

Installation

Prerequisites

Required apps on ctrlX CORE:

- PLC
- EtherCAT Master

The CODESYS Softmotion Package and the ctrlX Softmotion Adaption Package are available in the ctrlX Download Zone ([#link](#)).

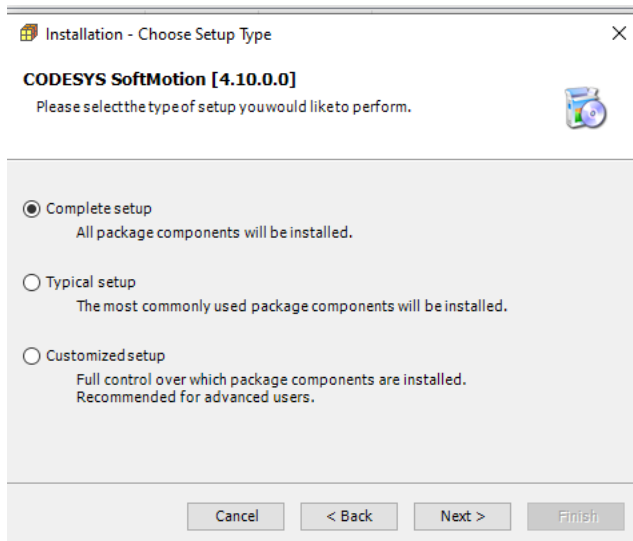
Ensure that you are logged in with administration rights on your PC.

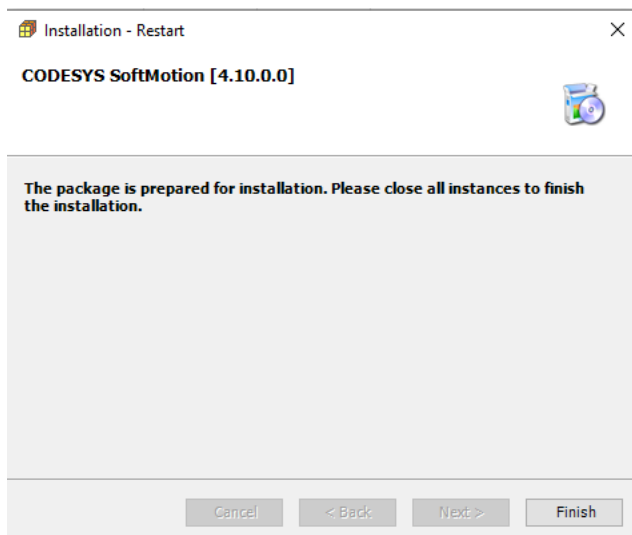
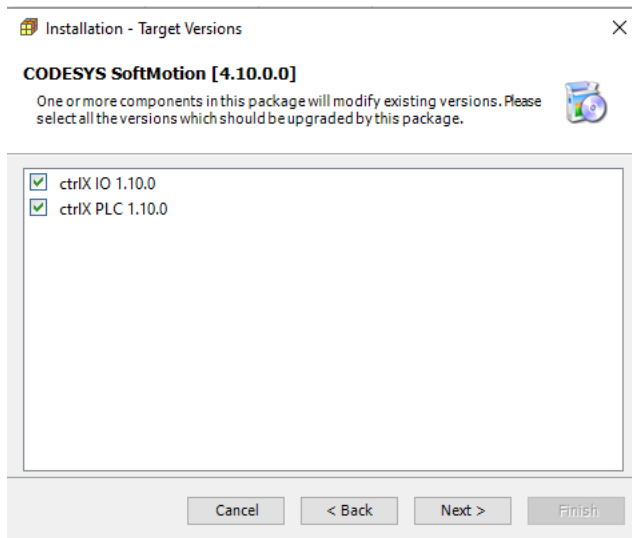
For the operation of the CODESYS Softmotion a license is required which you can order in the ctrlX CORE App Zone ([#link](#))

Without valid license the CODESYS Softmotion runs in evaluation mode and will be terminated after #.

Softmotion Installation

Install Softmotion package version 4.10.0.0 or newer version.





Close all dialogs and the PLC engineering application and allow the installation process to make changes on your computer. After some waiting time the installation window will open.

Installation - Progress

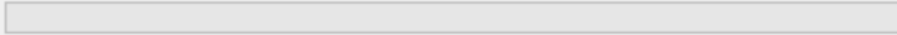


CODESYS SoftMotion [4.10.0.0]

Please wait while the package is being installed.



Initializing...



