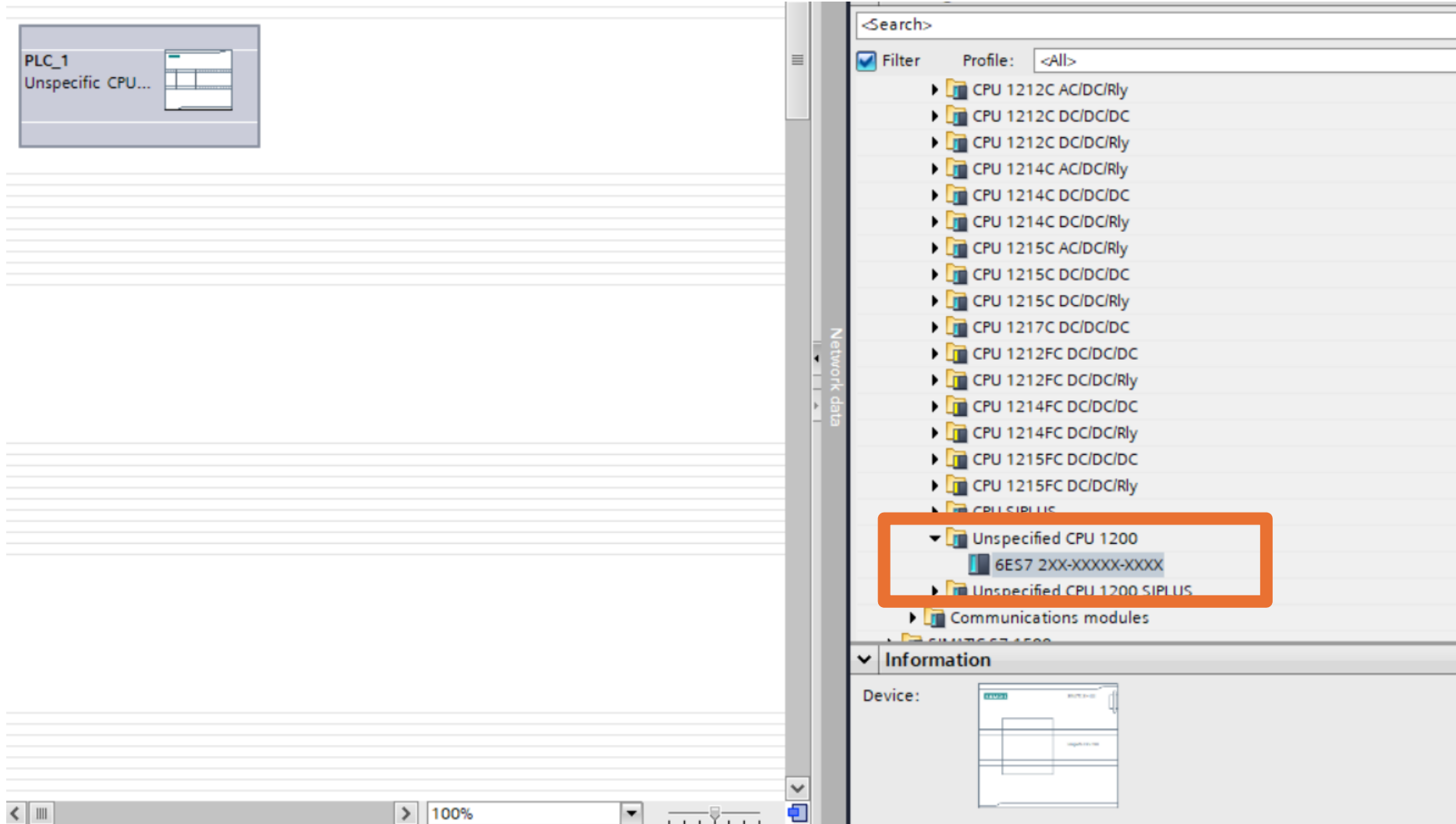


PLC & Sinamics S210

1. Add Unspecified PLC

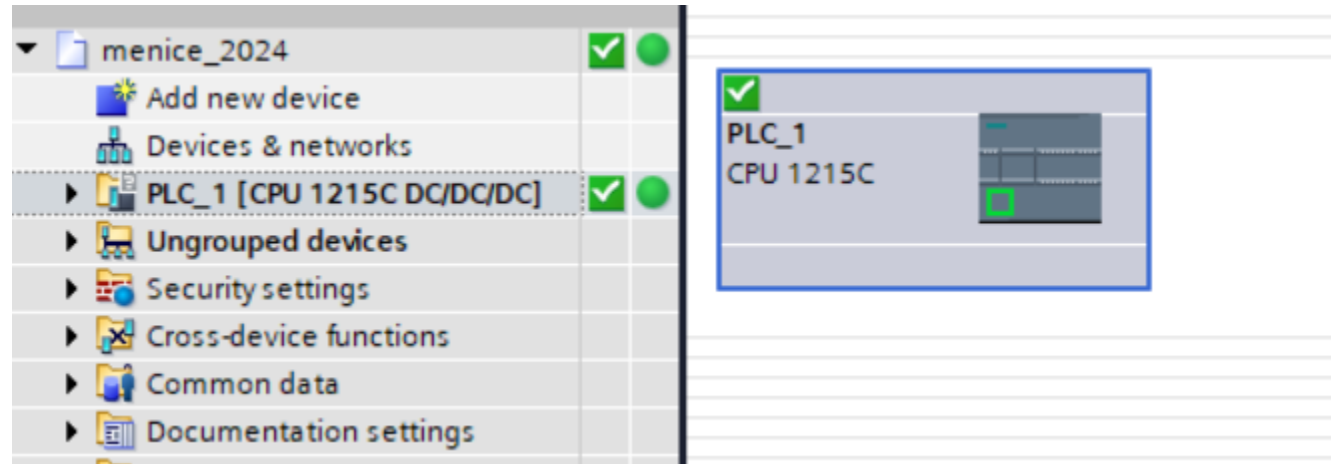


2. Detect PLC

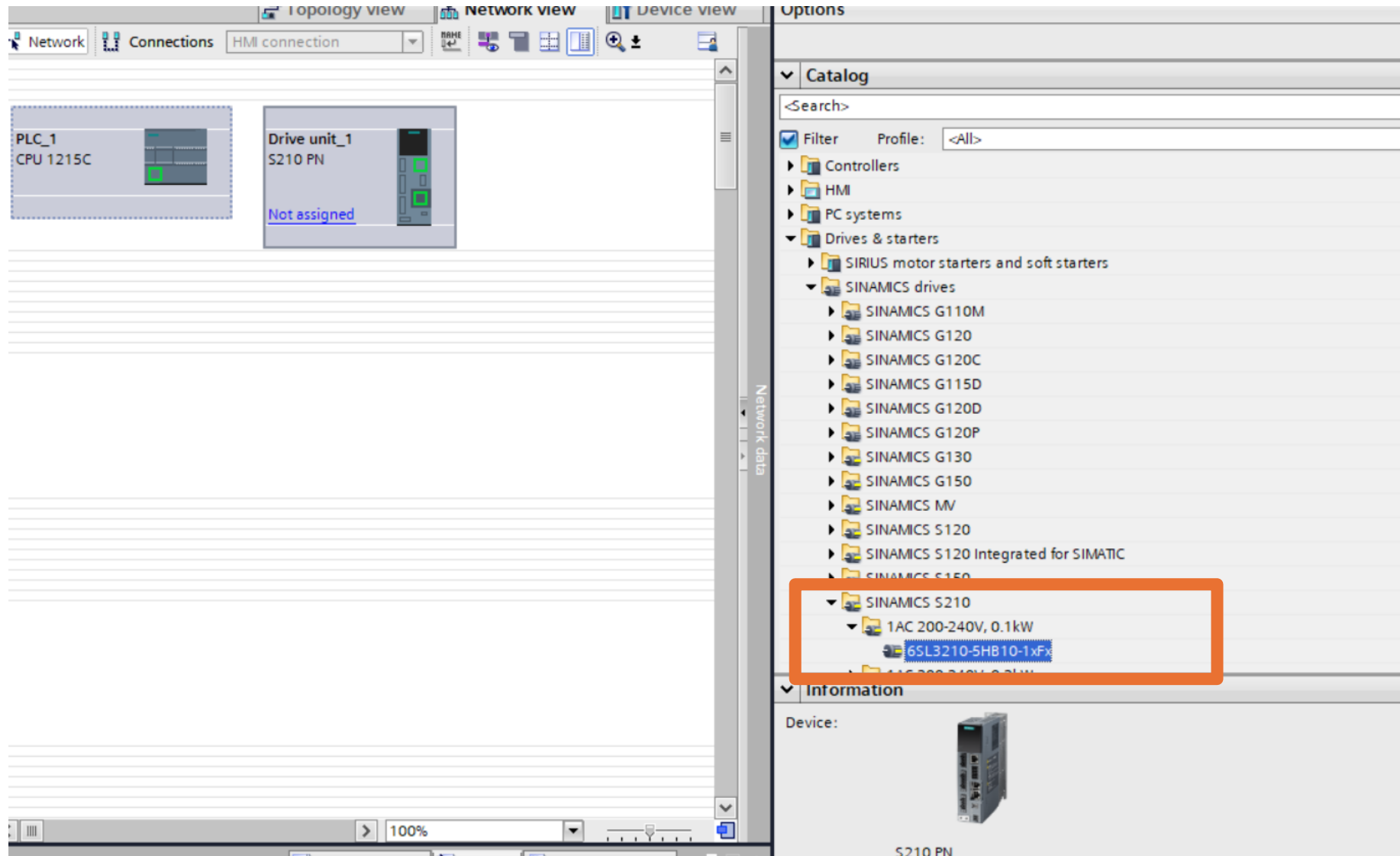
The screenshot displays the Siemens STEP 7 HW Config interface. The main window shows a rack configuration for 'Rack_0' with a 'PLC_1' label. The rack contains a 'SIEMENS' CPU module and an 'Unspecific CPU 1200' module. The 'Device view' tab is active, showing the rack structure. The 'Hardware catalog' panel on the right lists various hardware components under the 'Catalog' section, including CPU, Signal boards, Communications boards, Battery boards, DI, DQ, DI/DQ, AI, AQ, AI/AQ, Communications modules, and Technology modules. The 'Options' section is also visible. A yellow callout box with an orange border provides instructions on how to specify the device.

The device is not specified.
→ Please use the [Hardware catalog](#) to specify the CPU,
→ or [detect](#) the configuration of the connected device.

