



S210 Simple Motion S7-1500T using TIA Portal V16 and Startdrive

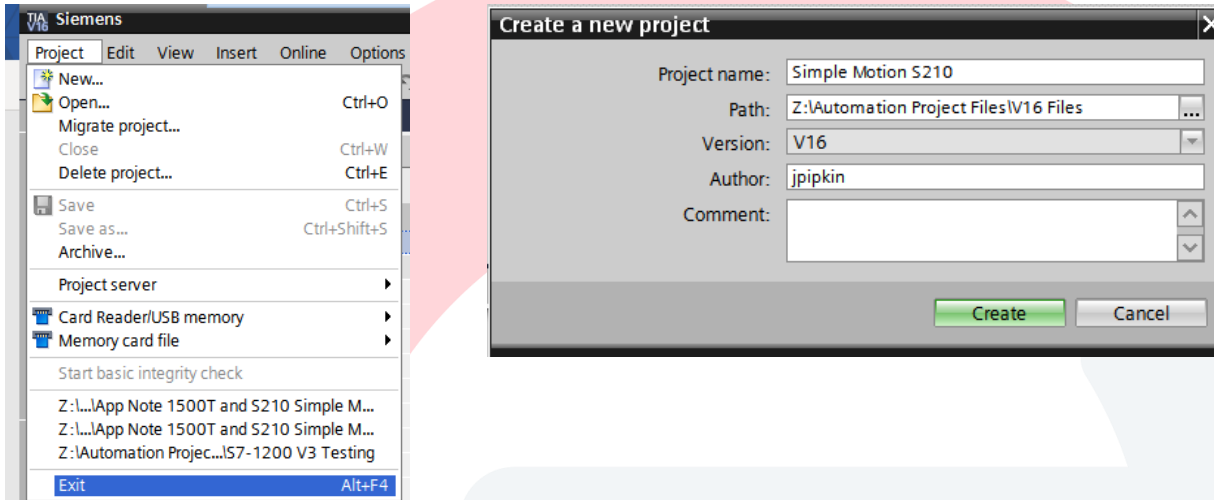
Revision Date: 4-6-2020

Launch TIA Portal V16 and open the Project View.

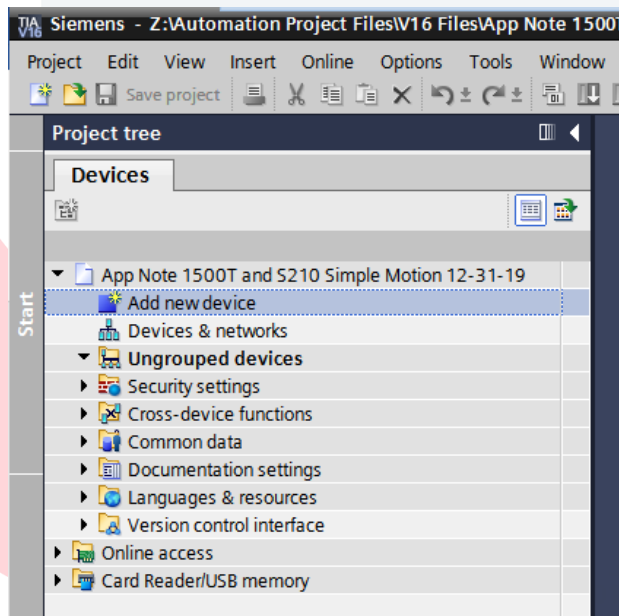
Begin by creating a new project by selecting New under the Project Menu or select the New Project Icon



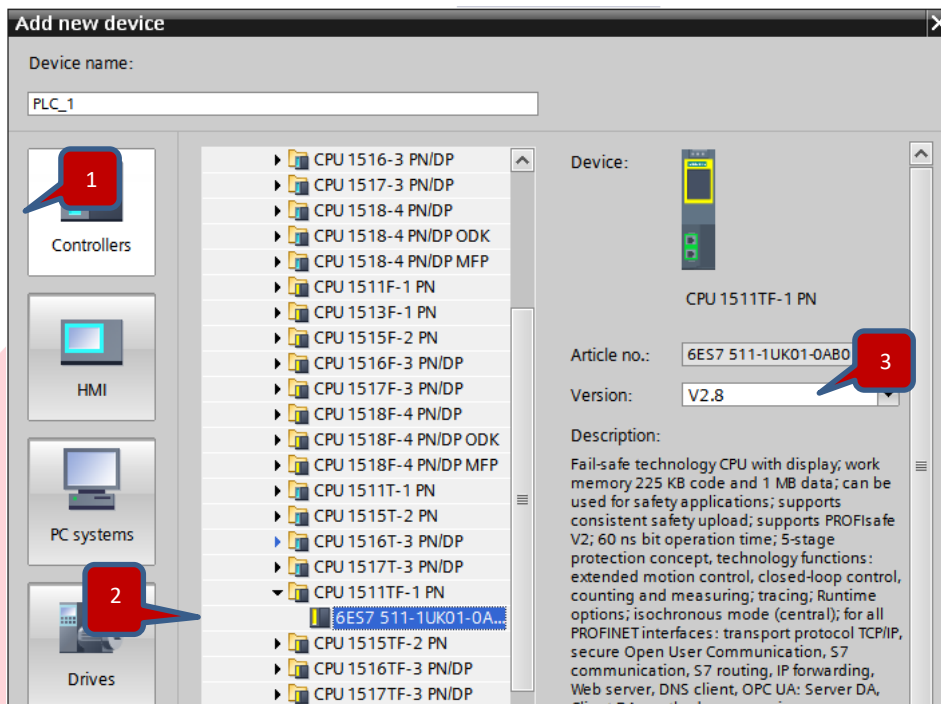
Name the Project and select the path to save.



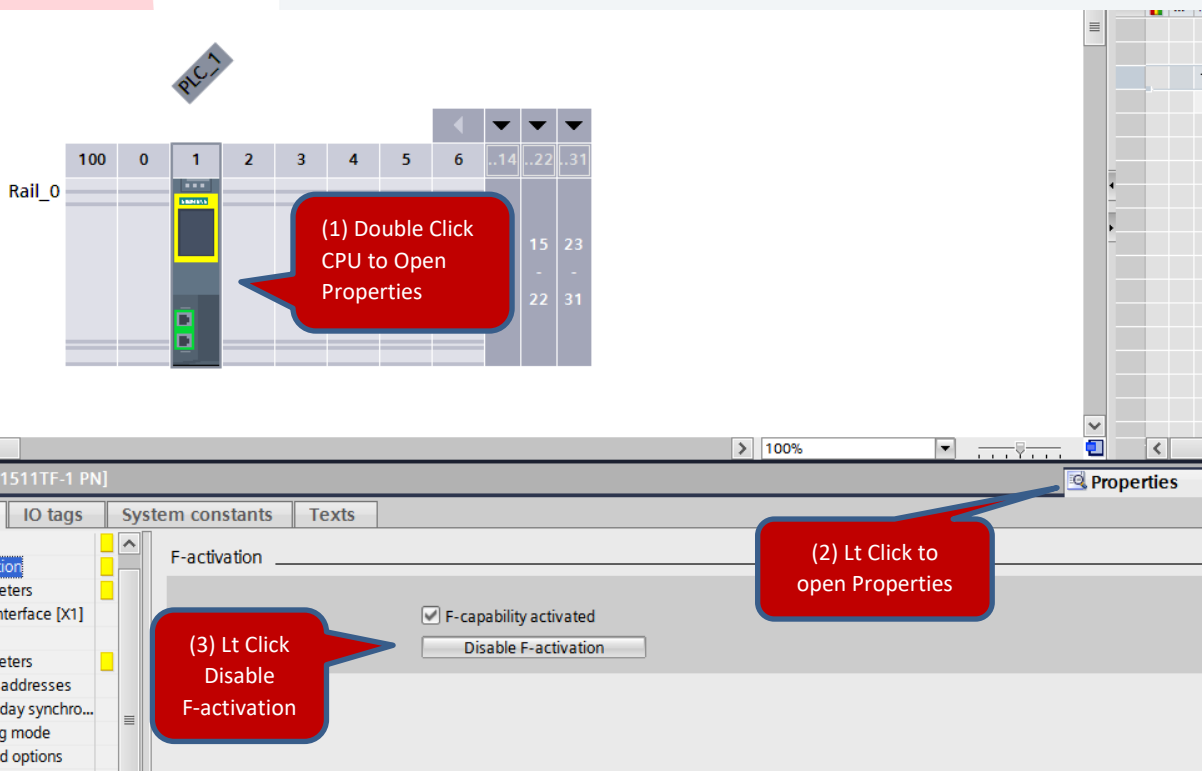
After the new project is created, select Add new device in the Project Tree.



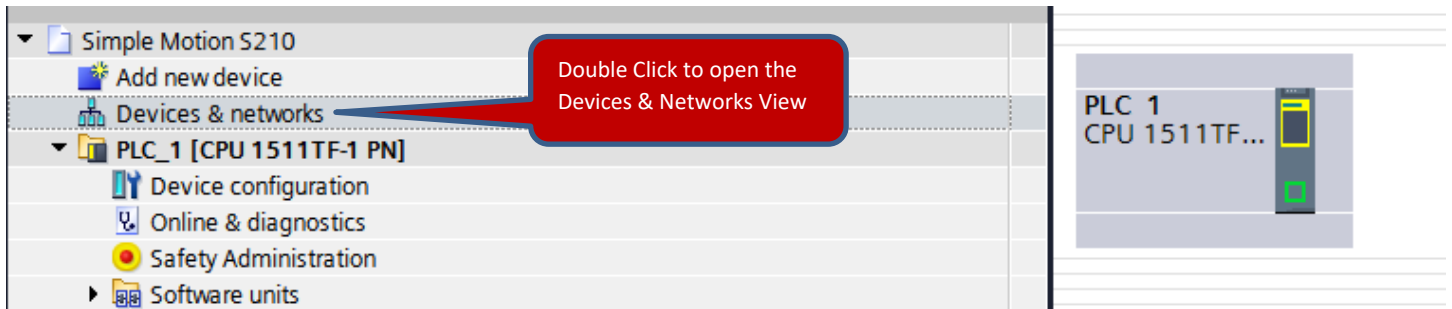
Select Controllers then select your S7-1500 CPU from the list. Confirm the Version matches your CPU Firmware.



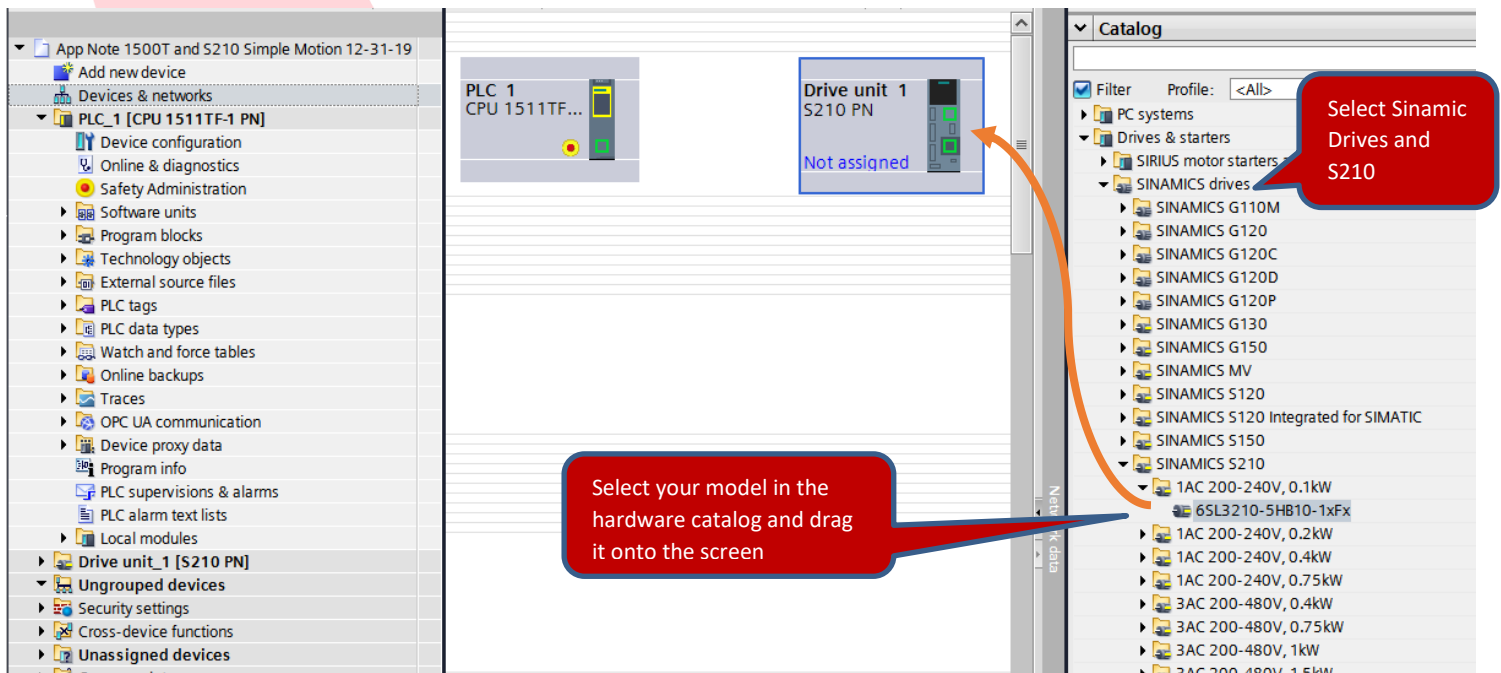
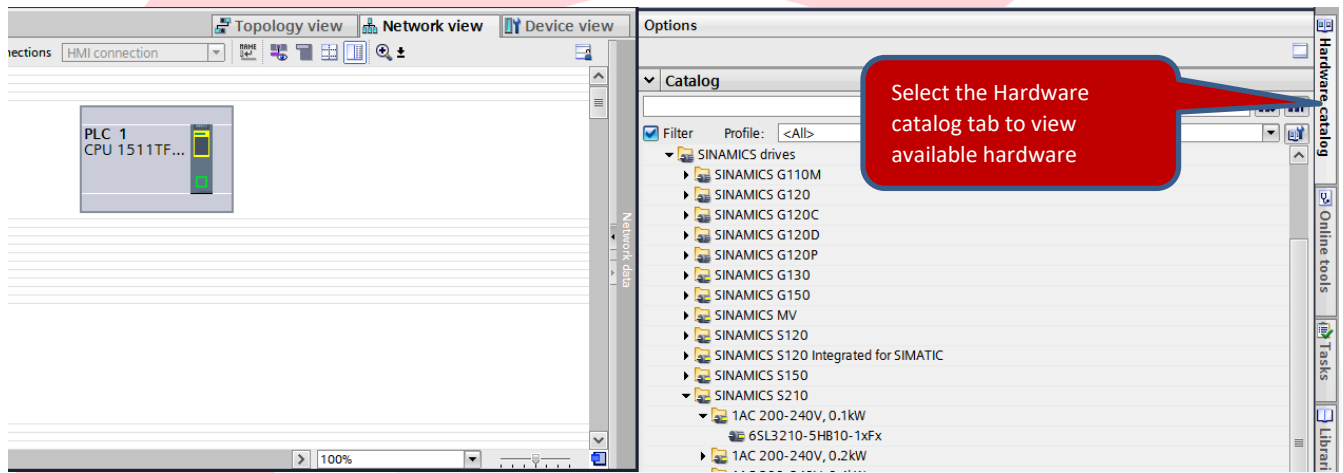
This CPU used for the document is a Failsafe CPU so for now Disable Safety in the PLC



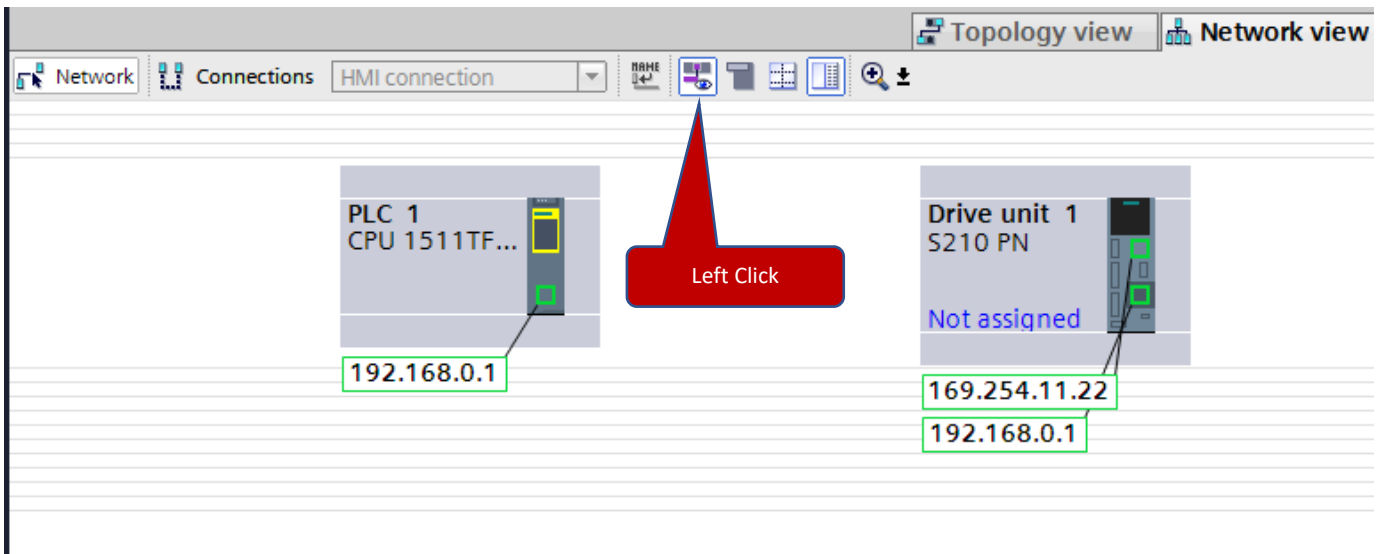
Open the Devices & Networks view to add the S210 Drive



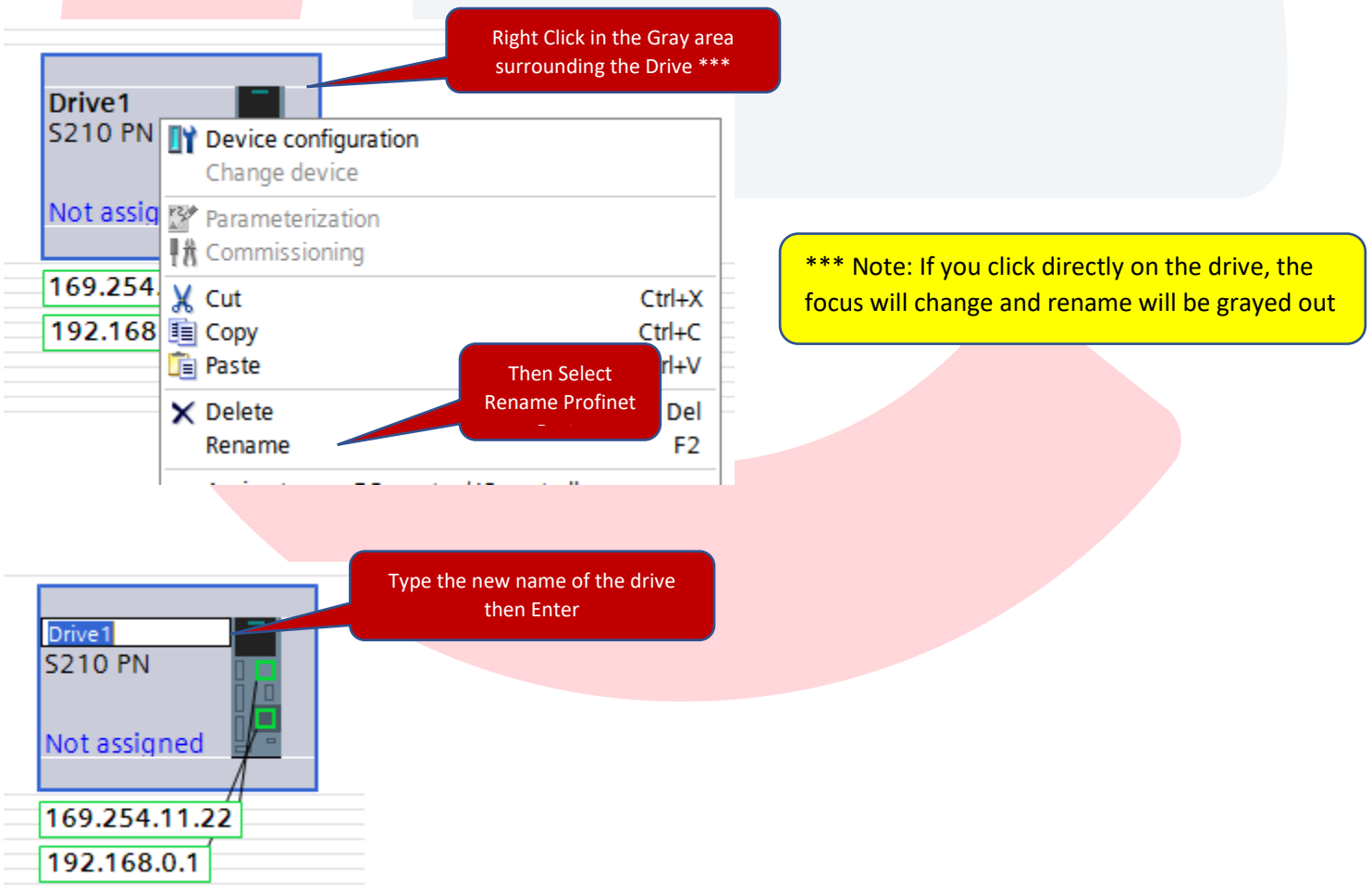
In the Devices and Networks Window, Drag and Drop in your S210 Drive model from the hardware catalog.



