

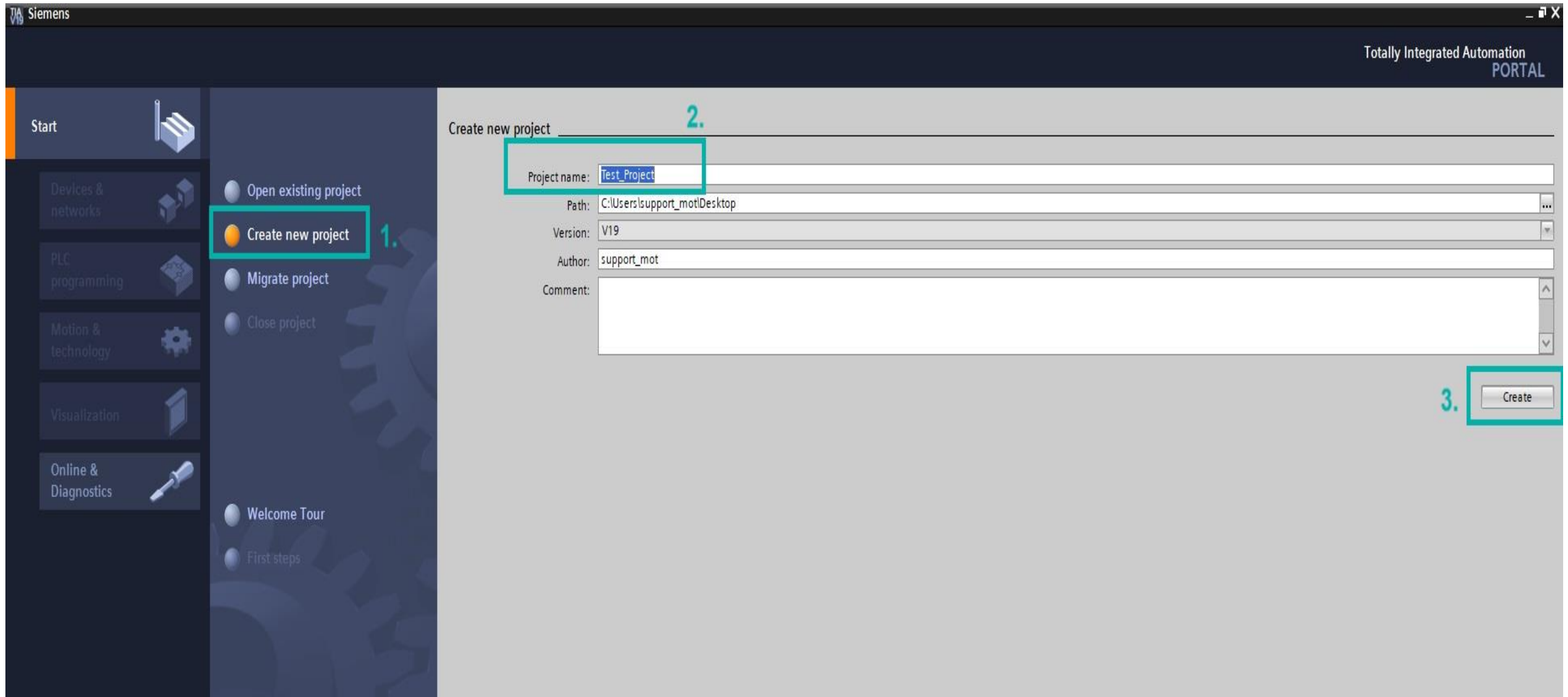


QUICKSTART INSTRUCTIONS



ABSOLUTE ENCODER WITH PROFINET INTERFACE

> Create a New Project



Siemens

Totally Integrated Automation
PORTAL

Start

Devices & networks

PLC programming

Motion & technology

Visualization

Online & Diagnostics

Open existing project

Create new project

Migrate project

Close project

Welcome Tour

First steps

Create new project

Project name: Test_Project

Path: C:\Users\support_mot\Desktop

Version: V19

Author: support_mot

Comment:

Create

> Configure a Device

Siemens - C:\Users\support_mot\Desktop\Test_Project\Test_Project

Start

Devices & networks

PLC programming

Motion & technology

Visualization

Online & Diagnostics

Open existing project

Create new project

Migrate project

Close project

Welcome Tour

First steps

Installed software

Help

User interface language

First steps

Project: "Test_Project" was opened successfully. Please select the next step:

Start

Devices & networks

Configure a device

PLC programming

Write PLC program

Motion & technology

Configure technology objects

Visualization

Configure an HMI screen

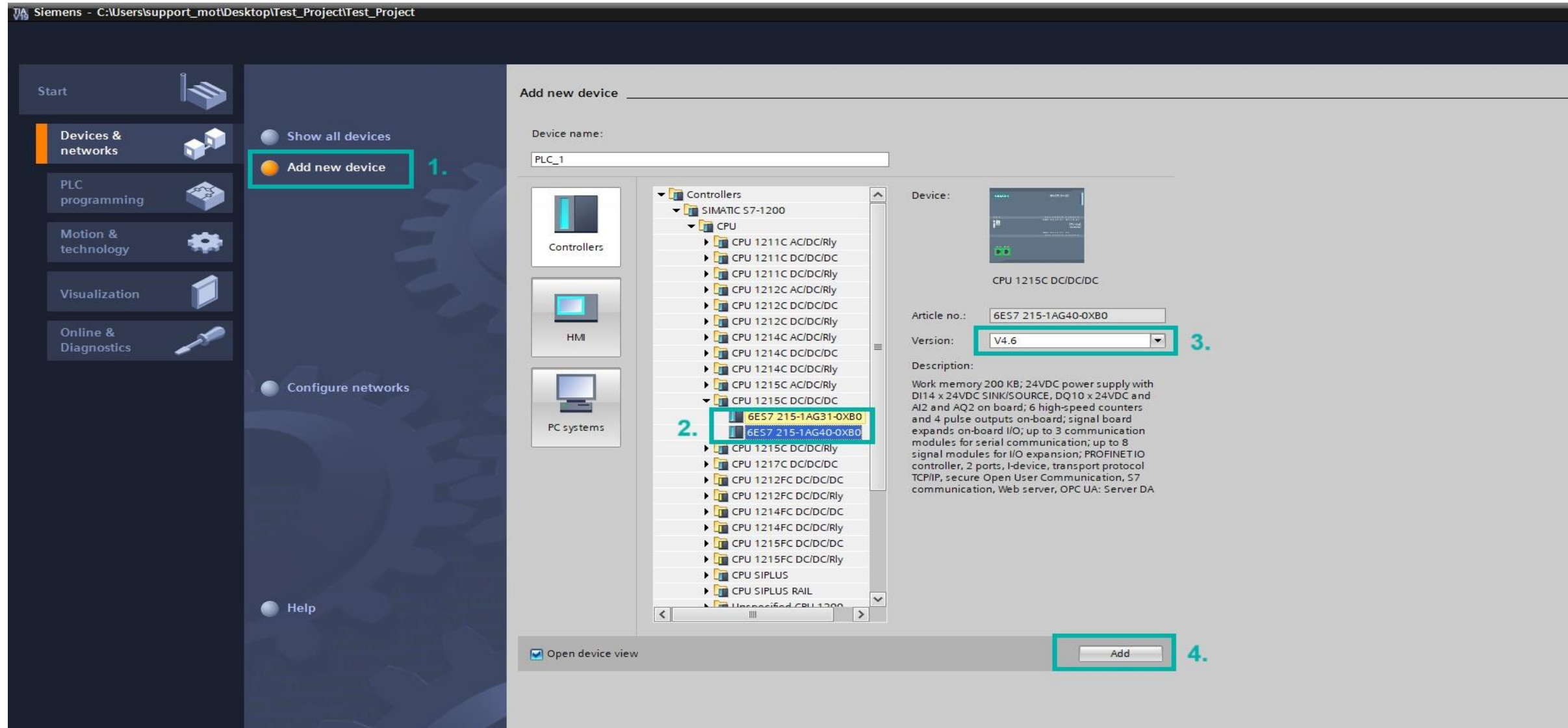
Project view

Open the project view

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3

> Add a PLC



Siemens - C:\Users\support_mot\Desktop\Test_Project\Test_Project

Start

Devices & networks

PLC programming

Motion & technology

Visualization

Online & Diagnostics

Show all devices

1. Add new device

Configure networks

Help

Add new device

Device name: PLC_1

Controllers

HMI

PC systems

2. 6ES7 215-1AG31-0XB0
6ES7 215-1AG40-0XB0

Controllers

SIMATIC S7-1200

CPU

CPU 1211C AC/DC/Rly

CPU 1211C DC/DC/DC

CPU 1211C DC/DC/Rly

CPU 1212C AC/DC/Rly

CPU 1212C DC/DC/DC

CPU 1212C DC/DC/Rly

CPU 1214C AC/DC/Rly

CPU 1214C DC/DC/DC

CPU 1214C DC/DC/Rly

CPU 1215C AC/DC/Rly

CPU 1215C DC/DC/DC

CPU 1215C DC/DC/Rly

CPU 1217C DC/DC/DC

CPU 1212FC DC/DC/DC

CPU 1212FC DC/DC/Rly

CPU 1214FC DC/DC/DC

CPU 1214FC DC/DC/Rly

CPU 1215FC DC/DC/DC

CPU 1215FC DC/DC/Rly

CPU SIPLUS

CPU SIPLUS RAIL

Unspecified CPU 1200

Device:

CPU 1215C DC/DC/DC

Article no.: 6ES7 215-1AG40-0XB0

Version: **3.** V4.6

Description:

Work memory 200 KB; 24VDC power supply with DI14 x 24VDC SINK/SOURCE, DQ10 x 24VDC and AI2 and AQ2 on board; 6 high-speed counters and 4 pulse outputs on-board; signal board expands on-board I/O; up to 3 communication modules for serial communication; up to 8 signal modules for I/O expansion; PROFINET IO controller, 2 ports, I-device, transport protocol TCP/IP, secure Open User Communication, S7 communication, Web server, OPC UA: Server DA




☒ Open device view


4. Add

> Download the correct GSDML File from our Website

← ↻ 🔒 https://www.posital.com/en/products/absolute-encoders/absolute-encoder-finder/OCD-EIC1B-1213-C100-PRM/220372601/detail.php 🔊 ☆ 📄 ☆ 📁 📶 ...

