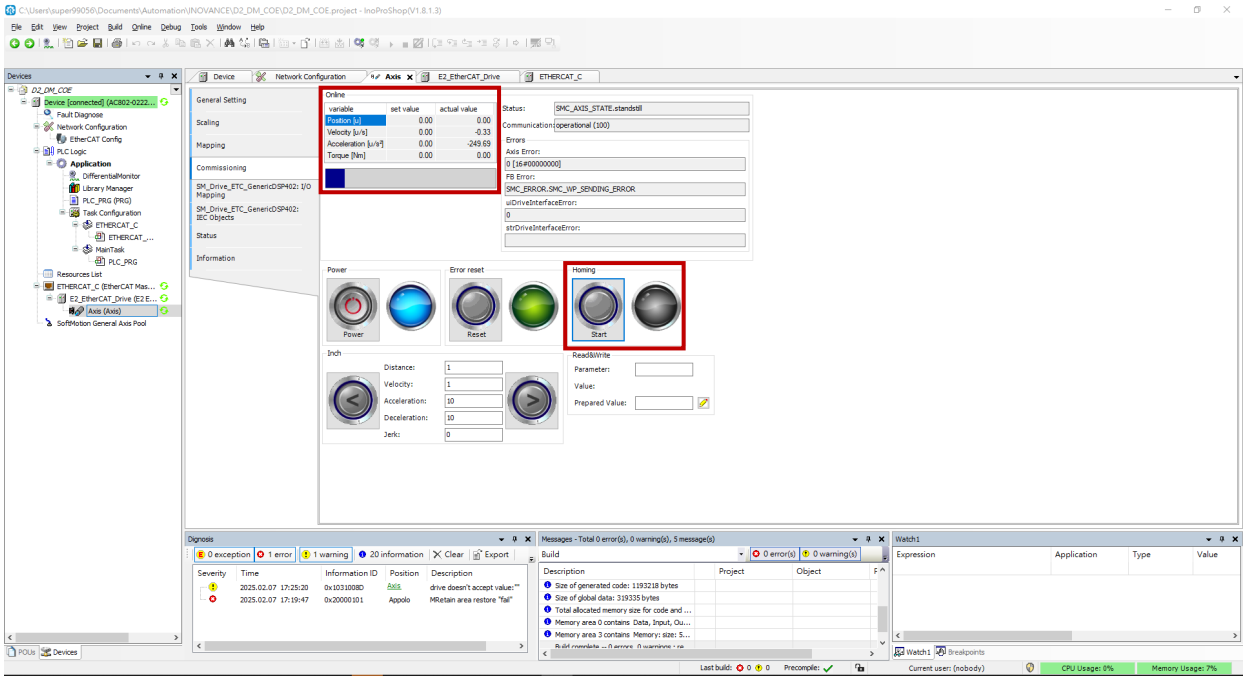

Figure 3.1.10

- Incremental movement (“Inch” area)

  Set the parameters based on the motion conditions. Here takes “a distance of 360 deg, a velocity of 60 deg/s” as an example. Continuously click **<** or **>** to move the motor the specified distance based on the motion conditions before stopping. The position feedback and the scroll bar will update based on the current position.

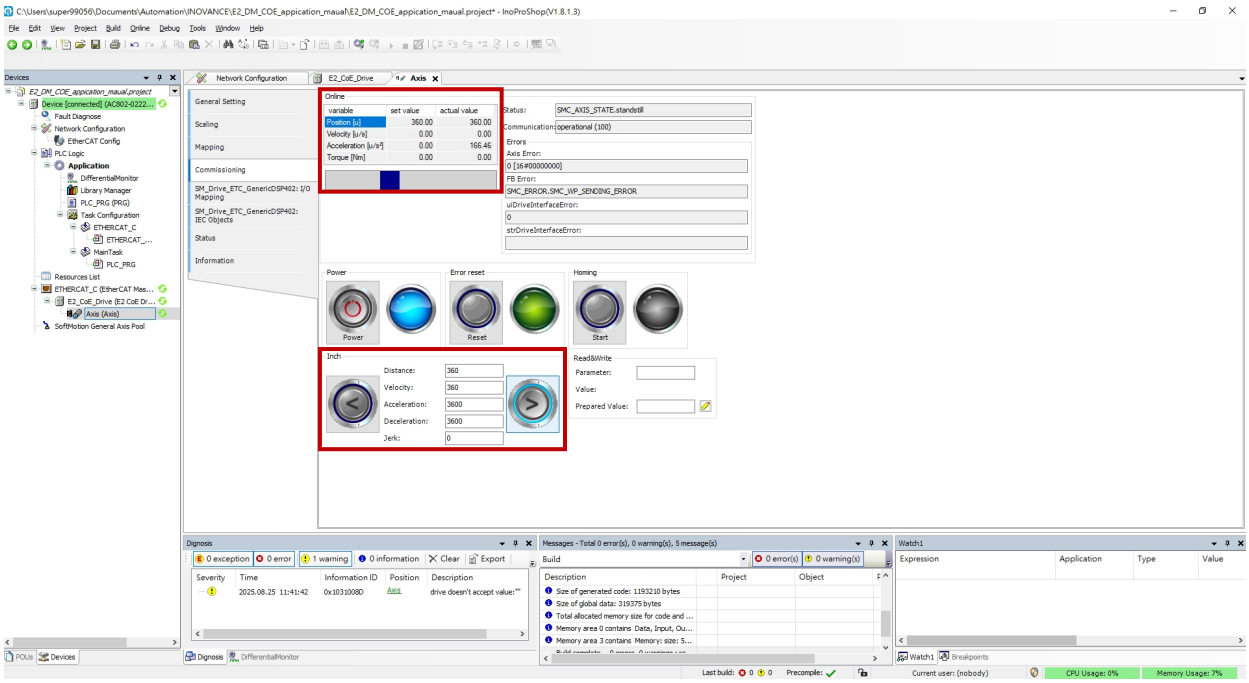

Figure 3.1.11

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4. Create Function Blocks

4.1 Motion commands

4.1.1 MC_Power

This function block is used to execute the command of enabling/disabling the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Expand **Application**→**Task Configuration**→**MainTask** on the main screen and double-click **PLC_PRG** to start editing the program.

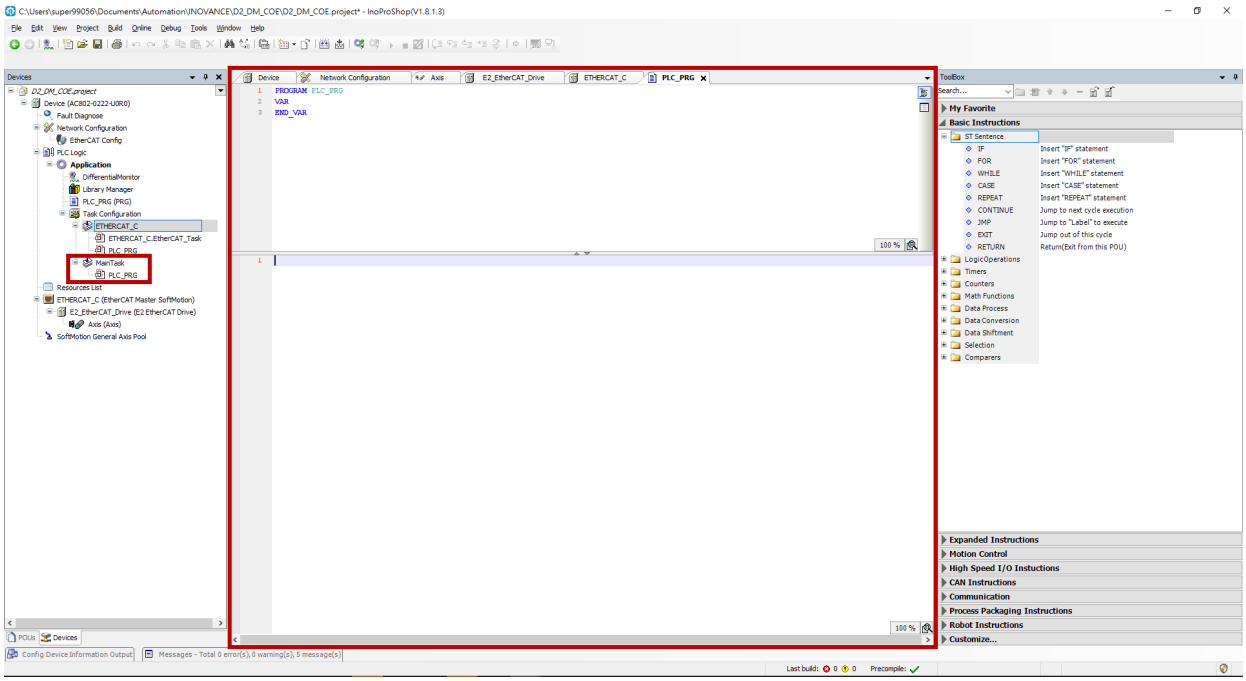

Figure 4.1.1.1

2. Expand **Motion Control** in “ToolBox” window on the right and select MC_Power function block in “Point To Point” folder.

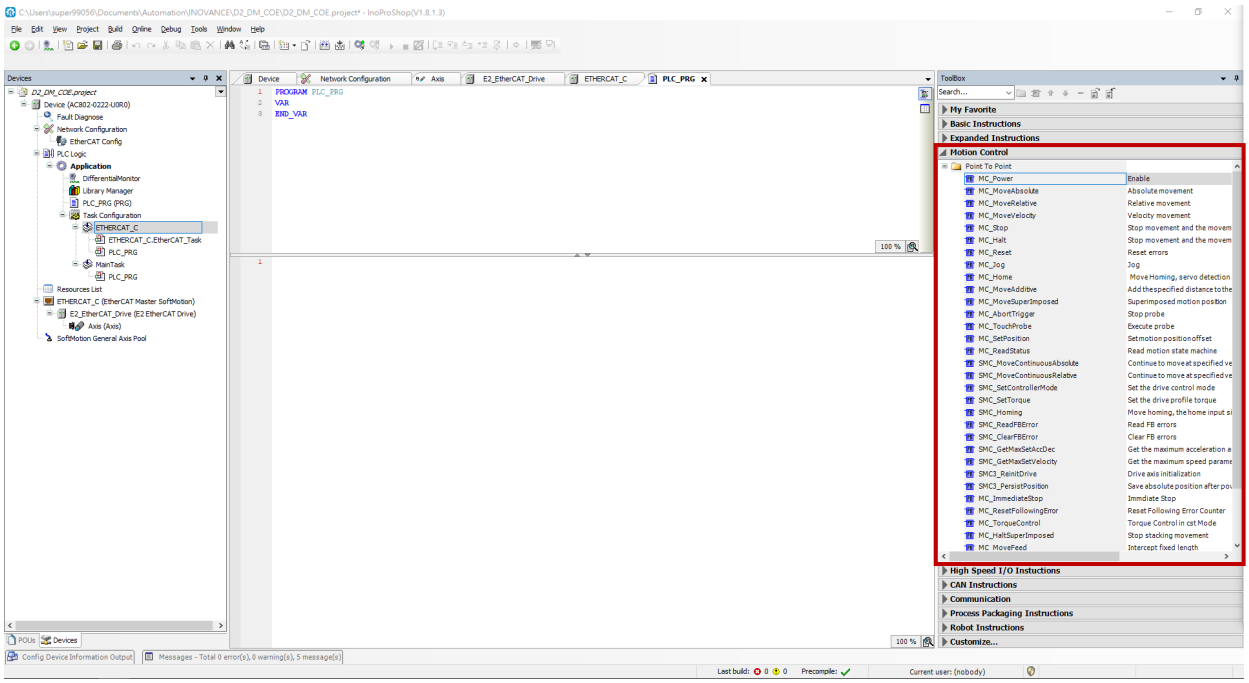

Figure 4.1.1.2

3. Double-click **MC_Power** and click **OK** in the pop-up “Auto Declare” window to start editing the program variables.