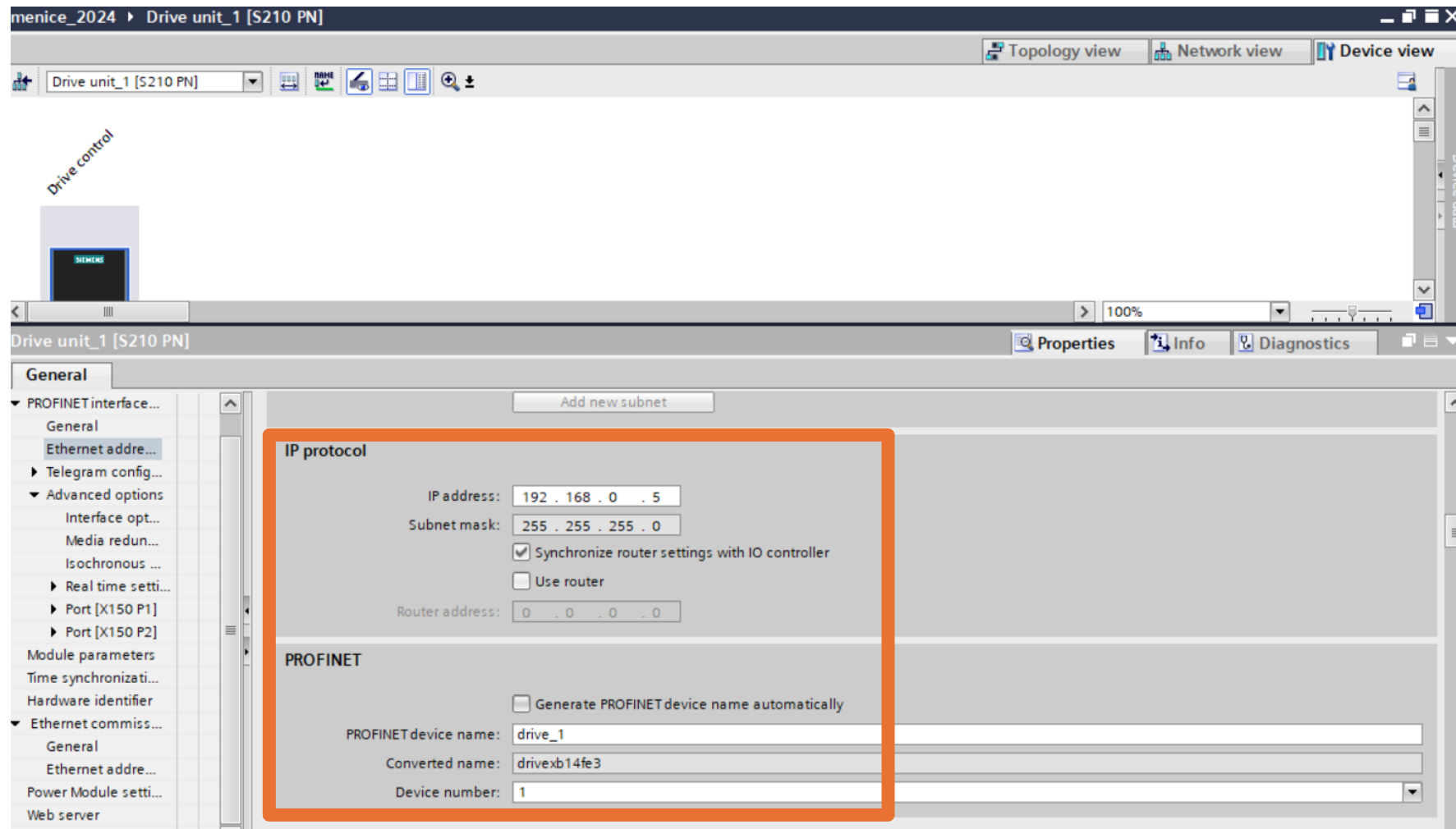
3. Verify connection



4. Add Sinamics S210



5. Set up PROFINET

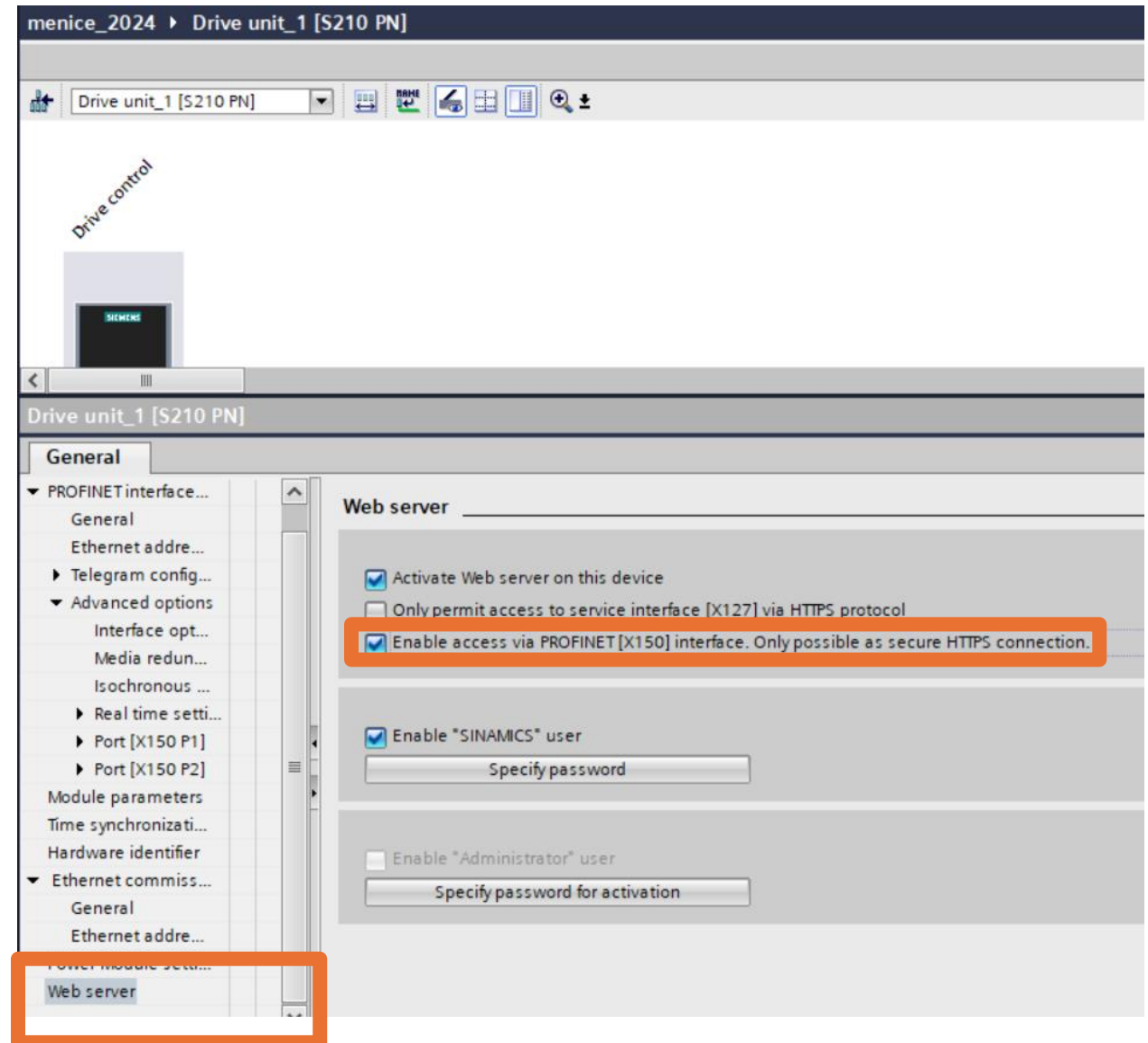


6. Select communication telegram 3

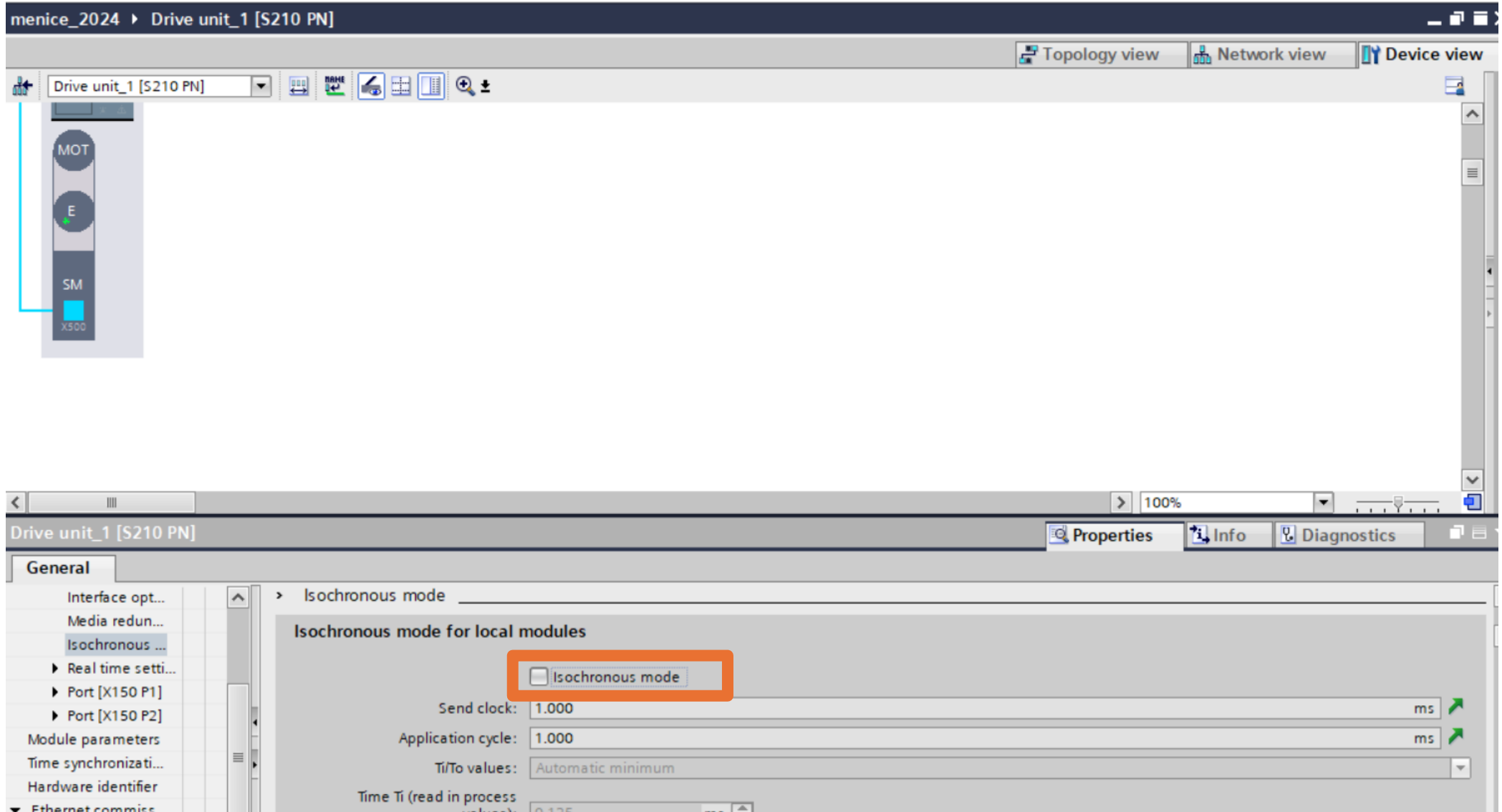
The screenshot displays the Siemens STEP 7 HW Config software interface. The top window, titled 'menice_2024 > Devices & networks', shows a network topology with 'PLC_1 CPU 1215C' and 'Drive unit_1 S210 PN' connected via a 'PLC_1.PROFINET IO-System'. The bottom window, titled 'Drive unit_1 [S210 PN]', is open to the 'General' tab of the 'PROFINET interface' properties. In the left-hand tree view, the 'Telegram config...' option is highlighted with an orange rectangle. The main area of this window shows the 'Telegram configuration' table.