Cancel

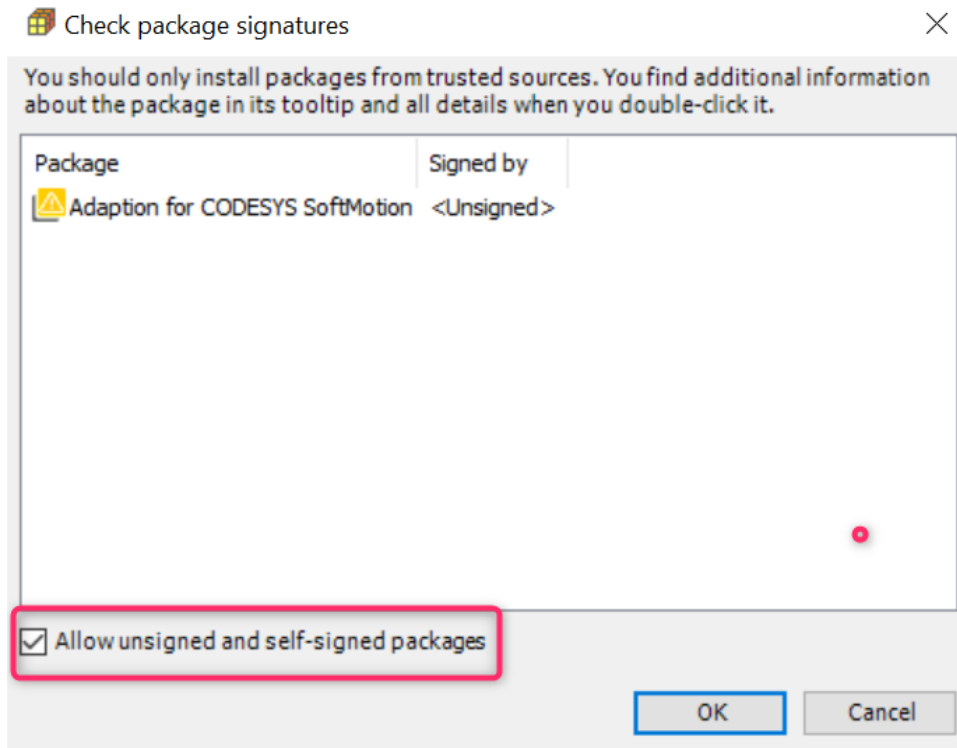
< Back

Next >

Finish

[ctrlX Softmotion Adaption Package Installation](#)

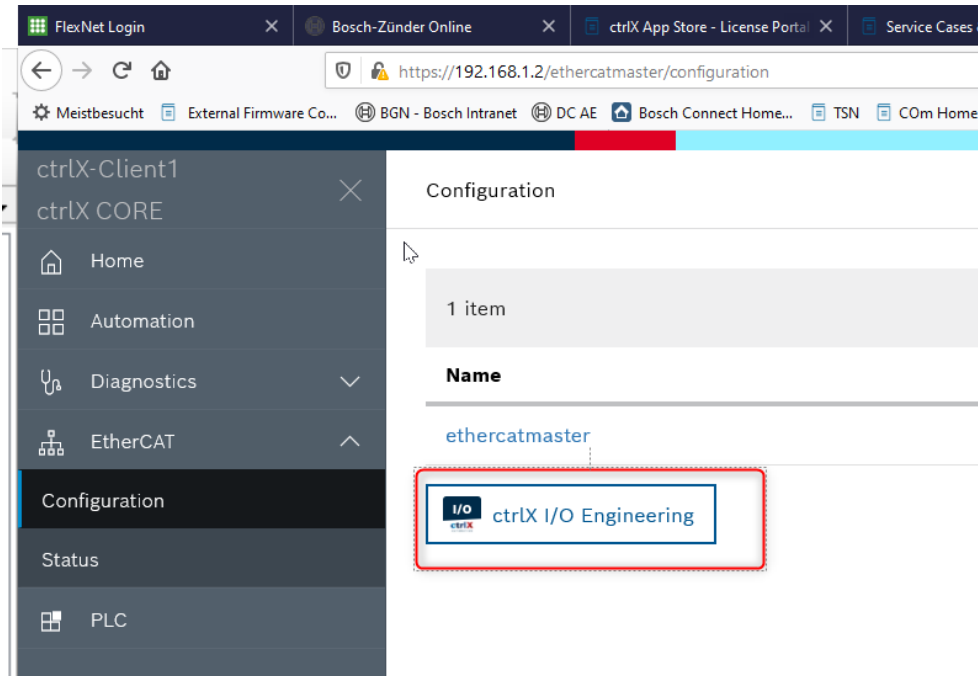
Call the ctrlX PLC Engineering menu Tools- > PackageManager. Click on the Install-Button in the appearing dialog and browse to the location where to you have downloaded the ctrlX Softmotion Adaption Package. Select "Allow unsigned and self-signed packages and click ok ok. Accept the license agreement and select typical installation in the following dialogs.