Click the "Show Address" icon to display the IP Addresses. At this point the Drive and the PLC are not connected on a network and have the same IP Address assigned.



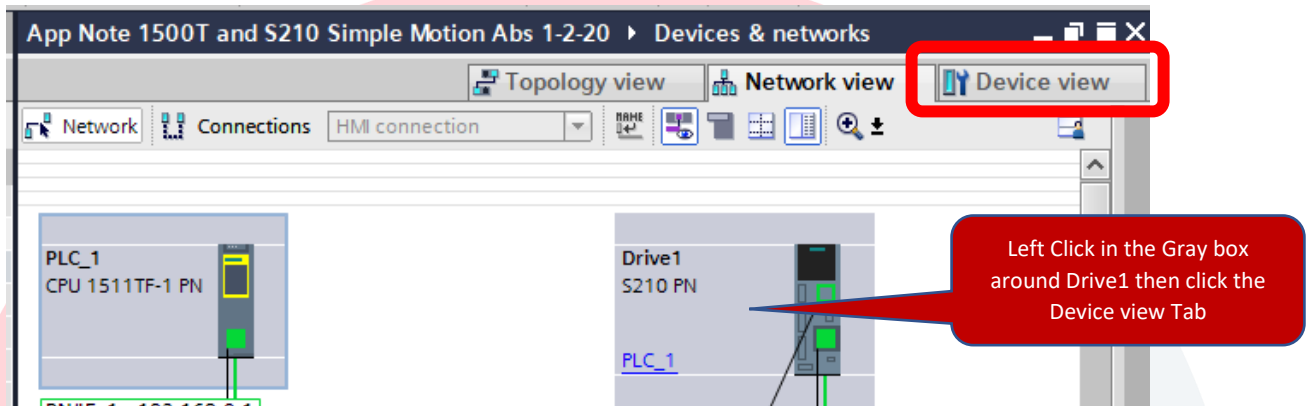
Now rename the S210 Drive as Drive1.



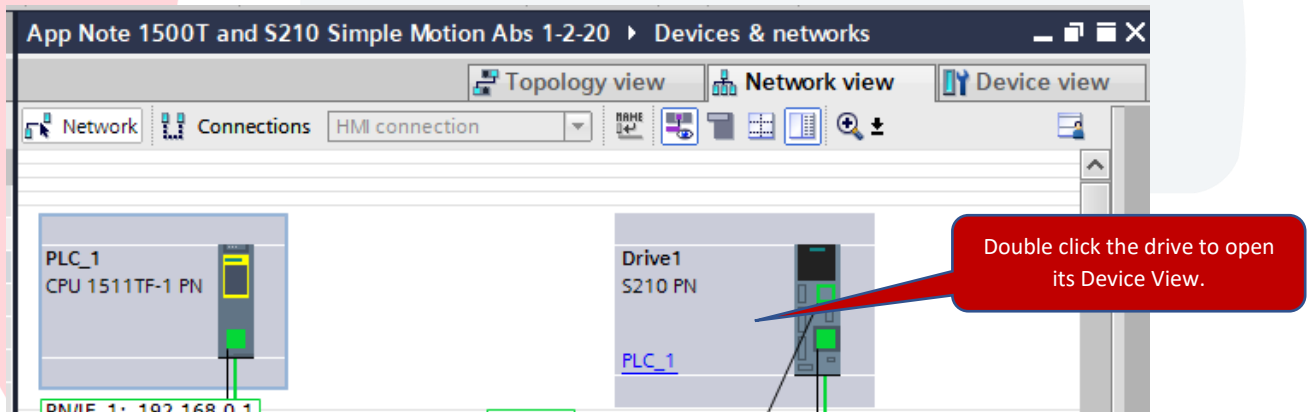
We now need to enter Drive1's device view.

Two options to open the Device View:

(1) Left Click on Drive1 then select the Device view Tab,

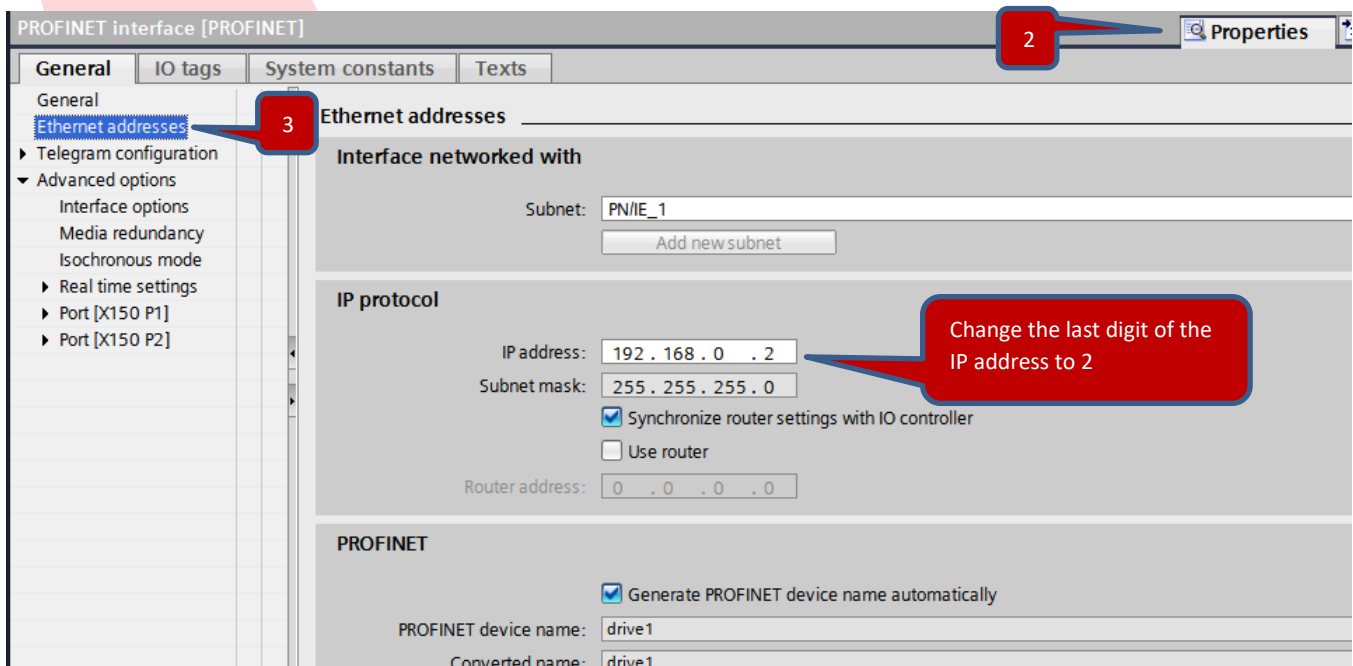
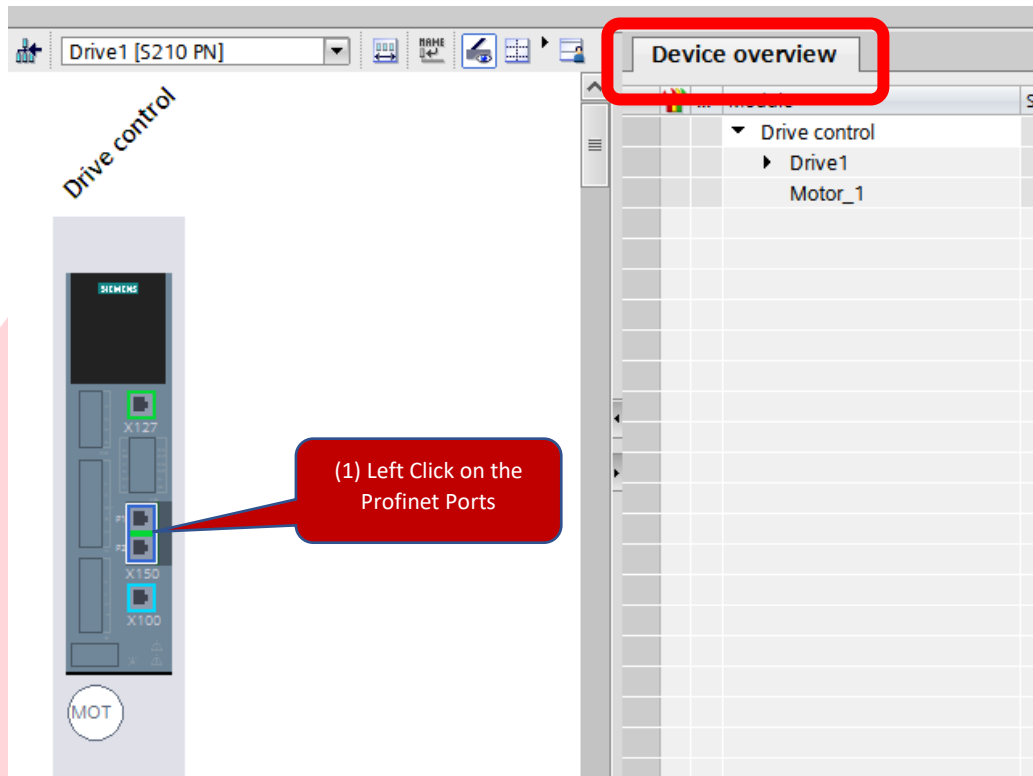


(2) Or you can Double Click on Drive1 to open Drive1 Device View.

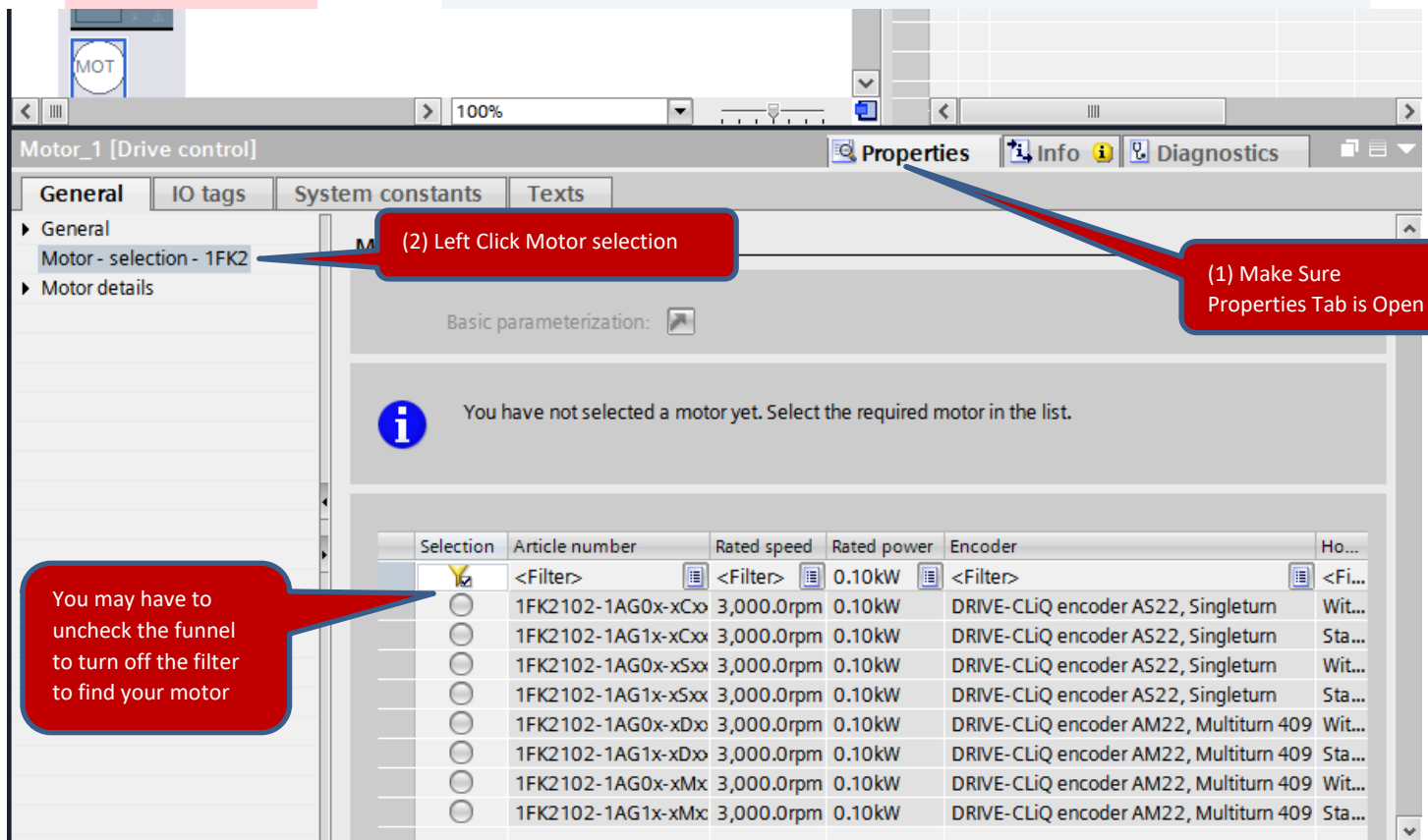
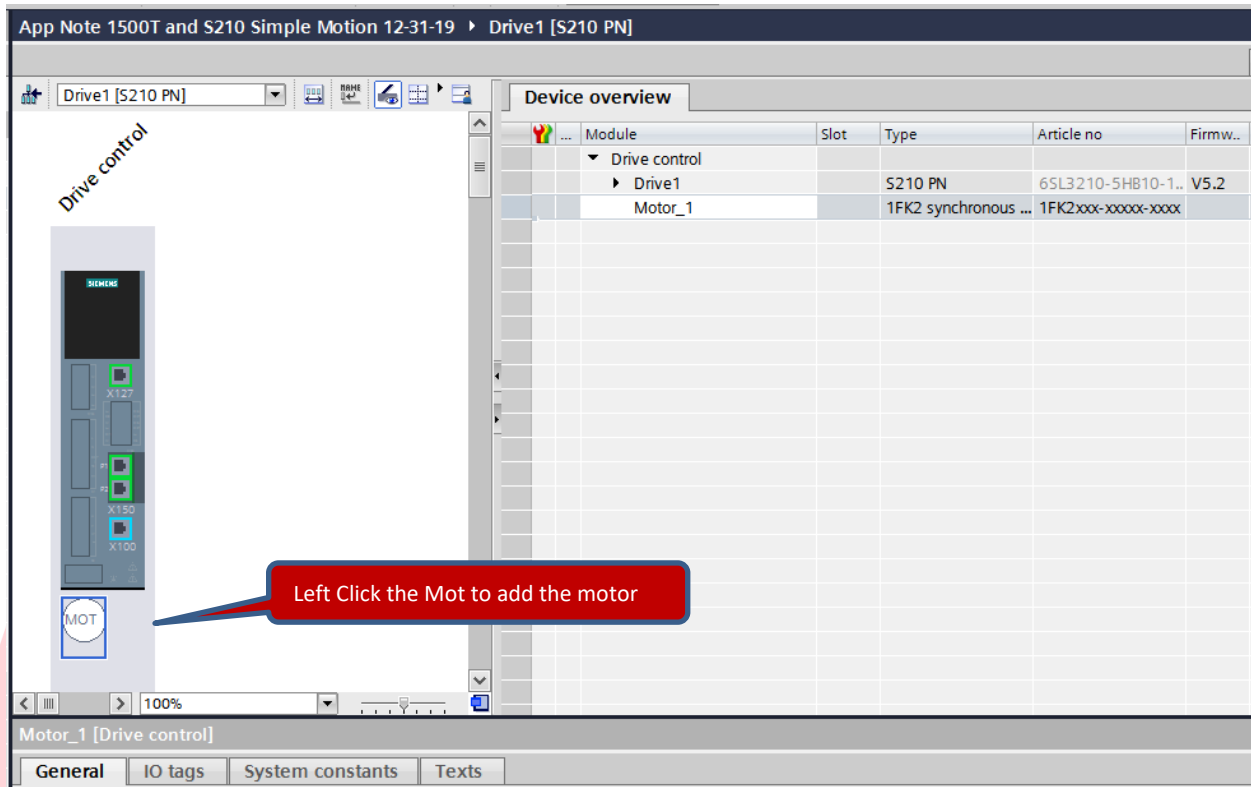


You should now be in the Device View of Drive1

Check the auto assigned IP addresses and change the addresses.



Next select the Motor attached to the S210 Drive




Motor_1 [Drive control]

General IO tags System constants Texts

General
Motor - selection - 1FK2
 Motor details
 Measuring system_1 [ENC]

Motor - selection - 1FK2

Basic parameterization: 


(1) Now select your motor in the list

Selection	Article number	Rated speed	Rated power	Encoder	Holding brake
<input checked="" type="radio"/>	1FK2102-0AG0x-xCxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake
<input type="radio"/>	1FK2102-0AG1x-xCxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Standard holding brake
<input type="radio"/>	1FK2102-0AG0x-xSxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake
<input type="radio"/>	1FK2102-0AG1x-xSxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Standard holding brake
<input type="radio"/>	1FK2102-0AG0x-xDxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AM22, Multiturn 409	Without holding brake
<input type="radio"/>	1FK2102-0AG1x-xDxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AM22, Multiturn 409	Standard holding brake
<input type="radio"/>	1FK2102-0AG0x-xMxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AM22, Multiturn 409	Without holding brake
<input type="radio"/>	1FK2102-0AG1x-xMxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AM22, Multiturn 409	Standard holding brake
<input type="radio"/>	1FK2102-1AG0x-xCxx	3,000.0rpm	0.10kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake
<input type="radio"/>	1FK2102-1AG1x-xCxx	3,000.0rpm	0.10kW	DRIVE-CLiQ encoder AS22, Singleturn	Standard holding brake

(2) Here you can also open a screen for Basic Parameters for the motor

Basic parameterization

Motor

Article number: 1FK2102-0AG0x-xCxx 

Encoder: DRIVE-CLiQ encoder AS22, Singleturn

Brake: Without holding brake

Rated voltage: 58 Vrms

Rated current: 0.75 Arms


Rated power: 0.05 kW

Rated speed: 3,000.0 rpm

Rated torque: 0.16 Nm

Drive unit line supply voltage: 230 V

Motor ambient temperature: 40 °C

Direction of rotation: [0] Clockwise 

Limitations

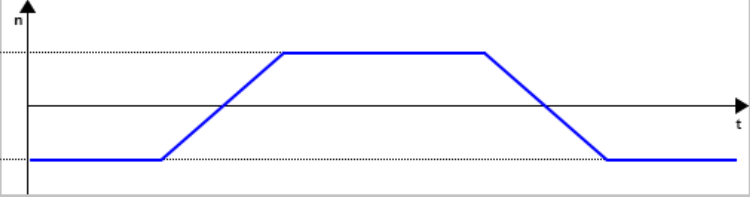
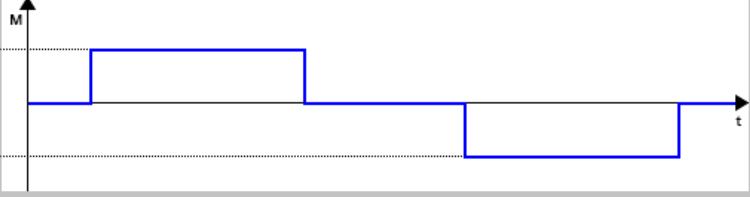
Positive speed limit: 8,000.000 rpm

