How to create a new project and connect 2 FD1x4S-EA-000 drives.

Follow the Codesys Installation document for installing the program and the required .package files for the AK840.

Since we are going to be connecting to FD servo drives in this example, we will need to load the required .xml file for the drives
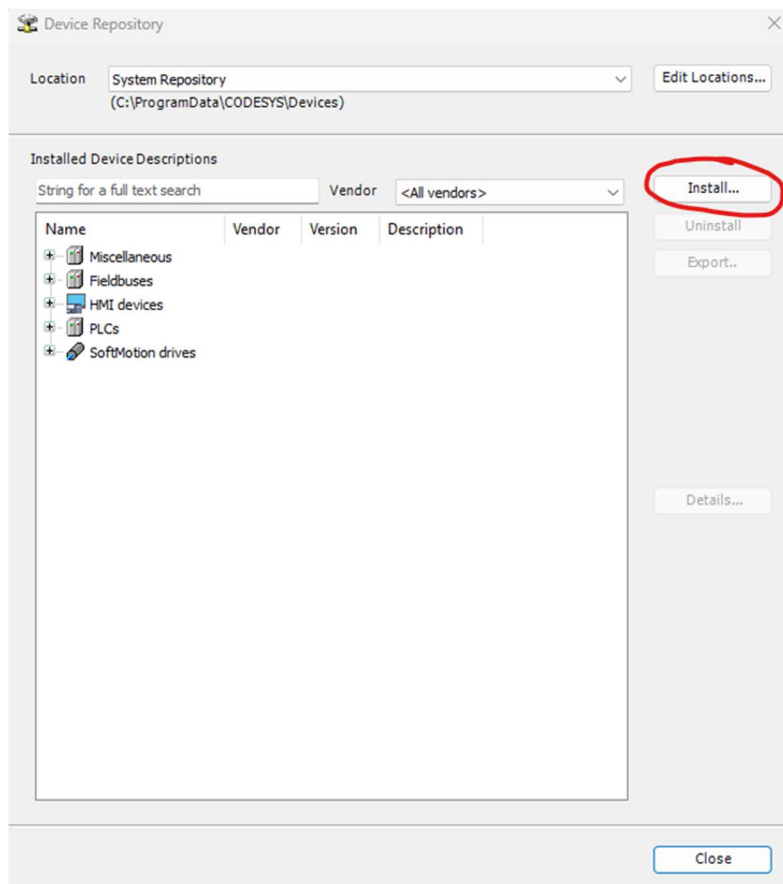
We are looking for the Kinco FD.xml file in the same download from the Codesys setup.