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[Home](#) [Products](#) > [Absolute Encoders](#) > [Absolute Encoder Finder](#) <

IXARC Absolute Rotary Encoder

OCD-EIC1B-1213-C100-PRM

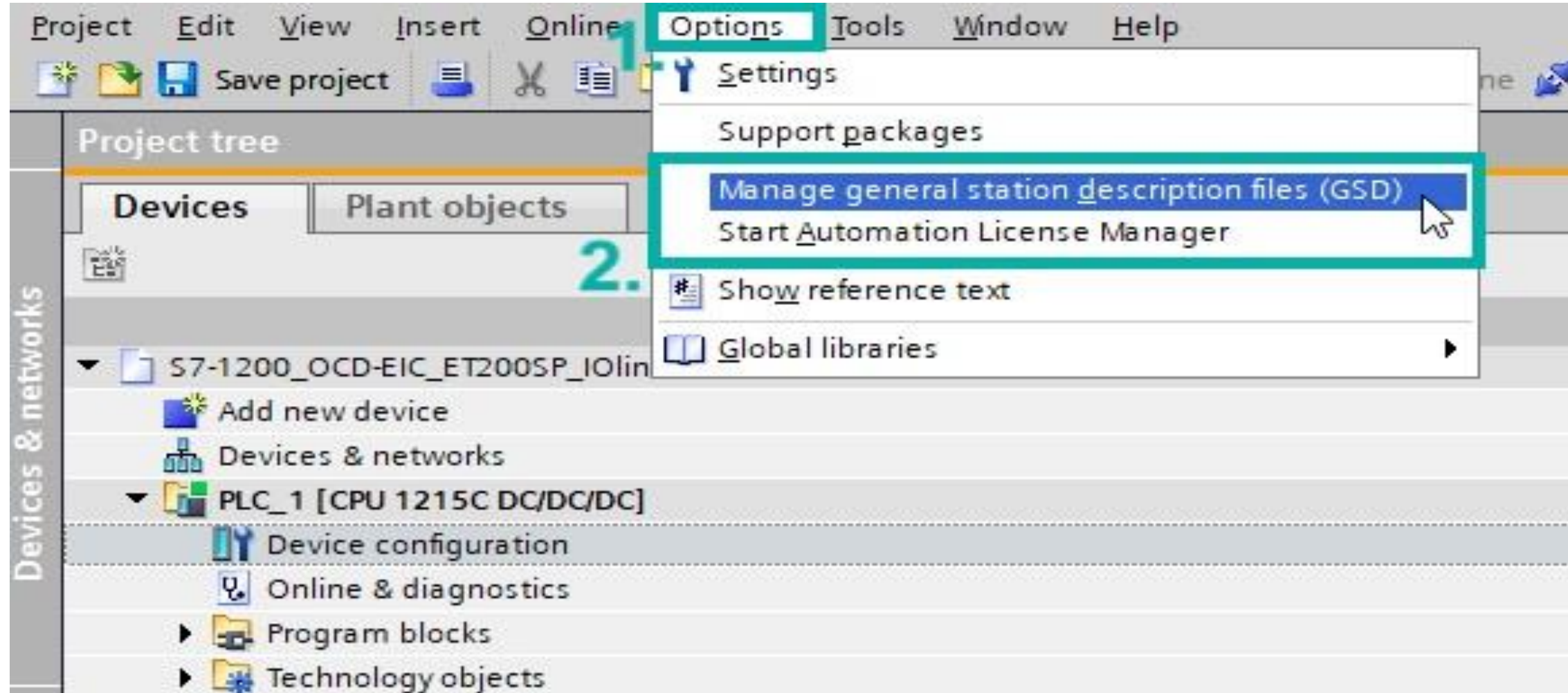


Interface

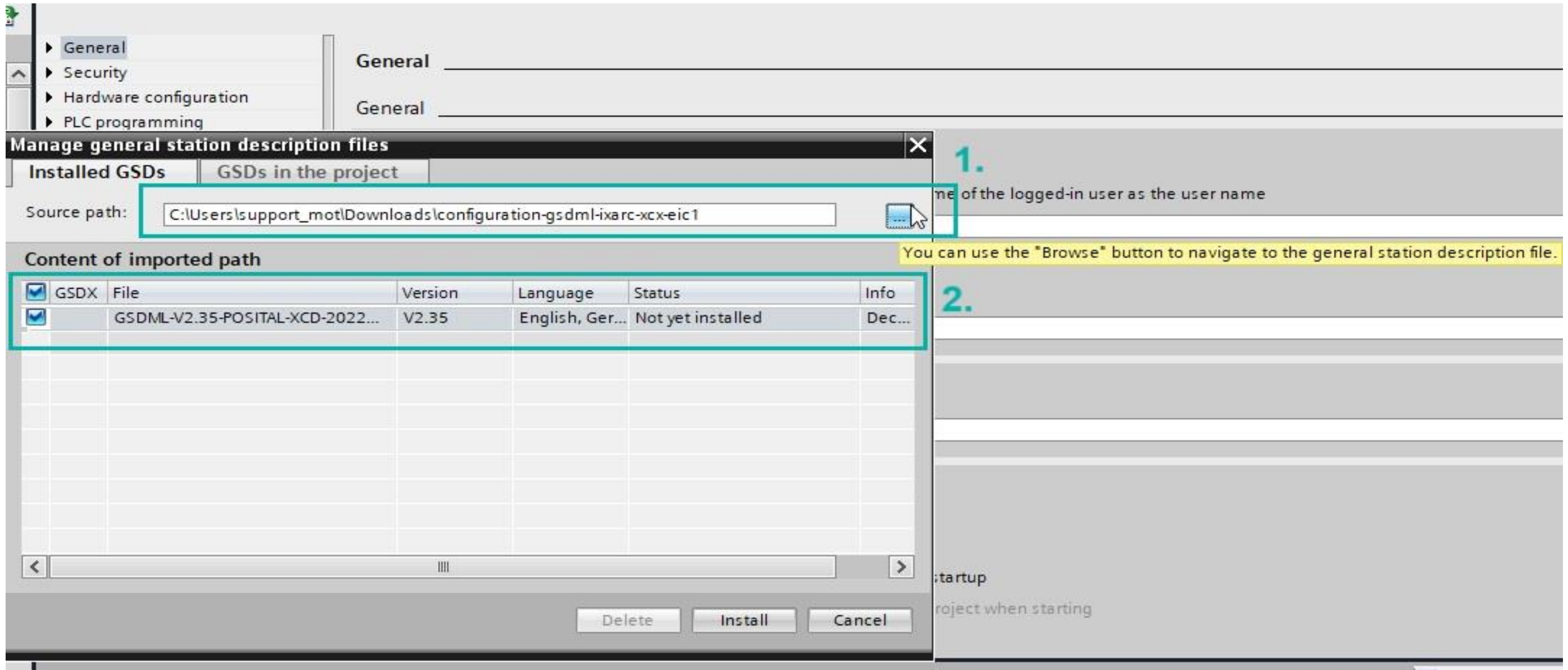
Downloads

- ▲ Datasheet
- ▲ 2D Drawing
- ▲ Manual
- ZIP Configuration File
 - configuration-gsdml-ixarc-xcx-eic1.zip
- ZIP Tools
- ZIP 3D Drawing Flange
- ZIP 3D Drawing Housing
- ZIP Project
- ZIP CE Declaration
- ▲ UL Certificate
- ZIP Certificate

➤ Add the GSDML File



> Install the GSDML file



Manage general station description files

General

General

Source path:

Content of imported path

<input checked="" type="checkbox"/>	GSDX	File	Version	Language	Status	Info
<input checked="" type="checkbox"/>		GSDML-V2.35-POSITAL-XCD-2022...	V2.35	English, Ger...	Not yet installed	Dec...

1. Use the name of the logged-in user as the user name

You can use the "Browse" button to navigate to the general station description file.