Name	Item	Link	Telegram	Length	Extension	Type	Partner	Partner d...
▼ Drive control-Telegrams								
Send (Actual value)	1	→	Standard telegram 3	9	words	→	CD	PLC_1 I 256...273
Receive (Setpoint)		←	Standard telegram 3	5	words	←	CD	PLC_1 Q 256...265
<Add telegram>								

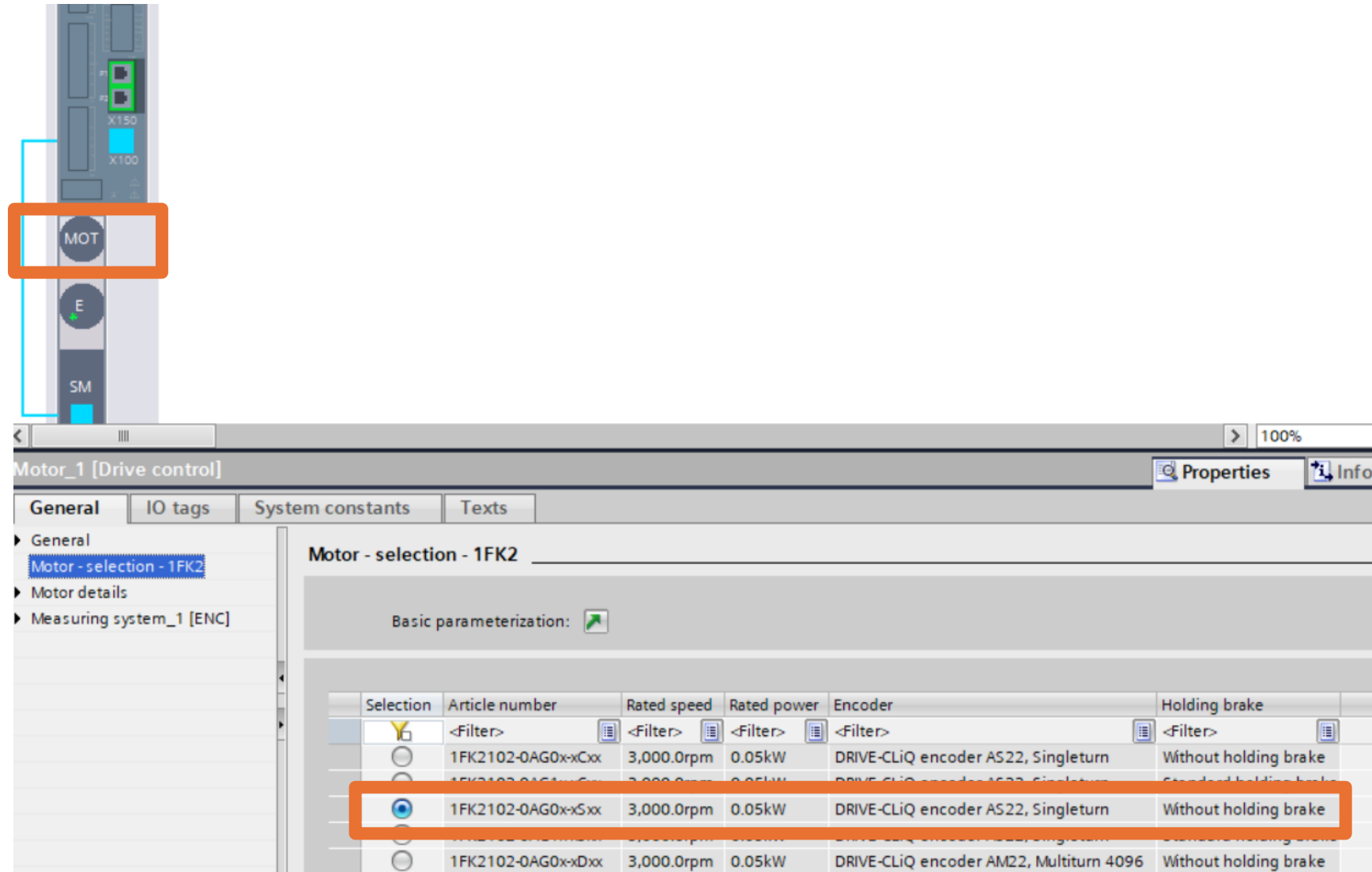
Optional: Enable webserver through PROFINET port X150



7. Disable Isochronous mode



8. Set up motor (click on motor icon)



The screenshot shows the Siemens TIA Portal HW Config window. On the left, a vertical rack is shown with slots for a power supply (P), two digital input modules (X150, X100), a motor module (MOT), an encoder module (E), and a slave module (SM). The MOT slot is highlighted with an orange rectangle. A blue line connects this slot to the 'Motor - selection - 1FK2' window.

The 'Motor - selection - 1FK2' window displays a table of motor options. The table has columns for Selection, Article number, Rated speed, Rated power, Encoder, and Holding brake. The third row is highlighted with an orange rectangle.

Selection	Article number	Rated speed	Rated power	Encoder	Holding brake
<input type="radio"/>	<Filter>	<Filter>	<Filter>	<Filter>	<Filter>
<input type="radio"/>	1FK2102-0AG0xxCxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake
<input checked="" type="radio"/>	1FK2102-0AG0xxSxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AS22, Singleturn	Without holding brake
<input type="radio"/>	1FK2102-0AG0xxDxx	3,000.0rpm	0.05kW	DRIVE-CLiQ encoder AM22, Multiturn 4096	Without holding brake

9. Upload config to S210

Project tree

- menice_2024
 - Add new device
 - Devices & networks
 - Drive unit_1 [S210 PN]**
 - Security settings
 - Cross-device functions
 - Common data
 - Documentation settings
 - Languages & resources
 - Version control interface
 - Online access
 - Display/hide interfaces
 - Realtek PCIe GBE Family Controller
 - Update accessible devices
 - Display more information
 - plc_1 [192.168.0.1]
 - hmi_1 [192.168.0.2]
 - drive 1 [192.168.0.5]
 - Intel(R) Dual Band Wireless-N 7260
 - Microsoft Wi-Fi Direct Virtual Adap...
 - Microsoft Wi-Fi Direct Virtual Adap...
 - PC internal [Local]
 - PLCSIM [PN/IE]
 - USB [S7USB]
 - TeleService [Automatic protocol d...
 - Card Reader/USB memory

Extended download to device

Configured access nodes of *Drive unit_1*

Device	Device type	Slot	Interface type	Address	Subnet
Drive unit_1	S210 PN	CU X150	PN/IE	192.168.0.5	PN/IE_1
	S210 PN	CU X127	PN/IE	169.254.11.22	

Type of the PG/PC interface:

PG/PC interface:

Connection to interface/subnet:

1st gateway:

Select target device:

Device	Device type	Interface type	Address	Target device
Drive unit_1	S210 PN	PN/IE	192.168.0.5	Drive unit_1
—	—	PN/IE	Access address	—