https://anaheimautomation.com/media/anaheim/files/software/Kinco_Ethercat_XML.zip
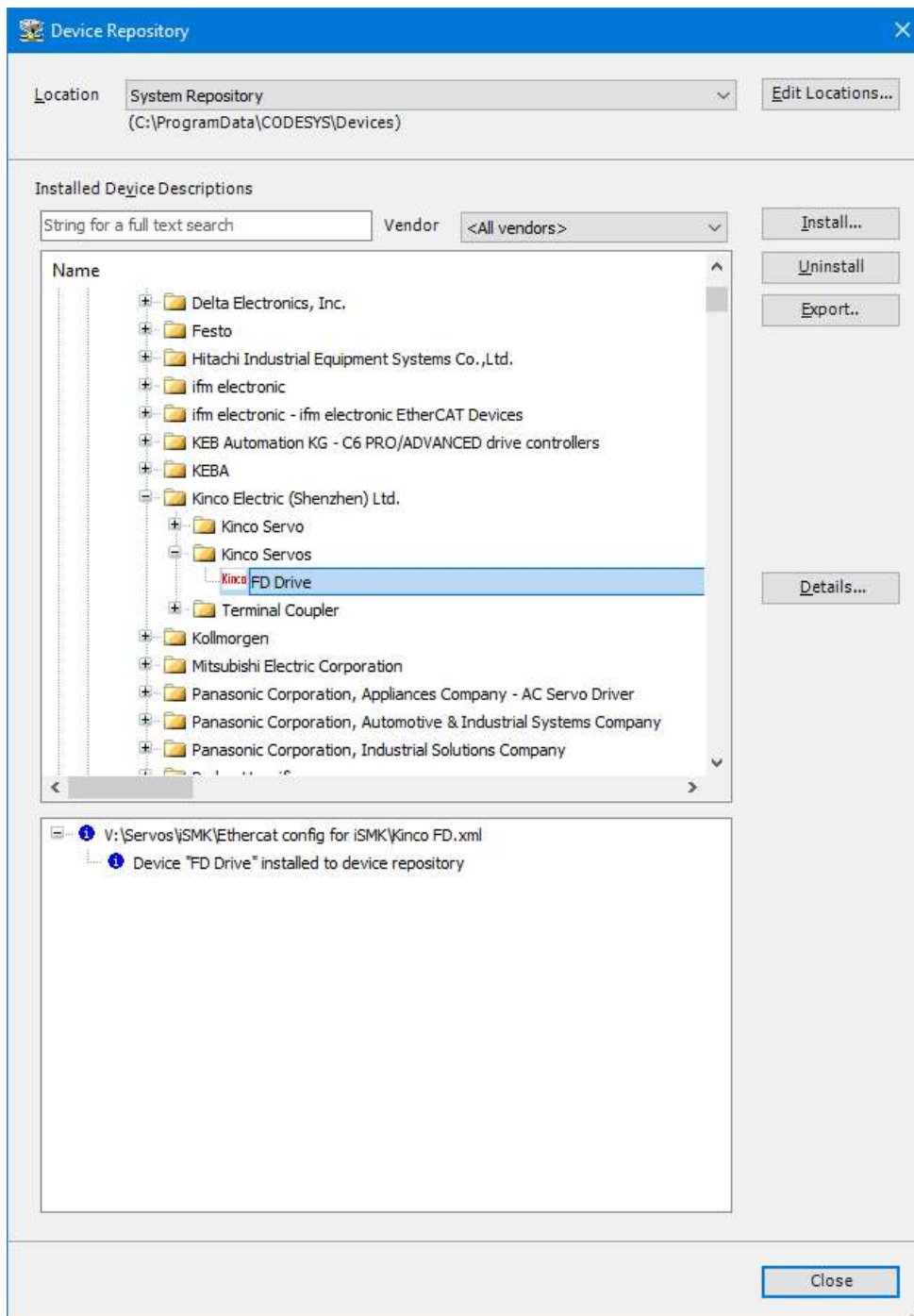
We need to add the new Servo FD.xml File, Click on Tools->Device Repository...
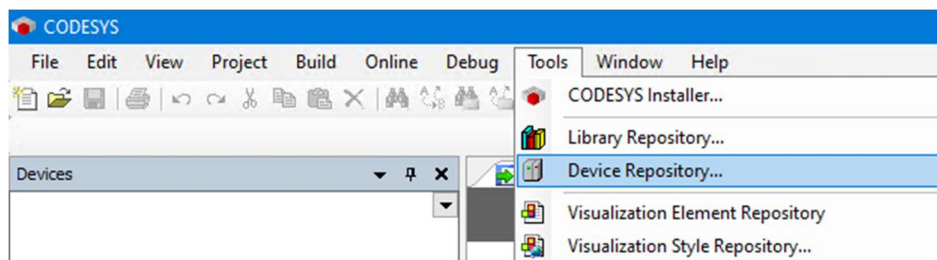
Click on Install, browse to Kinco FD.xml in the download saved earlier
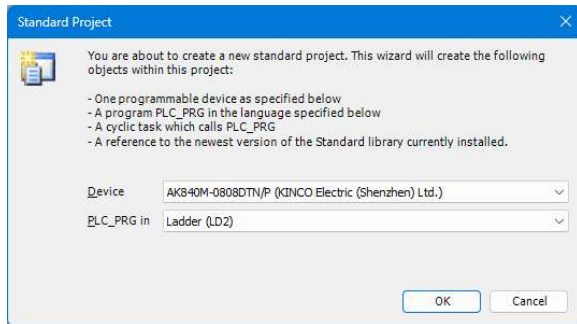
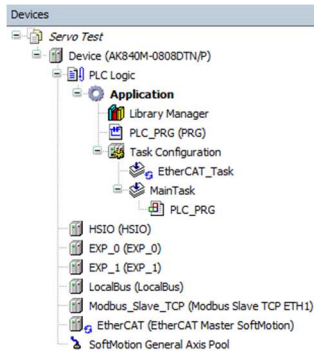You should see a new Kinco Servos folder with the FD Drive installed