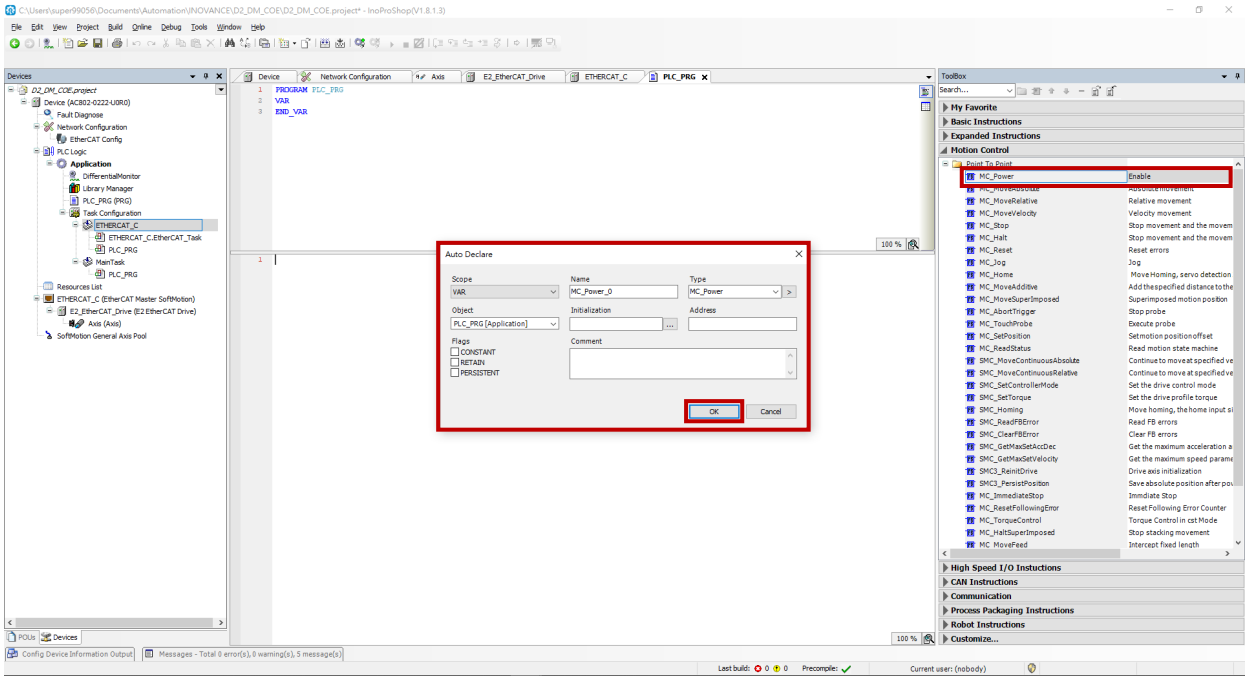

Figure 4.1.1.3

4. Key in the name of the corresponding axis in “Axis” (here takes “Axis” as an example). Then, key in variable names for other items based on the requirement, confirm “Name” and “Type” in the pop-up “Auto Declare” window, and click **OK**.

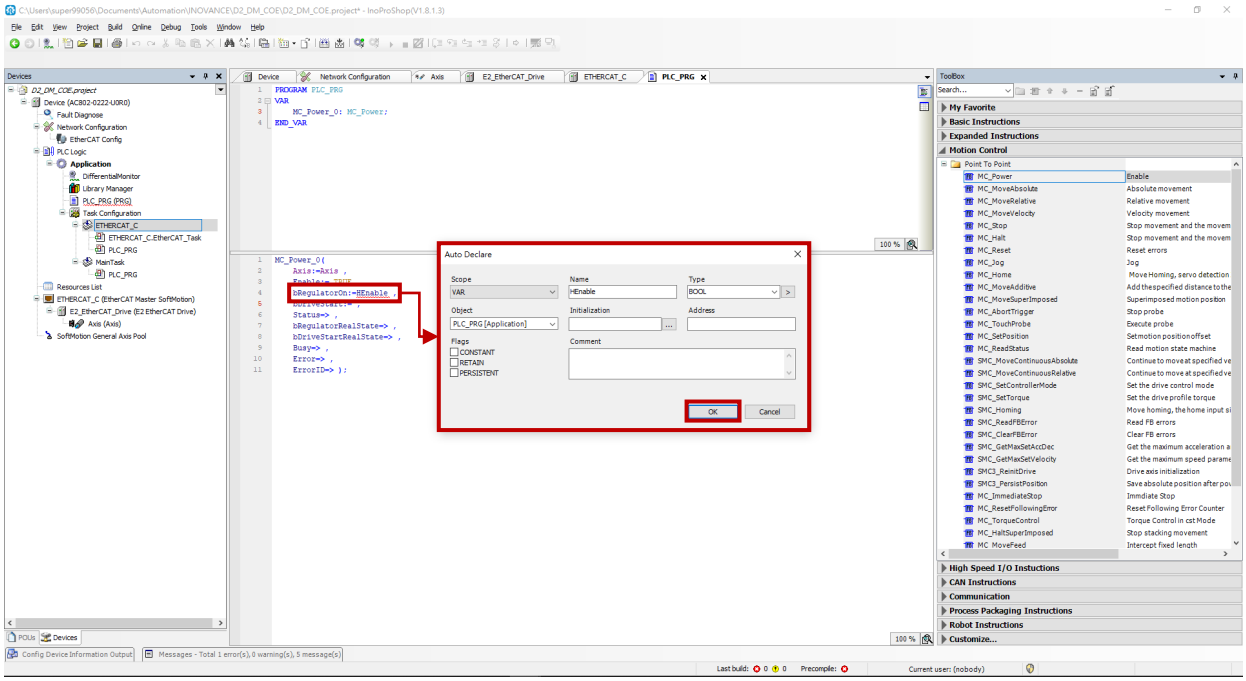

Figure 4.1.1.4

5. After completing the definition of the variable names in MC_Power function block, it will look like the figure below.

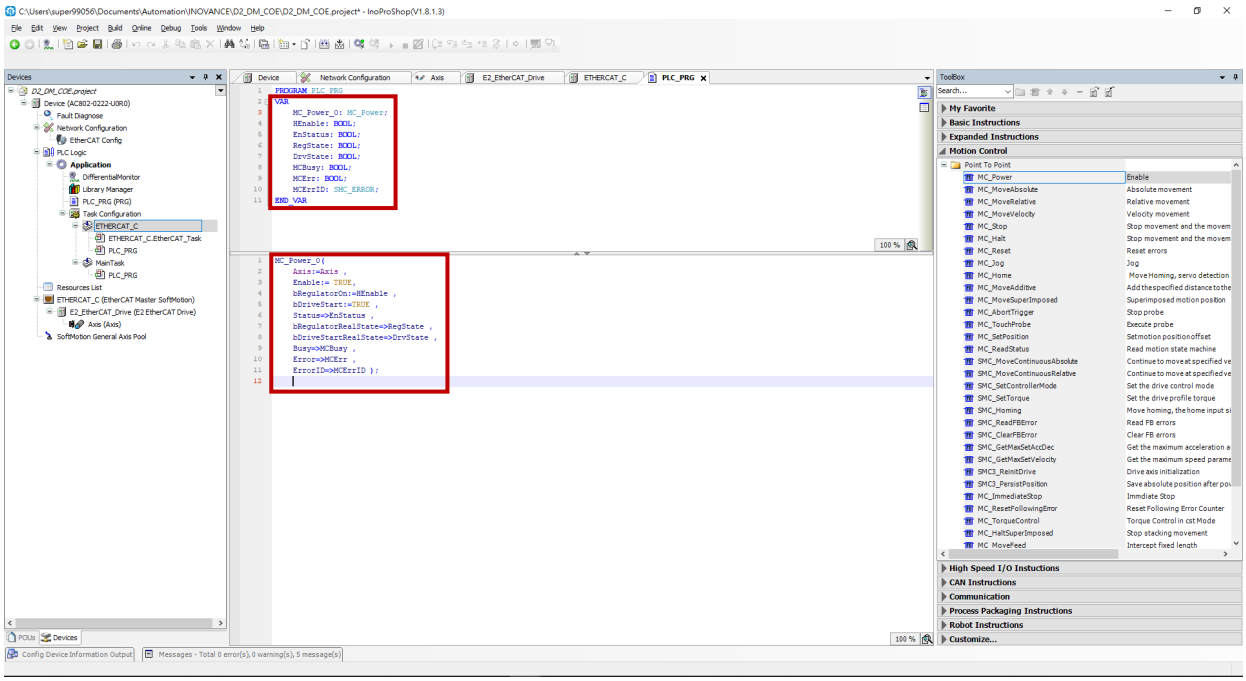

Figure 4.1.1.5

4.1.2 MC_Reset

This function block is used to clear the error status of the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Refer to section 4.1.1 to create the function block and complete the definition of the variable names in sequence.