Negative speed limit: -8,000.000 rpm

Torque limit upper: 0.66 Nm

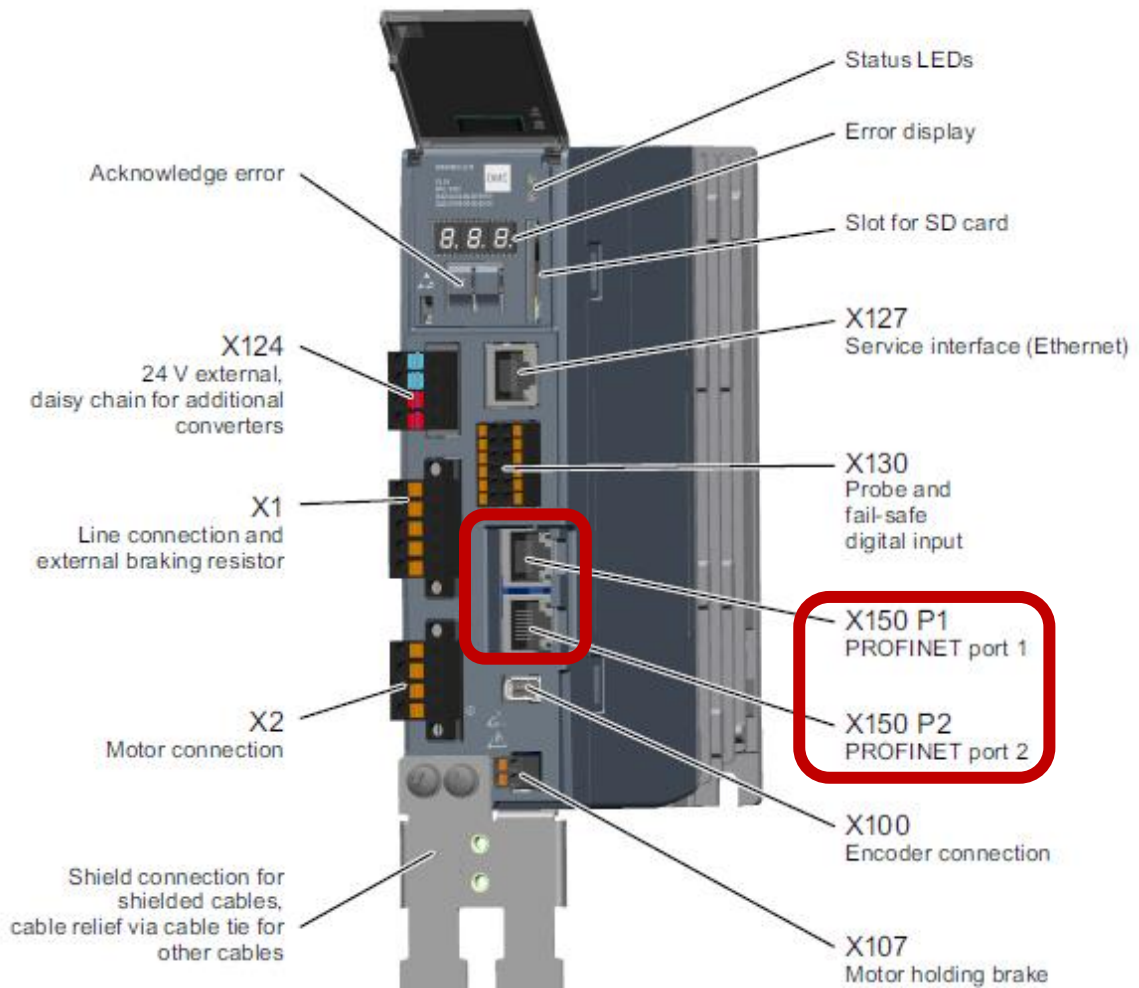
Torque limit lower: -0.66 Nm

Quick stop (Off3 ramp-down time): 0.000 s

Next download to the Drive to install the basic parameters along with the assigned IP Address and the Profinet Name of the device.

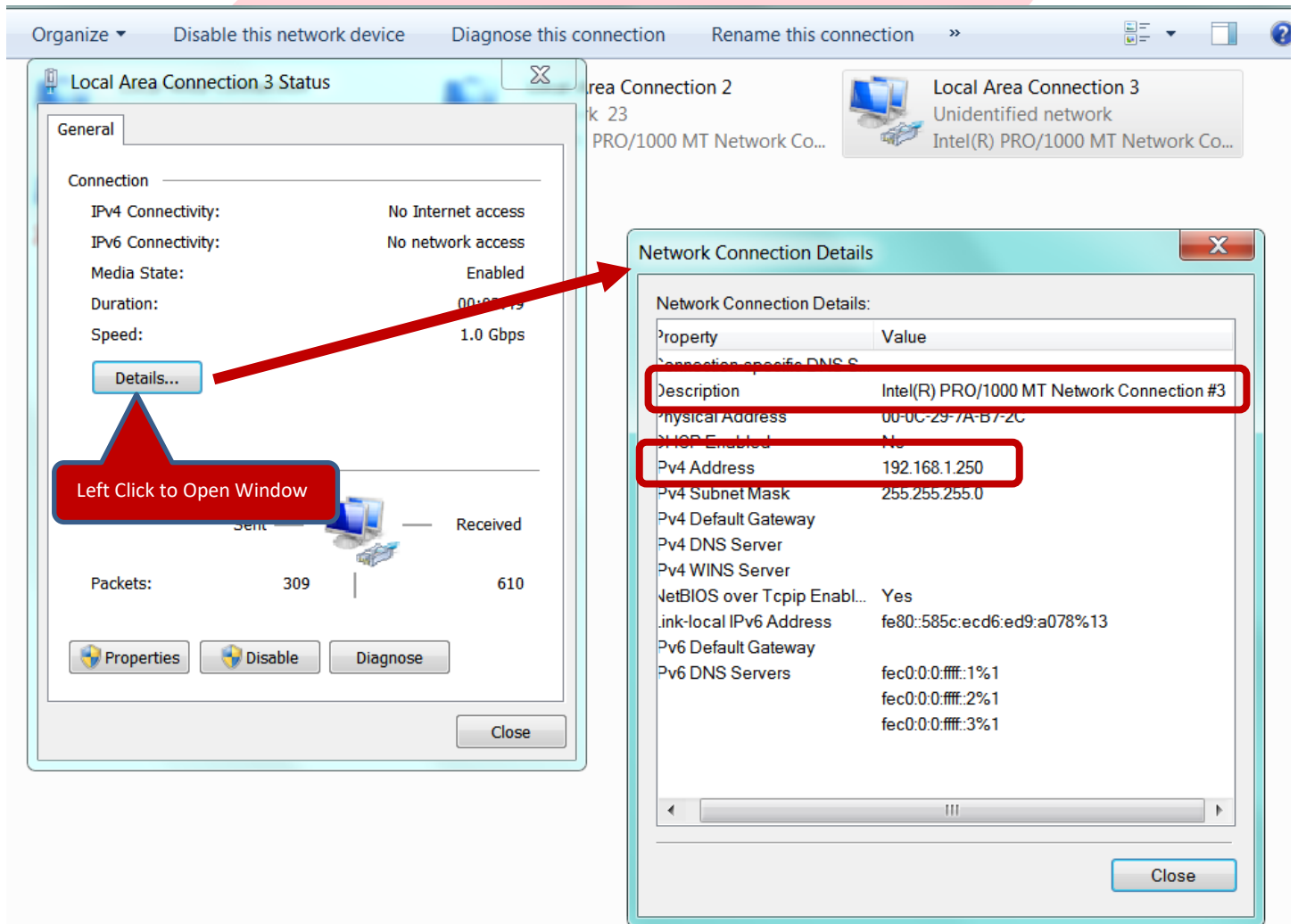
Make sure your Ethernet cable is plugged into one of the X150 ports on the Drive



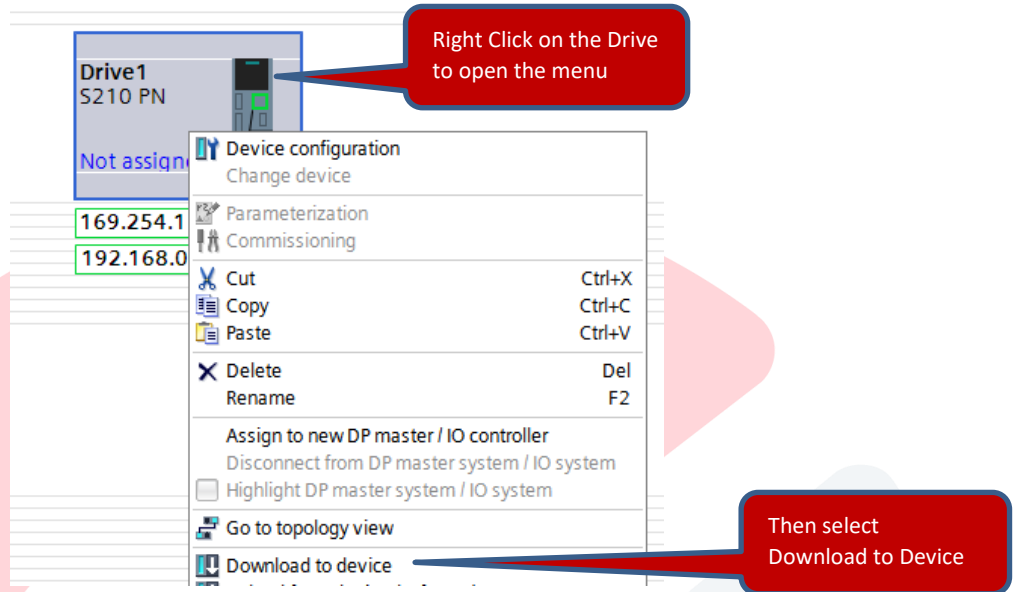
Note: For a successful first download, set the IP address of the wired port you plan to use to connect to the PLC and Drive Network into the same subnet as the PLC and Drive. The default IP addresses used in TIA Portal and the one we are using is 192.168.0.XXX. Set your PC IP Address to 192.168.0.250 and subnet mask to 255.255.255.0. Sometimes Wireless on a computer can also cause issues on first download, so disable wireless for the time being. Also, while in the Ethernet settings of the Computer note the Description name of the Ethernet connection. For my pc, I have extra Ethernet Ports defined. For the physical NIC RJ45 port, it is called Local Area Connection 3. The name in the Description in the Network Connections Details is the name to note. Also confirm the IPv4 Address is 192.168.0.250.

This is Windows 7, Windows 10 will look similar.

Windows Setup Information:



Now back in TIA Portal in the Network View:

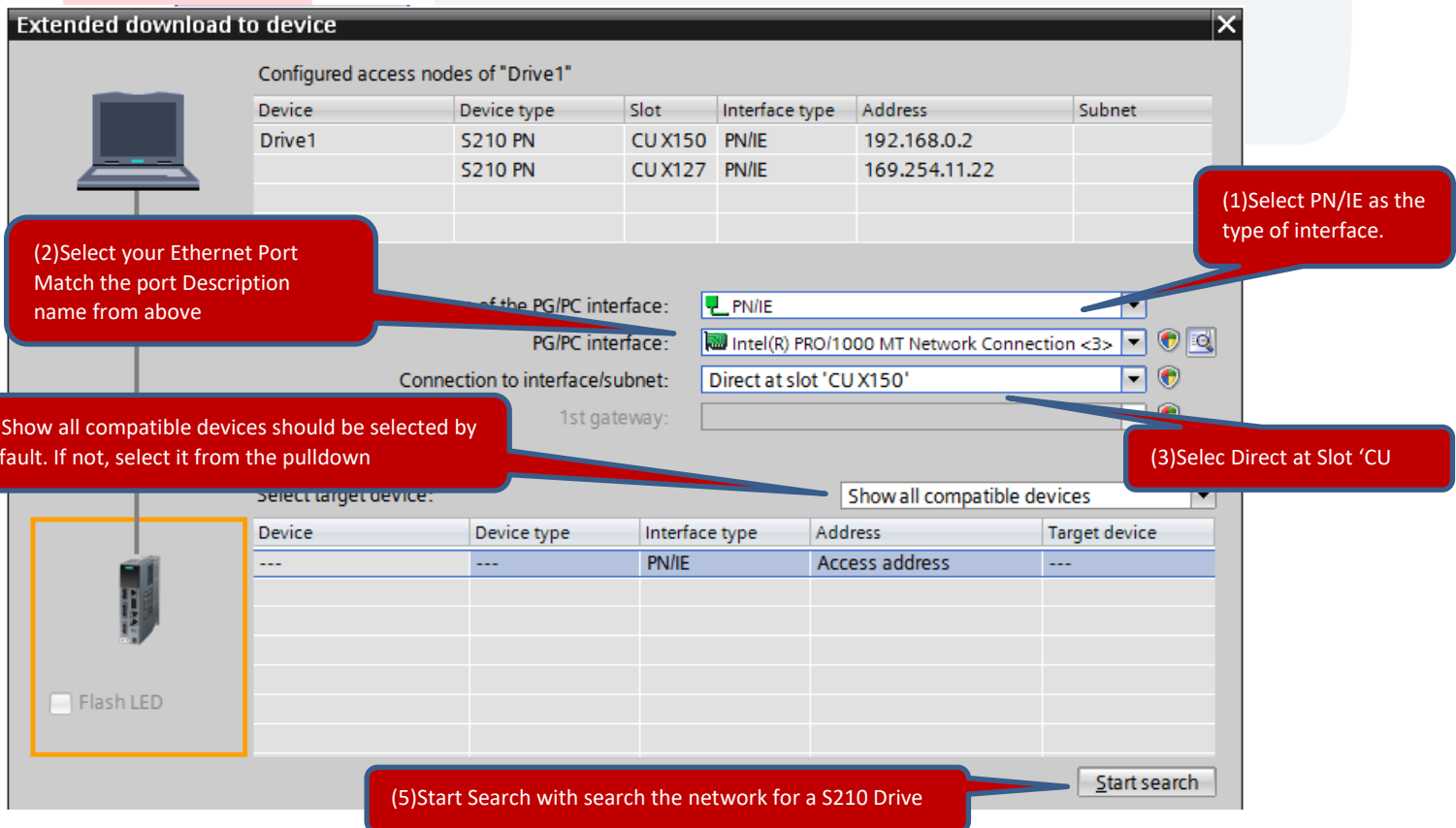


For the first download you will see the Extended download to device Window.

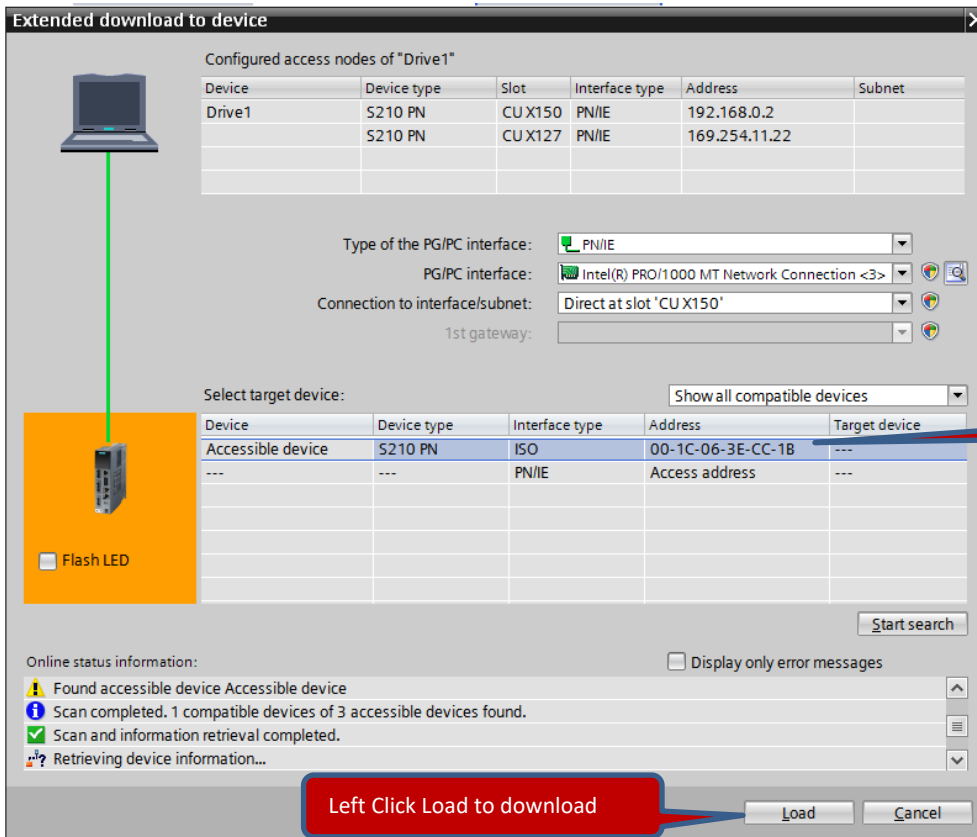
For PG/PC Interface select PN/IE – for Profinet Industrial Ethernet Download

Then Select PG/PC Interface as the physical NIC Card Name as shown above

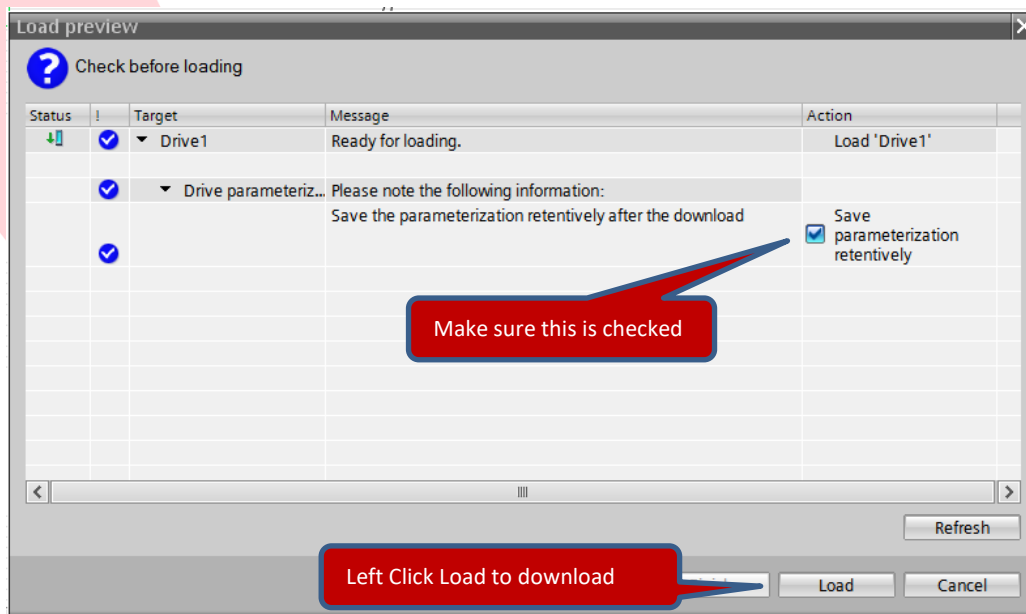
Also select Direct to Slot 'CU X150' for port on the S210 Drive.



After allowing a few seconds for TIA Portal to search the network, your drive should display on the Devices List. If you are connected directly to the Drive from your computer, then the drive will be all that is listed. Select the drive from the target device list and click Load.



Next you will see the Load preview window. Make sure the Save parameterization retentively is checked and click Load to begin the download.