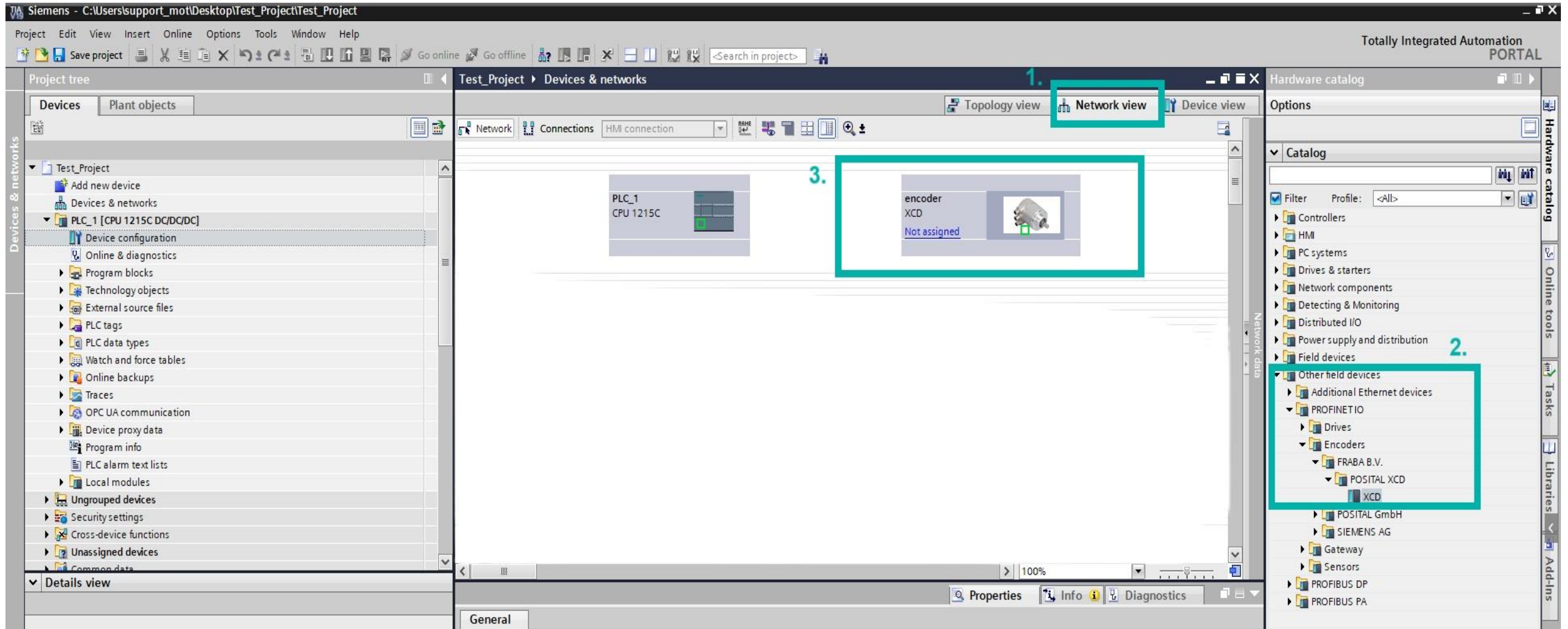
2.

Startup

Project when starting

Delete Install Cancel

> Add the Encoder



The screenshot displays the Siemens Totally Integrated Automation (TIA) PORTAL software interface. The main window shows the 'Test_Project' under 'Devices & networks'. The 'Network view' tab is selected, showing a network diagram with a 'PLC_1 CPU 1215C' and an 'encoder XCD' (labeled 'Not assigned').

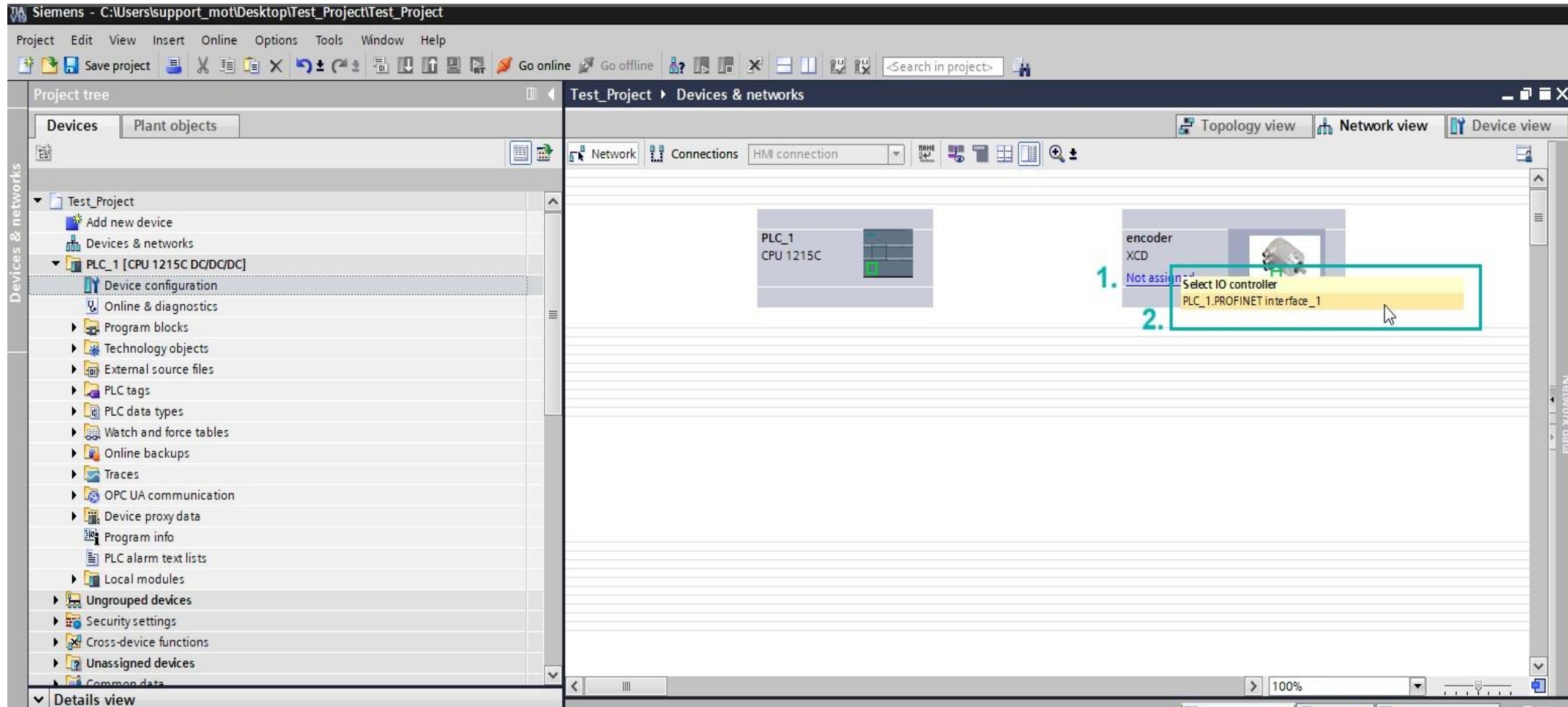
Three numbered steps are highlighted:

- 1.** The 'Network view' tab is selected in the top toolbar.
- 2.** The 'Hardware catalog' on the right is expanded, showing the 'Field devices' section, specifically 'Other field devices' > 'PROFINET IO' > 'Encoders' > 'FRABA B.V.' > 'POSITAL XCD' > 'XCD'.
- 3.** The 'encoder XCD' is added to the network diagram, indicated by a red box around the device icon.

The 'Project tree' on the left shows the project structure, including 'Test_Project' > 'Devices & networks' > 'PLC_1 [CPU 1215C DC/DC/DC]' > 'Device configuration'.