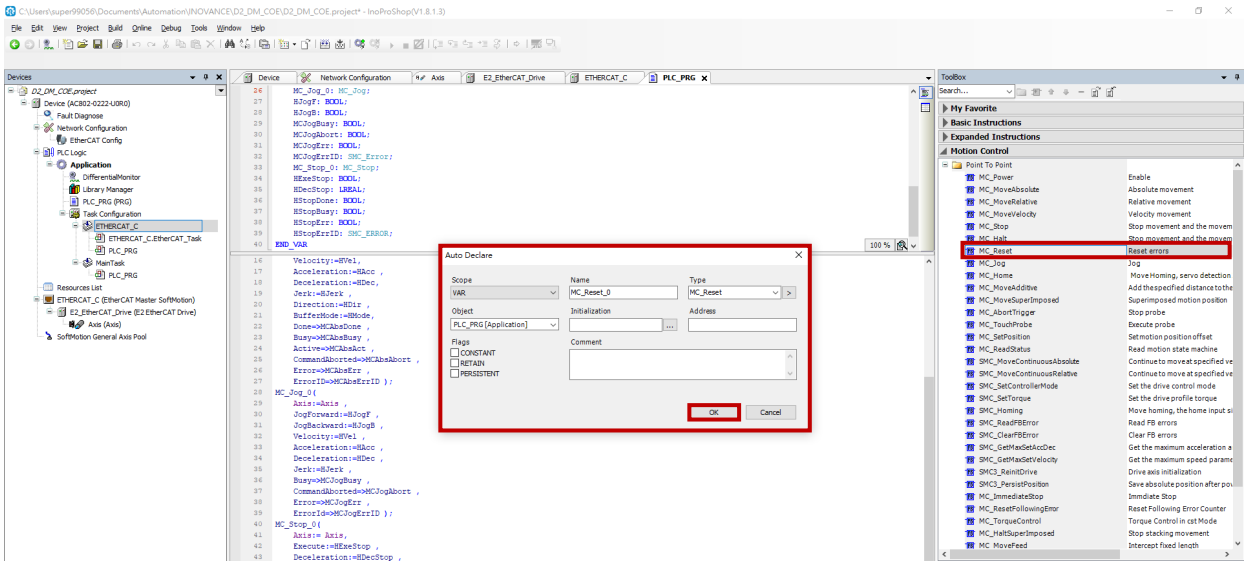

Figure 4.1.2.1

2. After completing the definition of the variable names in MC_Reset function block, it will look like the figure below.

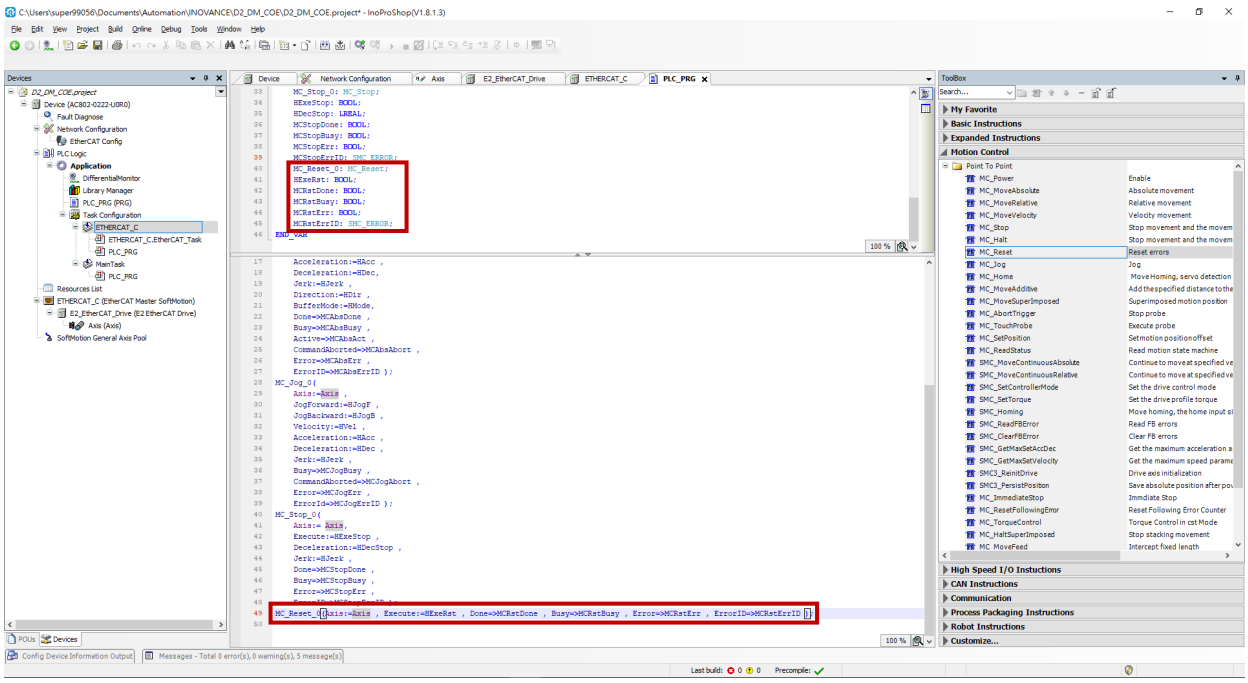

Figure 4.1.2.2

4.1.3 MC_Jog

This function block is used to execute the command of jog of the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Refer to section 4.1.1 to create the function block and complete the definition of the variable names in sequence.

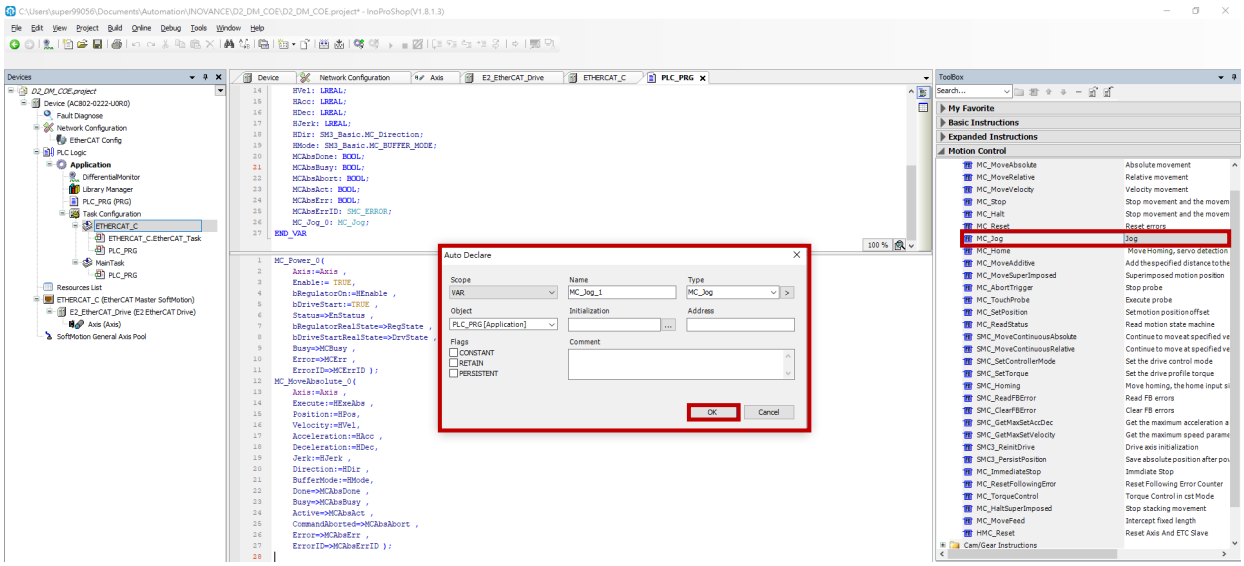

Figure 4.1.3.1

2. After completing the definition of the variable names in MC_Jog function block, it will look like the figure below.

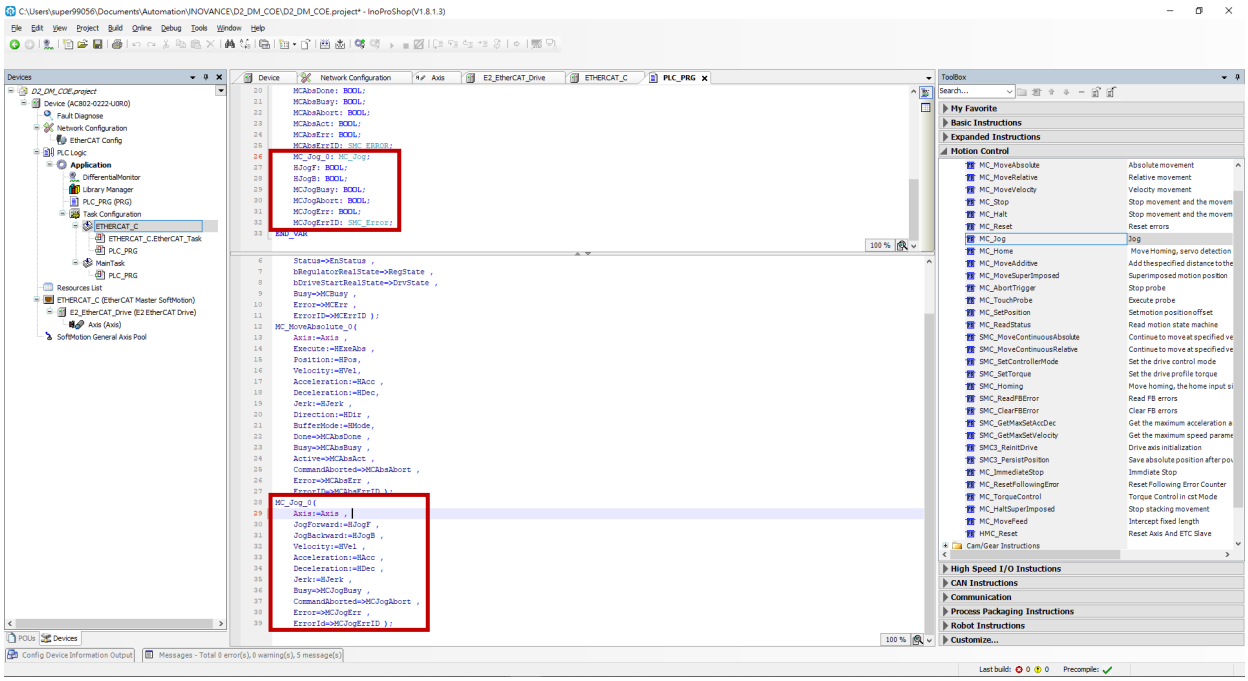

Figure 4.1.3.2

4.1.4 MC_MoveAbsolute

This function block is used to execute the command of absolute movement of the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Refer to section 4.1.1 to create the function block and complete the definition of the variable names in sequence.

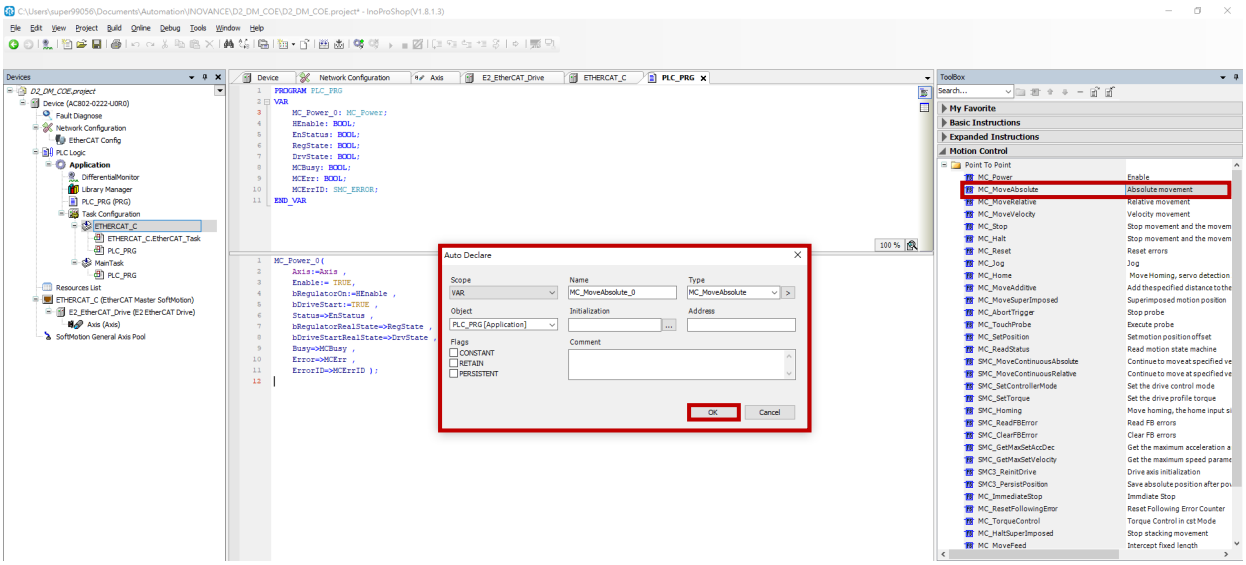

Figure 4.1.4.1

2. After completing the definition of the variable names in MC_MoveAbsolute function block, it will look like the figure below.