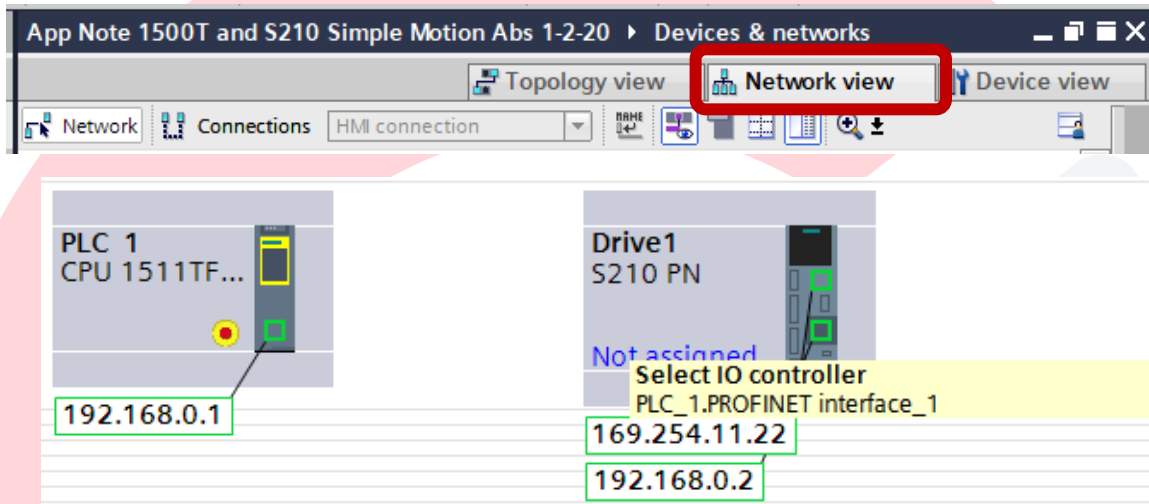


This will load the initial drive setup parameters motor data and the Profinet Name to Drive1

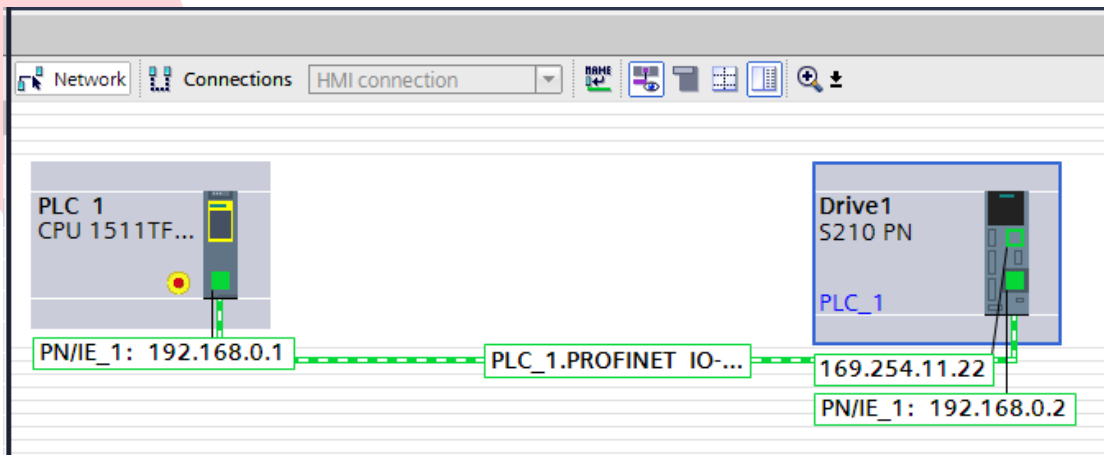
Note: Using Profinet Communications, the PLC assigns the IP address to each device by their Profinet Name, so you don't assign an IP address directly in the Drive, just the Profinet name.

Next, configure the Profinet Connection between Drive1 and PLC 1.

Open the Network View Tab. Left Click on **Not Assigned** on the Drive and select IO controller. Left Click **PLC_1.PROFINET interface_1** to connect the two devices.



Now we see a Profinet Connection (Green Dashed Line) between the PLC and Drive

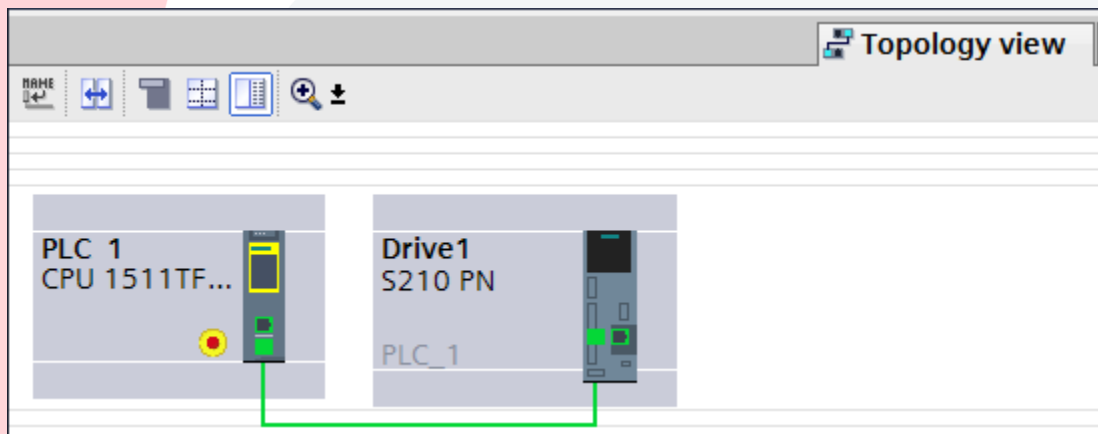
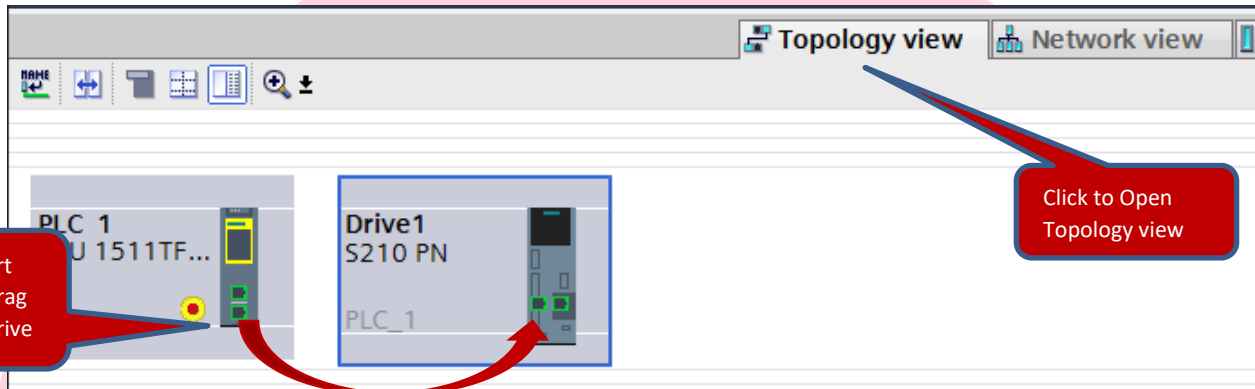


With Technology Objects and Motion, we also need to configure Topology View to be used the Profinet IRT (Isochronous Real-Time) communications

For Topology this needs to match the exact physical connections between the PLC and the Drive.

For my setup Port 2 on the PLC is connected directly to Port 1 on the drive.

Left Click on Port 2 of the PLC and Drag to Port 1 on the Drive



Next configure IRT communications for motion control over Profinet.

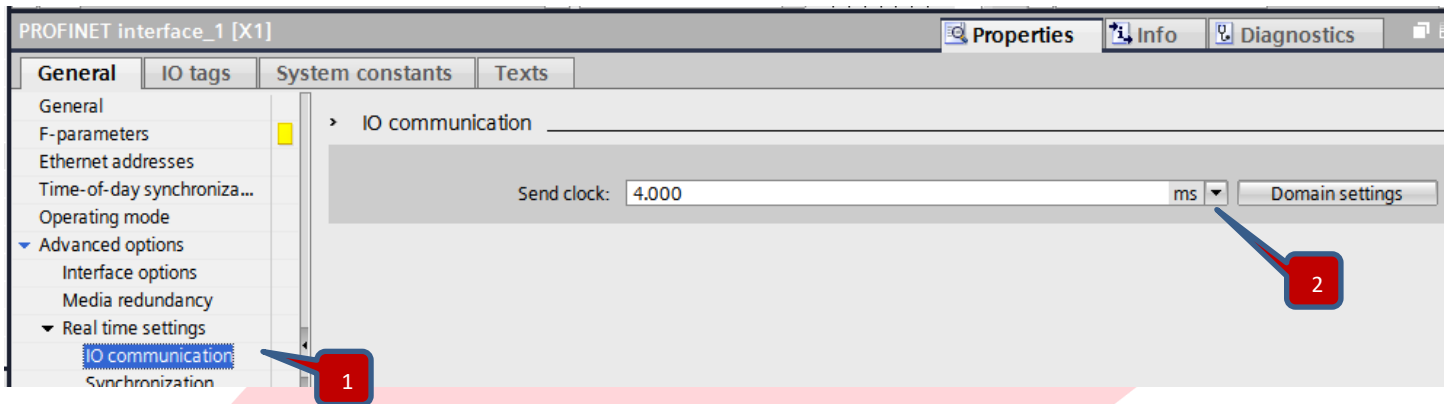
The image shows a sequence of three screenshots from the Siemens SIMATIC Manager software, illustrating the configuration of IRT communications for a PLC.

- Top Screenshot:** Shows the 'Topology view' with a PLC (PLC_1) and a drive (Drive1 S210 PN) connected by a green line. A red callout bubble points to the PLC with the text: "Double Click on PLC to open Settings".
- Middle Screenshot:** Shows the 'Device view' of the PLC. A red callout bubble points to the Ethernet ports with the text: "Click on PLC Ethernet Ports to open Properties".
- Bottom Screenshot:** Shows the 'Properties' dialog for the 'PROFINET interface_1'. The 'Synchronization' tab is active. A red callout bubble with the number '2' points to the 'Synchronization role' dropdown menu, which is currently set to 'Sync master'. A second red callout bubble with the number '3' points to the 'Synchronization' section in the left-hand tree view.

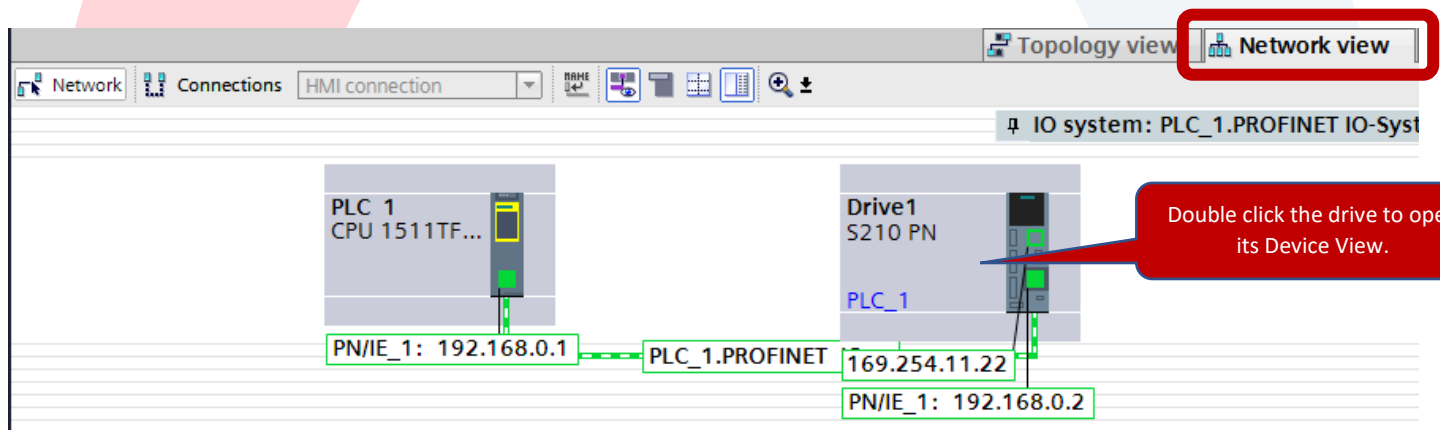
Set the PLC as Sync Master for the IRT Communications

A close-up of the 'Synchronization' settings dialog. The 'Sync domain' is set to 'Sync-Domain_1'. The 'Synchronization role' is set to 'Sync master'. The 'RT class' dropdown menu is open, showing the following options: 'Unsynchronized', 'Sync master', and 'Sync slave'. The 'Sync master' option is highlighted in blue.

Double check IO Communications Send Clock and set to 4ms if not already set.



Now we will setup up the communications in the drive. Click the Network View tab, and double click on the drive to open its device view.



The image shows a screenshot of the Siemens SIMATIC Manager software. The top window is titled "Drive1 [S210 PN]" and is in "Device view". It displays a vertical rack of components including a Siemens drive unit with ports X127, X150, and X100, and a motor (MOT). A red callout bubble points to the drive unit with the text "(1) In the device view of the drive". Another red callout bubble points to the X150 port with the text "(2) Double Click on Drive Ethernet Ports to open".

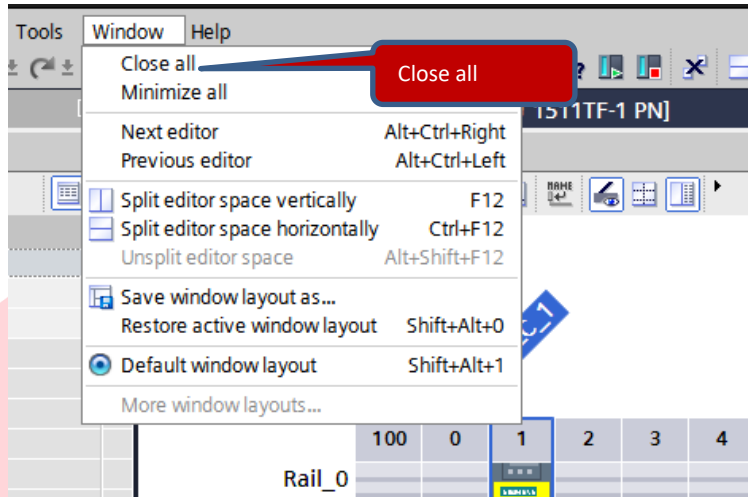
The bottom window is titled "PROFINET interface [PROFINET]" and is in "Properties" view. It shows a tree view on the left with "Synchronization" selected. A red callout bubble points to the "Synchronization" folder with the text "(3) Click Synchronization". The main area shows the "Synchronization" configuration with the following settings:

- Sync domain: Sync-Domain_1
- RT class: RT, IRT
- Synchronization role: Sync slave

A red callout bubble points to the "IRT" radio button with the text "(4) Click on Radio Button for IRT".

Save the Project.

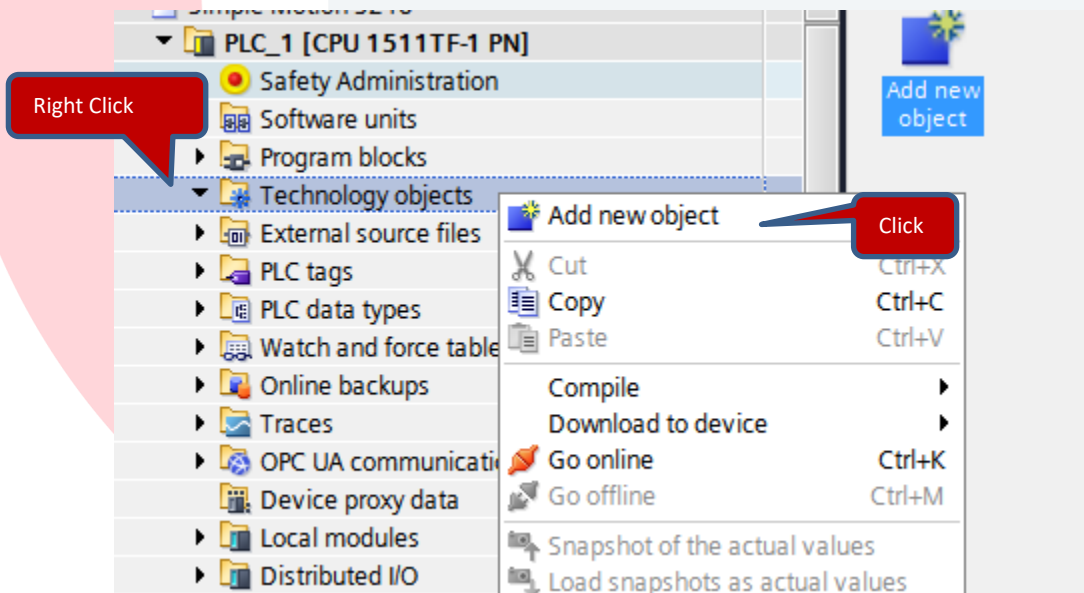
Select the Window menu and select Close all to close out all open windows.

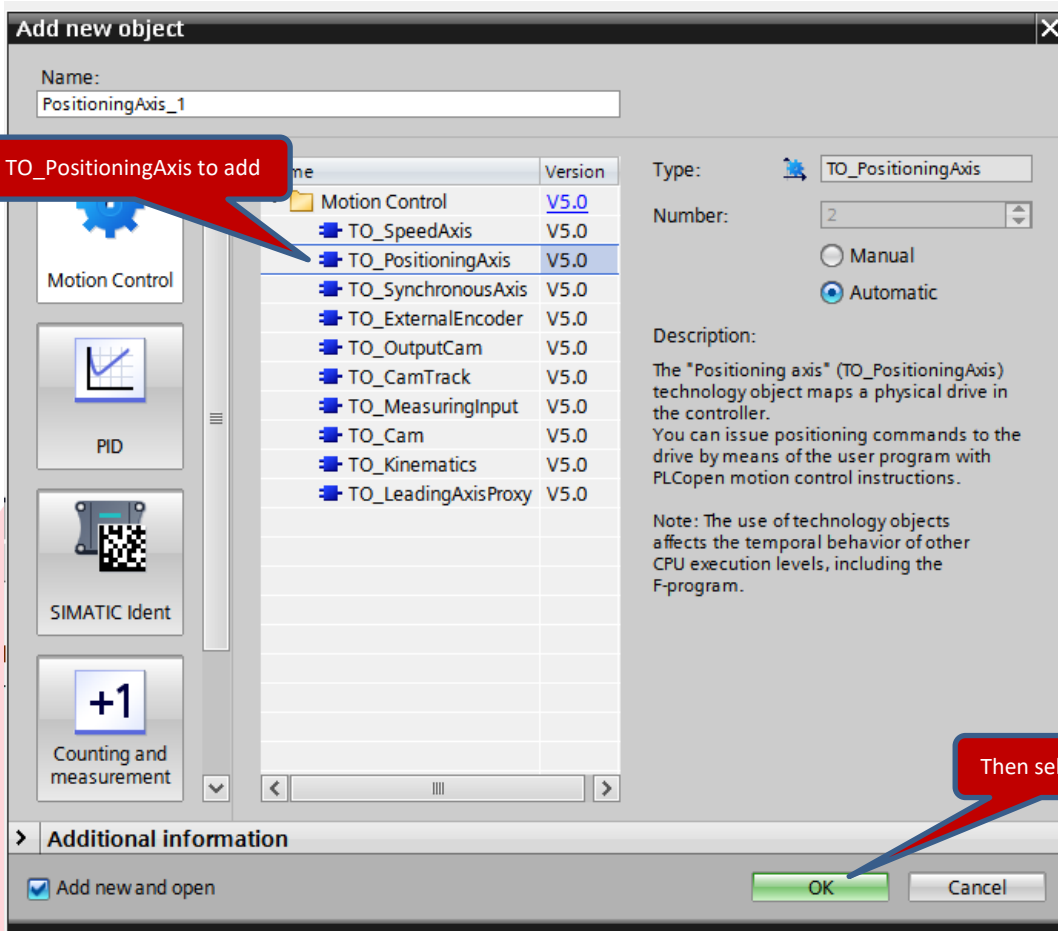


Now we begin Programming the Axis

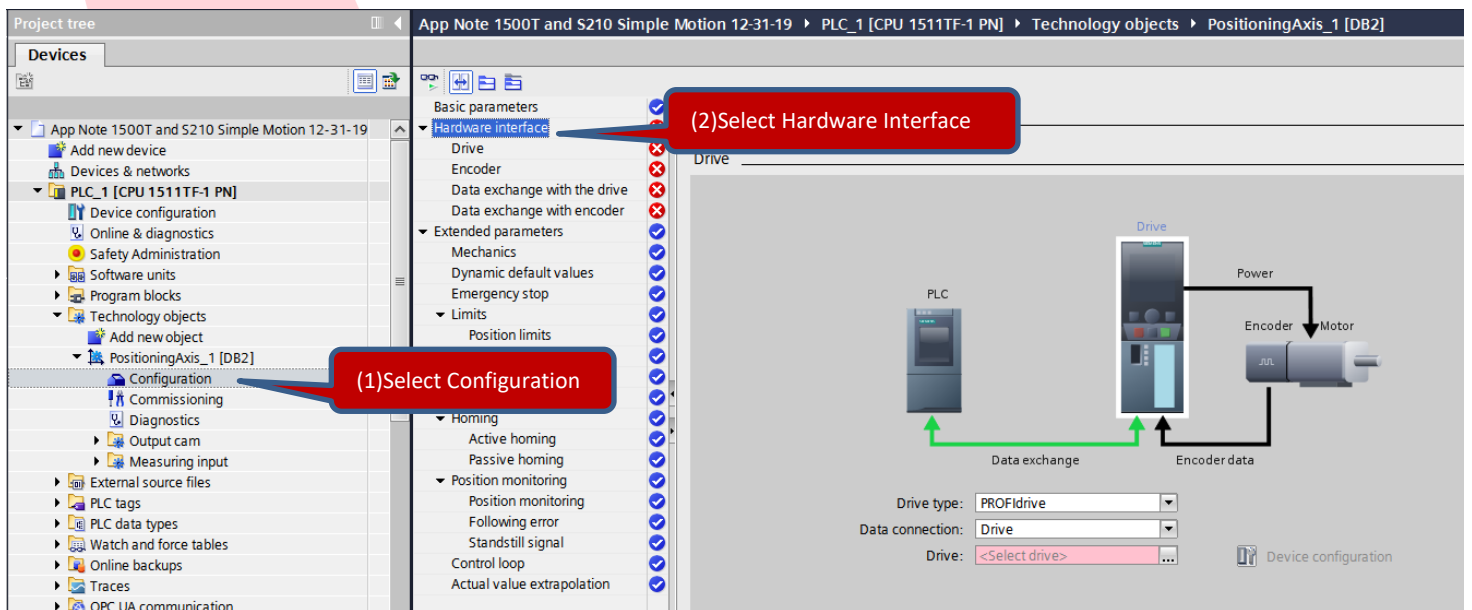
Right Click Technology Objects and Select Add new object

Then Select TO_PositioningAxis and keep the default name.