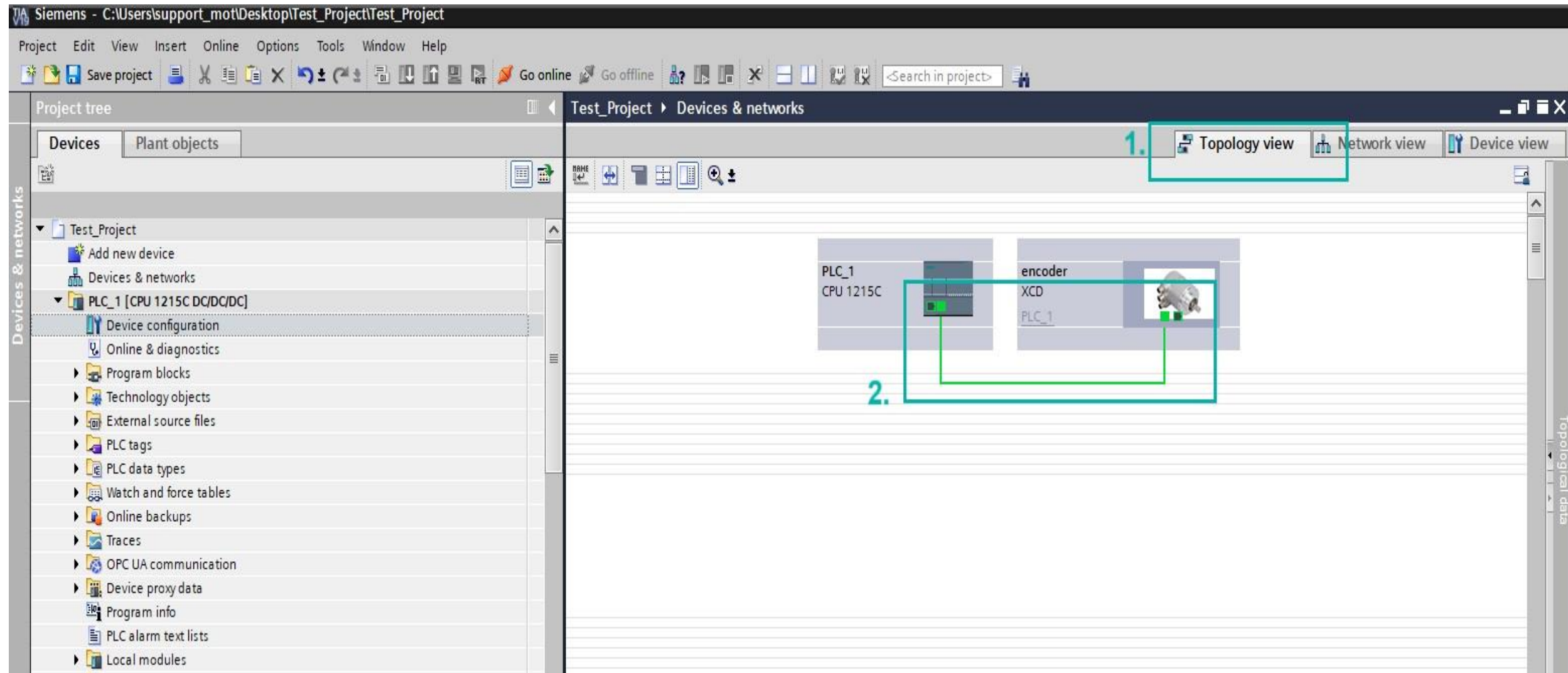
> Assign the Encoder

1. Click on Not Assigned in the encoder frame
2. Assign it to the corresponding PLC

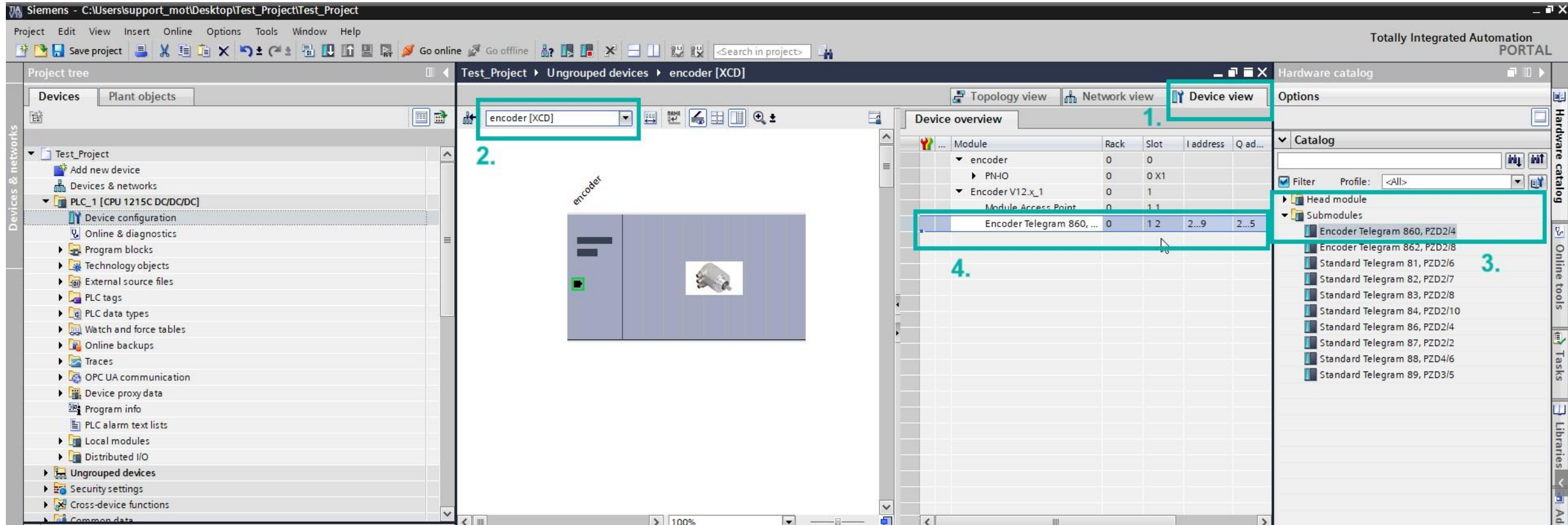


> Establish the Connection

Important: The connection must correspond with the onsite cable connection of your system.



> Choose the Telegram



The screenshot shows the Siemens TIA Portal interface for configuring a device. The main workspace displays a rack with an encoder module. The Device overview table on the right lists the modules and their addresses. The Hardware catalog on the far right shows the available telegram options.

1. The 'Device view' tab is selected in the top right corner.

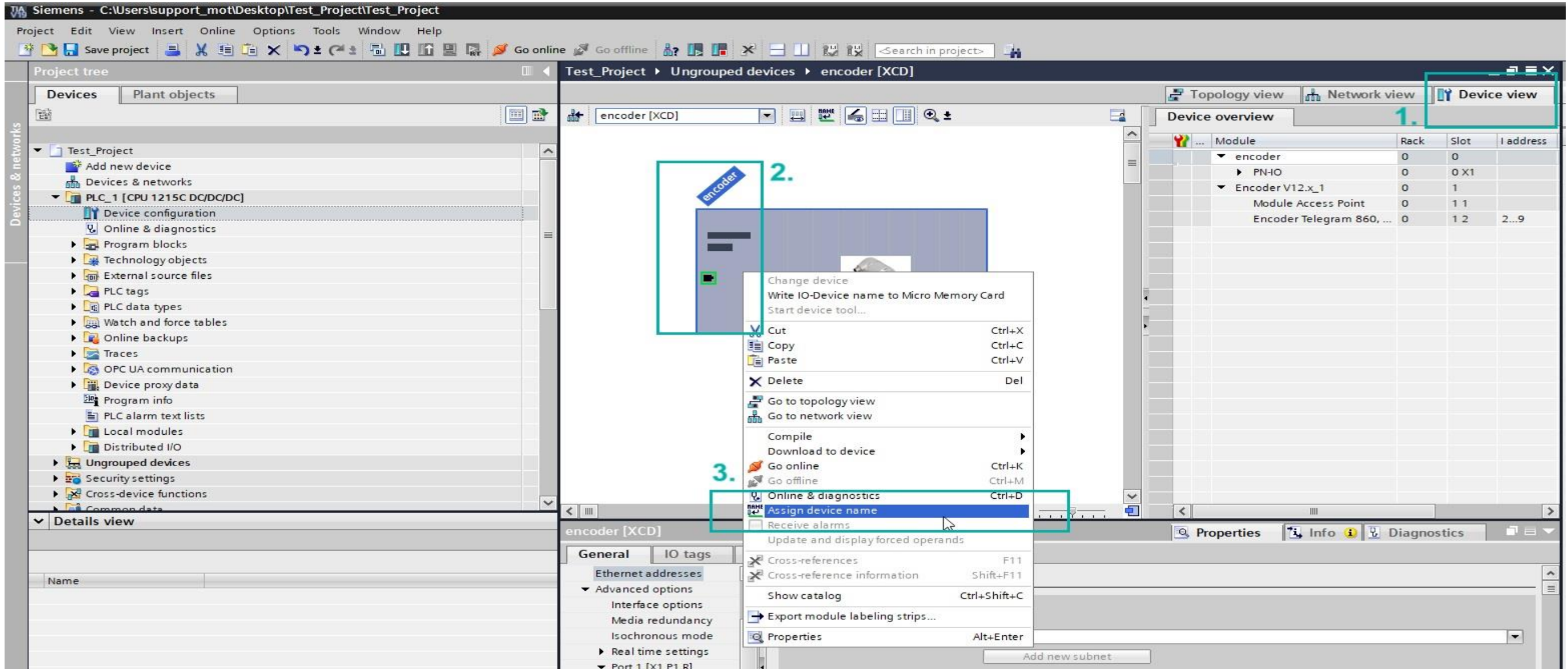
2. The 'encoder [XCD]' device is selected in the Project tree on the left.