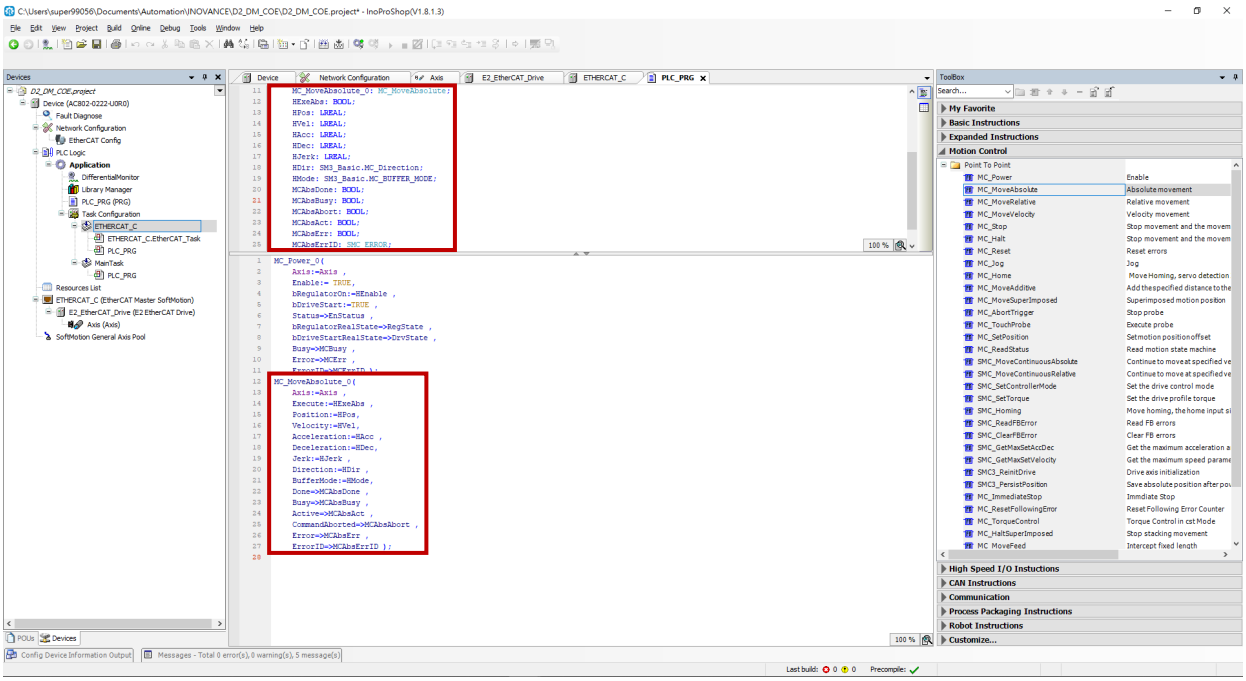

Figure 4.1.4.2

4.1.5 MC_MoveRelative

This function block is used to execute the command of relative movement of the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Refer to section 4.1.1 to create the function block and complete the definition of the variable names in sequence.

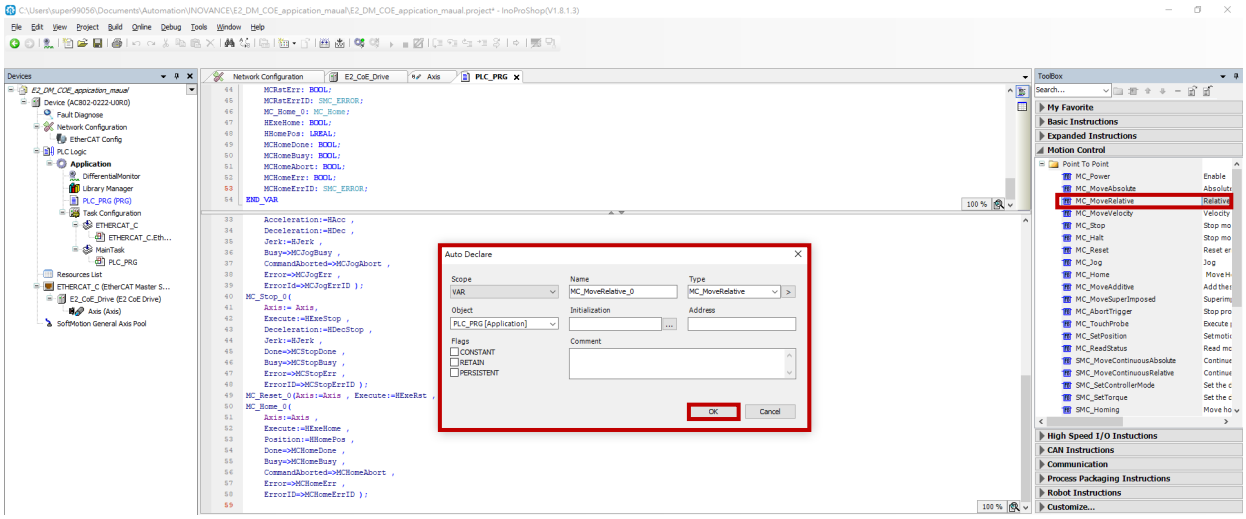

Figure 4.1.5.1

2. After completing the definition of the variable names in MC_MoveRelative function block, it will look like the figure below.

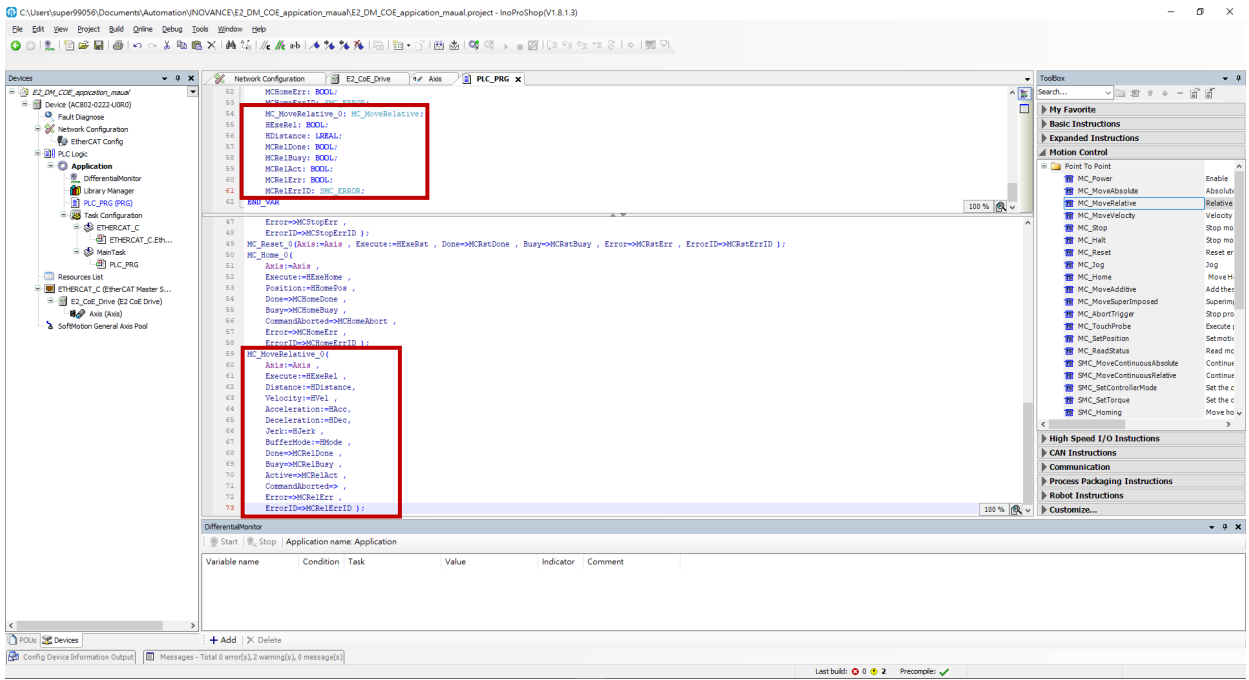

Figure 4.1.5.2

4.1.6 MC_Home

This function block is used to execute the command of homing of the axis.

Note: Click the MC function block and press keyboard shortcut **F1** to get the detailed description of this function block.

1. Refer to section 4.1.1 to create the function block and complete the definition of the variable names in sequence.

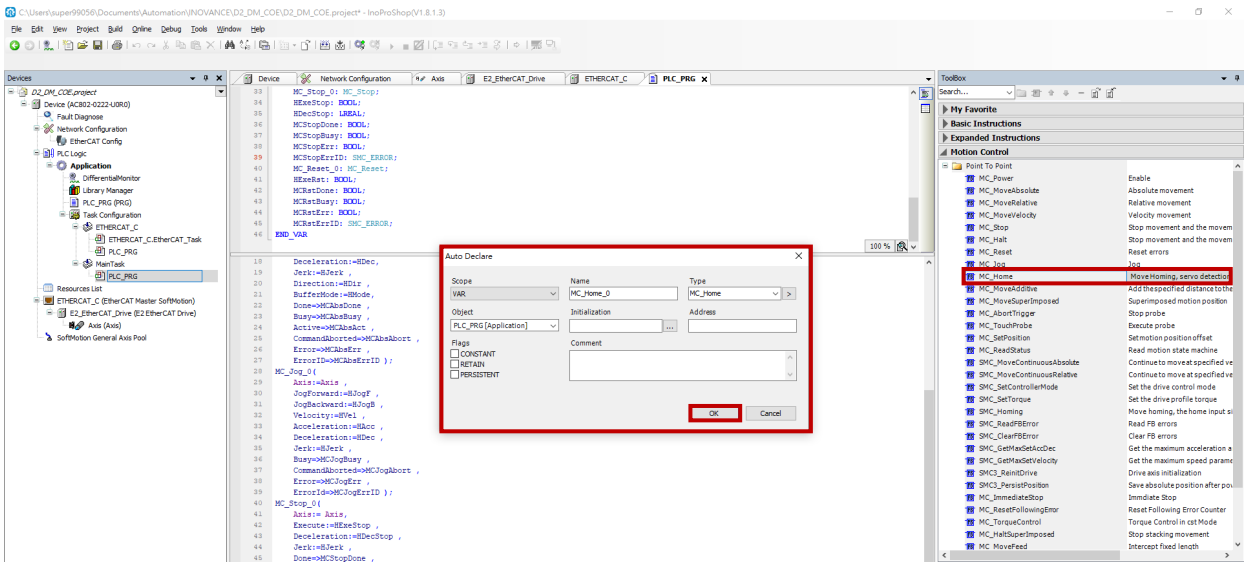

Figure 4.1.6.1

2. After completing the definition of the variable names in MC_Home function block, it will look like the figure below.

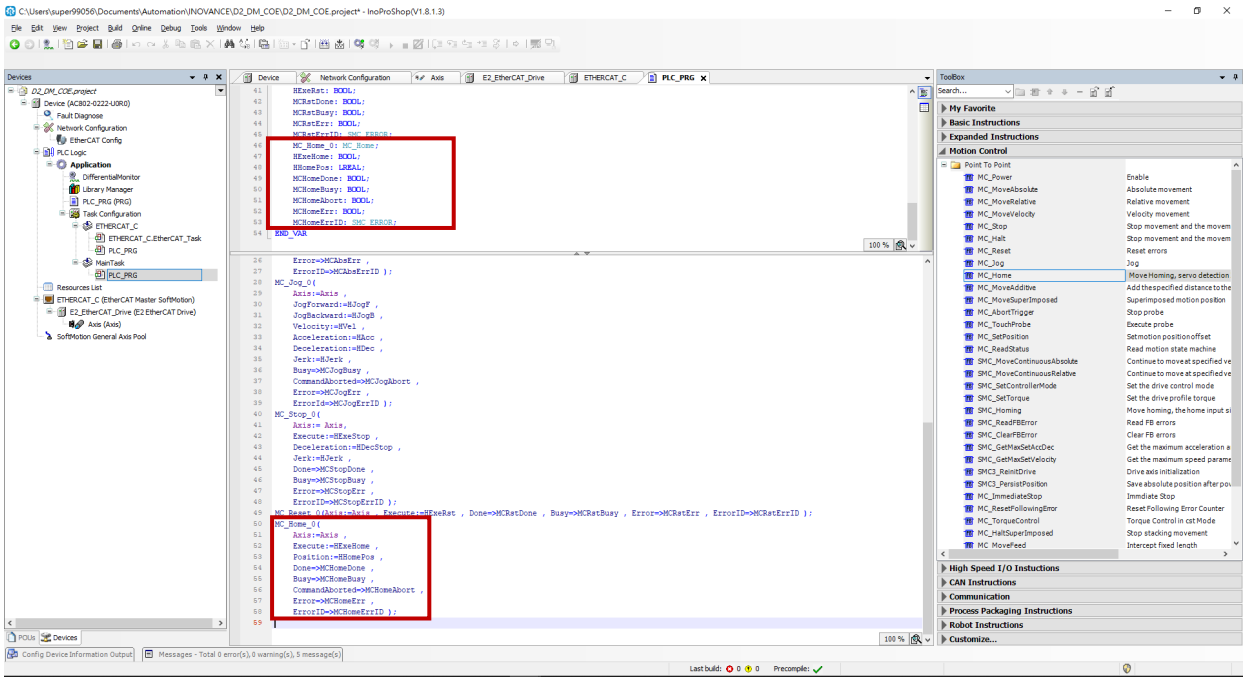

Figure 4.1.6.2

4.2 Download software setting to controller

1. After completing the edition of the motion commands, click “Check Application” and “Build” icons on the main screen in sequence to ensure that the compilation results are error-free.