☒ Flash LED

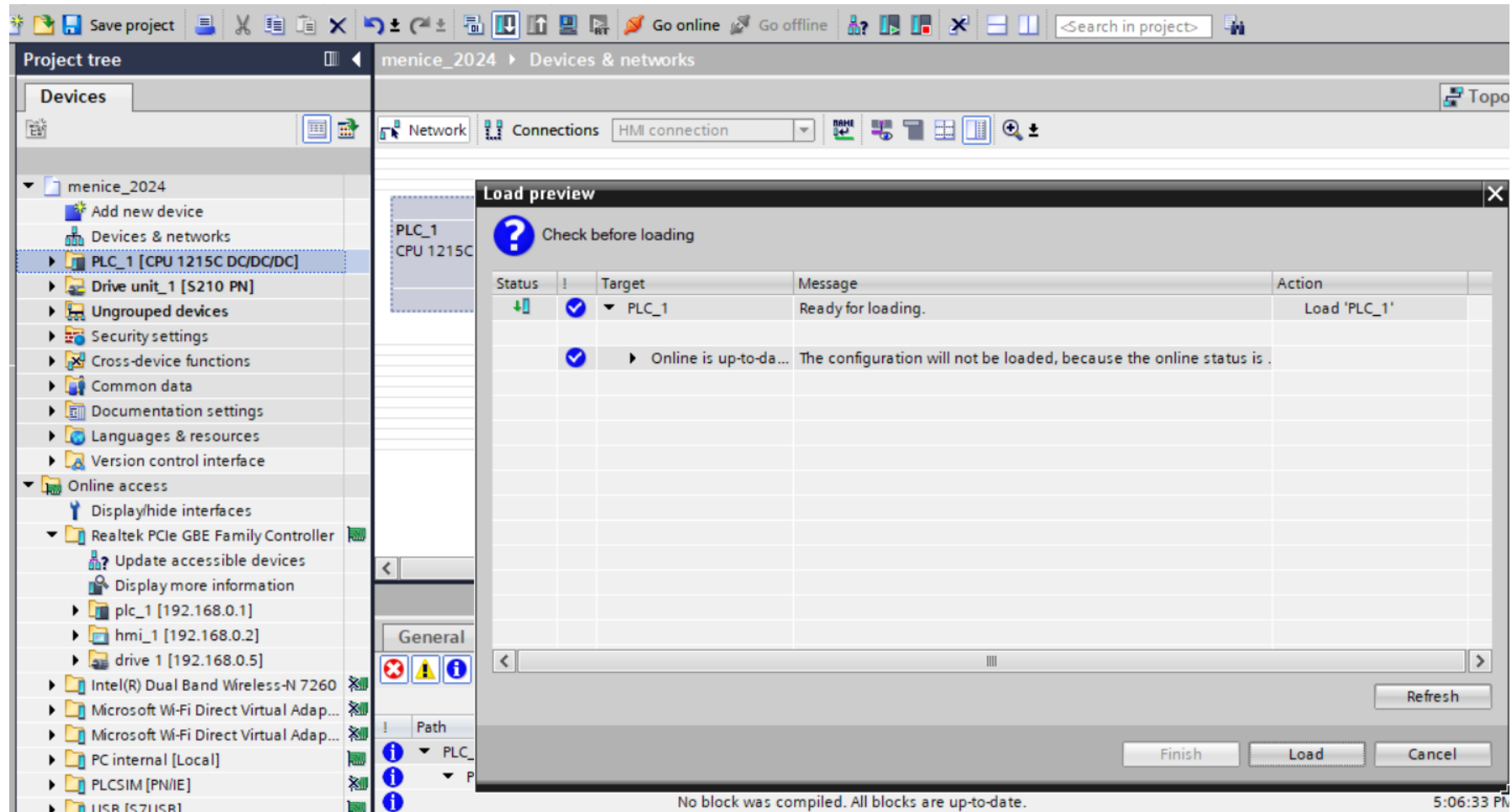
Start search

Online status information:

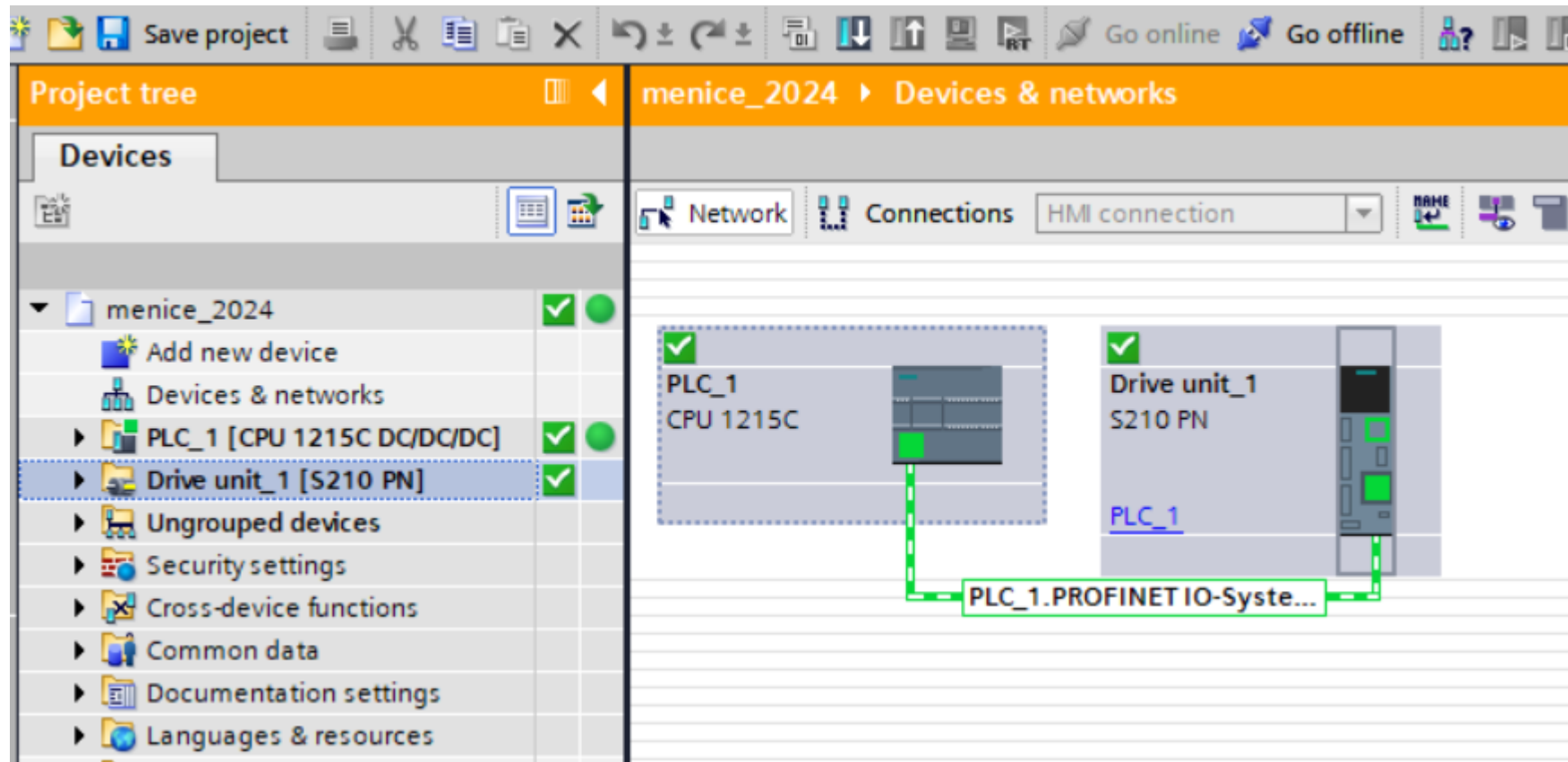
- Found accessible device hmi_1
- Scan completed. 1 compatible devices of 4 accessible devices found.
- Scan and information retrieval completed.
- Retrieving device information...