3. The 'Encoder Telegram 860, PZD2/4' option is selected in the Hardware catalog.

4. The 'Encoder Telegram 860, ...' row is highlighted in the Device overview table.

Module	Rack	Slot	I address	Q address
encoder	0	0		
PN-IO	0	0 X1		
Encoder V12.x_1	0	1		
Module Access Point	0	1.1		
Encoder Telegram 860, ...	0	1.2	2...9	2...5

> Assign Device Name



The screenshot shows the Siemens STEP 7 interface with the following components:

- Project tree (left):** Shows the project structure under 'Test_Project' > 'Ungrouped devices' > 'encoder [XCD]'. The 'encoder' module is highlighted with a red box and labeled '2.'.
- Device overview (right):** A table showing the device configuration. It is labeled '1.'.
- Context menu (center):** A right-click menu is open over the encoder module. The 'Assign device name' option is highlighted with a red box and labeled '3.'.
- Device overview table:**

Module	Rack	Slot	I address
encoder	0	0	
PN-IO	0	0 X1	
Encoder V12.x_1	0	1	
Module Access Point	0	1 1	
Encoder Telegram 860, ...	0	1 2	2...9
- Details view (bottom left):** Shows the 'General' tab for the 'encoder [XCD]' module.
- Properties window (bottom right):** Shows the 'Properties' tab for the 'encoder [XCD]' module.

> Select the encoder to be assigned

Assign PROFINET device name.

Configured PROFINET device

PROFINET device name:

Converted name:

Device type:

Online access

1. Type of the PG/PC interface:

PG/PC interface:

Device filter

☒ Only show devices of the same type

☐ Only show devices with bad parameter settings

☐ Only show devices without names

Accessible devices in the network:

IP address	MAC address	Device	PROFINET device name	St...
192.168.0.4	00-0E-CF-15-B5...	Posital OCD	encoder	<input checked="" type="checkbox"/> OK

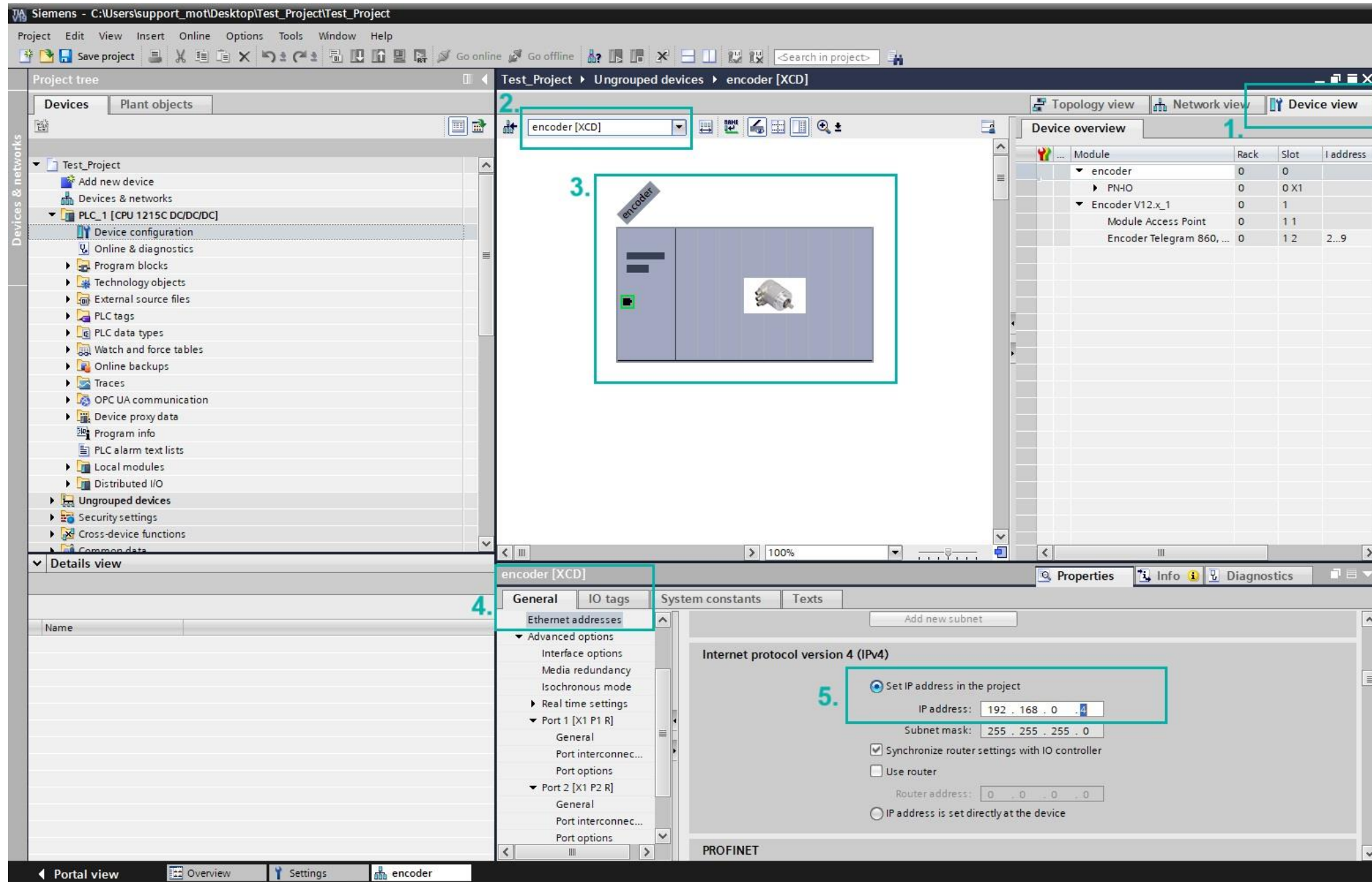
2.

☐ Flash LED

Online status information:

- ☒ Search completed. 1 of 4 devices were found.
- ☒ Search completed. 0 of 0 devices were found.
- ☒ Search completed. 1 of 4 devices were found.

> Set the IP address of the Encoder



The screenshot shows the Siemens SIMATIC Manager interface with the following components and annotations:

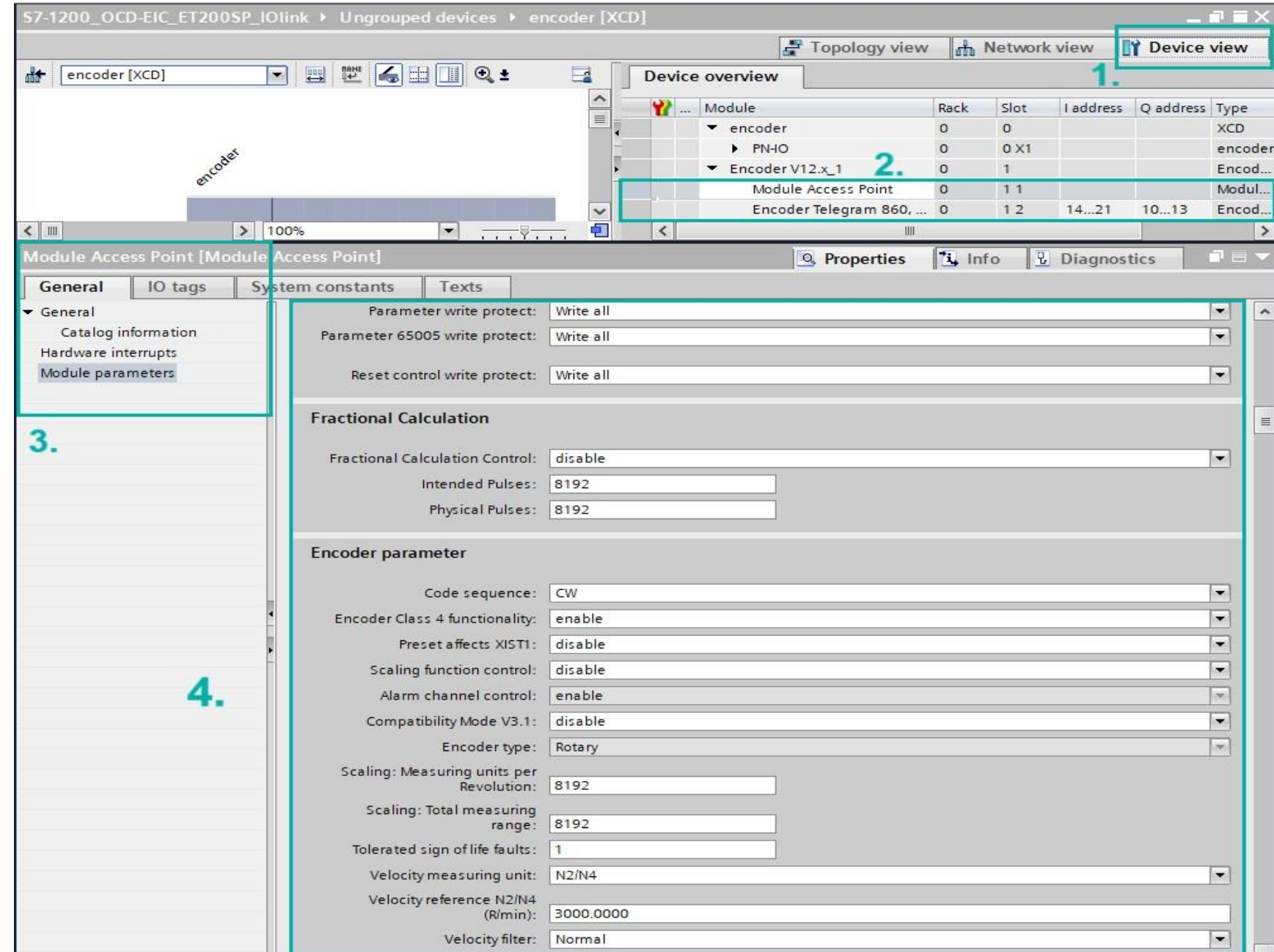
- Project tree (left):** Shows the project structure under 'Test_Project'. The 'encoder [XCD]' device is highlighted under 'Ungrouped devices'.
- Device overview (top right):** A table showing the device configuration. The 'encoder' module is highlighted in row 1.
- Device configuration (center):** A graphical representation of the encoder module. A red box highlights the 'encoder' label.
- Properties window (bottom right):** The 'General' tab is selected. The 'Ethernet addresses' section is expanded, and the 'Internet protocol version 4 (IPv4)' settings are shown. The 'Set IP address in the project' radio button is selected, and the IP address is set to 192.168.0.1.