Start a New Project

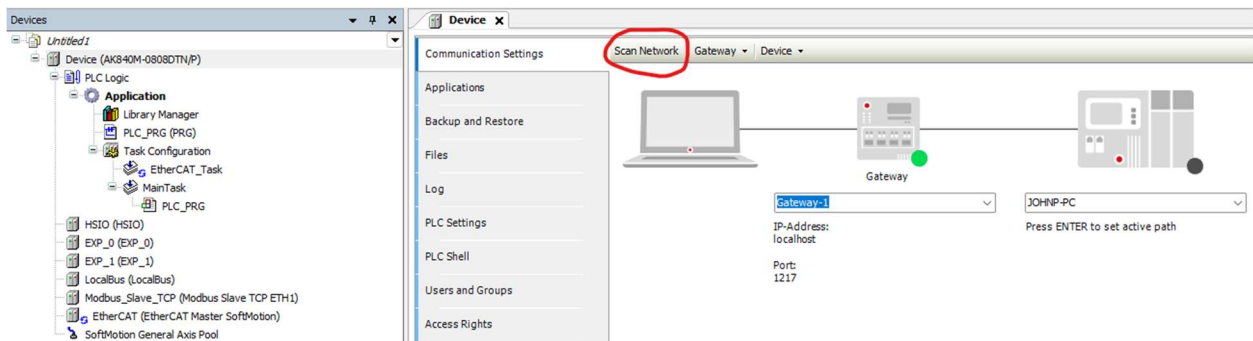Select the AK840M Device and your default programming language here

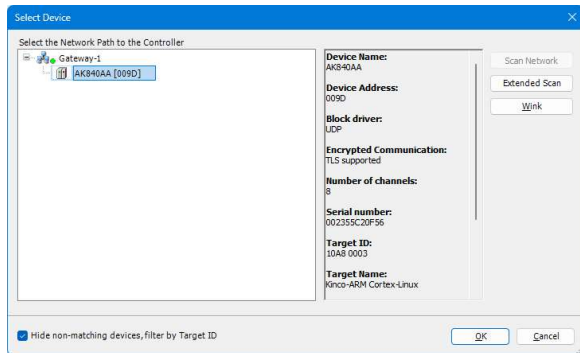

Device Stack of New Project

We need to connect the AK840M Now

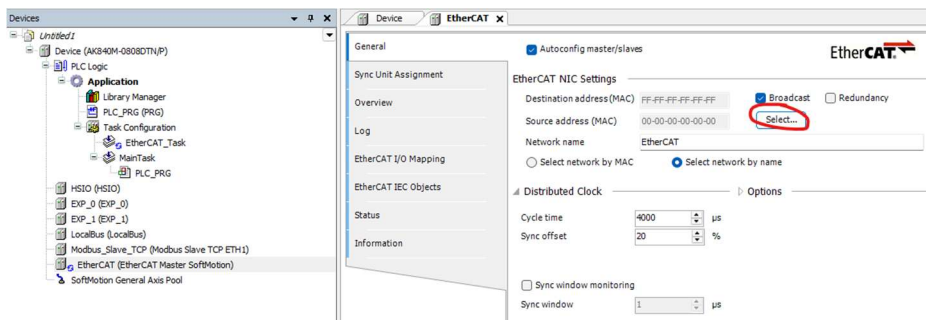Click on Device (AK840M-0808DTN/P) in the Device Tree