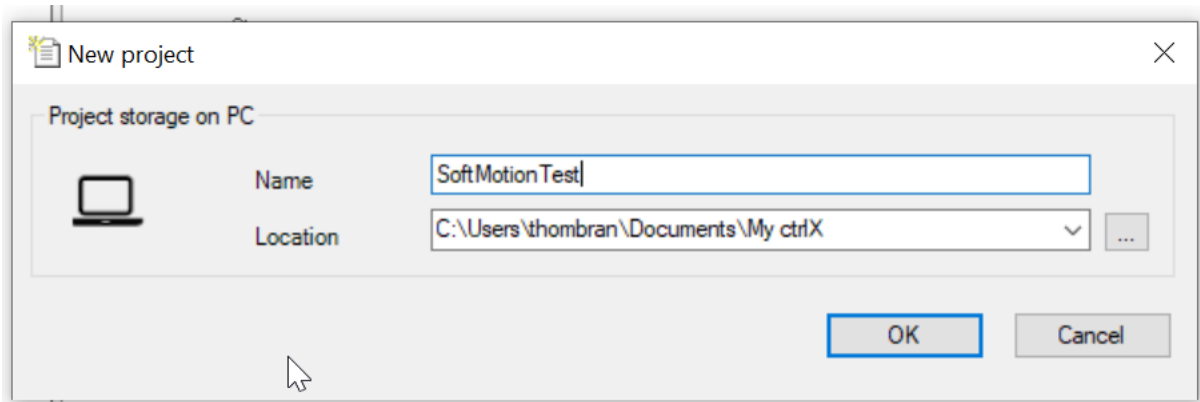
I/O Configuration

Connect your IndraDrives with EtherCAT SoE option to your ctrlX CORE.

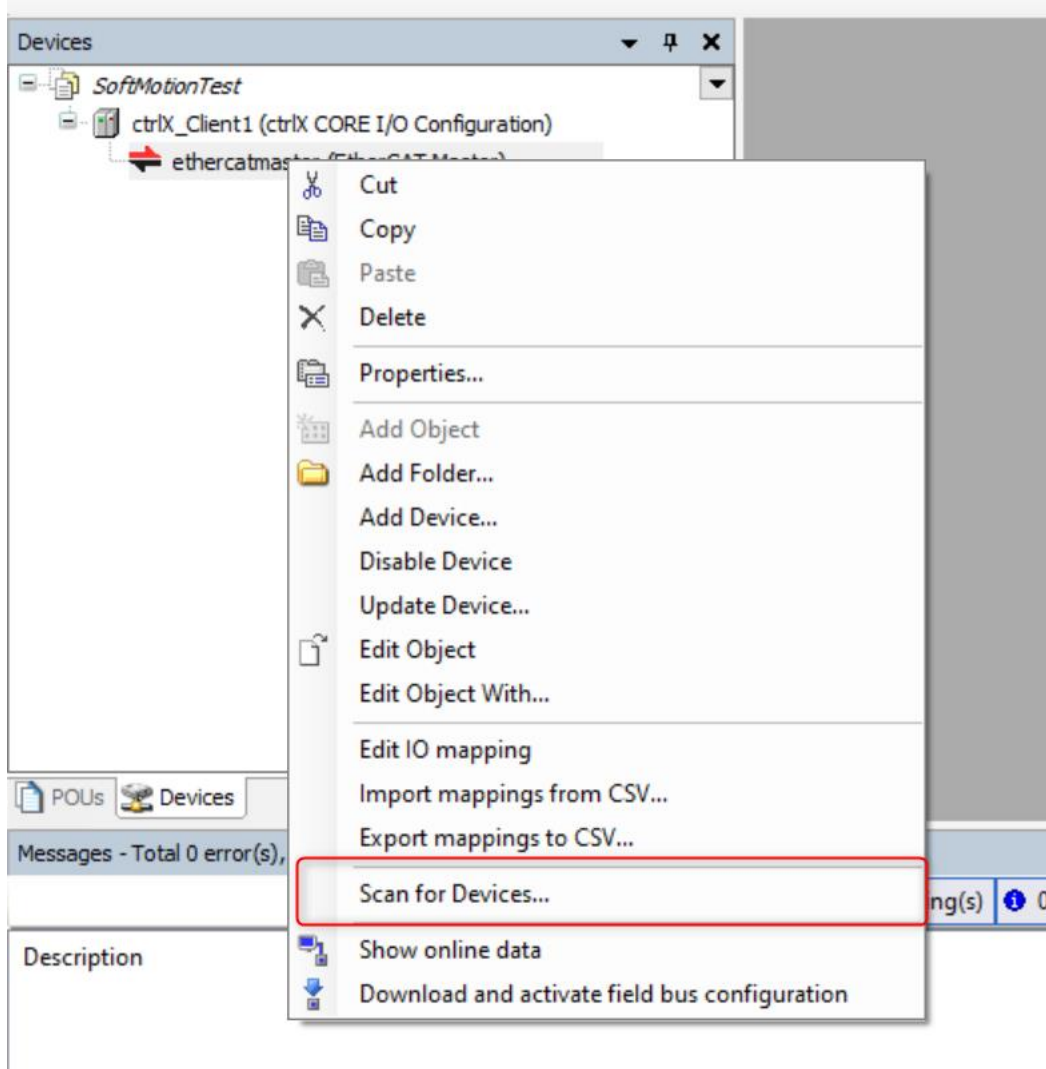
Connect with your web browser to ctrlX CORE, navigate to EtherCAT=>Configuration and start ctrlX I/O Engineering.