Numbered annotations (1-5) indicate the sequence of steps:

1. Select the 'Device view' tab in the top right.
2. Select the 'encoder [XCD]' device in the project tree.
3. Highlight the 'encoder' module in the device overview table.
4. Select the 'General' tab in the properties window.
5. Set the IP address in the project to 192.168.0.1.

> Multiple parameters can be configured in Module Access Point

You can configure several parameters you need:
Measuring units per revolution, Total measuring range, etc.



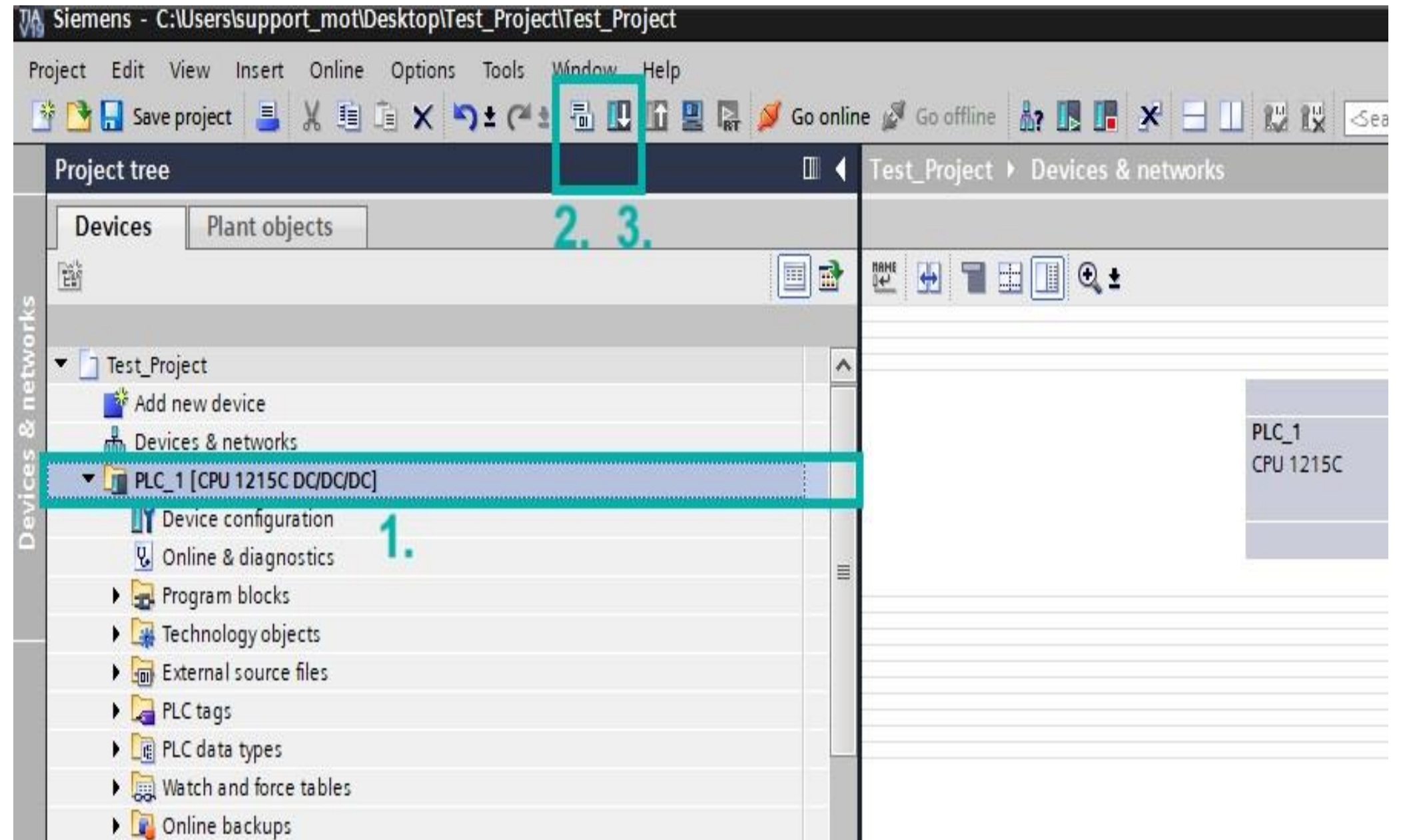
The screenshot shows the POSITAL software interface for configuring an encoder module. The interface is divided into several sections:

- Device overview:** A table showing the configuration of the encoder module. The table has columns for Rack, Slot, I address, Q address, and Type. The 'Module Access Point' is highlighted in the table.
- Module Access Point [Module Access Point]:** A configuration panel for the 'Module Access Point' module. It includes tabs for General, IO tags, System constants, and Texts. The 'General' tab is selected, showing various parameters for the module.
- Properties:** A window showing the properties of the 'Module Access Point' module. It includes fields for 'Parameter write protect', 'Parameter 65005 write protect', 'Reset control write protect', 'Fractional Calculation Control', 'Intended Pulses', 'Physical Pulses', 'Encoder parameter', 'Code sequence', 'Encoder Class 4 functionality', 'Preset affects XIST1', 'Scaling function control', 'Alarm channel control', 'Compatibility Mode V3.1', 'Encoder type', 'Scaling: Measuring units per Revolution', 'Scaling: Total measuring range', 'Tolerated sign of life faults', 'Velocity measuring unit', 'Velocity reference N2/N4 (R/min)', and 'Velocity filter'.

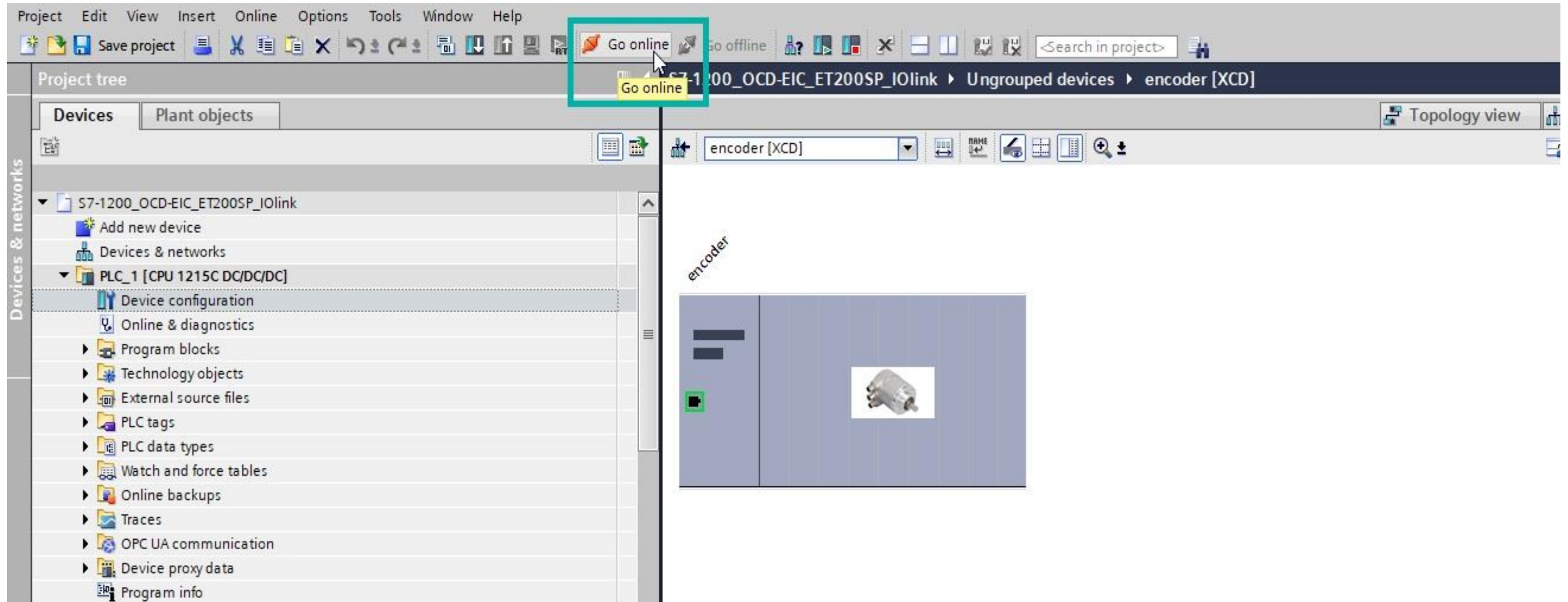
Numbered callouts (1, 2, 3, 4) are present in the image, indicating specific areas of interest:

- 1. Points to the 'Device overview' table.
- 2. Points to the 'Encoder V12.x_1' entry in the table.
- 3. Points to the 'Module Access Point' configuration panel.
- 4. Points to the 'Properties' window.