The program will scan the network – Select the device when it is found and click OK
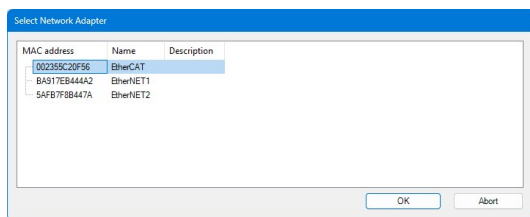

Next we need to link the Source Address for the EtherCAT communication

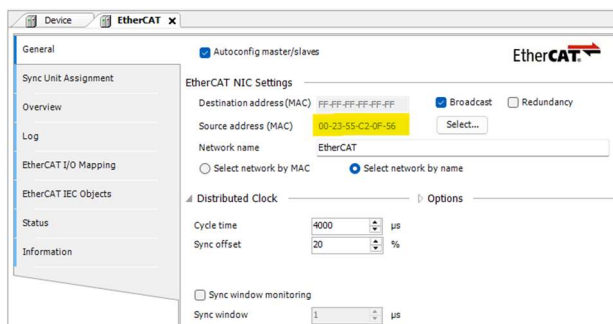Double Click on EtherCAT (EtherCAT Master SoftMotion) in the Device Tree
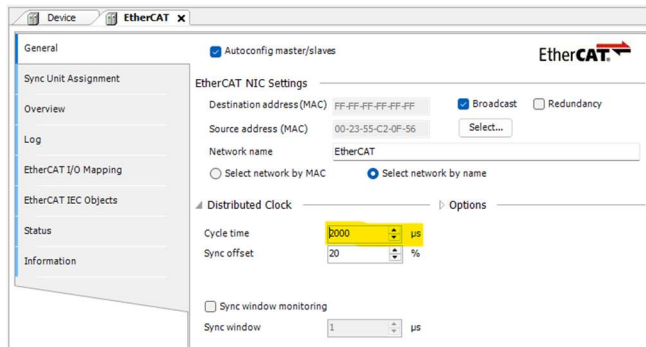
Click on Select

Select EtherCAT as the Adapter and then click on OK

You will see the Source address (MAC) change when this step is completed

We want to use a Cycle time of 2mS (2000us) so we need to make sure that this is set in the EtherCAT properties

We also want to expand the Options Selection and click on Automatically restart slaves. This will reconnect the EtherCAT devices without having to power down the AK840M if the power is reset on the FD Drives (this takes about a minute to reconnect after power cycling the FD Drives)
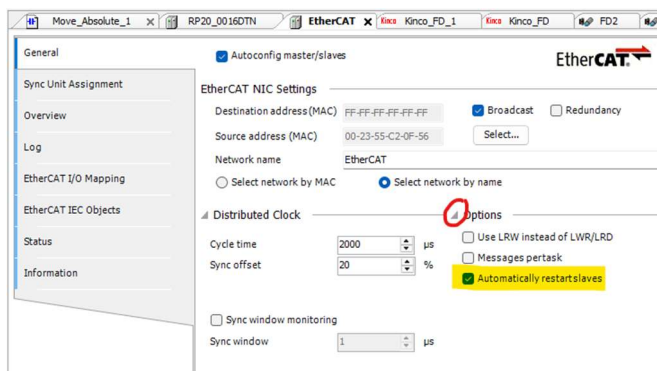
Since we are going to connect to 2 FD Servo drives, we need to make sure that the following addresses are set as shown below using KincoServo+ or KincoServo3

ECAN_Sync_Cycle – Register 301101 = 0001 (2mS)

ECAN_Sync_Clock - Register 301102 = 0001 (Clock Sync)

Keba - Register 23400D = 0001 (Support Keba PLC)