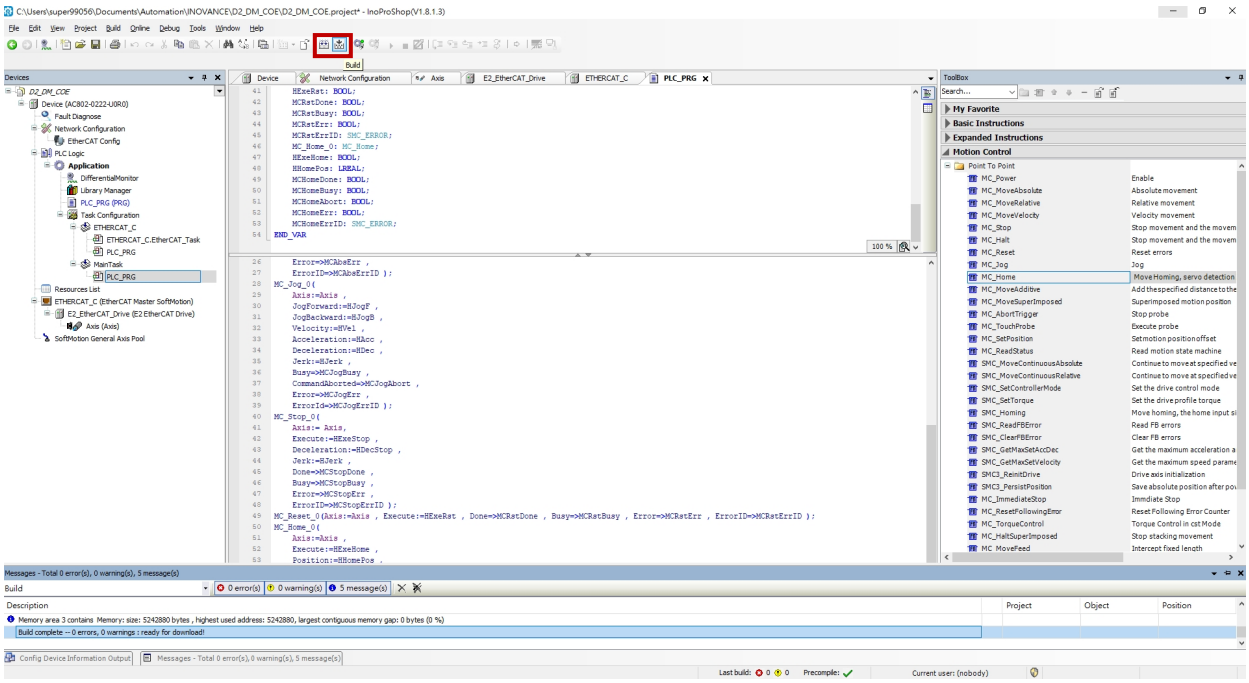

Figure 4.2.1

2. Click “Login” icon and click **YES** in the pop-up window to write the motion commands to the controller.

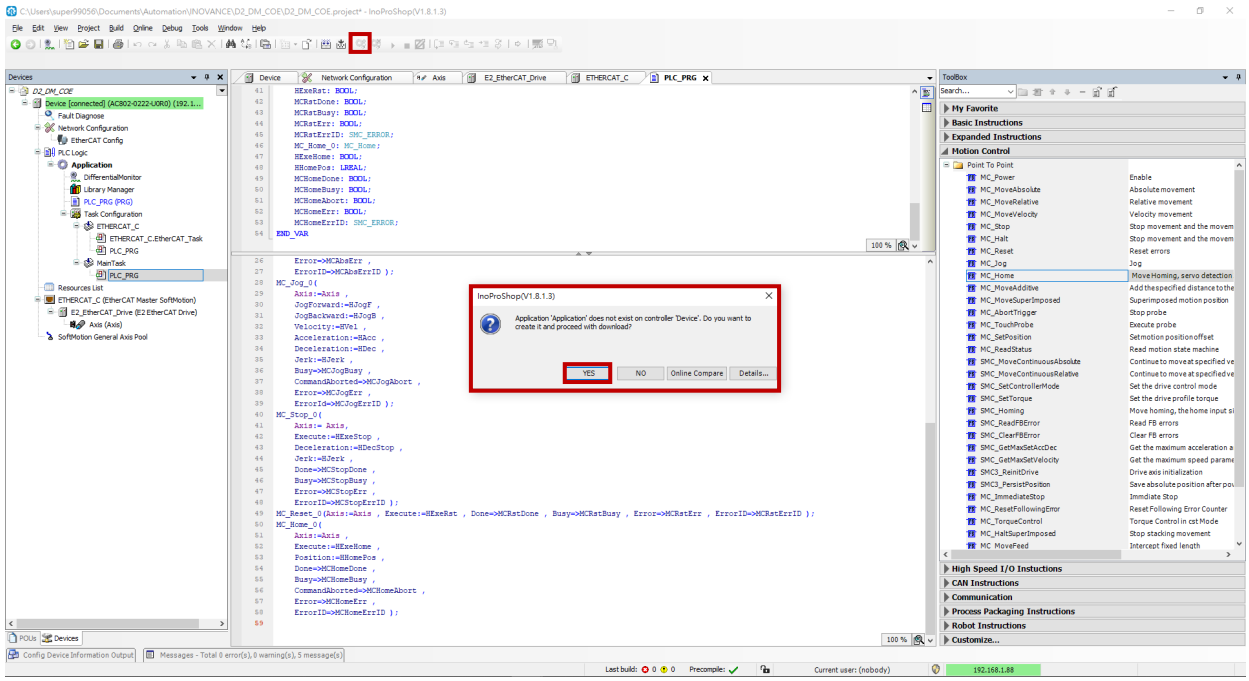

Figure 4.2.2

3. At this time, “Logout” icon is clickable, and Device displays a green light. If Axis (Axis) displays a green light, it indicates that communication of the salve axis is successfully established. Users can start operating function blocks.

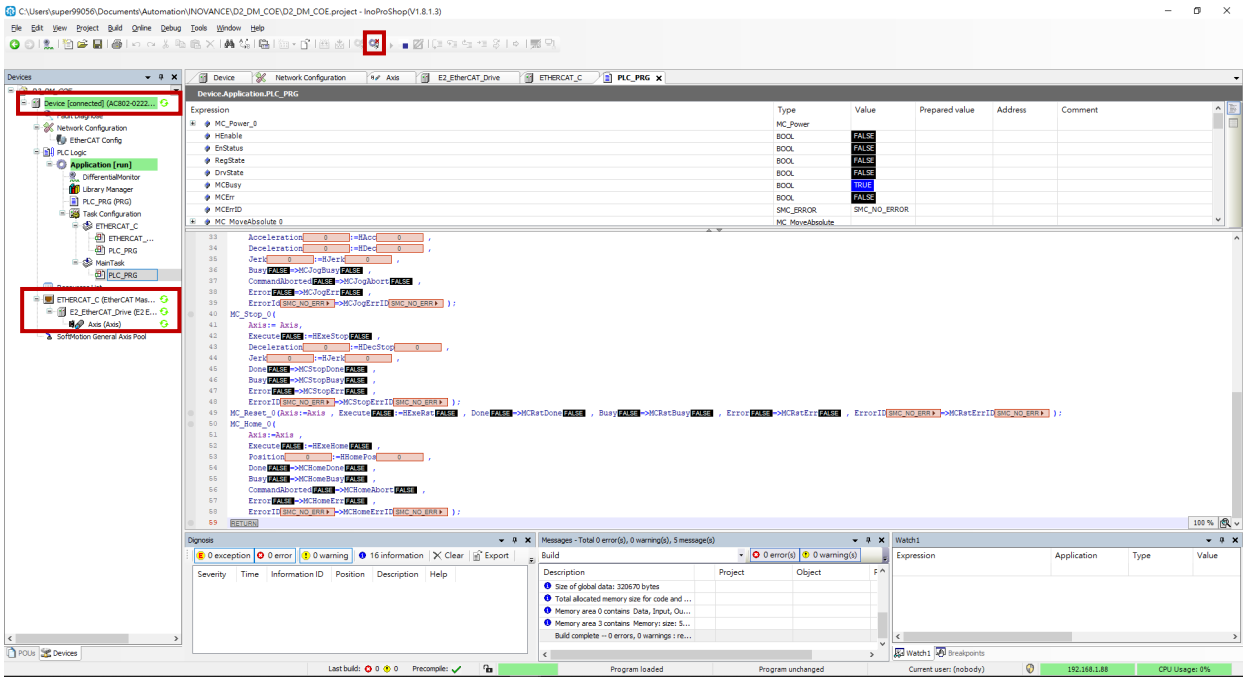

Figure 4.2.3

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5. Operate Function Blocks

5.1 Execute motion commands

5.1.1 MC_Power

1. After communication is successfully established, set the user-defined variable “HEnable” to **TRUE** in “Prepared value” column on “PLC_PRG” page.

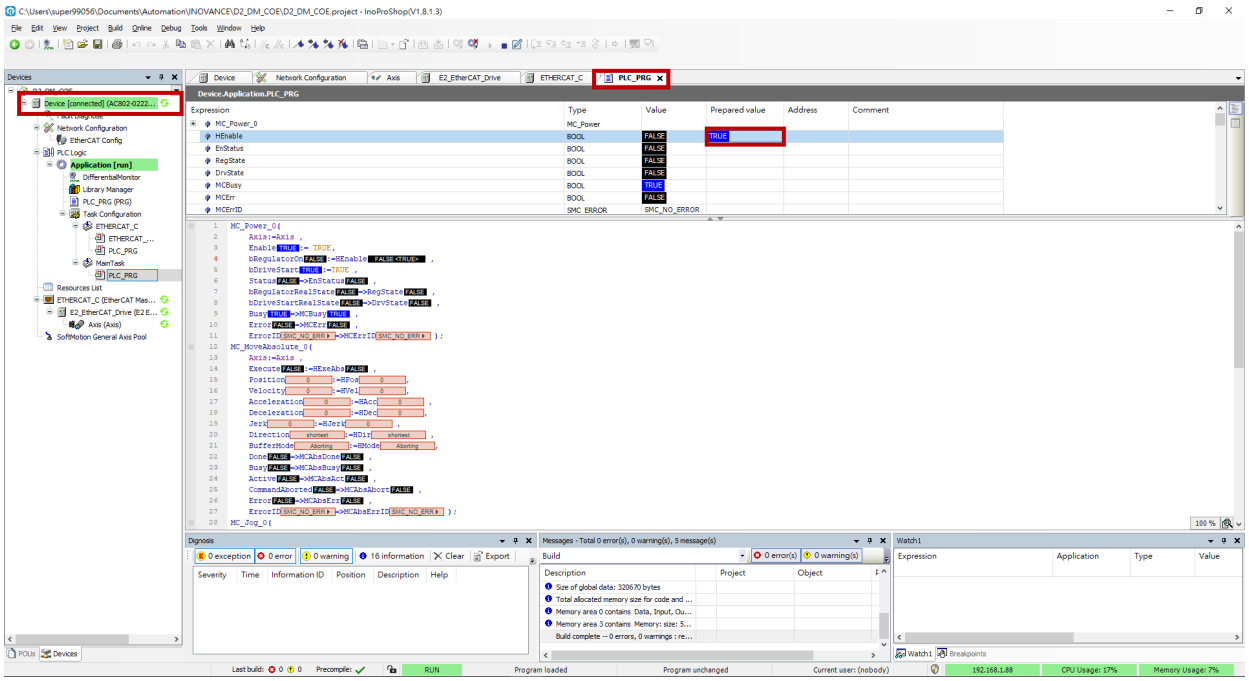

Figure 5.1.1.1

2. Click **Debug** and execute **Write values** (shortcut Ctrl+F7). After the command is successfully executed, the motor will be enabled.