Under the new PositioningAxis_1 select Configuration



Select the Drive to attach to this Technology Object. Select the ellipsis (...) button and dive down under PROFINET IO-System, then Drive1, and select Drive Control for Drive1.

Drive

PLC

Drive

Power

Encoder

Motor

Data exchange

Encoder data

Drive type: PROFdrive

Data connection: Drive

Drive: Drive1.Drive_control_SIEMENS...

1 Click [...]

2

3

4

Device configuration

Name	Device type
Drive control	SIEMENS telegram 105

Show all modules

the moment. There is either no object selected or

Check the Data exchange with the drive settings

Select data exchange with drive

Make sure both check boxes are checked

Drive data

Drive telegram: Standard telegram 105

Automatically apply drive values during configuration (offline)

Automatically apply drive values at runtime (online)

Reference speed: 8000.0 1/min

Maximum speed: 8000.0 1/min

Reference torque: 0.6603 Nm

Then the Data exchange with encoder.

Select data exchange with encoder

Make sure both check boxes are checked

Settings for:

Encoder 1

Encoder telegram: Standard telegram 105

Automatically apply encoder values during configuration (offline)

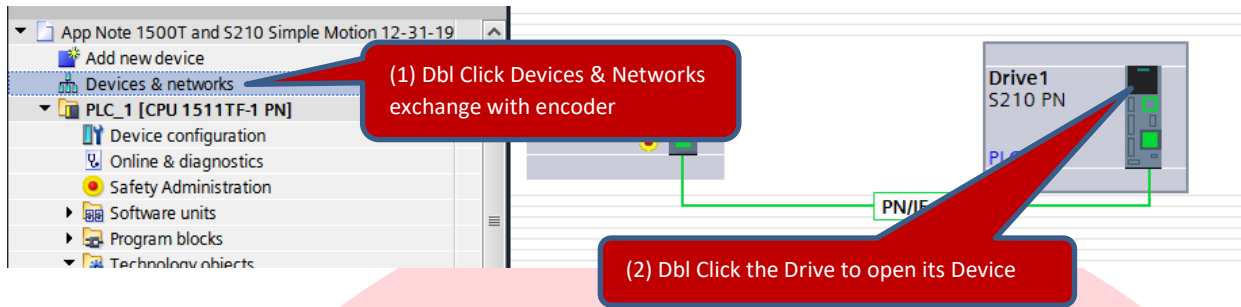
Automatically apply encoder values during runtime (online)

Measuring system: Rotary

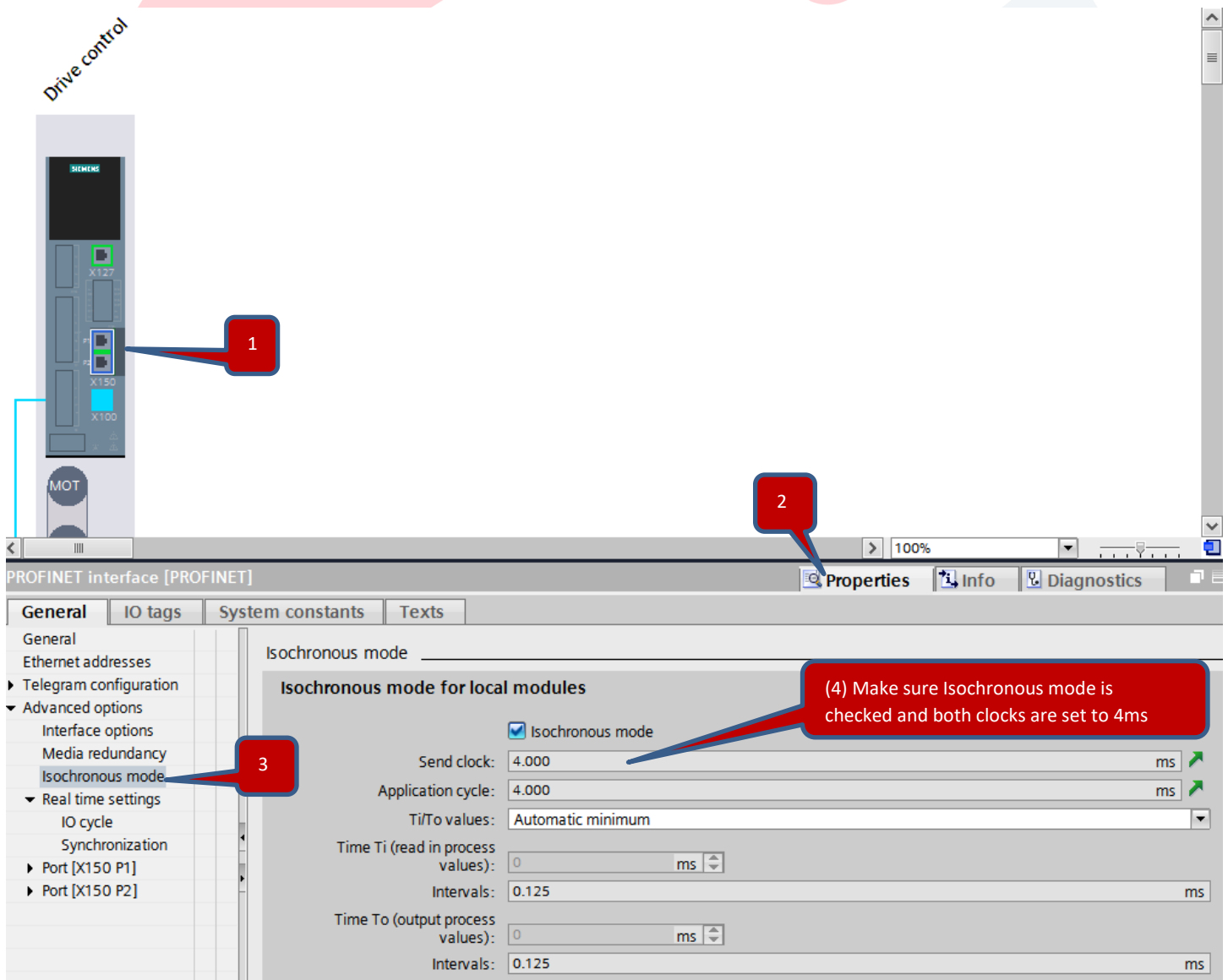
Increments per revolution: 2048

Number of revolutions: 1

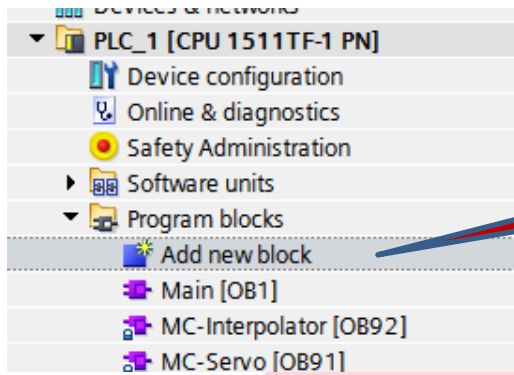
Now go back to the Devices & Networks Screen



On the Device View click the Profinet Ports of the Drive, then click the Properties Tab at the bottom of the page, and check the Isochronous mode settings as shown.

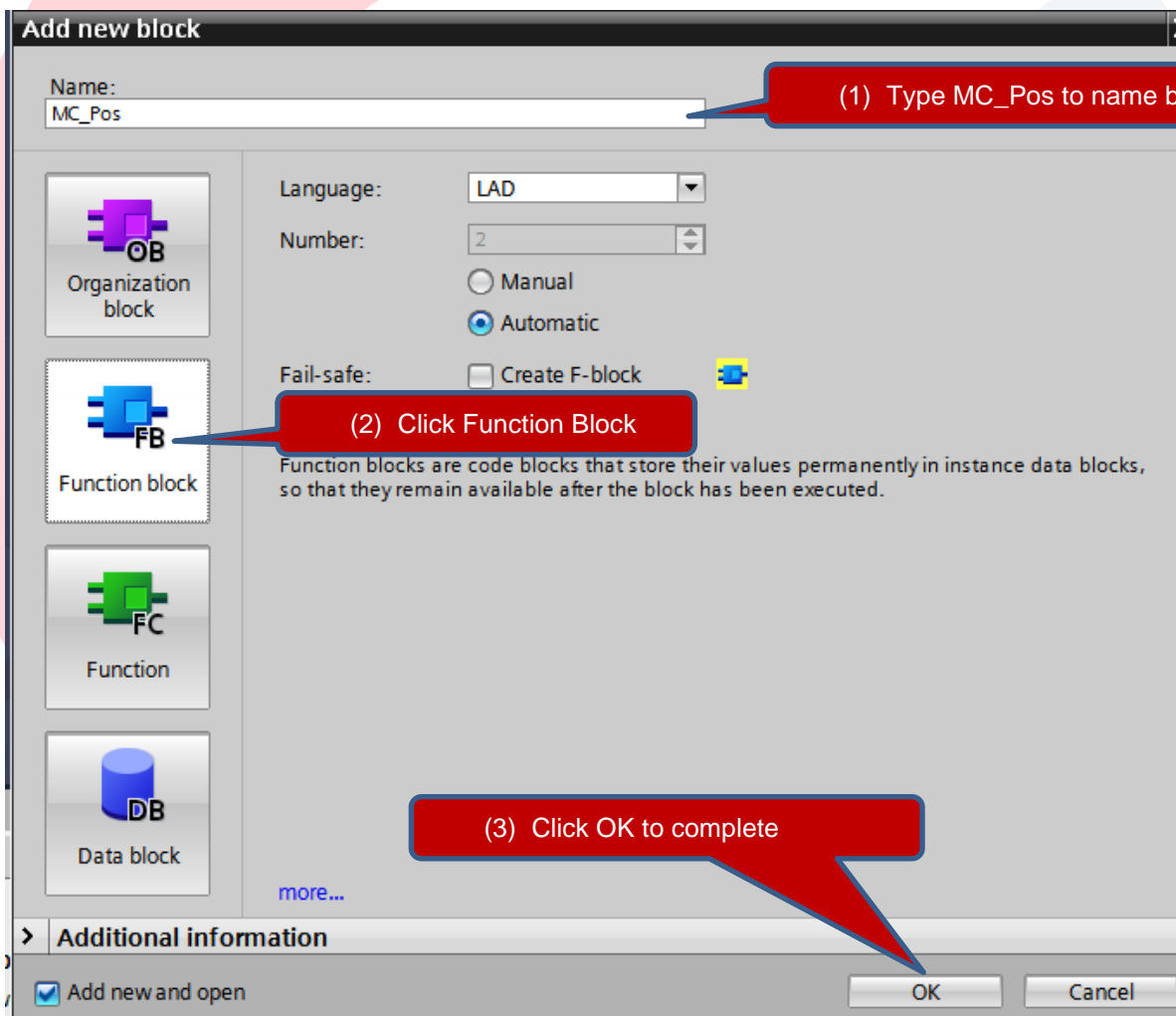


Create the S7 Program



Click Add new block

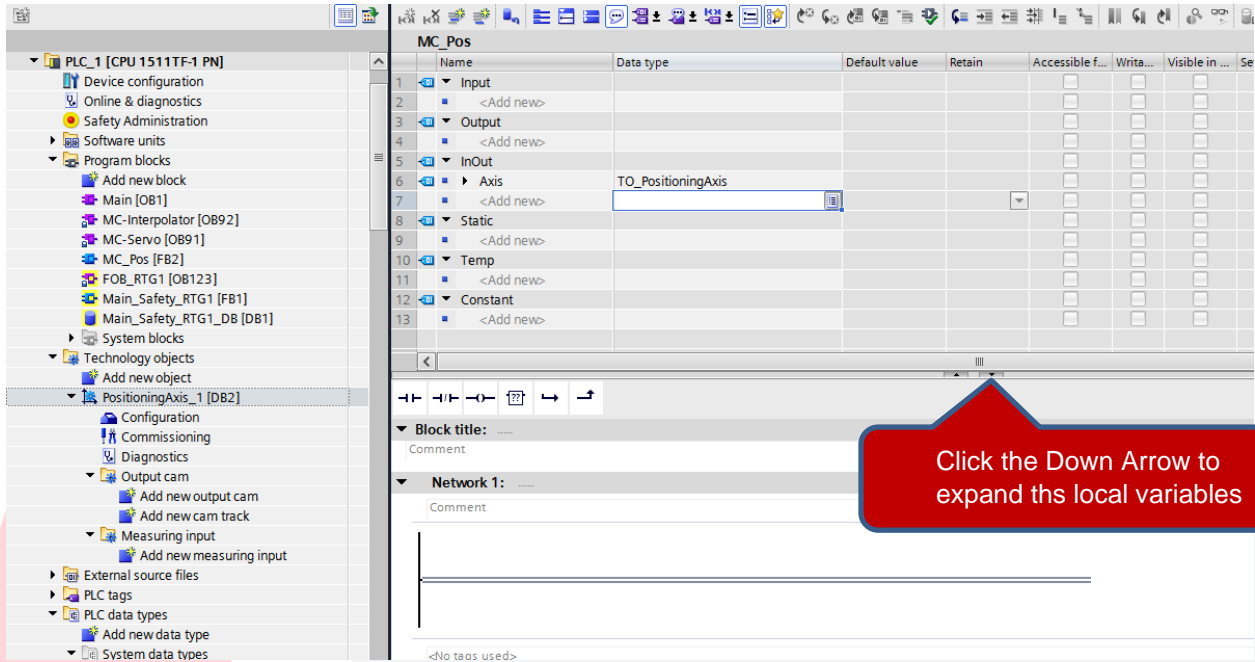
Create a new FB with the name MC_Pos.



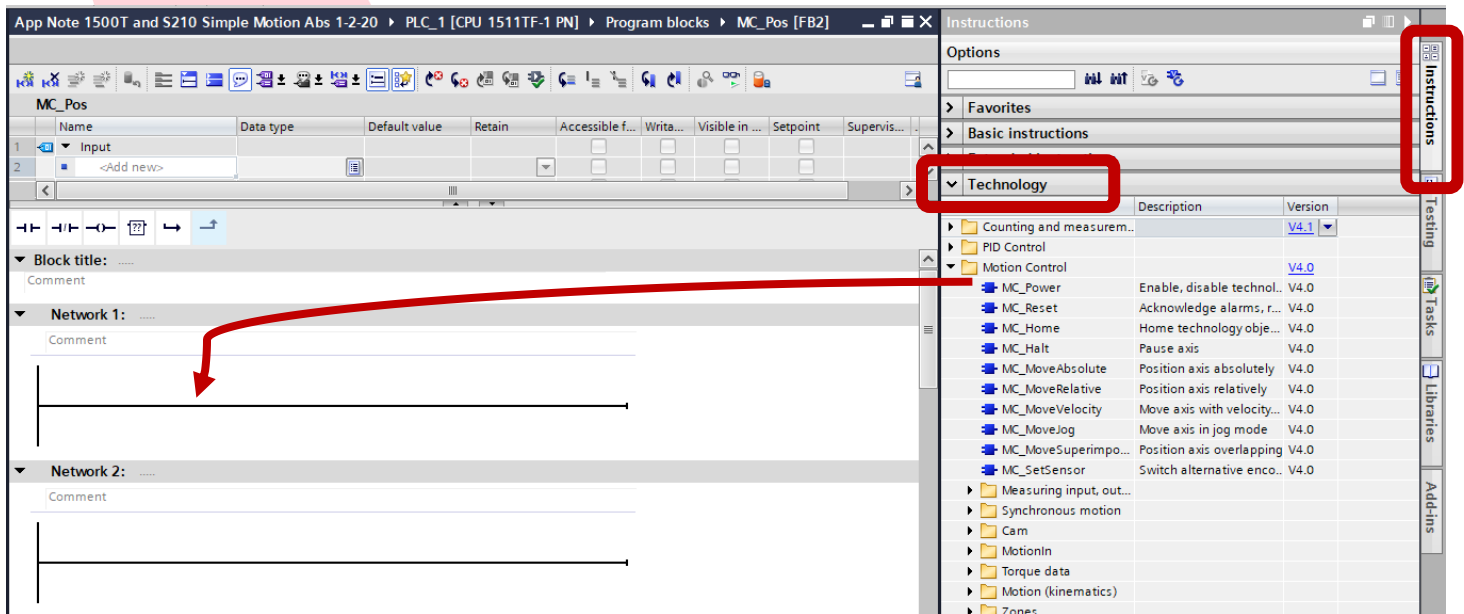
Add Local InOut Variable named Axis to MC_Pos as data type TO_PositionAxis.

You will need to Type **TO_PositioningAxis** as it can't be found by a search.

This InOut Axis Variable will be used to link the physical axis to these functions.

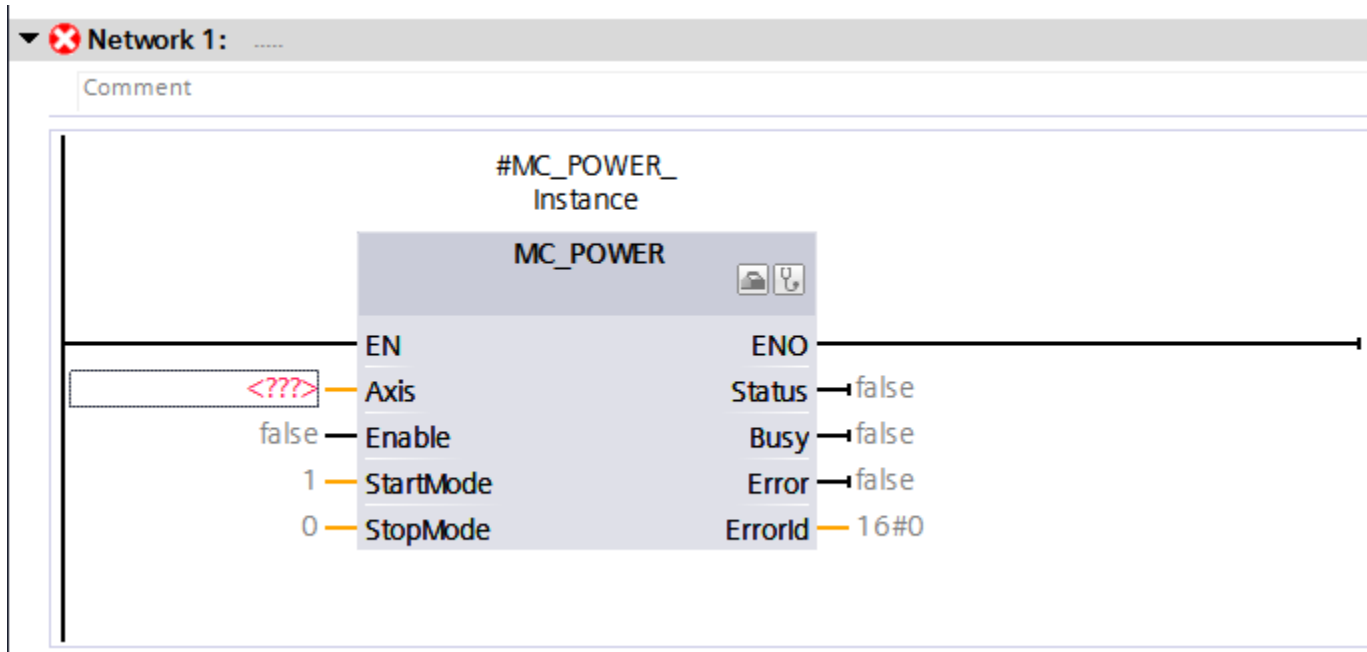


Here we will add logic for control of the Axis. We will be using functions from Motion Control under the Technology Library. Make sure to click on the Instructions Tab to open the Libraries then click on Technology to open the Technology Library. Left Click the Instruction and drag and drop onto the Ladder Network.