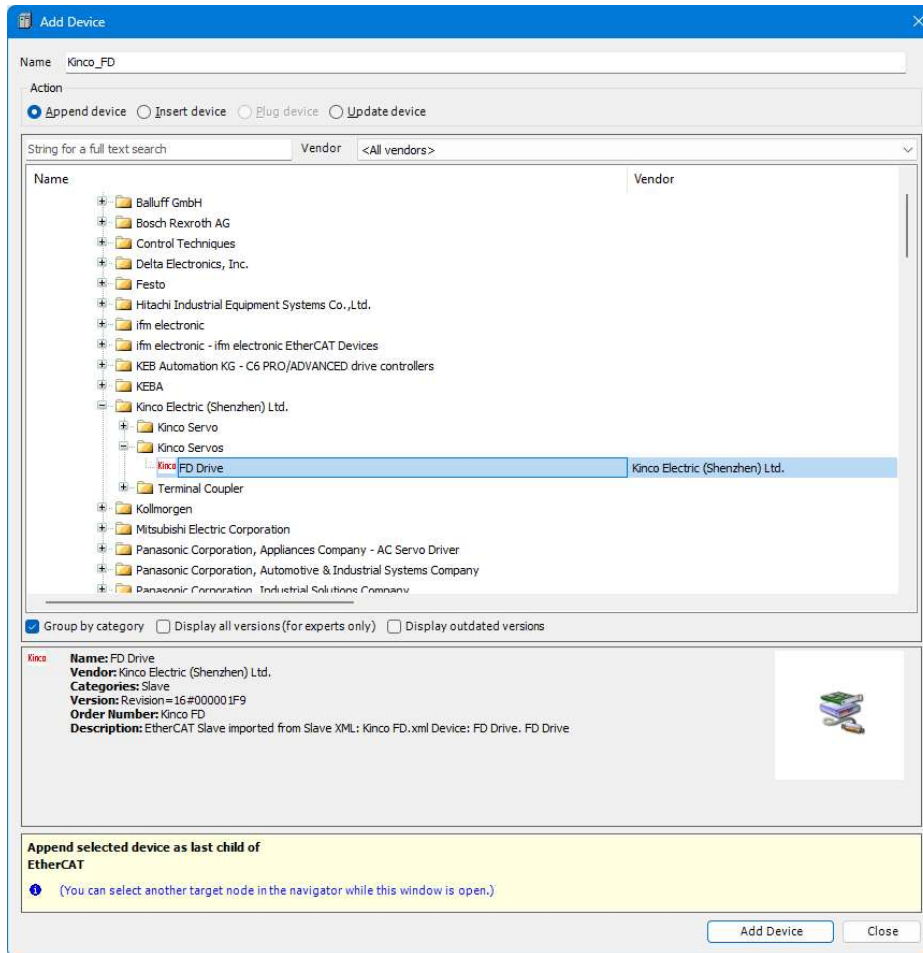Sim_ABZ - Register 64101F = 10,000 (sets 10,000 pulses per revolution)

Now we will Add the 2 FD Servo Drive Devices to the EtherCAT Device Tree

Right Click on EtherCAT and select Add Device…

Expand the Kinco Electric (Shenzhen) Ltd. Option
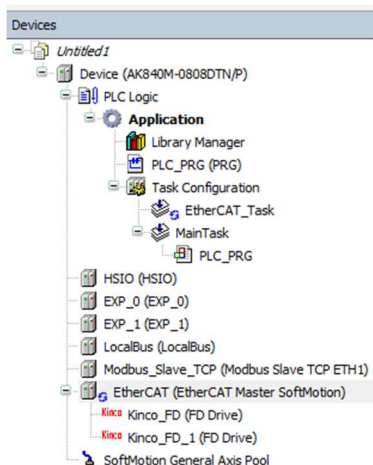
Expand the Kinco Servos option

Select FD Drive and click on Add Device 2 times since we are adding 2 FD drives

This is the FD Drive you want to use when creating your programs.

DO NOT USE THE FD DRIVE IN THE KINCO SERVO (WITHOUT S) FOLDER.