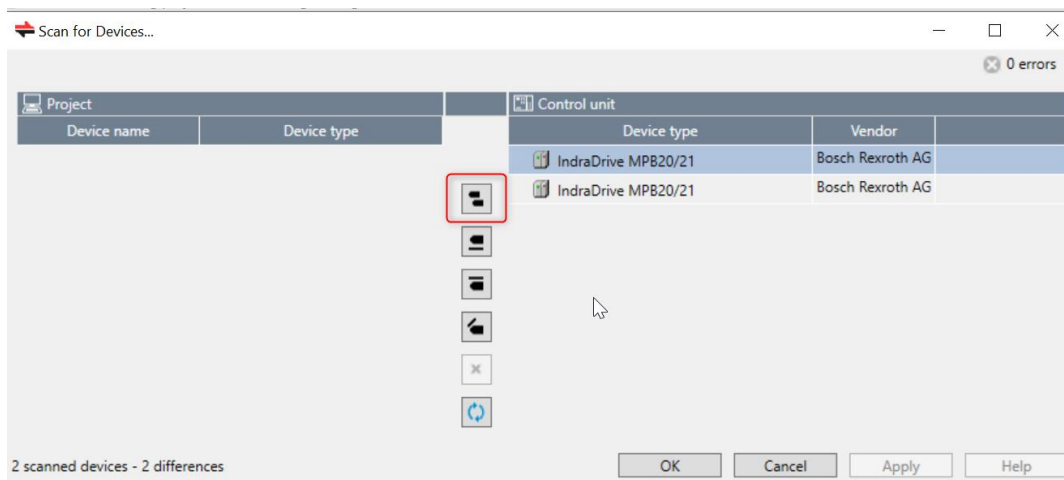
After the Start of ctrIX I/O Engineering you are requested to define the Name of your application and the destination folder on your engineering PC.



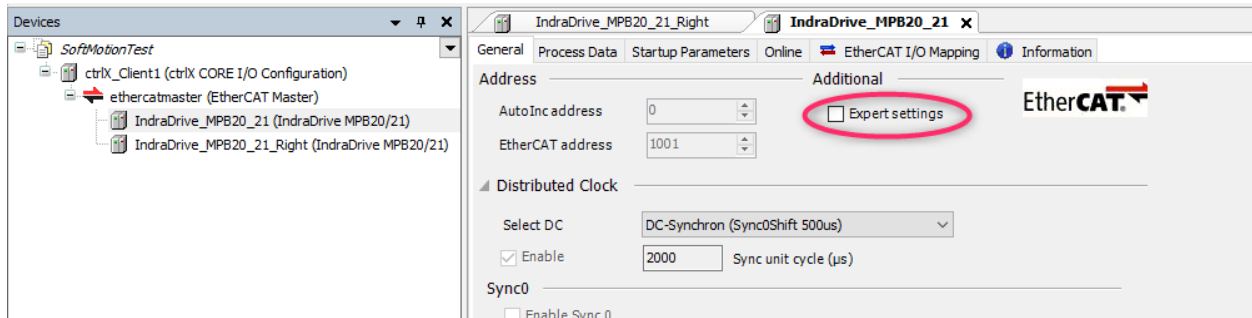
Ensure that your drives are configured for EtherCAT SOE communication (### link to description), the EtherCAT line is connected correctly and the power supply of the drives is on. Then click with the right mouse button on the ethercatmaster node to open the menu where you can select "Scan for Devices".



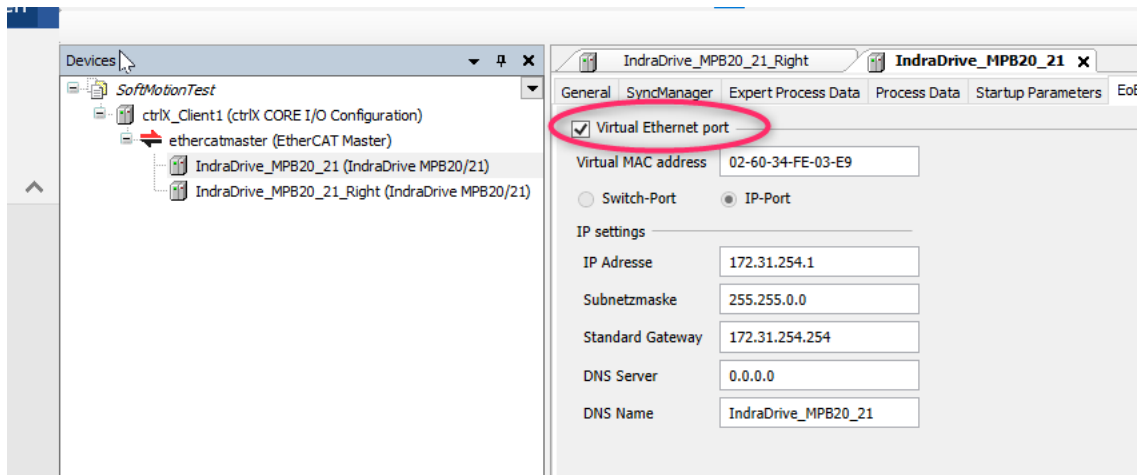
In the scan result you will see the drives connected to your ctrlX CORE. Press the button “Insert all newly scanned devices” in the scan result dialog to copy the drives to your project I/O configuration on the left panel of the dialog.