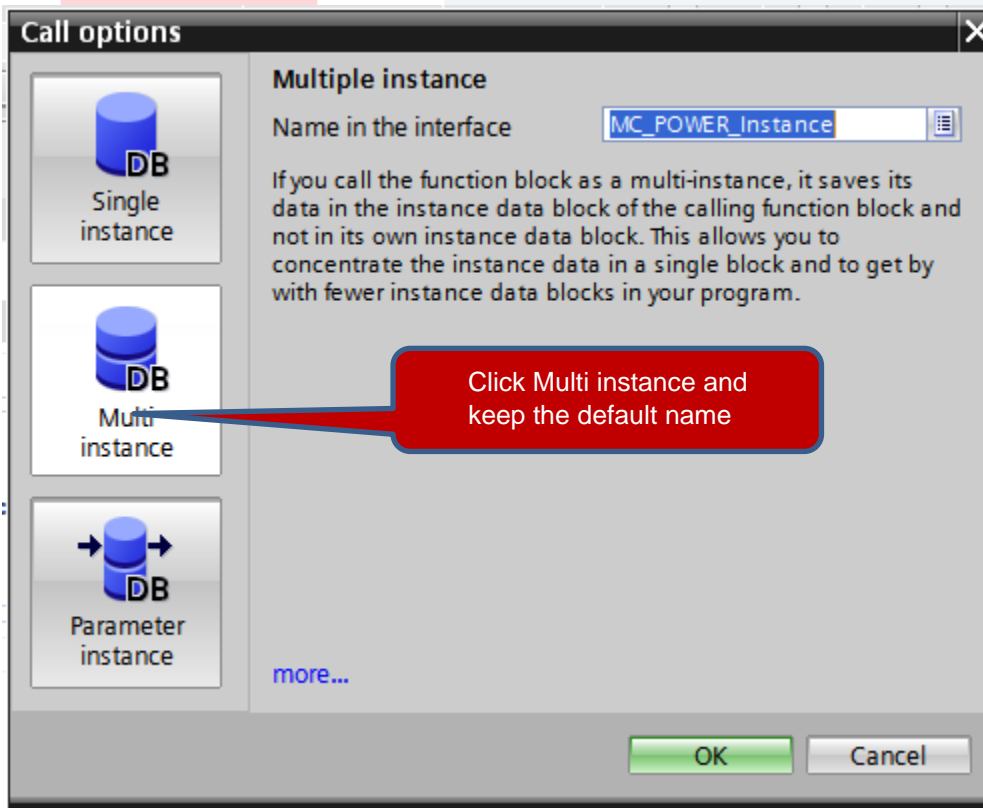


First, select MC_Power. MC_Power allows the drive to be enabled

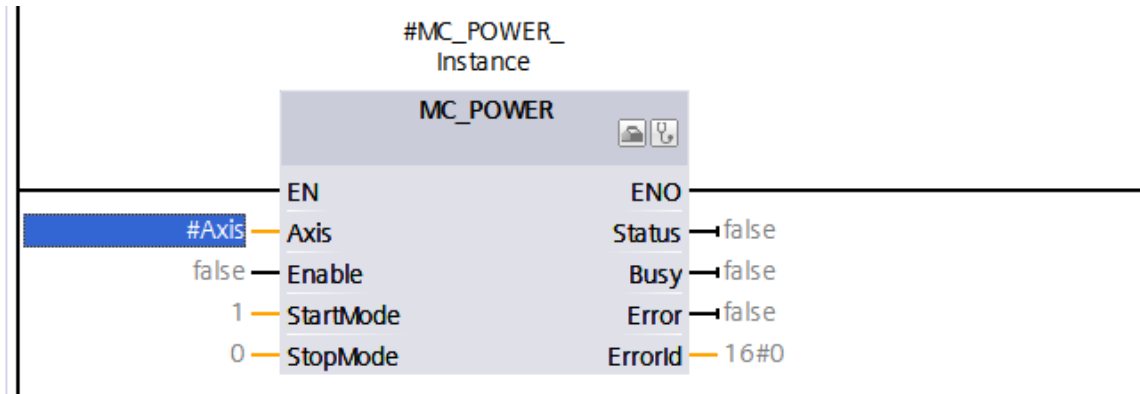
Left Click and hold on MC_Power in the Technology Instructions and drag and drop into the network.



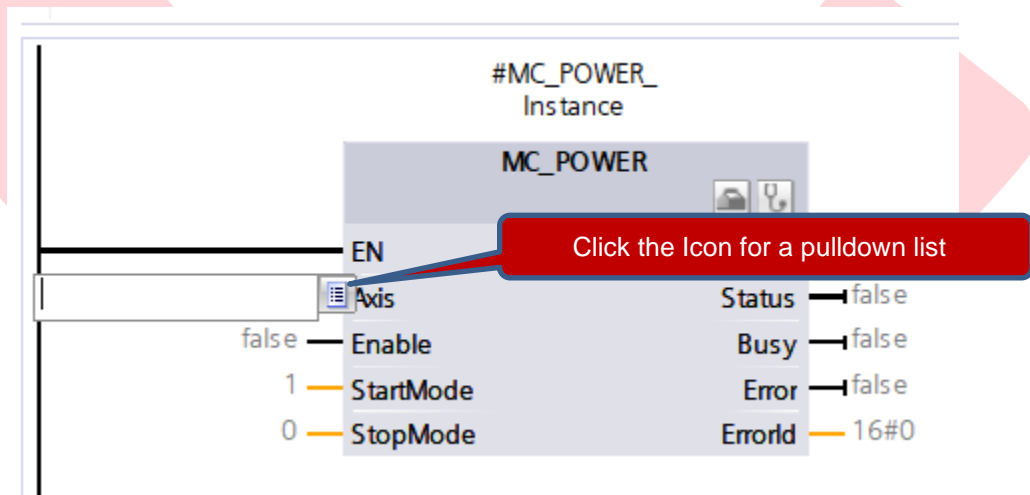
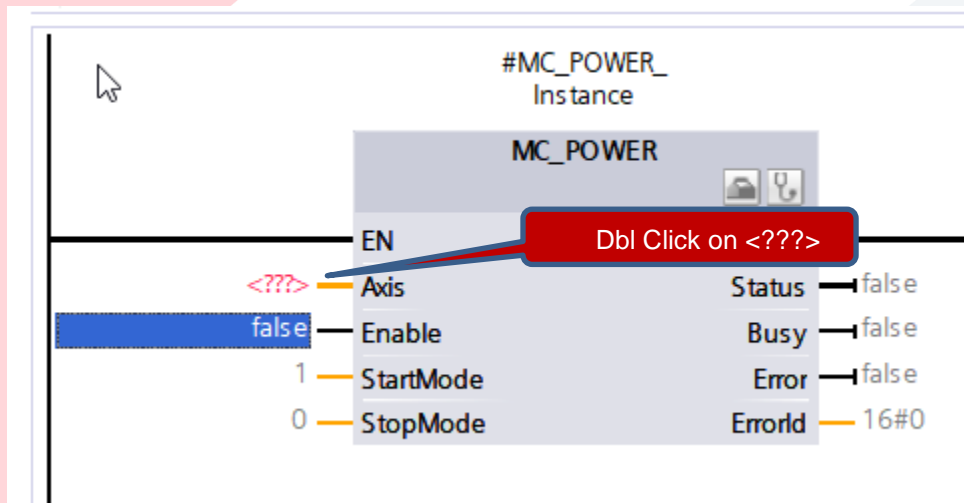
For all the MC block calls in this FB we will use Multi Instance for all these (MC) Motion Control Functions.



Next link our local InOut Variable #Axis to the Axis Pin on the MC_Power Block



Selecting #Axis can be tricky. Follow these steps to simplify the exercise.



#MC_POWER_Instance

MC_POWER

EN ENO

Axis Status → false

#Axis	TO_Positioning...	>>
#MC_POWER_Instance	MC_POWER	>>
#Status	Status	>>
"MC_Pos_DB"		>>
"MC_RESET_DB"	Instance DB of ... DB1	>>
"PositioningAxis_1"	Data block deri... DB2	>>

Comment

#MC_POWER_Instance

MC_POWER

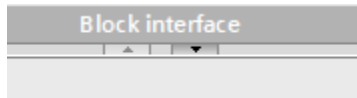
EN ENO

#Axis | Axis Status → false

None		>>
Actor	TO_StructureActor	>>

Comment

As another alternative, you can drag the variable directly from the Local FB variables table.



Click the down arrow below Block interface to open the table

You can then single click the Axis variable from the Local Variables to select the variable.

Then Left Click it and drag and drop onto the MC_Power Axis input pin.

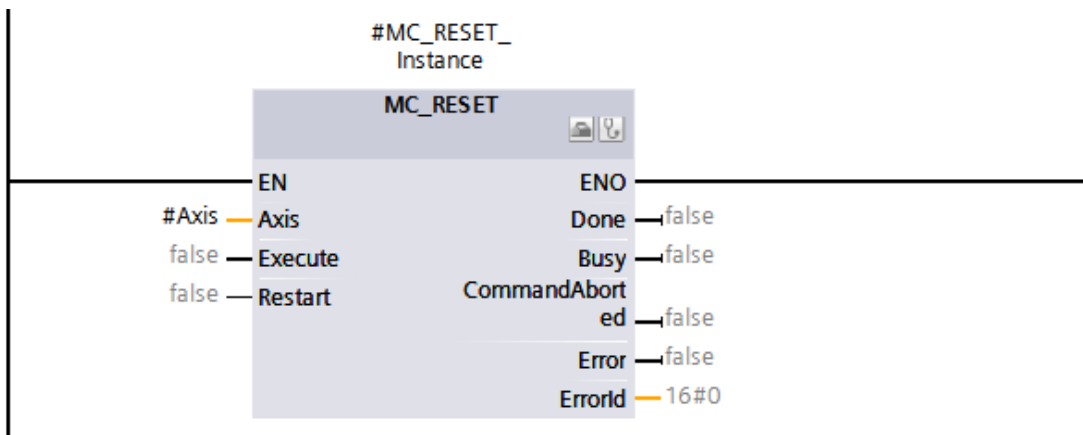
	Name	Data type	Default value	Retain	Accessible f...	Writa...	Visible in ...	Setpoint	Supervis
1	Input				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	<Add new>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Output				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	<Add new>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	InOut				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6	Axis	TO_Positioning...			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	Static				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	MC_POWER_Instance	MC_POWER			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9	MyTargetPos	LReal	0.0	Non-retain	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10	Temp				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11	Status	Struct			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12	Constant				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Network 1:

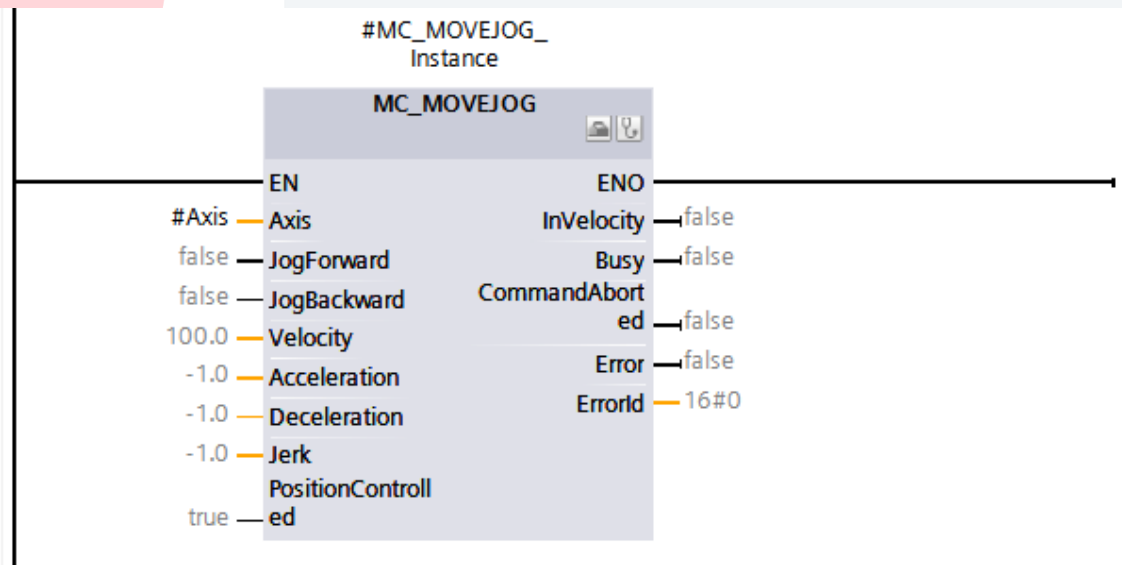
```
graph LR
    subgraph MC_POWER_Instance
        EN
        ENO
        Status --> false
        Busy --> false
        Error --> false
        ErrorId --> 16#0
    end
    #Axis --> Axis
    false --> Enable
    1 --> StartMode
    0 --> StopMode
```

Add MC_Reset block to network 2. Again, select Multi Instance and connect #Axis

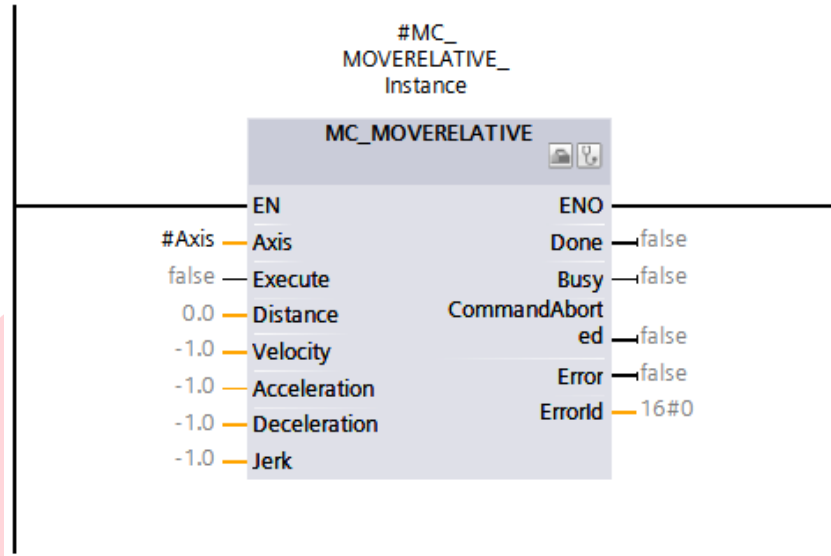
Note: It may help to enter all of the MC blocks below the go back and add the #Axis Variable. You can copy from the MC_Power Block by Rt Clicking and select Copy, then past on each block on the Axis pin.



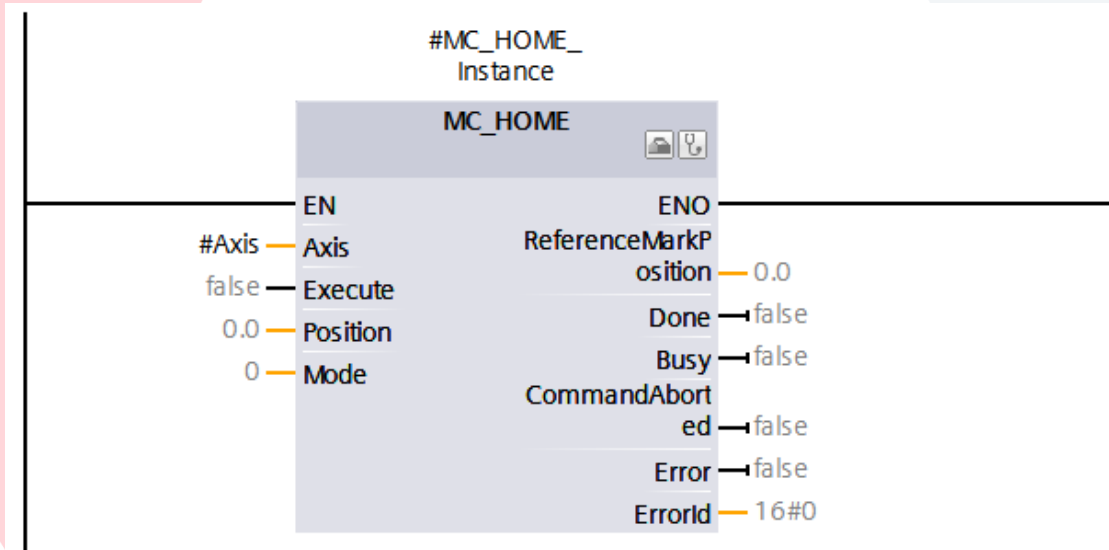
Add MC_MOVEJOG to network 3. Again, select Multi Instance and connect #Axis



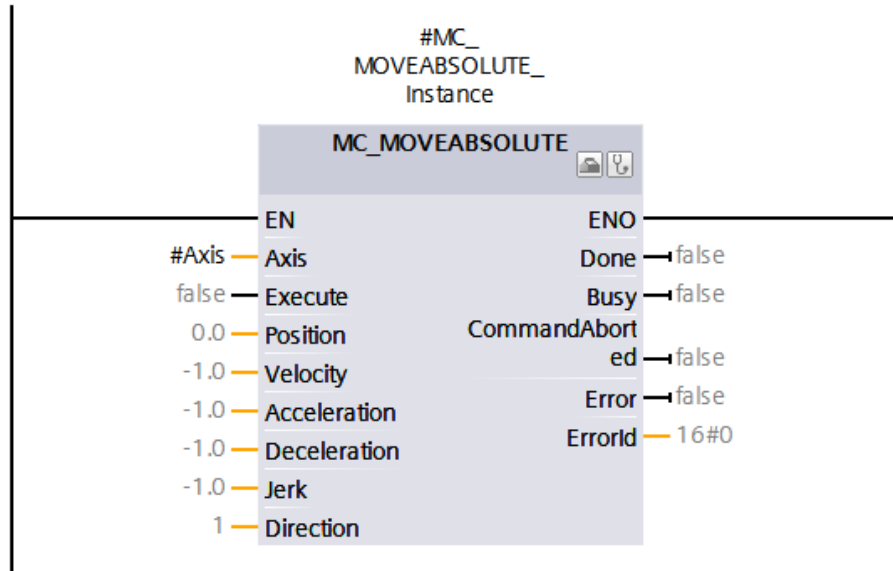
Add MC_MOVERELATIVE to network 4. Again, select Multi Instance and connect #Axis



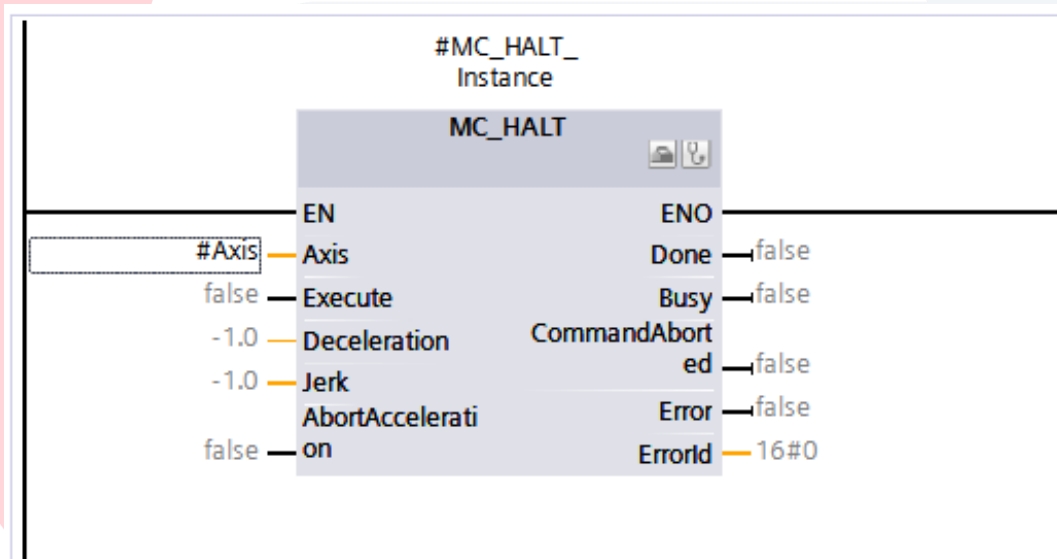
Add MC_HOME to network 5. Again, select Multi Instance and connect #Axis