Load Cancel

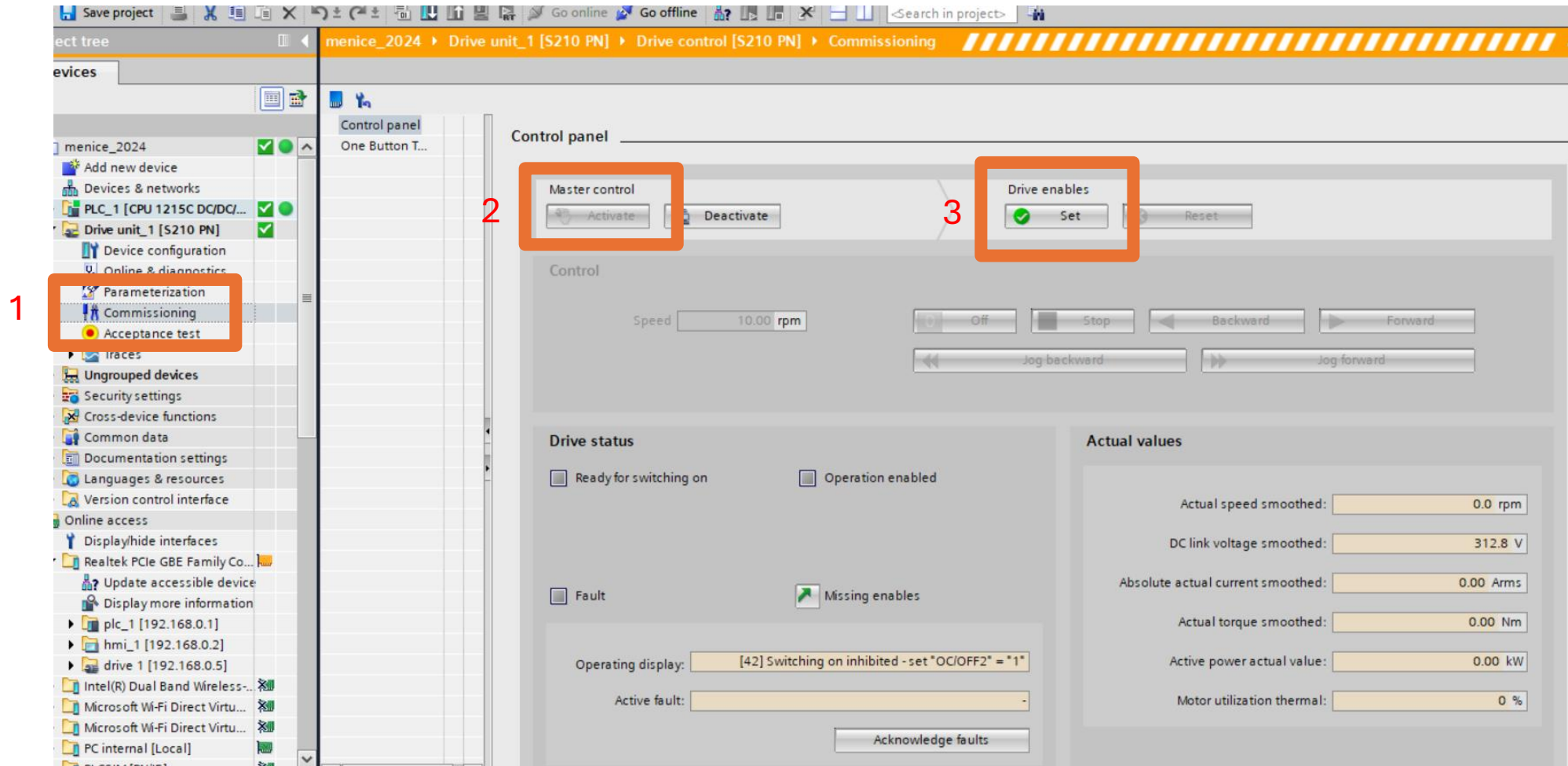
10. Upload config to PLC



Optional: Verify by going online on both devices



11. Verify basic settings



Optional: Parametrization

The screenshot displays the Siemens TIA Portal software interface for configuring a motor drive unit. The left sidebar shows the project tree with the following structure:

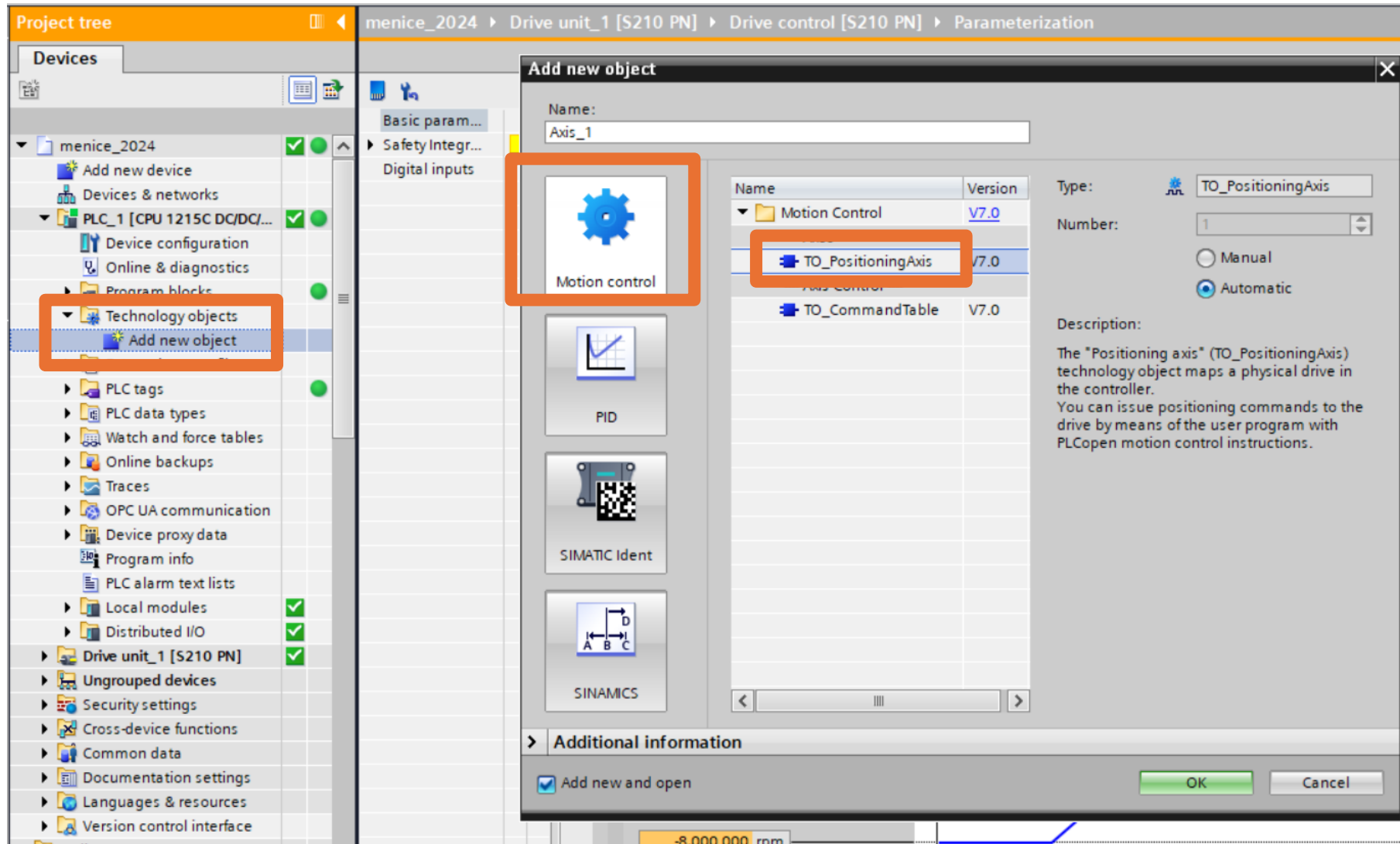
- menice_2024
 - Add new device
 - Devices & networks
 - PLC_1 [CPU 1215C DC/DC/...
 - Drive unit_1 [S210 PN]
 - Device configuration
 - Online & diagnostics
 - Parameterization** (highlighted with an orange box)
 - Acceptance test
 - Traces
 - Ungrouped devices
 - Security settings
 - Cross-device functions
 - Common data
 - Documentation settings
 - Languages & resources
 - Version control interface
- Online access
 - Display/hide interfaces
 - Realtek PCIe GBE Family Co...
 - Update accessible device
 - Display more information
 - plc_1 [192.168.0.1]
 - hmi_1 [192.168.0.2]
 - drive 1 [192.168.0.5]
- Intel(R) Dual Band Wireless...
- Microsoft Wi-Fi Direct Virtu...
- Microsoft Wi-Fi Direct Virtu...
- PC internal [Local]

The main window shows the 'Basic parameterization' tab for the 'Motor' section. The parameters are as follows:

Parameter	Value
Article number	1FK2102-0AG0x-xSxx
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

Below the motor parameters, there is a 'Limitations' section with a speed limit graph. The graph shows a trapezoidal speed profile over time (t). The positive speed limit is set to 8,000.000 rpm, and the negative speed limit is set to -8,000.000 rpm.

12. Add technology object: Motion axis



13. Set PROFIdrive

The screenshot displays the Siemens SIMATIC Manager interface for configuring a drive unit. The left sidebar shows the project tree with 'menice_2024' and 'PLC_1 [CPU 1215C DC/DC/...]'. Under 'Technology objects', 'Axis_1 [DB1]' is selected. The main window shows the 'General' tab for 'Technology object - Axis'. The 'Axis name' is 'Axis_1'. A diagram illustrates the data flow: 'User program' → 'Technology object - Axis' → 'PROFIdrive' → 'Drive'. The 'Drive' section has three radio buttons: 'PTO (Pulse Train Output)', 'Analog drive connection', and 'PROFIdrive', with the latter selected and highlighted by an orange rectangle. The 'Unit of measurement' section shows 'Position unit' set to 'mm'. The 'Simulation' section shows 'Simulation' set to 'No simulation'.