Closing the scan dialog with ok will add the drives under the ethercatmaster node in IO Engineering. Double-click in the device tree of I/O Engineering on the drive and activate on the tab page “General” the Expert Settings.

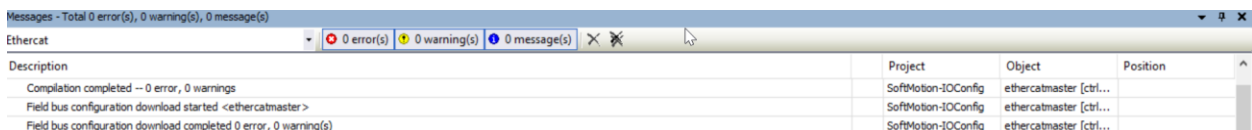


More tab pages will be displayed. You have to go to the tab page EoE and activate virtual Ethernet port.



Repeat these steps for all drives. Afterwards download the EtherCAT configuration via the I/O Engineering menu entry Online => “Download and activate fieldbus configuration”. Quit the appearing dialog with Yes.

The message window of IO Engineering should confirm the successful download.



In ctrlX Web UI you can verify the EtherCAT status and change the operation modes. For further proceeding the operation mode OP has to be active.

EtherCAT Status

Master 'ethercatmaster'



Run

Slaves

Status	Name	Address	State	Diagnostics
✓	IndraDrive_MPB20_21	1001	OP	
✓	IndraDrive_MPB20_21_1	1002	OP	

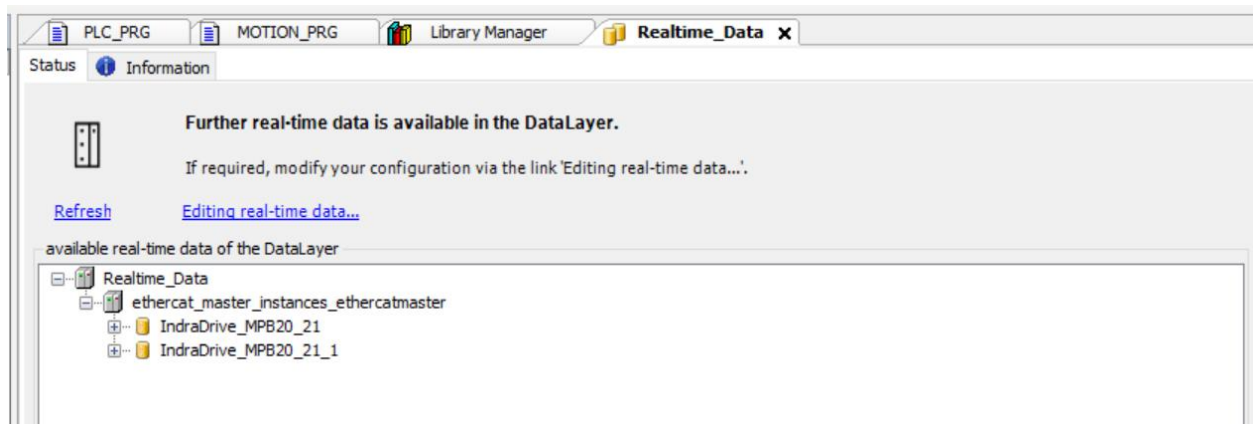
Finally save the I/O Engineering project and close IO Engineering.

PLC Engineering

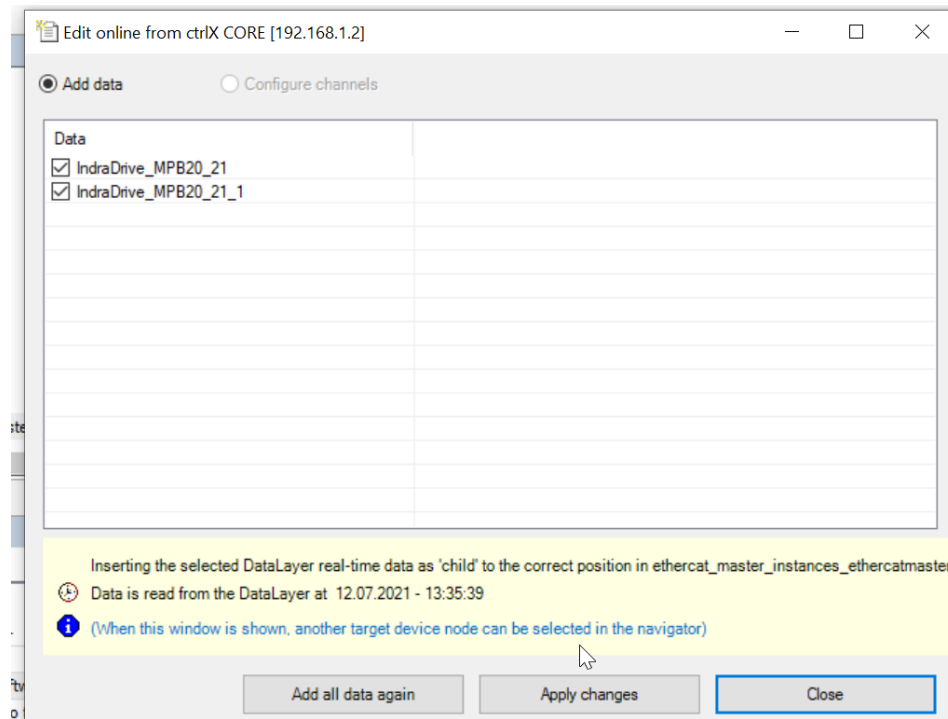
Start PLC Engineering from ctrlX CORE Web UI.