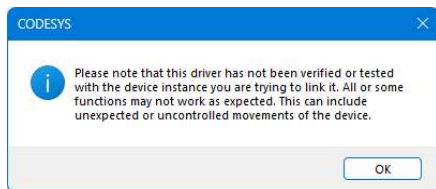Device Tree after adding the 2 Servo devices

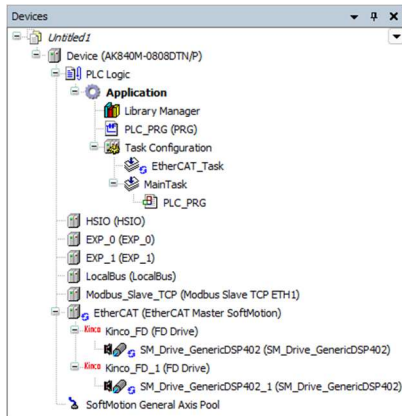To control the Servo with Codesys Commands we need to add Soft Motion CiA402 devices to each drive

For both Kinco_FD and Kinco_FD_1 drives now in the Device Tree, right click and select Add SoftMotion CiA402 Axis
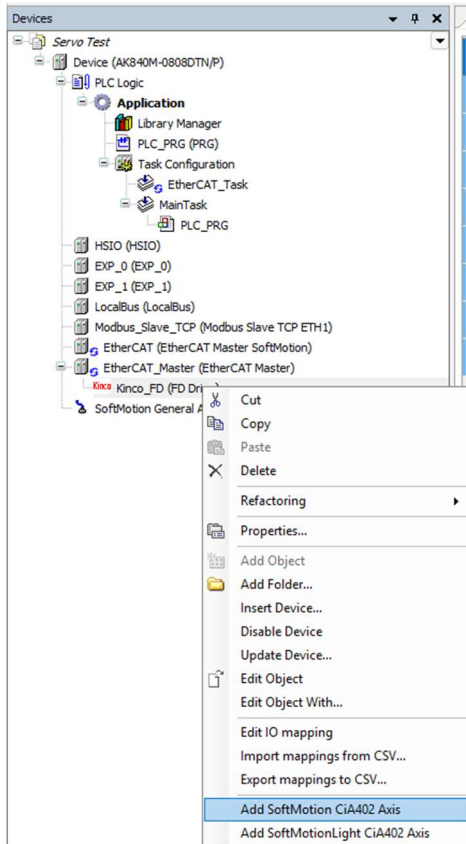
This notification box will pop up, select OK
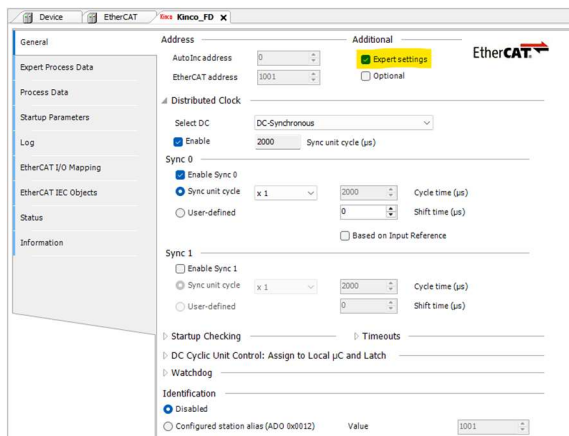
Device Tree after add CiA402 axis
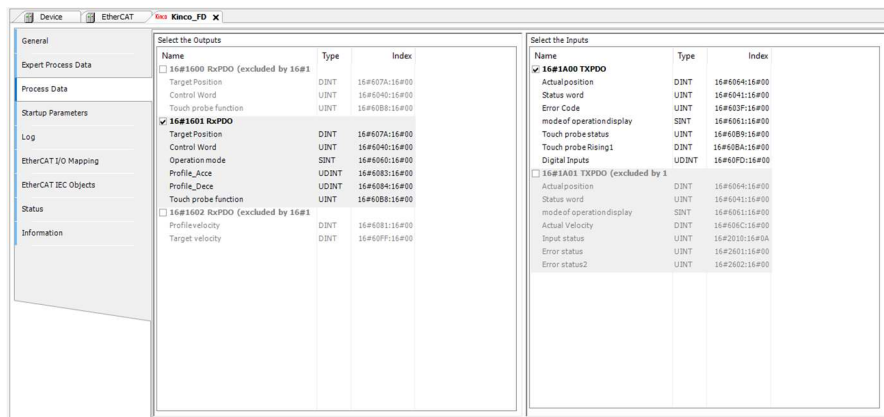