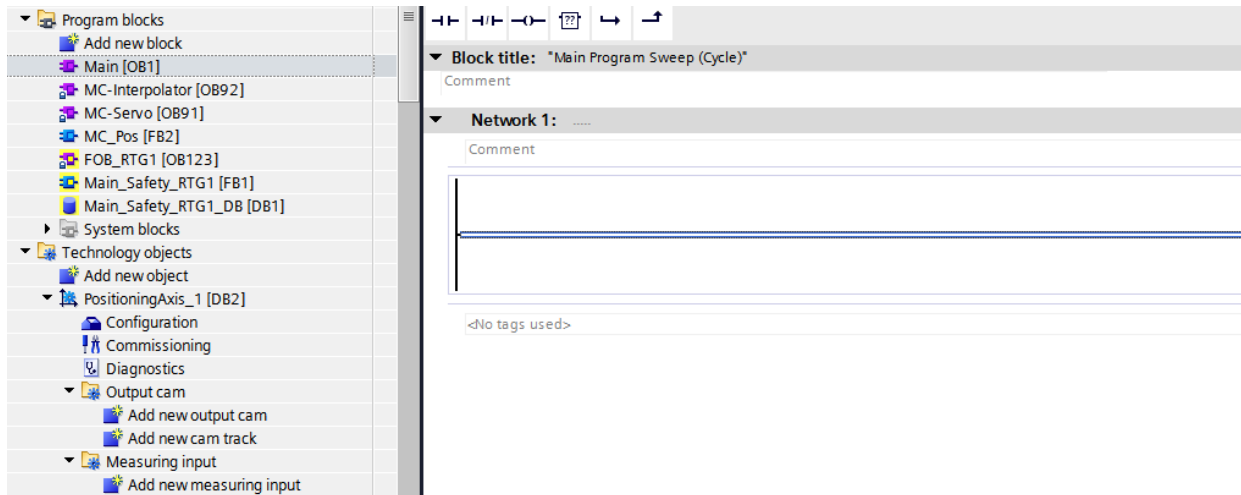
Add MC_MOVEABSOLUTE to network 6. Again, select Multi Instance and connect #Axis



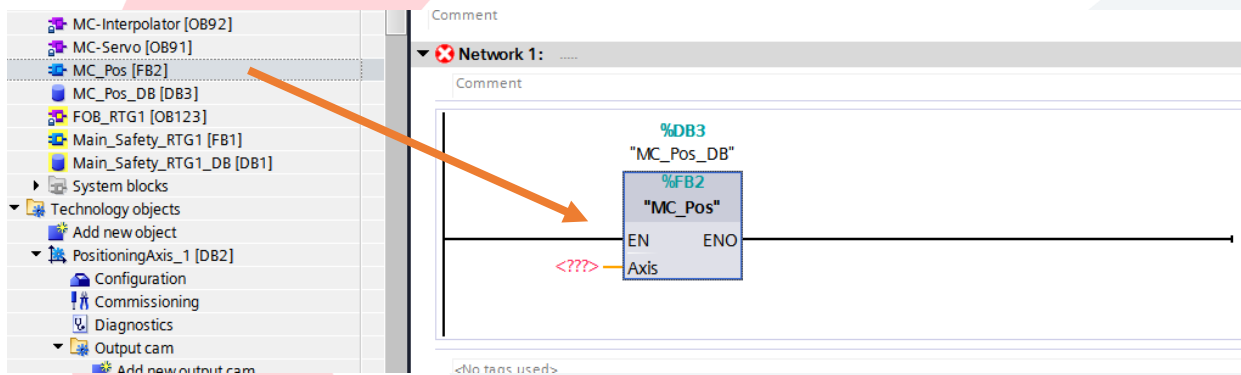
Finally add MC_Halt to network 7. Again, select Multi Instance and connect #Axis



Next open the Main [OB1]

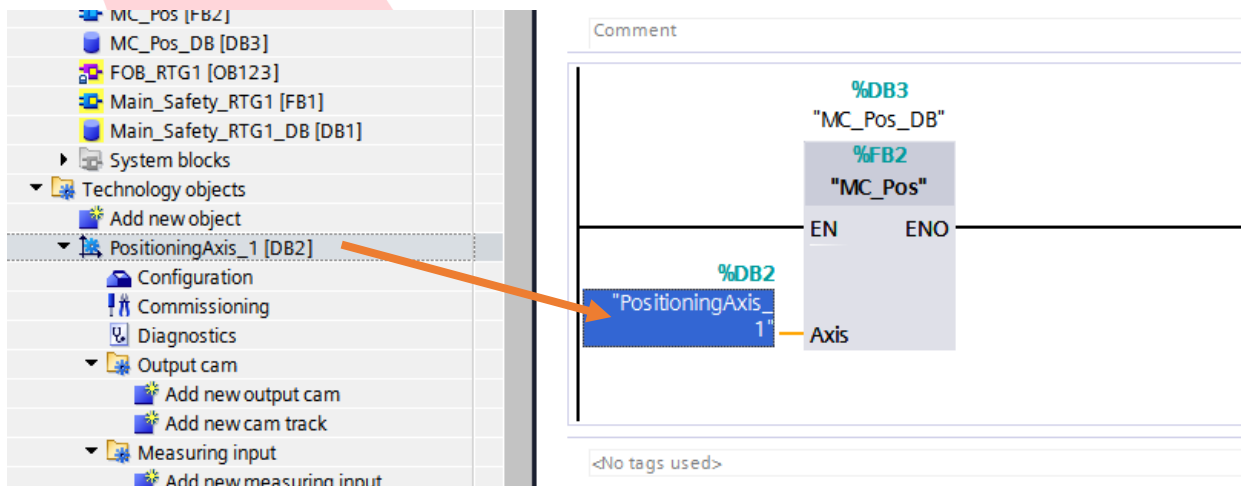


Left Click and drag and drop MC_Pos onto Network 1



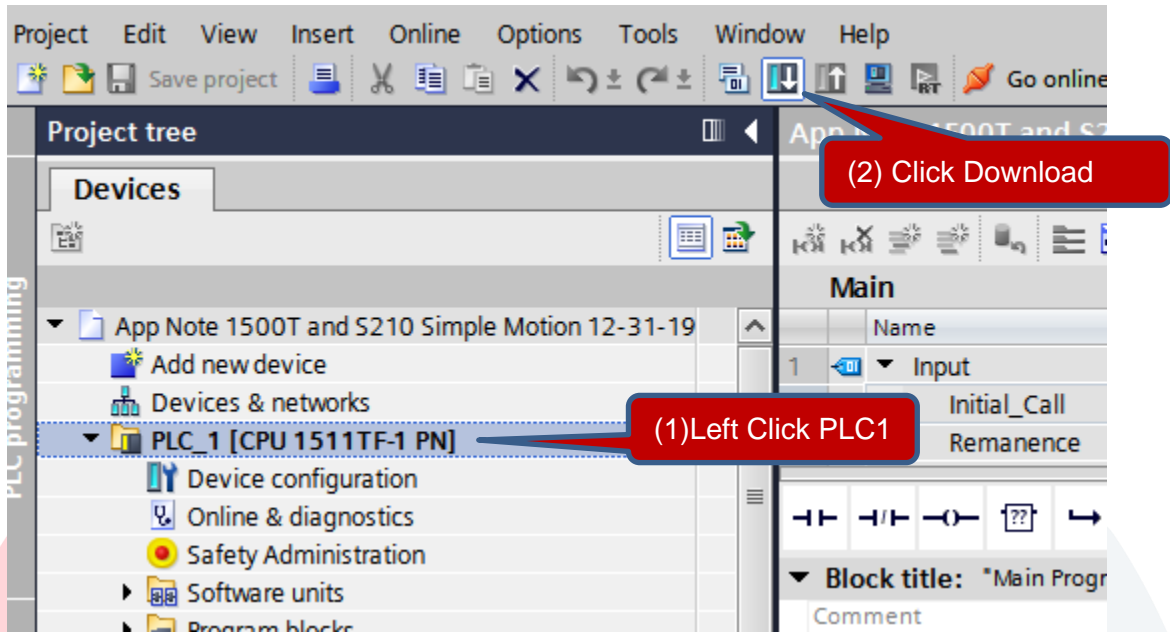
Left Click PositioningAxis_1 and drag and drop to the Axis pin on MC_Pos FB Call.

This links this call of MC_Pos to PositioningAxis_1.

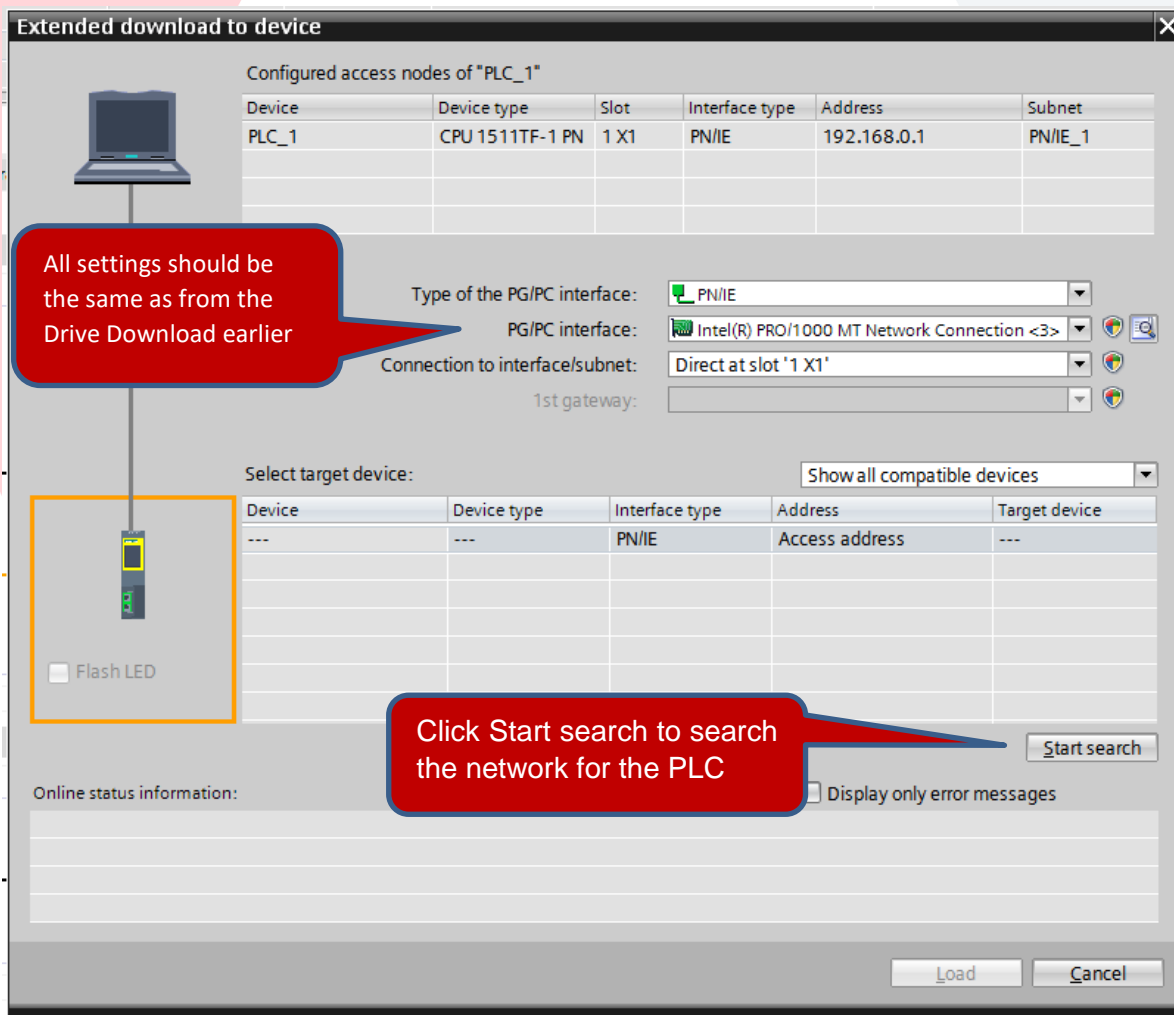


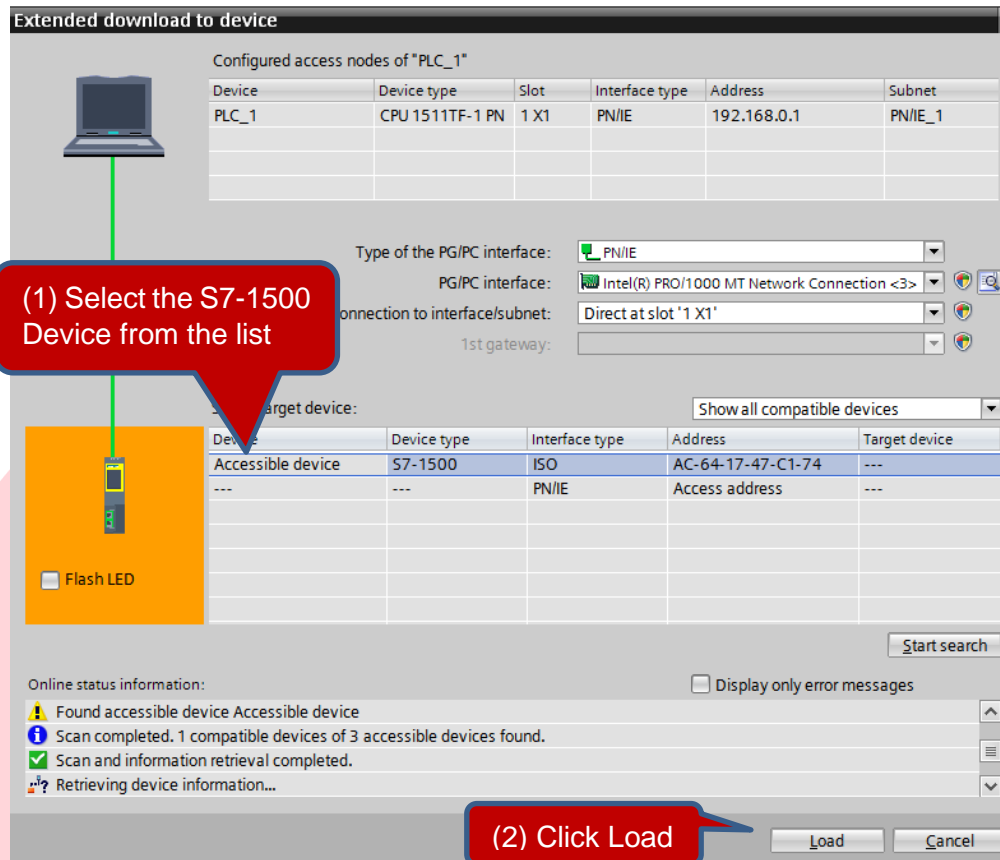
Save the Project

Now we will Download the program to the PLC.



Here again we will see the Extended download to device window.

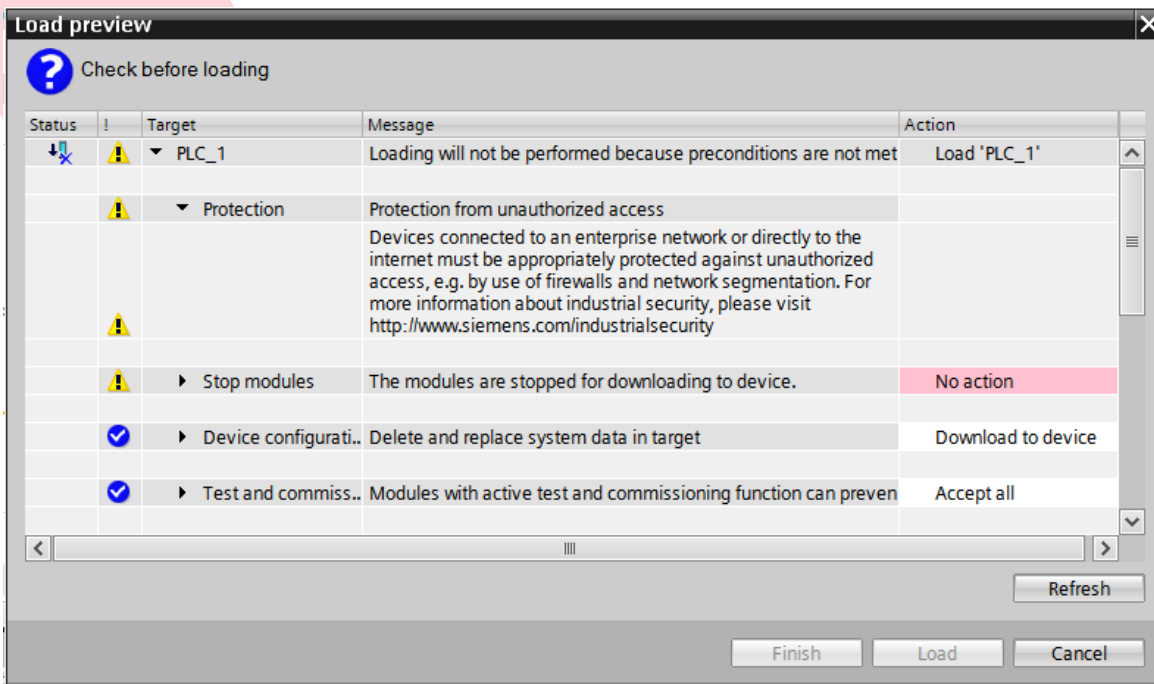


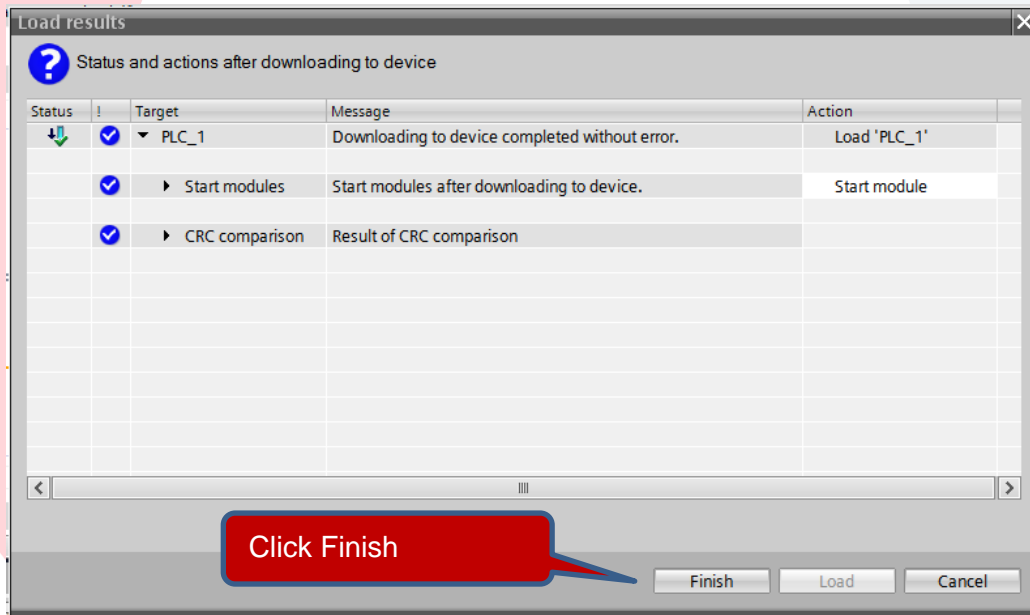
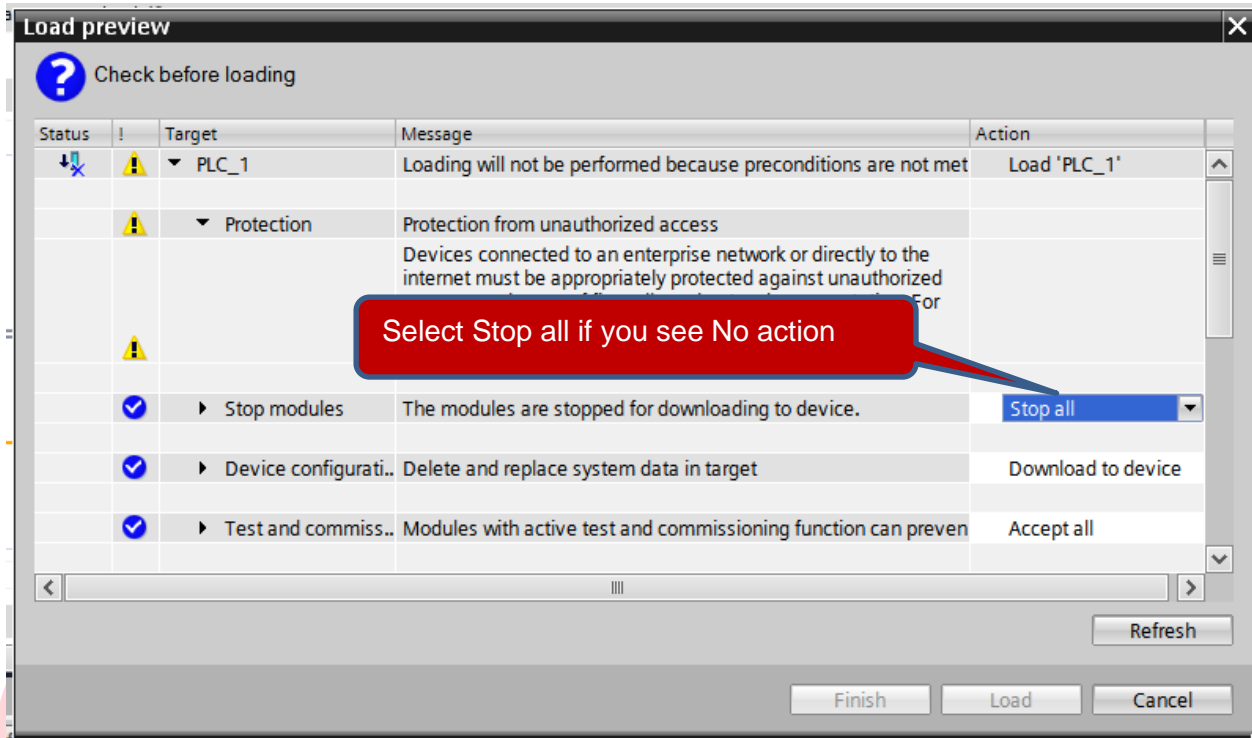


Next you will see the Load preview screen.