Click with the right mouse button on the device tree entry “Device (ctrlX CORE)” and “Enable Softmotion” in the popup menu. This will add the “Softmotion General Axis Pool” to the device tree.

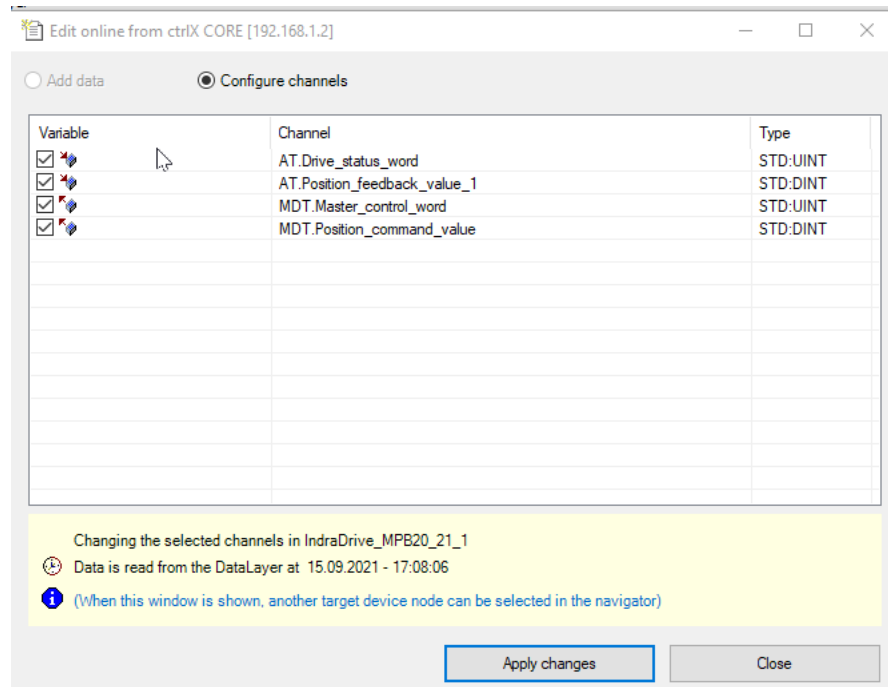
Add the drives to the Data-Layer_Realtime configuration by double-clicking on the node Data-Layer_Realtime. The Realtime_Data dialog will open.



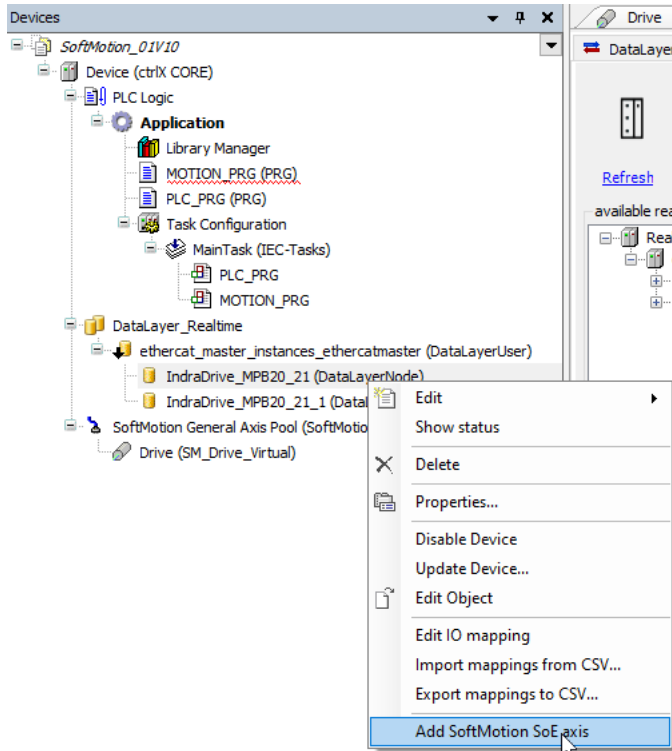
Select both drives and press “Apply changes” again in the following dialog.