Double Click Kinco_FD Device

In General Tab

Click Expert Settings

Verify Sync unit cycle = 2000

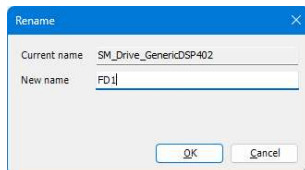# In Process Data Tab select the correct Outputs as shown below
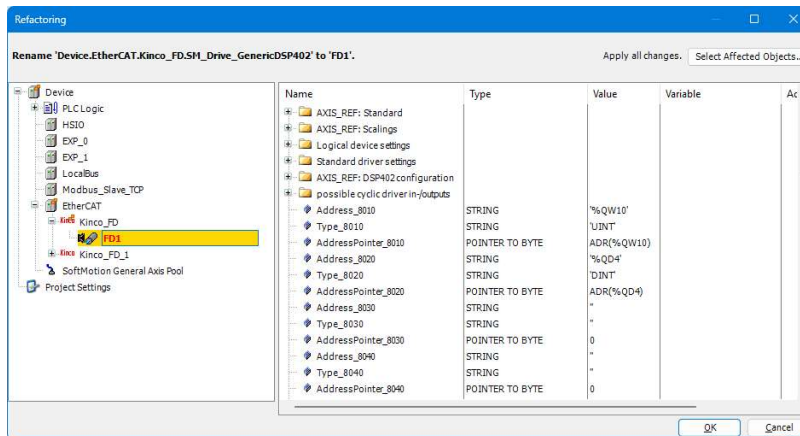
Do the same for the Kinco_FD_1 Device

Now we want to Rename the CiA402 Devices so it is easier to select the proper Axis in the program

Right Click on SM_Drive_GenericDSP402 -> Refactoring -> Rename

New Name is set to FD1 then click OK

Another window will pop up showing the new name in RED. There is nothing to change here, Click OK
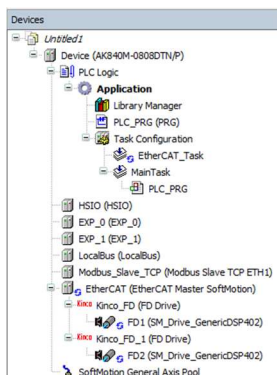

Repeat for the Second Drive

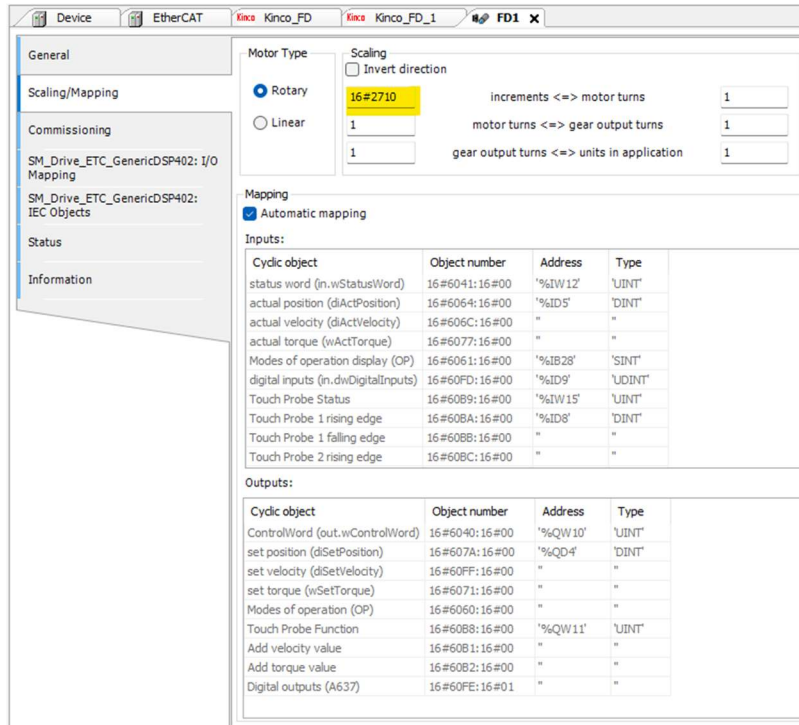Right Click on SM_Drive_GenericDSP402_1 -> Refactoring -> Rename

Rename Device to FD2

The Device Tree should look like this after both devices are renamed.