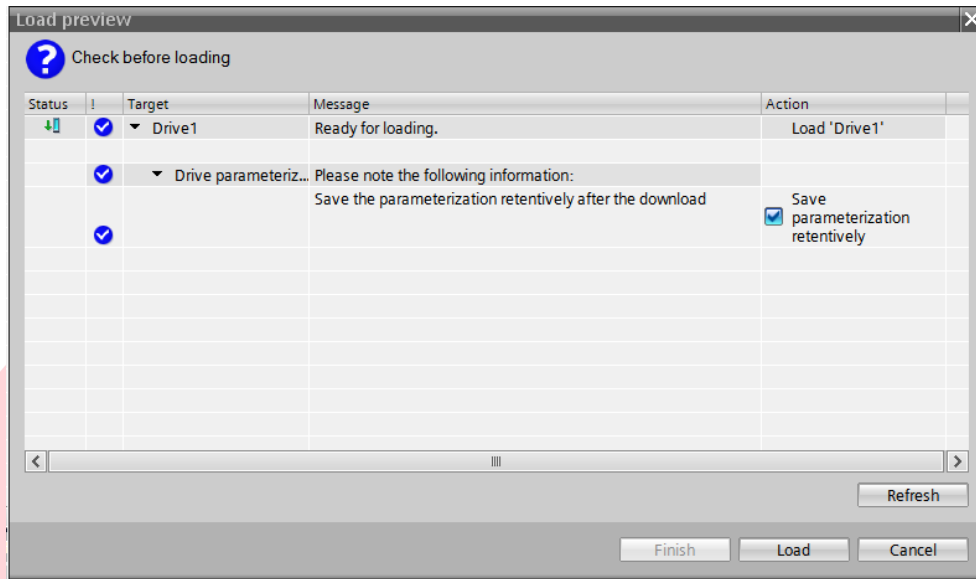
If the PLC had a previous program loaded, then you will see the No Action highlighted in Pink.

If this is the case change No action to Stop all. This will stop PLC processing so the new program can be loaded.

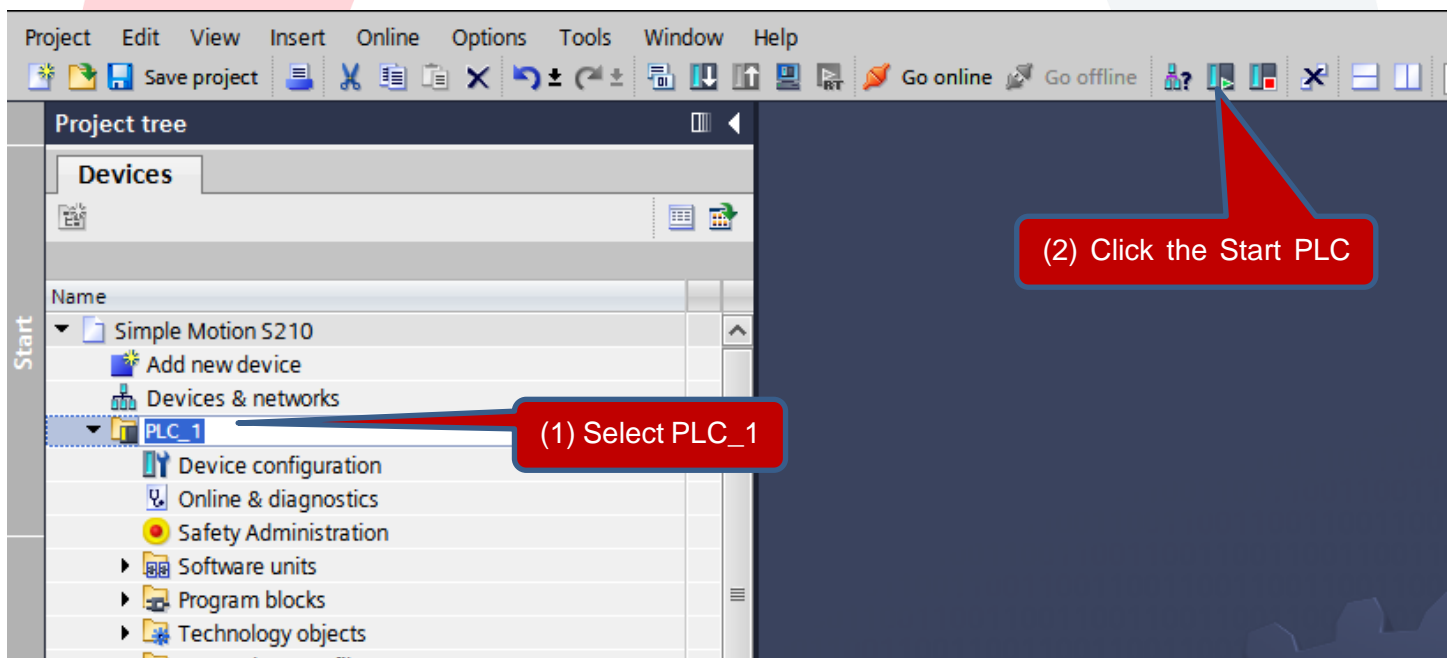




Also Download to the Drive again to get all network settings transferred to the drive. Again, make sure Save parameterization retentively is checked.



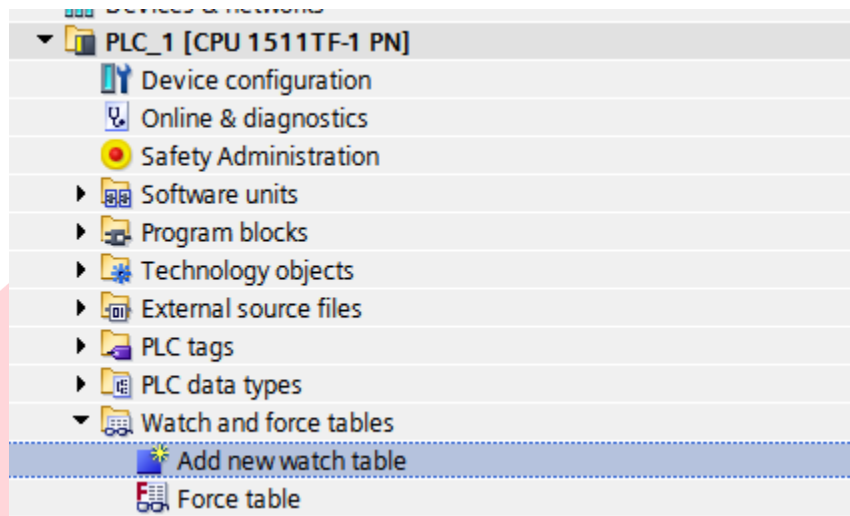
After the drive is loaded you will need to restart the PLC.



You should now see a Green Run Light on the PLC and two Green Led's on the Drive.

Drive Testing and Control:

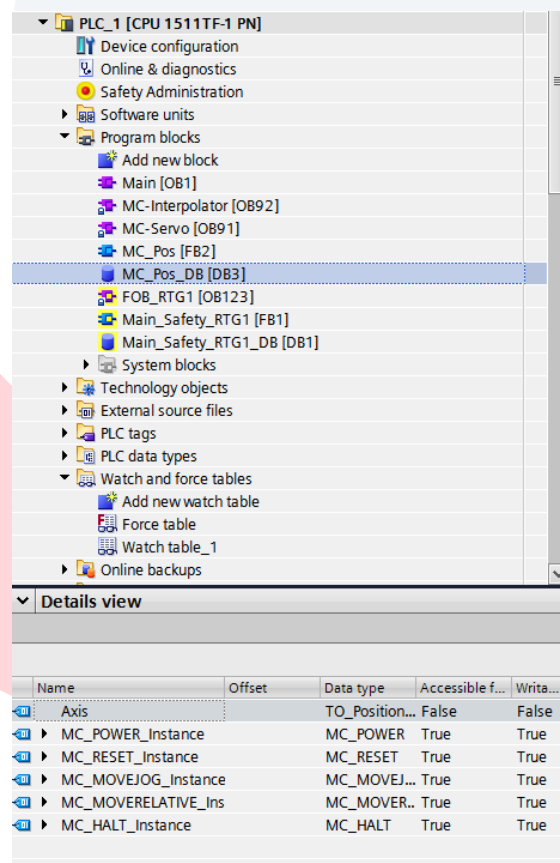
Add a Watch Table for easy access to the MC Blocks



Keep the Default Name of Watch table_1.

Next add variables to the Watch Table.

Left Click the MC_Pos_DB to list its variables in the Details View



From the Details view Select one or more pertinent variables and drag them to the Watch Table

Note: Multiple variables can be selected and brought over together.

	i	Name	Address	Display format	Monitor value
1		// MC_Power			
2		"MC_Pos_DB".MC_POWER_Instance.Enable		Bool	
3		"MC_Pos_DB".MC_POWER_Instance.Status		Bool	
4		"MC_Pos_DB".MC_POWER_Instance.Busy		Bool	
5		"MC_Pos_DB".MC_POWER_Instance.Error		Bool	
6		// MC_Reset			
7		"MC_Pos_DB".MC_RESET_Instance.Execute		Bool	
8		"MC_Pos_DB".MC_RESET_Instance.Done		Bool	
9		"MC_Pos_DB".MC_RESET_Instance.Busy		Bool	
10		"MC_Pos_DB".MC_RESET_Instance.Error		Bool	
11		// MC Move Jog			
12		"MC_Pos_DB".MC_MOVEJOG_Instance.JogForward		Bool	
13		"MC_Pos_DB".MC_MOVEJOG_Instance.JogBackward		Bool	
14		"MC_Pos_DB".MC_MOVEJOG_Instance.Velocity		Floating-point nu...	
15		"MC_Pos_DB".MC_MOVEJOG_Instance.Error		Bool	
16		// MC Move Relative			
17		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Execute		Bool	
18		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Distance		Floating-point nu...	
19		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Velocity		Floating-point nu...	
20		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Done		Bool	
21		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Busy		Bool	
22		"MC_Pos_DB".MC_MOVERELATIVE_Instance.Error		Bool	
23		// MC Halt			
24		"MC_Pos_DB".MC_HALT_Instance.Execute		Bool	
25		"MC_Pos_DB".MC_HALT_Instance.Done		Bool	
26		// MC Home			
27		"MC_Pos_DB".MC_HOME_Instance.Execute		Bool	
28		"MC_Pos_DB".MC_HOME_Instance.Position		Floating-point nu...	
29		"MC_Pos_DB".MC_HOME_Instance.Mode		DEC+/-	
30		"MC_Pos_DB".MC_HOME_Instance.Busy		Bool	
31		"MC_Pos_DB".MC_HOME_Instance.Done		Bool	
32		"MC_Pos_DB".MC_HOME_Instance.Error		Bool	
33		// MC Move Absolute			
34		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Execute		Bool	
35		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Position		Floating-point nu...	
36		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Velocity		Floating-point nu...	
37		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Done		Bool	
38		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Busy		Bool	
39		"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Error		Bool	
40					

Important Watch Table Icons



Insert Row before current selected



Add Row after current selected



Insert Command Line with //



Monitor the variables in the Watch Table



Write Modified Values from Modify Value Column to the PLC

To run the drive from the Watch Table;

First Press the Monitor Button to go online with the Watch Table



Monitor the variables in the Watch Table

First Enable the Drive with MC_Power.

Type 1 or TRUE in the Modify Value column next to MC_Power_Instance.Enable and

	Name	Address	Display format	Monitor value	Modify value
1	// MC_Power				
2	"MC_Pos_DB".MC_POWER_Instance.Enable		Bool	<input checked="" type="checkbox"/> TRUE	TRUE
3	"MC_Pos_DB".MC_POWER_Instance.Status		Bool	<input checked="" type="checkbox"/> TRUE	
4	"MC_Pos_DB".MC_POWER_Instance.Busy		Bool	<input checked="" type="checkbox"/> TRUE	
5	"MC_Pos_DB".MC_POWER_Instance.Error		Bool	<input type="checkbox"/> FALSE	

select Modify Values selected values.



With MC_Power Enabled, now you can enter a 1 in JogForward or JogBackward and Modify Values to jog the motor. Return value to 0 and Modify All to stop the motion

// MC Move Jog					
	"MC_Pos_DB".MC_MOVEJOG_Instance.JogForward		Bool	<input checked="" type="checkbox"/> TRUE	TRUE
	"MC_Pos_DB".MC_MOVEJOG_Instance.JogBackward		Bool	<input type="checkbox"/> FALSE	FALSE
	"MC_Pos_DB".MC_MOVEJOG_Instance.Velocity		Floating-poin...	100.0	
	"MC_Pos_DB".MC_MOVEJOG_Instance.Error		Bool	<input type="checkbox"/> FALSE	

For a Relative Move enter a Distance in mm, a velocity in mm/sec and Modify All, then Enter a 1 in Execute and again Modify All. The motor will move 10 Revolutions or 100 mm (Default Scaling of the Technology Object that was created was a linear axis and is configured as a 10mm travel per 1 revolution of the motor). After the move you must toggle the Execute bit to OFF and Modify All then toggle back ON and Modify All again to move another 100mm. Most servo move commands trigger off of a rising edge of the input bit.

// MC Move Relative							
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Execute		Bool	<input type="checkbox"/> FALSE	TRUE	<input checked="" type="checkbox"/>	
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Distance		Floating-poin...	0.0	100.0	<input checked="" type="checkbox"/>	
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Velocity		Floating-point nu...	-1.0	100.0	<input checked="" type="checkbox"/>	
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Done		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>	
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Busy		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>	
	"MC_Pos_DB".MC_MOVERELATIVE_Instance.Error		Bool	<input type="checkbox"/> FALSE		<input type="checkbox"/>	

We will next Home the Motor. My Motor has an Absolute Encoder so homing is not required to do an Absolute move, but it will help to set the current position to 0 for a base reference

First add ActualPosition to the Watch Table from PositioningAxis_1.

Technology objects						
▼ Add new object		37	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Done	Bool	<input type="checkbox"/> FALSE	
▼ PositioningAxis_1 [DB2]		38	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Busy	Bool	<input type="checkbox"/> FALSE	
Configuration		39	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Error	Bool	<input type="checkbox"/> FALSE	
Commissioning		40				
Diagnostics		41	"PositioningAxis_1".ActualPosition	Floating-point number	6716.551	
Details view						
Name Offset Data type						
VirtualAxis			TO_Struct...			
Simulation			TO_Struct...			
Position			LReal			
ActualPosition			LReal			
		47				
		48				<Add new>

For the MC_Home block there are several options for homing mode. For this example we will just use mode 0, which will set the Actual Position Value to the value loaded in the MC_HOME_Instance.Position variable. We will use 0, so when the block is executed the ActualPosition will be set to 0.

Set Instance.Execute to 1 and modify all. The Done Bit should immediately turn on and Actual Position should be set to 0.

// MC Home						
	"MC_Pos_DB".MC_HOME_Instance.Execute		Bool	<input checked="" type="checkbox"/> TRUE	TRUE	
	"MC_Pos_DB".MC_HOME_Instance.Position		Floating-point nu...	0.0		
	"MC_Pos_DB".MC_HOME_Instance.Mode		DEC+/-	0		
	"MC_Pos_DB".MC_HOME_Instance.Busy		Bool	<input type="checkbox"/> FALSE		
	"MC_Pos_DB".MC_HOME_Instance.Done		Bool	<input checked="" type="checkbox"/> TRUE		
	"MC_Pos_DB".MC_HOME_Instance.Error		Bool	<input type="checkbox"/> FALSE		
	"PositioningAxis_1".ActualPosition		Floating-point number	0.0		

Now you can turn off the Execution Bit. Again type in 0 and Modify All.

Now you can make an Absolute Move. Set the Instance Position to the Absolute Position you want the motor to move to and Modify All. Then Trigger the Execute bit to make the move. After the move is complete the Done Bit will turn on and you will see the Actual Position be very close to the target position.

// MC Move Absolute						
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Execute		Bool	<input checked="" type="checkbox"/> TRUE	TRUE	
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Position		Floating-point number	100.0	100.0	
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Velocity		Floating-point number	-1.0		
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Done		Bool	<input checked="" type="checkbox"/> TRUE		
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Busy		Bool	<input type="checkbox"/> FALSE		
	"MC_Pos_DB".MC_MOVEABSOLUTE_Instance.Error		Bool	<input type="checkbox"/> FALSE		
	"PositioningAxis_1".ActualPosition		Floating-point number	99.999		

Technology Object Monitoring Screens

There are also some other status screens for the drive built into the Technology Object

View Status and Error Bits

Axis status	Motion status	Error
<input type="checkbox"/> Simulation active	<input checked="" type="checkbox"/> Done (no job running)	<input type="checkbox"/> System
<input type="checkbox"/> Enabled	<input type="checkbox"/> Homing job	<input type="checkbox"/> Configuration
<input checked="" type="checkbox"/> Position-controlled mode	<input type="checkbox"/> Jog	<input type="checkbox"/> User program
<input type="checkbox"/> Homed	<input type="checkbox"/> Velocity specification	<input type="checkbox"/> Drive
<input type="checkbox"/> Error	<input type="checkbox"/> Positioning job	<input type="checkbox"/> Encoder
<input type="checkbox"/> Restart active	<input checked="" type="checkbox"/> Constant velocity	<input type="checkbox"/> Data exchange
<input type="checkbox"/> Axis control panel active	<input checked="" type="checkbox"/> Standstill	<input type="checkbox"/> I/O
<input type="checkbox"/> Drive ready	<input type="checkbox"/> Accelerating	<input type="checkbox"/> Job rejected
<input checked="" type="checkbox"/> Encoder values valid	<input type="checkbox"/> Decelerating	<input type="checkbox"/> Homing
<input checked="" type="checkbox"/> Active encoder	<input type="checkbox"/> Torque limit active	<input type="checkbox"/> Positioning
<input type="checkbox"/> Restart required	<input type="checkbox"/> Stop job active	<input type="checkbox"/> Dynamic limitation
<input type="checkbox"/> Negative SW limit switch approached	Warnings	<input type="checkbox"/> Following error
<input type="checkbox"/> Positive SW limit switch approached	<input type="checkbox"/> Configuration	<input type="checkbox"/> SW limit switch
<input type="checkbox"/> Neg. HW limit switch approached	<input type="checkbox"/> Job rejected	<input type="checkbox"/> HW limit switch
<input type="checkbox"/> Pos. HW limit switch approached	<input type="checkbox"/> Dynamic limitation	<input type="checkbox"/> Adapt
<input checked="" type="checkbox"/> Alarm display		

Select Diagnostics under PositioningAxis_1

View Motion Status

Setpoints	
Target position:	0.0 mm
Position setpoint:	347.69 mm
Velocity setpoint:	0.0 mm/s
Velocity override:	100.0 %

Current values	
Operative encoder:	Encoder 1
Actual position:	347.69 mm
Actual velocity:	-0.00119209289550781 mm/s
Following error:	0.0 mm

Dynamic limits	
Velocity:	500.0 mm/s
Acceleration:	10000.0 mm/s ²
Deceleration:	10000.0 mm/s ²
Jerk:	200000.0 mm/s ³

Save Project