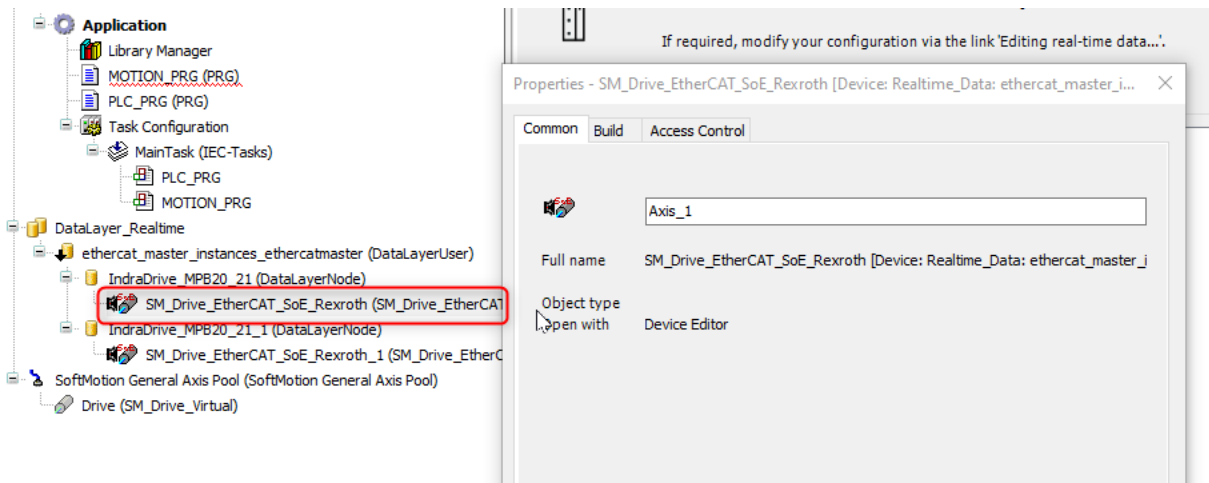
The communication channels will be configured automatically and you have to click “apply changes” once more in the next dialog.

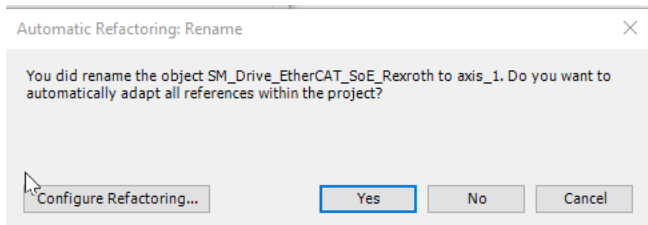


The EtherCAT devices will be added to the device tree. For each drive you have to add a Softmotion EtherCAT SoE axis by opening the right mouse menu.

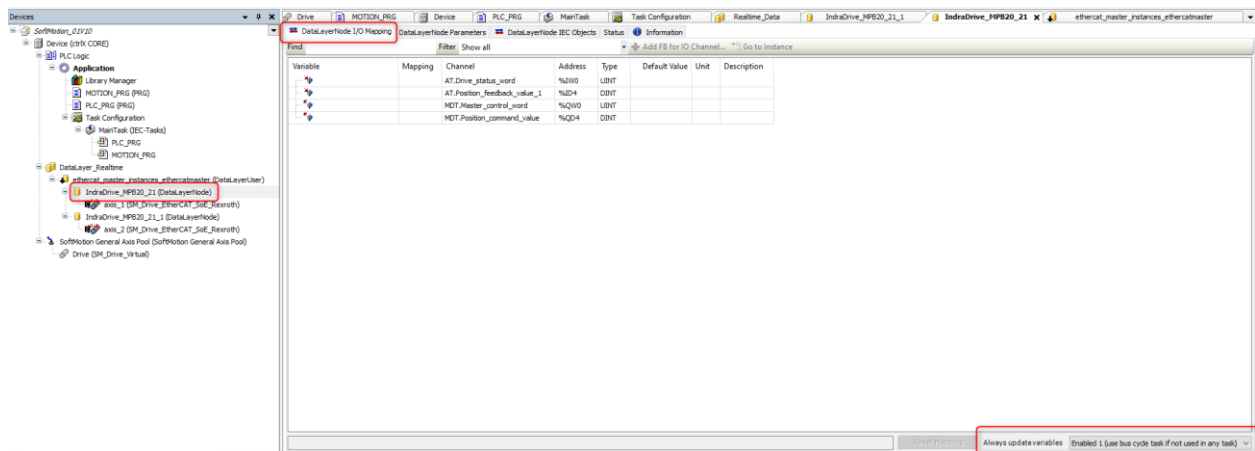


Rename both Softmotion axis to the name which you like to see in your PLC program (e.g. axis_1 and axis_2). You can do this via the Properties dialog which you reach via the right mouse menu of the axis nodes. Confirm that you want to adapt all references in the project.