We need to set the Encoder Resolution to match the Servo Drive

Double Click FD1 and Select Scaling/Mapping

Change increments <=> motor turns to 16#2710 (2710 hex = 10,000 dec)

Do the same for the FD2 Device

Save the project at this point as we are now ready to LogIn to PLC and verify that everything is connected correctly.

For EtherCAT, the first device connected to the AK840M will be FD1. The second device connected to FD1 will be FD2. The sequence of how the devices are listed under the EtherCAT Device Tree matter and if you add other devices, the list must be in the same order as the connection.
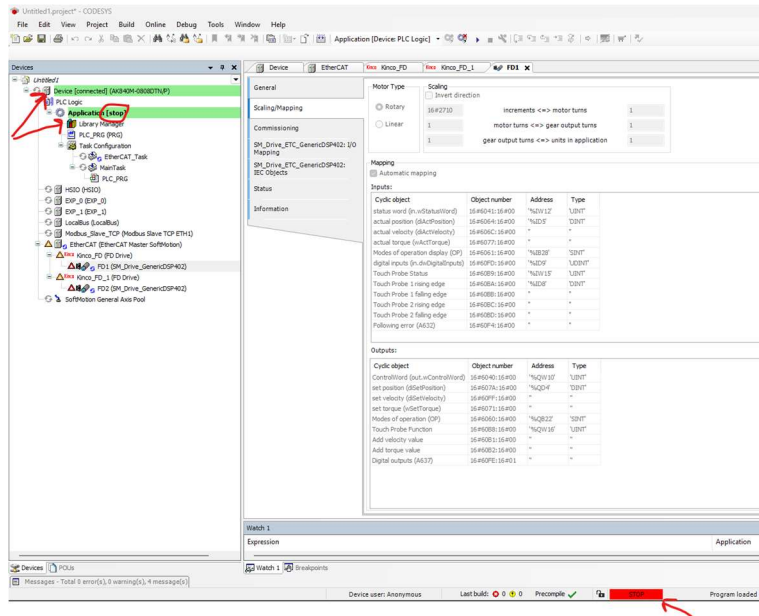
Log In to the PLC

If you receive any pop up messages please select yes to overwrite and download our new setting into the AK840M.

The program will now compile and download the settings into the AK840M

At this point the program is not running, you will see that the PLC is connected and in STOP mode. Also the EtherCAT has a triangle next to it indicating it is not running.

Now let's Run the AK840M – Click the Start button

At this point, all the icons on the left of the devices should turn green. We have a successful connection via EtherCAT to both FD Servo Drives from the AK840M.
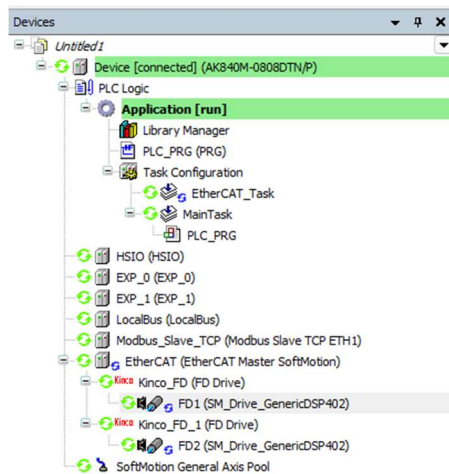
You are now setup with the AK840M Controller and 2 FD Drives.

Press the Stop button and LogOut of the AK840M, You are now ready to start programming.