General

Technology object - Axis

Axis name: Axis_1

User program → Technology object - Axis → PROFIdrive → Drive

Drive

☐ PTO (Pulse Train Output)
☐ Analog drive connection
☒ PROFIdrive

Unit of measurement

Position unit: mm

Simulation

Simulation: No simulation

14. Select telegram

Basic parameters

- General
- Drive
- Encoder

Extended parameters

- Mechanics
- Modulo
- Position limits
- Dynamics
 - General
 - Emergency stop
- Homing
 - Active
 - Passive
- Position monitoring
 - Positioning monitoring
 - Following error
 - Standstill signal
- Control loop

Encoder data

PLC

Drive

Encoder

Motor

Data exchange

Power

Select PROFIdrive drive

Data connection: Drive

Drive: Drive unit_1.Drive_control_Standard_tele...

Device configuration

Data exchange with the drive

Drive telegram: Standard telegram 3

Input address: Axis_1_Drive_IN %I256.0

Output address: Axis_1_Drive_OUT %Q256.0

☐ Invert drive direction

☒ Automatically apply drive values during configuration (offline)

15. Set up encoder

The screenshot displays the Siemens SIMATIC Manager interface for configuring a drive system. On the left, a navigation tree shows the 'Encoder' parameter set under 'Basic parameters'. The main workspace contains a schematic diagram and configuration fields.

Schematic Diagram: Shows a PLC connected to a drive unit, which is connected to a motor. The drive unit has an encoder. Data exchange is indicated by a green arrow from the PLC to the drive unit. Encoder data is indicated by a blue arrow from the encoder to the drive unit. Power is indicated by a black arrow from the drive unit to the motor.

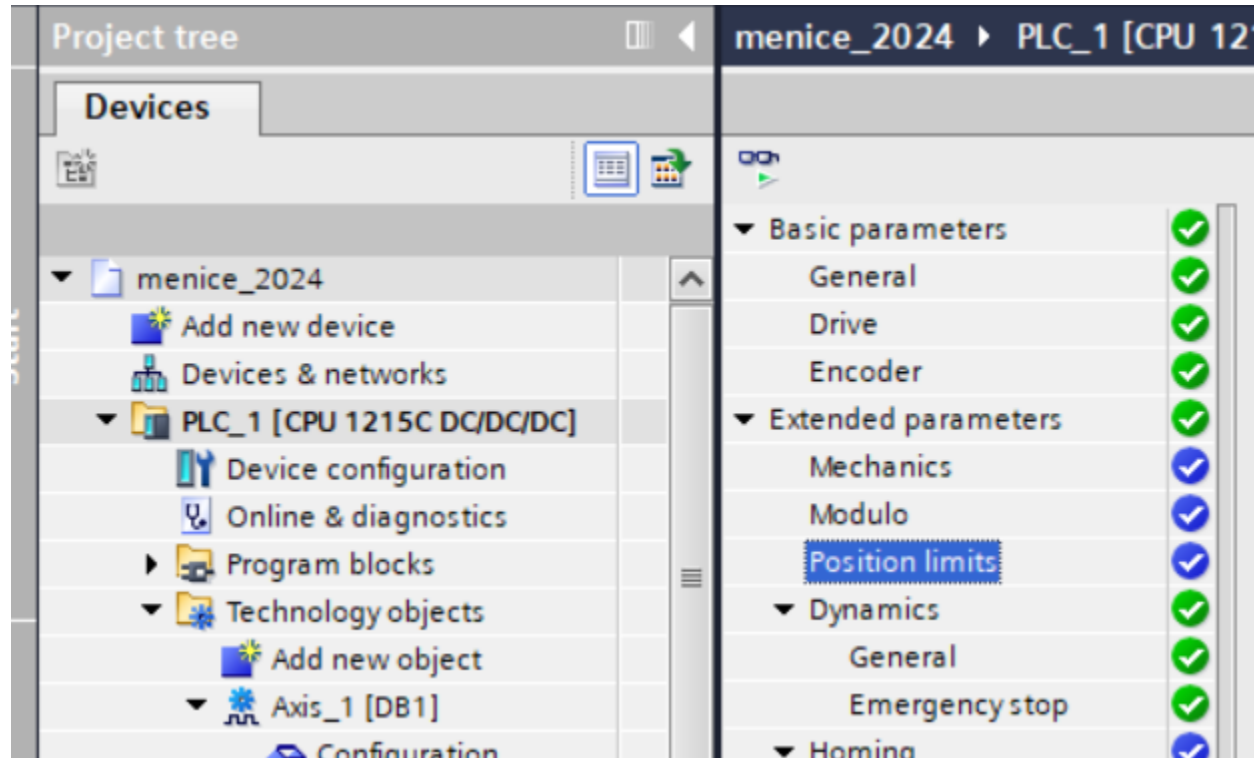
Encoder connection: The 'Encoder on PROFINET/PROFIBUS' option is selected and highlighted with an orange box.

Encoder selection: The 'Data connection' dropdown is set to 'Encoder' and the 'PROFIdrive encoder' dropdown is set to 'Drive unit_1.Drive_control_Standard_telegram...' (both highlighted with an orange box).

Data exchange with encoder: The 'Encoder telegram' dropdown is set to 'Standard telegram 3'. The 'Input address' is 'Axis_1_Drive_IN' with address '%I256.0'. The 'Output address' is 'Axis_1_Drive_OUT' with address '%Q256.0'. There is an unchecked checkbox for 'Invert encoder direction'.

A 'Device configuration' button with a green arrow icon is located on the right side of the configuration area.

Optional: Set up additional parameters



16. Set up homing

The screenshot displays the Siemens TIA Portal interface for configuring the homing of Axis_1 [DB1]. The project tree on the left shows the hierarchy: menice_2024 > PLC_1 [CPU 1215C DC/DC/DC] > Technology objects > Axis_1 [DB1]. The main window shows the 'Dynamics' section with the 'Homing' parameter selected. The 'Passive' option is chosen for the homing mode. The 'Select homing mode' section shows 'Use zero mark via PROFIdrive telegram' selected. The 'Digital input homing switch' section shows 'Input homing switch' and 'Select level' set to 'High level'. A diagram at the bottom shows a red arrow pointing right and a green arrow pointing left, labeled 'Traversing motion'.

Project tree: menice_2024 > PLC_1 [CPU 1215C DC/DC/DC] > Technology objects > Axis_1 [DB1]

Devices:

- menice_2024
 - Add new device
 - Devices & networks
 - PLC_1 [CPU 1215C DC/DC/DC]
 - Device configuration
 - Online & diagnostics
 - Program blocks
 - Technology objects
 - Add new object
 - Axis_1 [DB1]
 - Configuration
 - Commissioning
 - Diagnostics
 - External source files
 - PLC tags
 - PLC data types
 - Watch and force tables
 - Online backups
 - Traces
 - OPC UA communication
 - Device proxy data
 - Program info
 - PLC alarm text lists
 - Local modules

Basic parameters: General, Drive, Encoder

Extended parameters: Mechanics, Modulo, Position limits

Dynamics: General, Emergency stop, Homing (Active, Passive), Position monitoring, Positioning monitoring, Following error, Standstill signal, Control loop

Passive

Select homing mode:

- ☐ Use zero mark via PROFIdrive telegram and proximity switch
- ☒ Use zero mark via PROFIdrive telegram
- ☐ Use homing switch via digital input

Digital input homing switch

Input homing switch: [] []