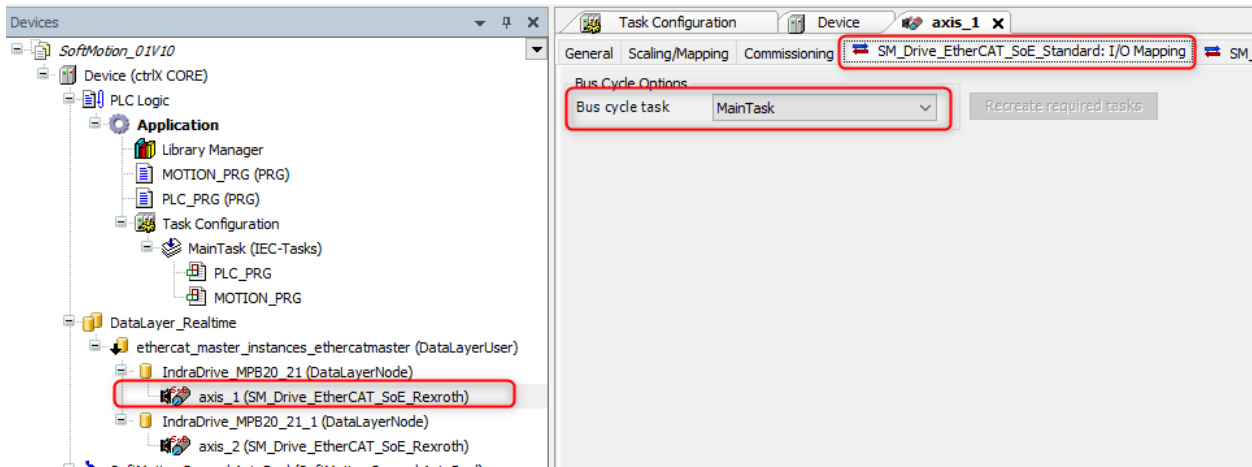




For both data layer nodes you have to configure the I/O mapping. You can do this by double-clicking on the data layer node, go then to the tab page DataLayerNode I/O Mapping and change the following settings at the right bottom of the dialog: Modify “Always update variables” from “Use parent device setting” to “Enabled 1 (use bus cycle task if not used in any task)”.



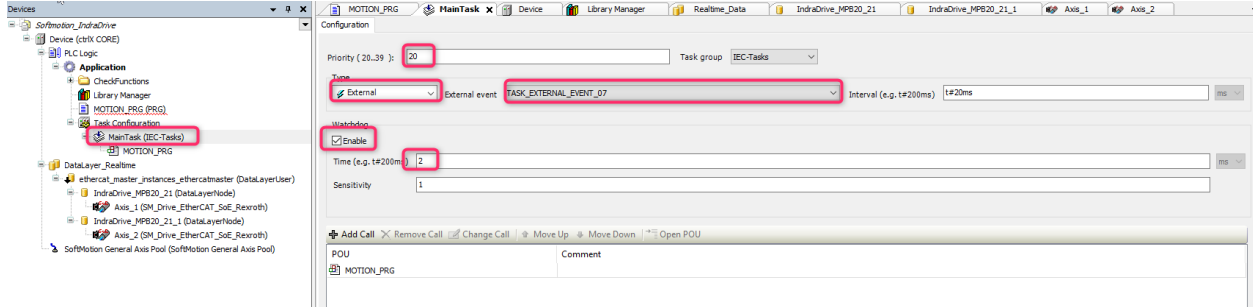
Also you have to set the bus cycle task to the Main Task for all drives. Double-click on the drive node. Go to the tab page “SM_Drive_EtherCAT_SoE_Standard: I/O Mapping” and set the Bus cycle task to “Main Task”.



Finally, open the Main Task property dialog by double-click and set the following properties:

- Priority : 20
- Type: External

- External Event: TASK_EXTERNAL_EVENT_07
- Enable Watchdog
- Set Watchdog Time to 2 msec



Softmotion Program Examples

Rexroth provides CODESYS Softmotion examples in the directory
 C:\Program Files\Rexroth\ctrlX WORKS\Studio\Projects\SoftMotion\ctrlXExamples.

Execute the following steps for evaluation of an example:

1. Copy the example to your working folder.
2. Open the project in ctrlX PLC Engineering
3. Change the IP address in the communication settings in PLC Engineering

Controlling the Movement of a Single Virtual Axis

Project:

CODESYS Softmotion Online Help:

https://help.codesys.com/webapp/sm_example_single_axis_motion_control;product=codesys_softmotion;version=4.10.0.0

Rexroth CNC program example

Rexroth provides a CODESYS Softmotion example in the directory
 <Installation Drive>\Program Files\Rexroth\ctrlX WORKS\Studio\Projects\SoftMotion\ctrlXExamples.

Copy the example to your working folder.

Open the project in ctrlX PLC Engineering

Modify the IP address in the communication settings in PLC Engineering

Controlling the Movement of a virtual axis

https://help.codesys.com/webapp/sm_example_single_axis_motion_control;product=codesys_softmotion;version=4.10.0.0

Add POU MOTION_PRG

Add call of MOTION_PRG to Main Task