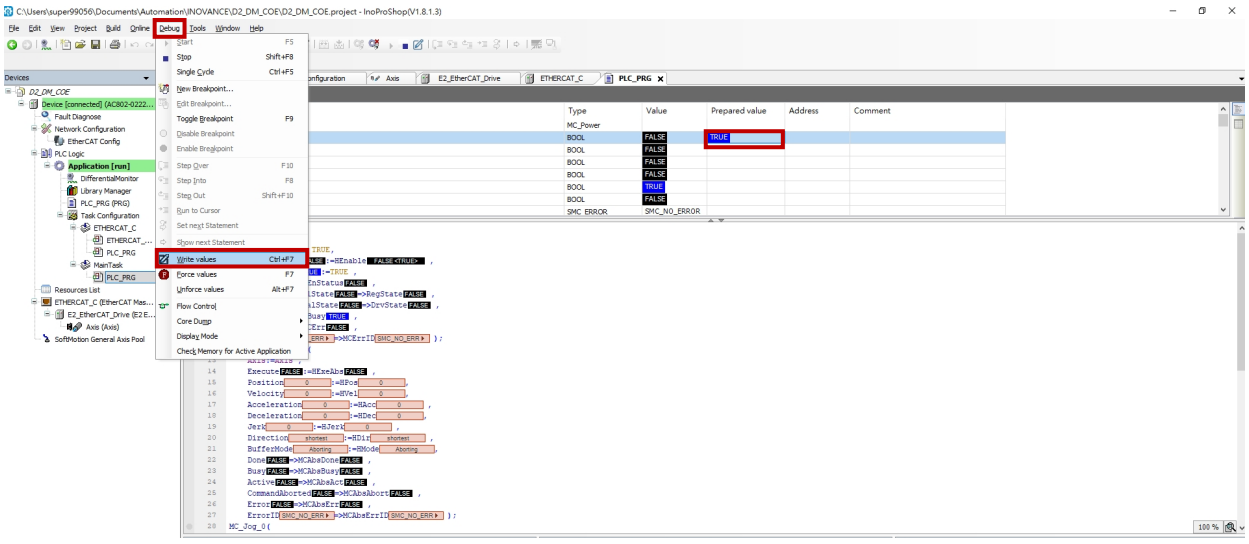

Figure 5.1.1.2

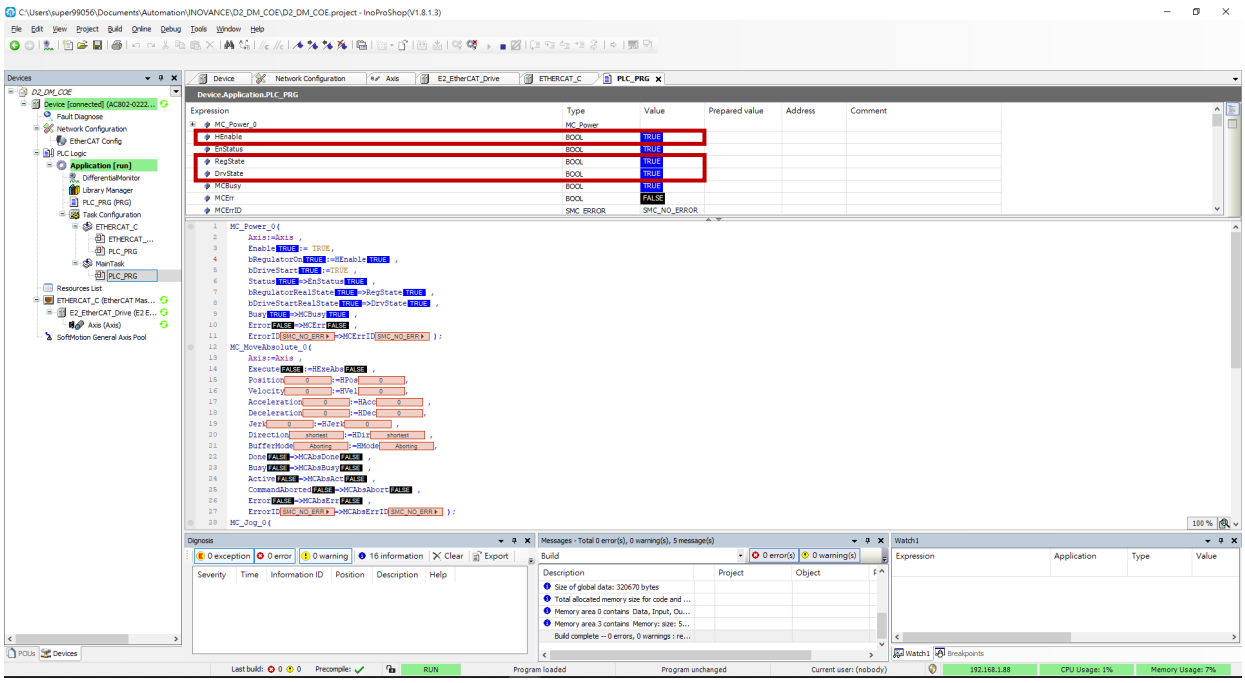

Figure 5.1.1.3

5.1.2 MC_Reset

1. After communication is successfully established, set the user-defined variable “HExeRst” to **TRUE** in “Prepared value” column on “PLC_PRG” page.

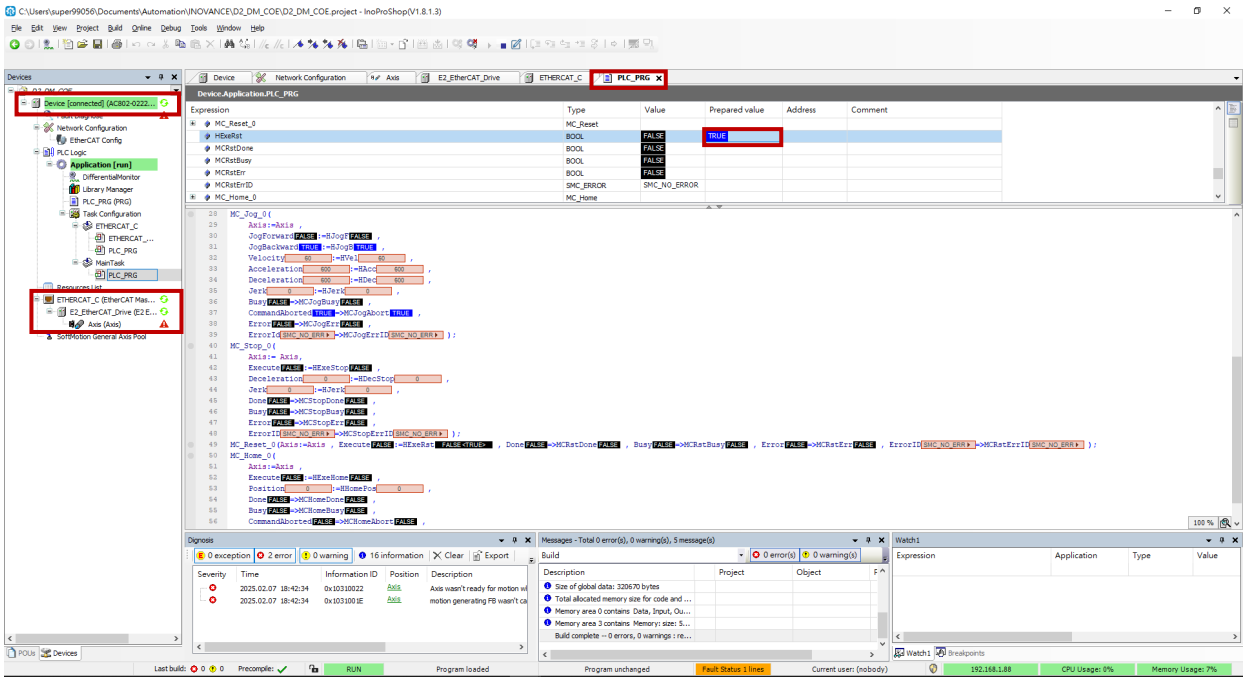

Figure 5.1.2.1

2. Refer to section 5.1.1 to execute the steps of Write values. After the command is successfully executed, the error of the axis will be cleared.

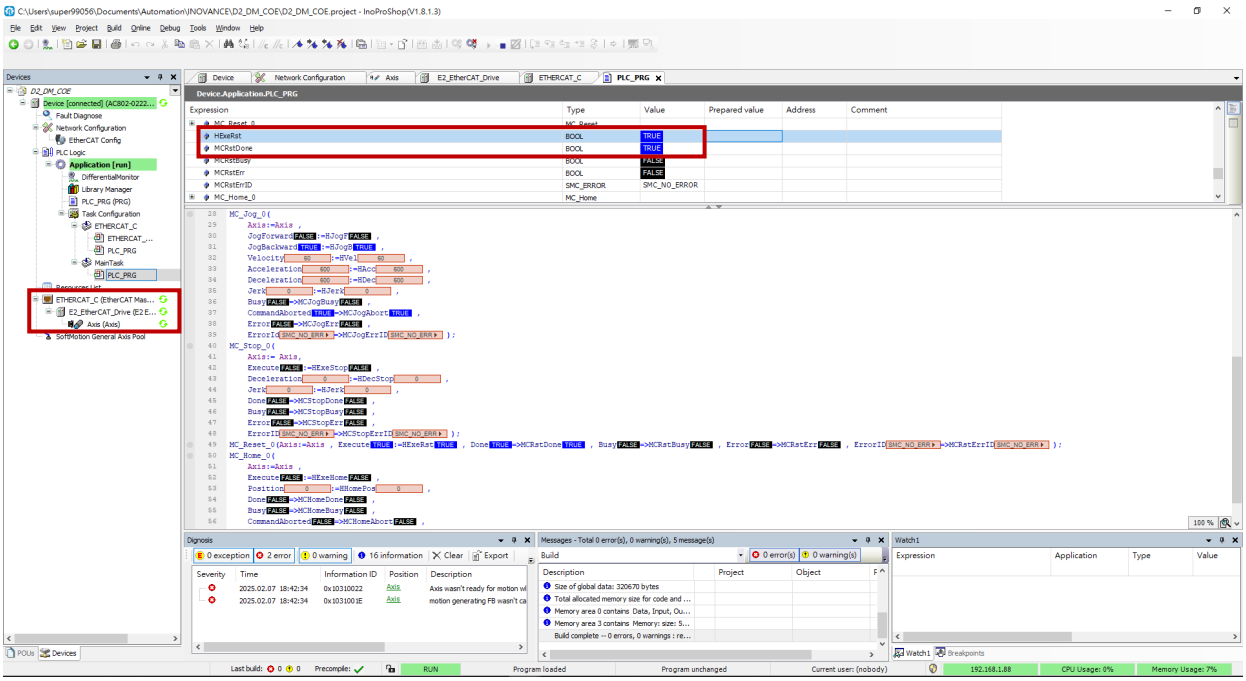

Figure 5.1.2.2

5.1.3 MC_Jog

1. After communication is successfully established, complete the setting of motion parameters on “PLC_PRG” page and set the user-defined variable “HJogF” to **TRUE** in “Prepared value” column.