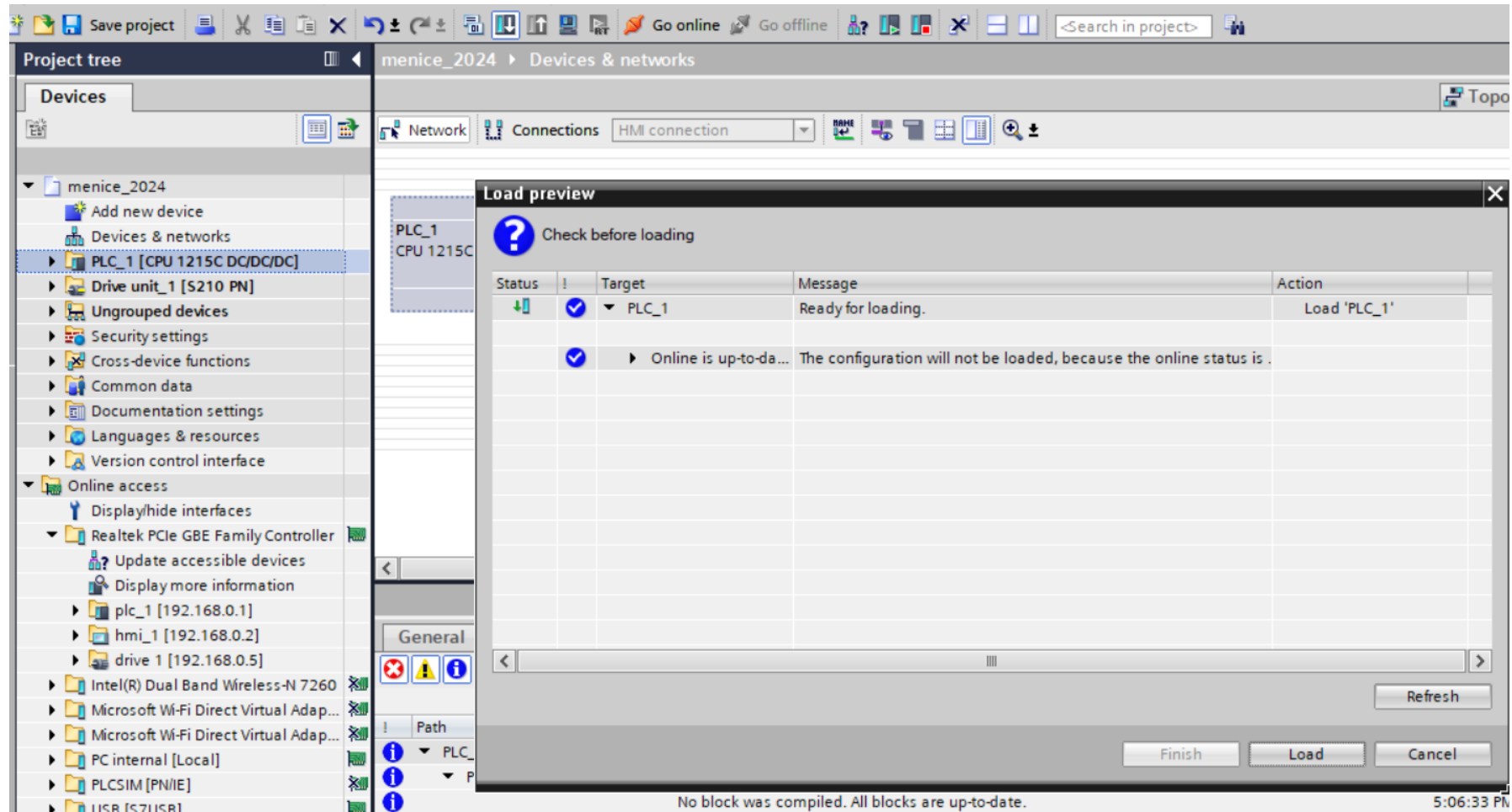
Select level: High level

Side of homing switch:

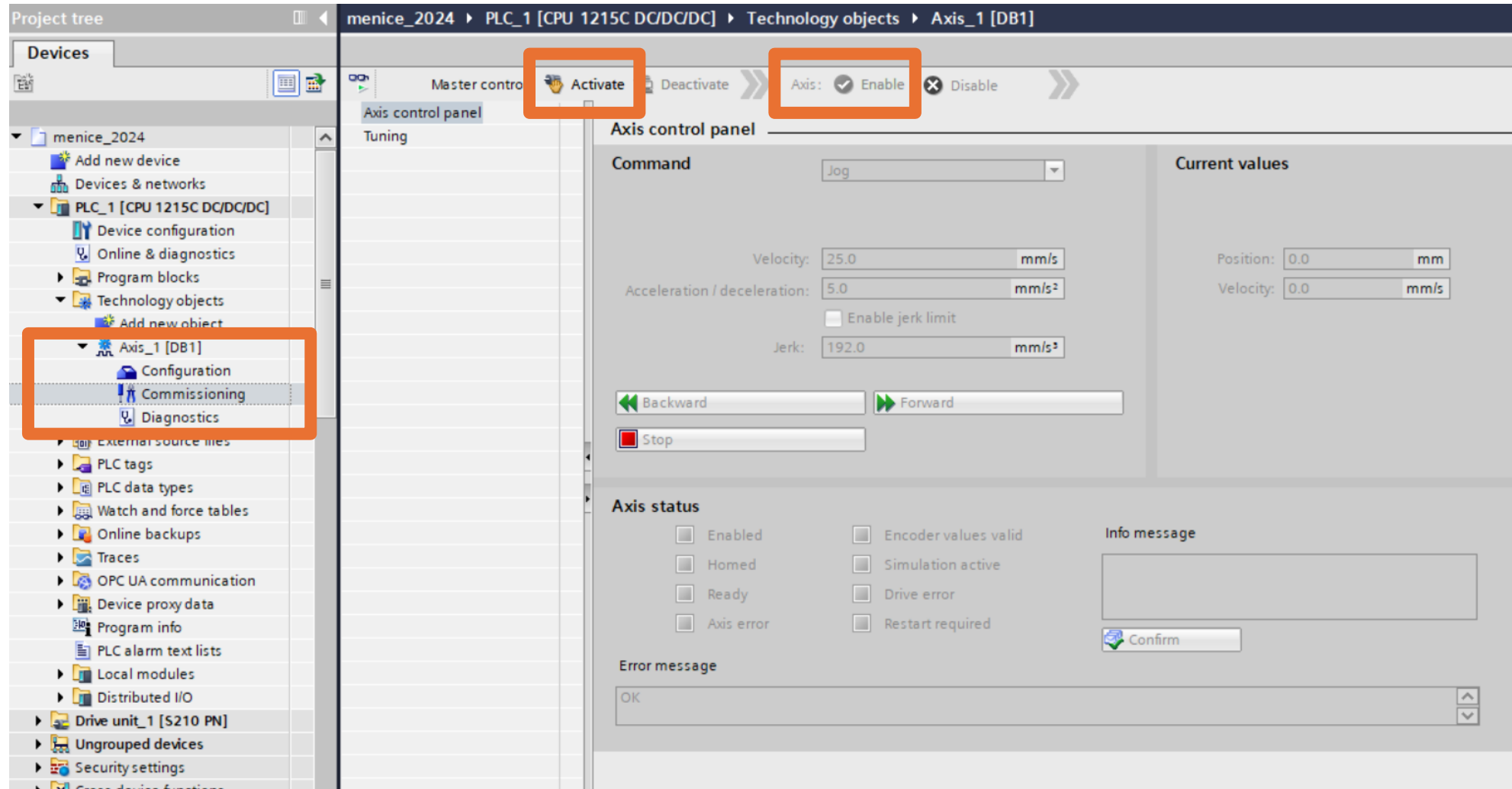
- ☐ Top side
- ☒ Bottom side

Traversing motion

17. Upload config to PLC



18. Verify through Commissioning



Be aware: For absolute positioning, the drive has to be homed first

19. Use Technology object in program