> Compile and Download the Project

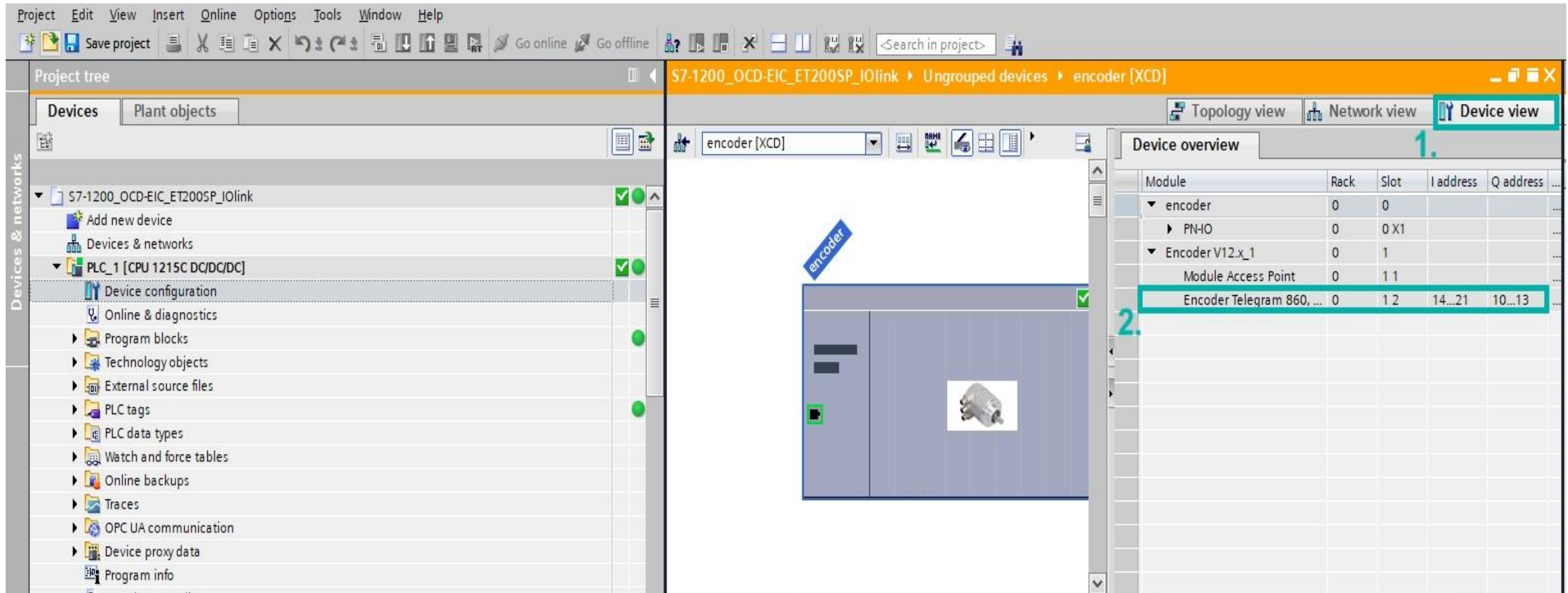


> Go Online



> Check the IO Addresses in the Telegram

Important: Pay attention to the I/O addresses. You need them later when the position values are monitored. You need them in the next steps.



The screenshot shows the Siemens STEP 7 HW Config interface. The left pane displays the project tree with the following structure:

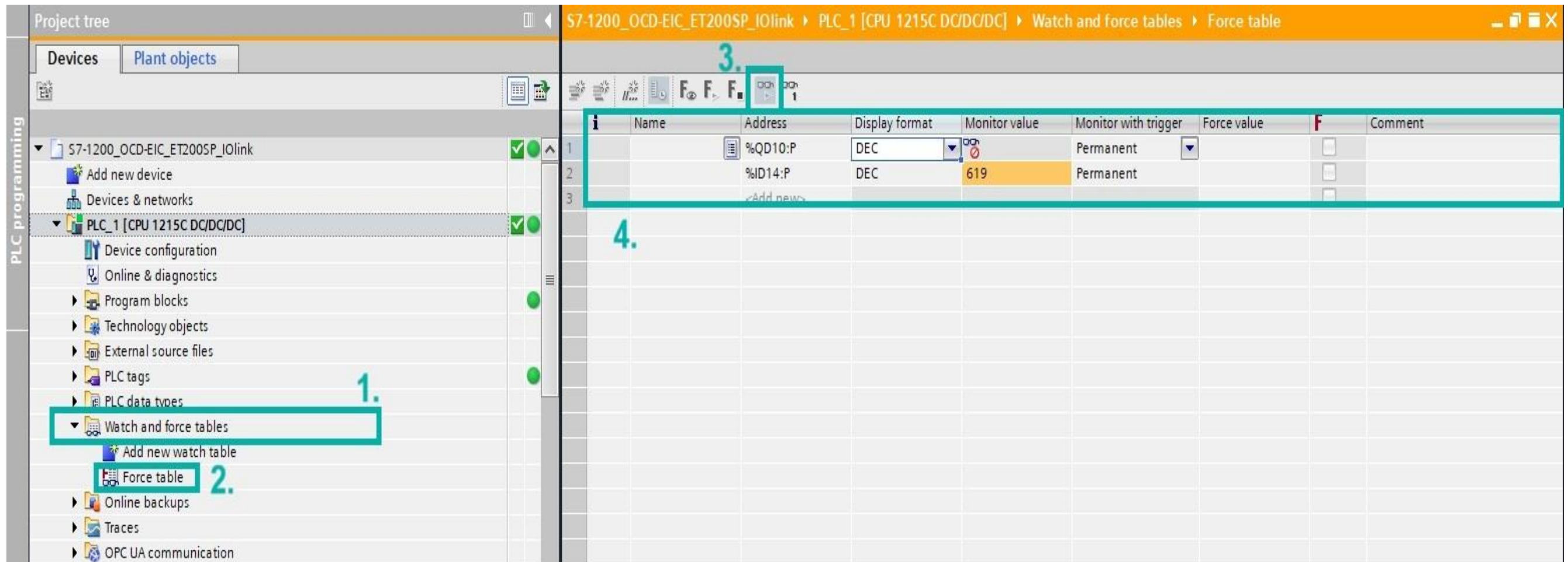
- Project tree
 - Devices
 - S7-1200_OCD-EIC_ET200SP_IOlink
 - Add new device
 - Devices & networks
 - PLC_1 [CPU 1215C DC/DC/DC]
 - Device configuration (selected)
 - Online & diagnostics
 - Program blocks
 - Technology objects
 - External source files
 - PLC tags
 - PLC data types
 - Watch and force tables
 - Online backups
 - Traces
 - OPC UA communication
 - Device proxy data
 - Program info

The main workspace shows the hardware configuration for the selected device. A blue label 'encoder' points to a module slot. The right pane displays the 'Device overview' table, which lists the modules and their I/O addresses. The table is highlighted with a red box and a red '1.' label. The 'Encoder Telegram 860, ...' row is highlighted with a red box and a red '2.' label.

Module	Rack	Slot	I address	Q address
encoder	0	0		
PN-IO	0	0 X1		
Encoder V12.x_1	0	1		
Module Access Point	0	1 1		
Encoder Telegram 860, ...	0	1 2	14...21	10...13

> Monitor Values

1. Use the Watch and force tables to monitor values
 2. Go to Force table
 3. Click on Monitor Values
 4. In a free row add the address: “%ID14” to monitor position value. You have to type it manually.
- Important:** The underlined value depends on the chosen Telegram (here Telegram 860). Check the manual for more information.



The screenshot shows the SIMATIC Manager interface. On the left, the 'Project tree' displays the hierarchy: S7-1200_OCD-EIC_ET200SP_IOlink > PLC_1 [CPU 1215C DC/DC/DC] > Watch and force tables > Force table. The 'Force table' is selected, and the 'Monitor values' button is highlighted with a red box and the number 3. The main table has the following columns: Name, Address, Display format, Monitor value, Monitor with trigger, Force value, and Comment. The table contains two rows: the first row is for '%QD10:P' with a monitor value of 0, and the second row is for '%ID14:P' with a monitor value of 619. The second row is highlighted with a red box and the number 4. The first row is highlighted with a red box and the number 1. The second row is highlighted with a red box and the number 2.