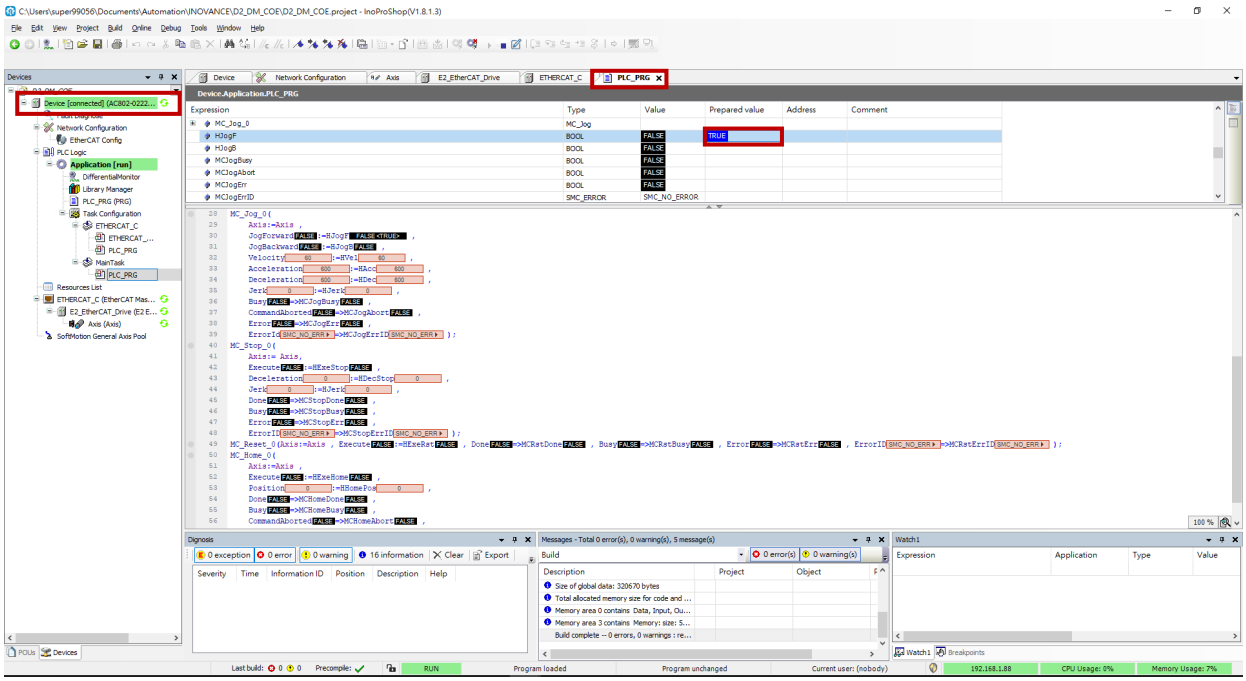

Figure 5.1.3.1

2. Refer to section 5.1.1 to execute the steps of Write values. After the command is successfully executed, the axis will perform jog based on the motion conditions.

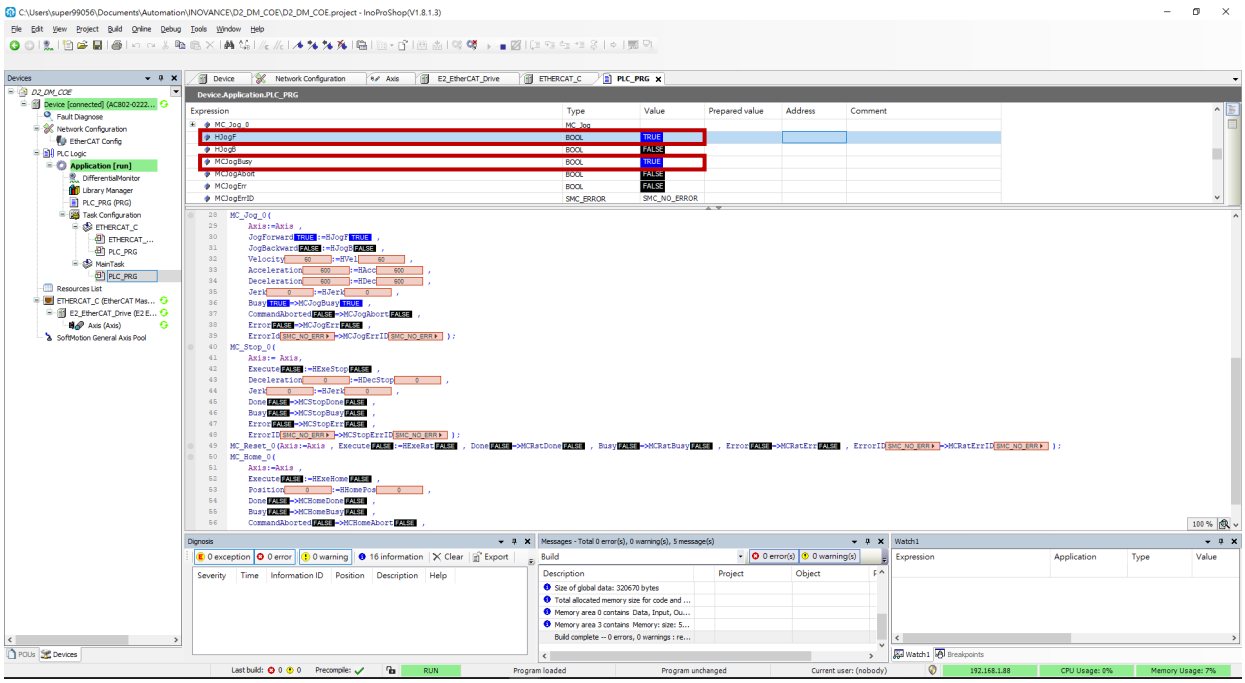

Figure 5.1.3.2

5.1.4 MC_MoveAbsolute

1. After communication is successfully established, complete the setting of motion parameters on “PLC_PRG” page and set the user-defined variable “HExeAbs” to **TRUE** in “Prepared value” column.

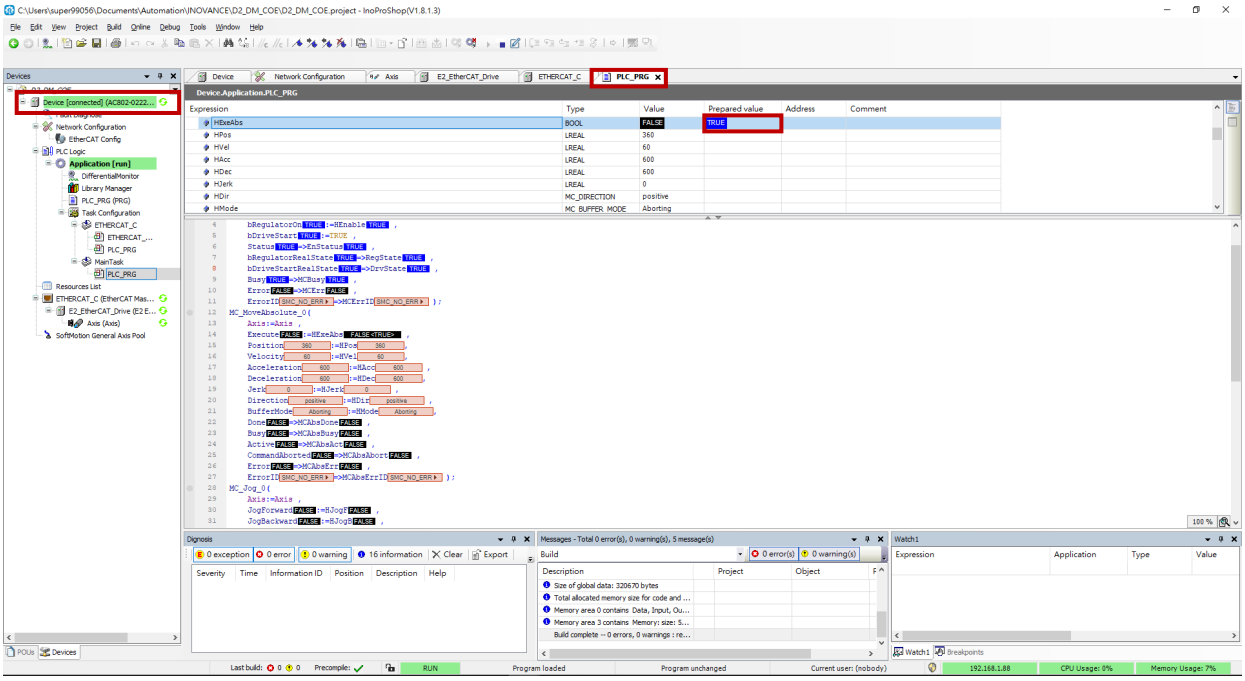

Figure 5.1.4.1

2. Refer to section 5.1.1 to execute the steps of Write values. After the command is successfully executed, the axis will perform absolute movement based on the motion conditions.

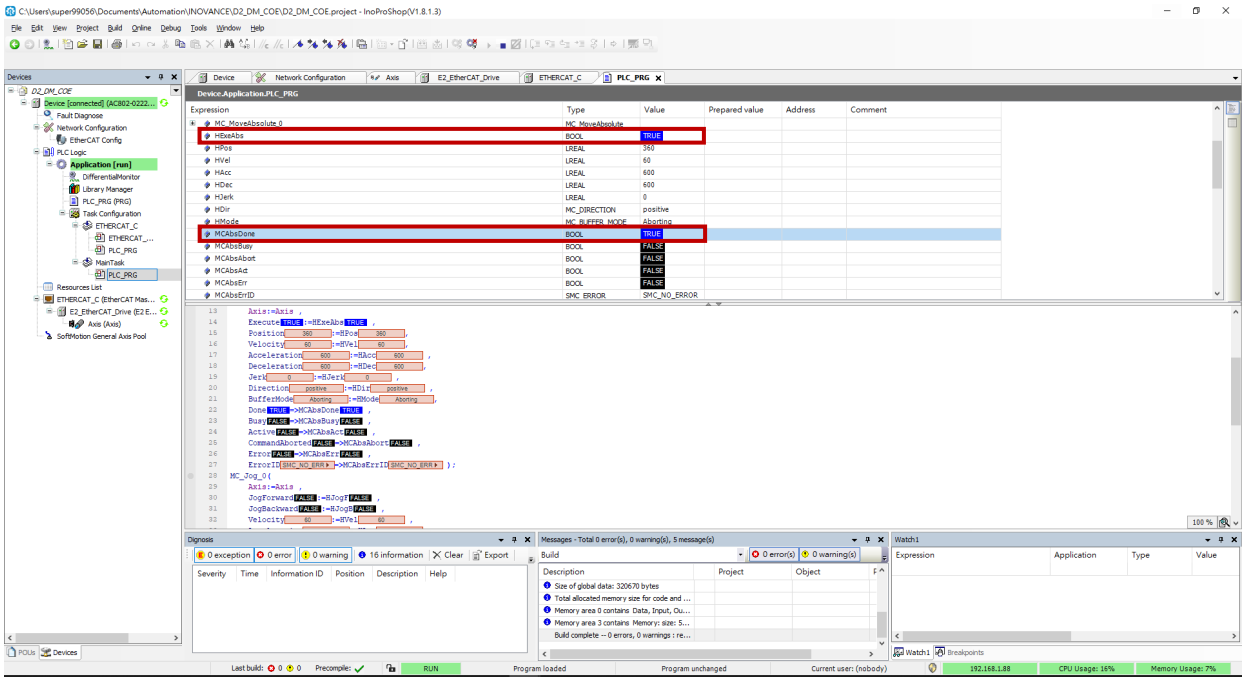

Figure 5.1.4.2

5.1.5 MC_MoveRelative

1. After communication is successfully established, complete the setting of motion parameters on “PLC_PRG” page and set the user-defined variable “HExeRel” to **TRUE** in “Prepared value” column.