Name	Address	Display format	Monitor value	Monitor with trigger	Force value	Comment
%QD10:P	%QD10:P	DEC	0	Permanent		
%ID14:P	%ID14:P	DEC	619	Permanent		

> Preset Value

1. In a free row add the address: “%QD10” for preset position value
2. Add the desired value(Bit 31 is set to “1” for Preset Control)
3. Click on Force

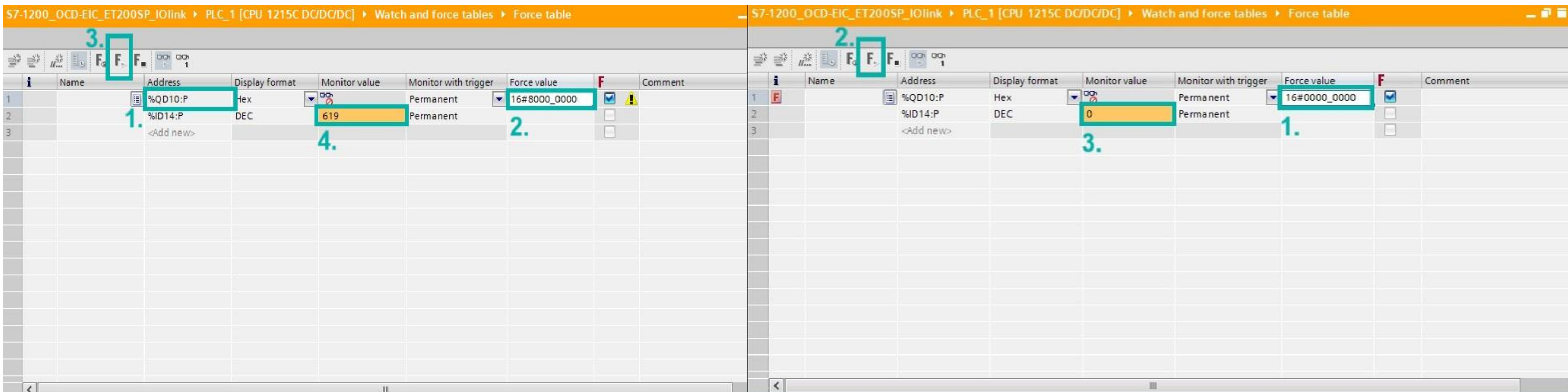
1. Save the Preset: Bit 31 is set back to “0” for saving the preset

2. Click on Force

3. Now the Preset is set to “0”

Now Values in cell 1 and cell 3 are equal. Value from cell 1 was “forced” in cell 3

Important: The underlined value depends on the chosen Telegram (here given for Telegram 860).



The image displays two side-by-side screenshots of the SIMATIC Manager 'Force table' interface, illustrating the process of setting a preset value.

Left Screenshot (Initial State):

- Row 1: Address %QD10:P, Display format Hex, Monitor value 619 (labeled 4.), Monitor with trigger Permanent, Force value 16#8000_0000 (labeled 2.).
- Row 2: Address %ID14:P, Display format DEC, Monitor value (empty), Monitor with trigger Permanent, Force value (empty).
- Row 3: Address <Add new>, Display format (empty), Monitor value (empty), Monitor with trigger (empty), Force value (empty).

Right Screenshot (After Clicking Force):

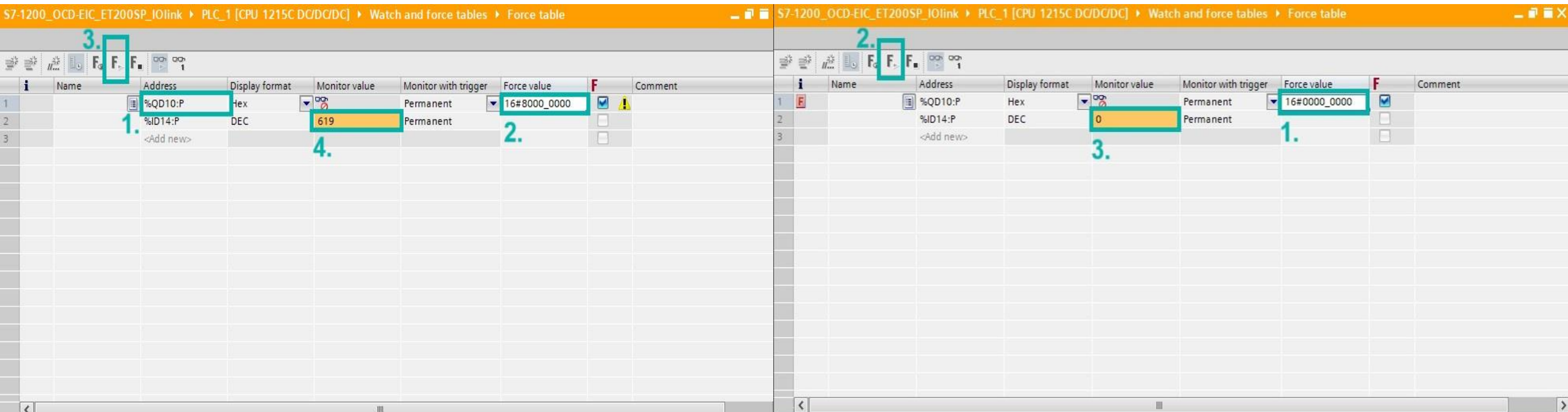
- Row 1: Address %QD10:P, Display format Hex, Monitor value 0 (labeled 3.), Monitor with trigger Permanent, Force value 16#0000_0000 (labeled 1.).
- Row 2: Address %ID14:P, Display format DEC, Monitor value (empty), Monitor with trigger Permanent, Force value (empty).
- Row 3: Address <Add new>, Display format (empty), Monitor value (empty), Monitor with trigger (empty), Force value (empty).

> Preset Value - Explanation

The way of defining the preset value: Preset Control: Bit 31 must be set the to “1”

In HEX it is: 16#8000_0000

In BIN it is: 2#1000_0000_0000_0000_0000_0000_0000_0000



Name	Address	Display format	Monitor value	Monitor with trigger	Force value	Comment
1	%QD10:P	Hex		Permanent	16#8000_0000	
2	%ID14:P	DEC	619	Permanent		
3	<Add new>					

Name	Address	Display format	Monitor value	Monitor with trigger	Force value	Comment
1	%QD10:P	Hex		Permanent	16#0000_0000	
2	%ID14:P	DEC	0	Permanent		
3	<Add new>					

We recommend to use the Hexadecimal values. As it is shorter, it is less likely to lead to mistakes.

Important: For more information check “Preset Value” chapter in the manual

> Example: Set the Preset to “5”

1. In cell 1 preset control is active (31 bit is set to “1” HEX: 16#8000_0000)
2. Click on Force
3. The value is set to 5
4. Save the Preset: 31 bit back to “0”
5. Click on Force
6. The value is set and saved to 5

S7-1200_OCD-EIC_ET200SP_IOlink ▶ PLC_1 [CPU 1215C DC/DC/DC] ▶ Watch and force tables ▶ Force table

2.

	i	Name	Address	Display format	Monitor value	Monitor with trigger	Force value	1. F	Comment
1	F		%QD10:P	Hex	5	Permanent	16#8000_0005	<input checked="" type="checkbox"/>	
2			%ID14:P	DEC		Permanent		<input type="checkbox"/>	
3			<Add new>					<input type="checkbox"/>	

3.

S7-1200_OCD-EIC_ET200SP_IOlink ▶ PLC_1 [CPU 1215C DC/DC/DC] ▶ Watch and force tables ▶ Force table

5.



	i	Name	Address	Display format	Monitor value	Monitor with trigger	Force value	F	Comment
1	F		%QD10:P	Hex	5	Permanent	16#0000_0005	<input checked="" type="checkbox"/>	
2			%ID14:P	DEC		Permanent		<input type="checkbox"/>	
3			<Add new>					<input type="checkbox"/>	

4.



6.

> Monitor the Velocity

1. Add the Address for the Velocity : ID18 (ID14 +4) in that test
2. When moving the shaft, the velocity is monitored

S7-1200_OCD-EIC_ET200SP_IOlink ▶ PLC_1 [CPU 1215C DC/DC/DC] ▶ Watch and force tables ▶ Force table									
	i	Name	Address	Display format	Monitor value	Monitor with trigger	Force value	F	Comment
1			%QD10:P	Hex		Permanent	16#0000_0005	<input checked="" type="checkbox"/>	
2			%ID14:P	DEC	5	Permanent		<input type="checkbox"/>	
3			%ID18:P	DEC	0	Permanent		<input type="checkbox"/>	
4			<Add new>					<input type="checkbox"/>	

1.

S7-1200_OCD-EIC_ET200SP_IOlink ▶ PLC_1 [CPU 1215C DC/DC/DC] ▶ Watch and force tables ▶ Force table									
	i	Name	Address	Display format	Monitor value	Monitor with trigger	Force value	F	Comment
1			%QD10:P	Hex		Permanent	16#0000_0005	<input checked="" type="checkbox"/>	
2			%ID14:P	DEC	19725	Permanent		<input type="checkbox"/>	
3			%ID18:P	DEC	46449	Permanent		<input type="checkbox"/>	
4			<Add new>					<input type="checkbox"/>	

2.