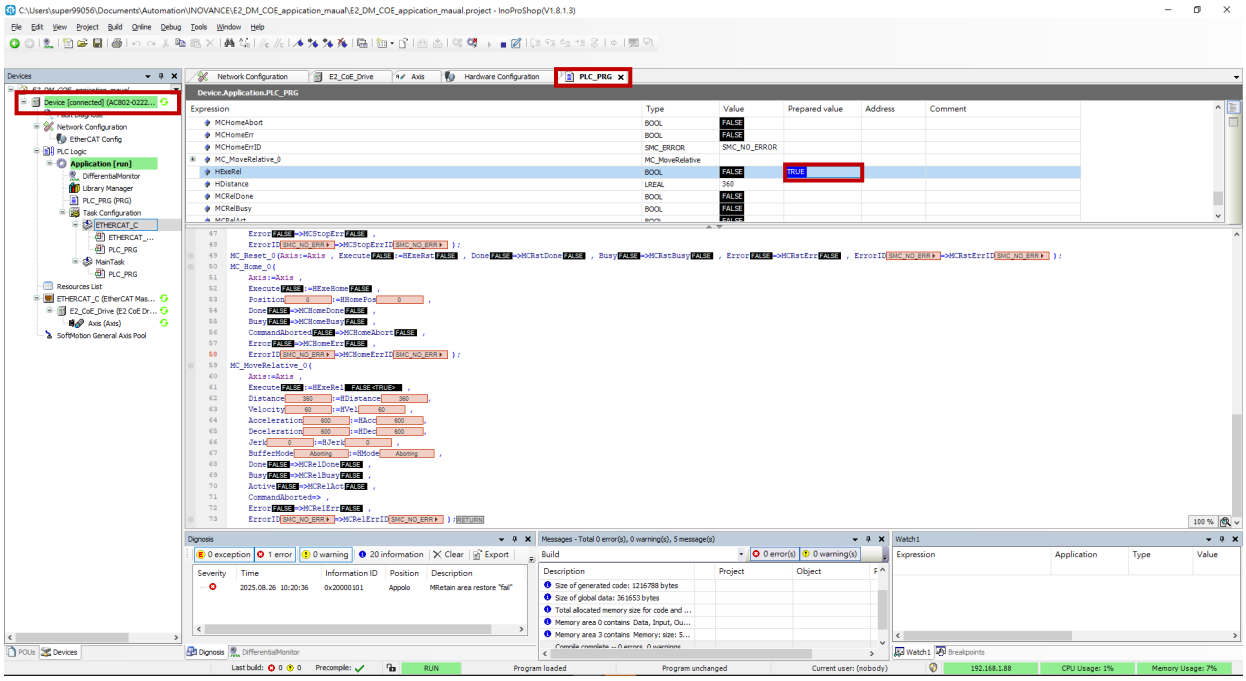

Figure 5.1.5.1

2. Refer to section 5.1.1 to execute the steps of Write values. After the command is successfully executed, the axis will perform relative movement based on the motion conditions.

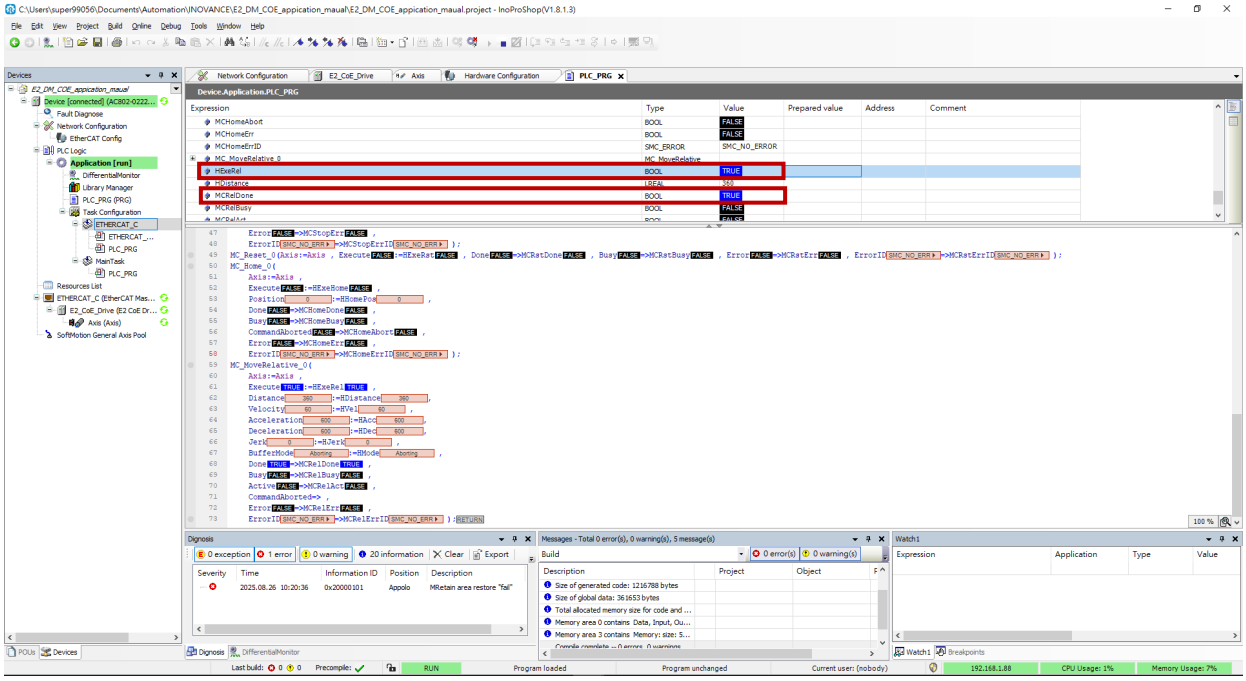

Figure 5.1.5.2

5.1.6 MC_Home

1. After communication is successfully established, complete the setting of homing parameters on "PLC_PRG" page and set the user-defined variable "HExeHome" to **TRUE** in "Prepared value" column.

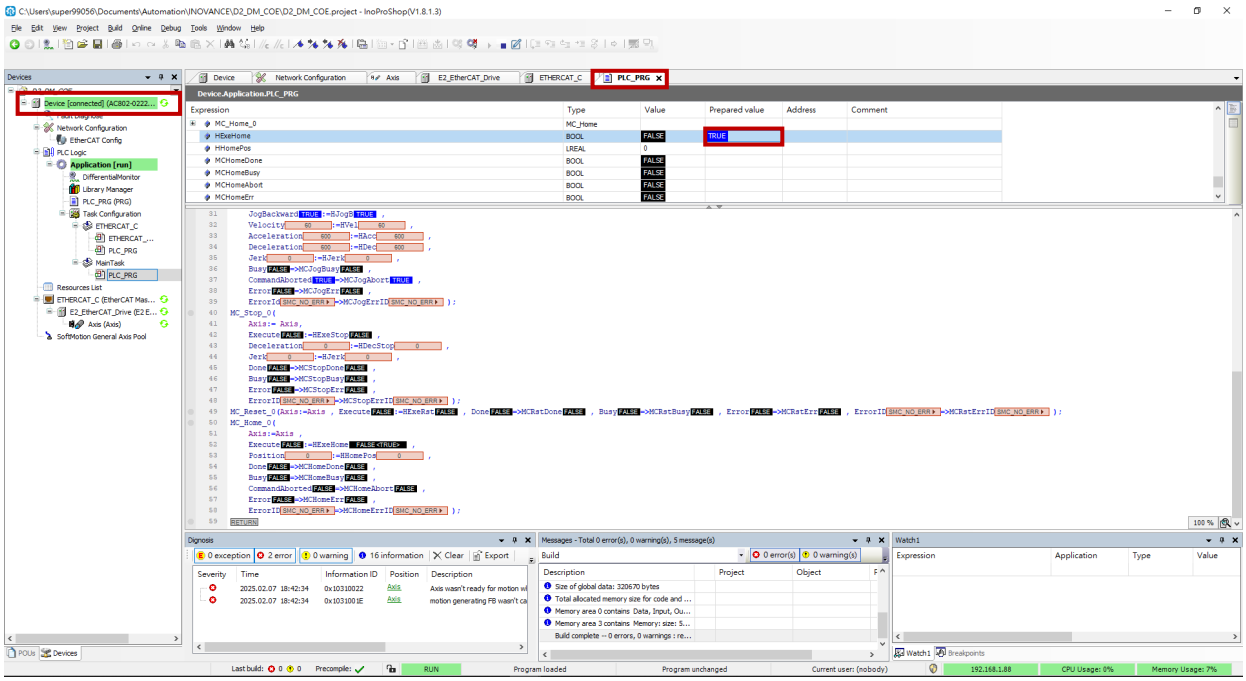

Figure 5.1.6.1

2. Refer to section 5.1.1 to execute the steps of Write values. After the command is successfully executed, the axis will perform homing based on the motion conditions.

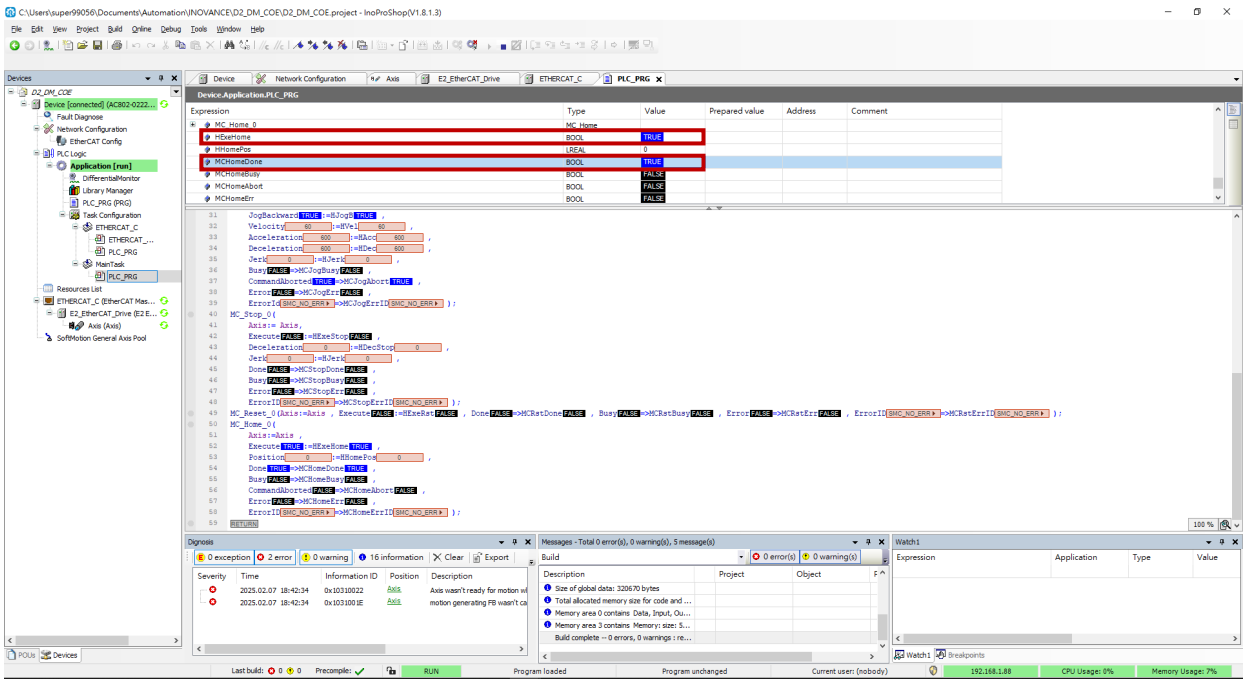

Figure 5.1.6.2