How to take a backup in TIA Portal by uploading a PLC program

If you need to know how to take a backup in TIA Portal from a physical PLC, you can upload the hardware configuration and software from the device into a new, empty project. This guide walks you through the upload, shows you how to verify the result, and explains what a PLC upload can and cannot recover.

Prerequisites

Before you start, make sure you have the following:

- A physical PLC connected to your PC through PROFINET or Industrial Ethernet.
- TIA Portal installed on your PC.
- A new, empty project, which you create in the first steps below.

Understand what can go wrong and what an upload recovers

Several situations can leave you without a complete PLC program on your PC or server:

- You might accidentally delete your PLC from the project.
- You might make unwanted changes to your PLC program.
- You might not have the complete PLC program available on your PC or server.

If you delete the PLC or lose the program, you may need to create a new project from scratch, especially with older PLCs. For older PLCs, such as the S7-300 series, losing the program meant losing all project data unless you had a backup.

You can upload a backup from the physical PLC to your PC. With newer PLCs (S7-1500, S7-1200), the process is more comfortable and user-friendly. You can create a new project or upload the program directly from the PLC.

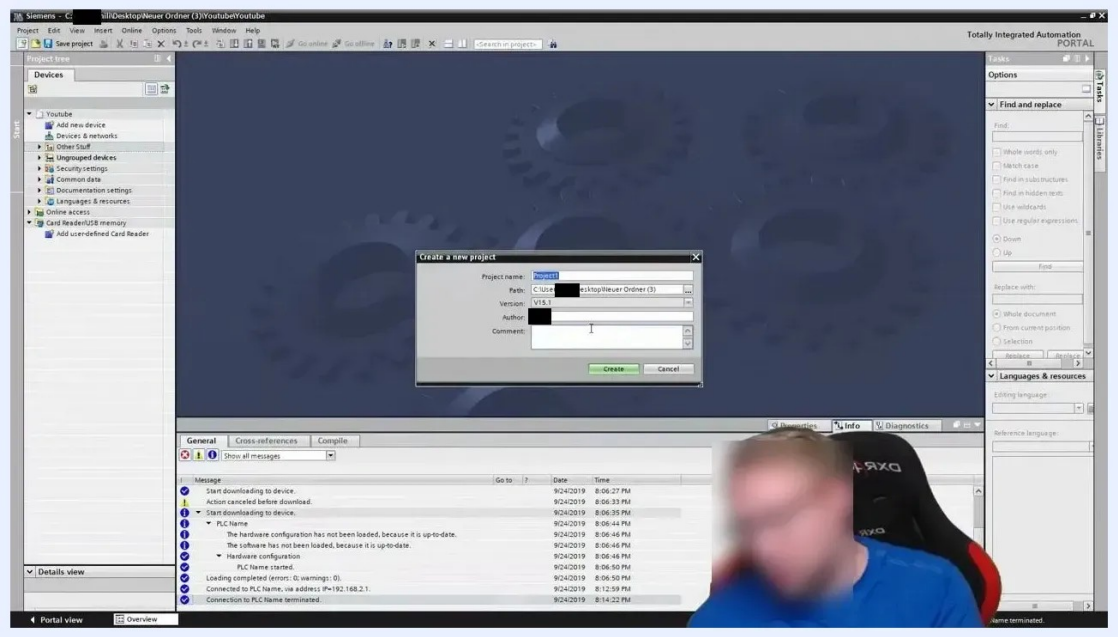
Be aware of the limits of an upload:

- The backup contains only the executable code unless you upload hardware and software as a new station, as in this guide.
- With an executable-code-only upload, all comments, variable names, and documentation are lost.
- Such a program functions but lacks readability and maintainability.

Steps to take a backup in TIA Portal

1. Create a new project

In TIA Portal, open the **Create a new project** dialog. Fill in the project name, path, version, author, and comment fields.

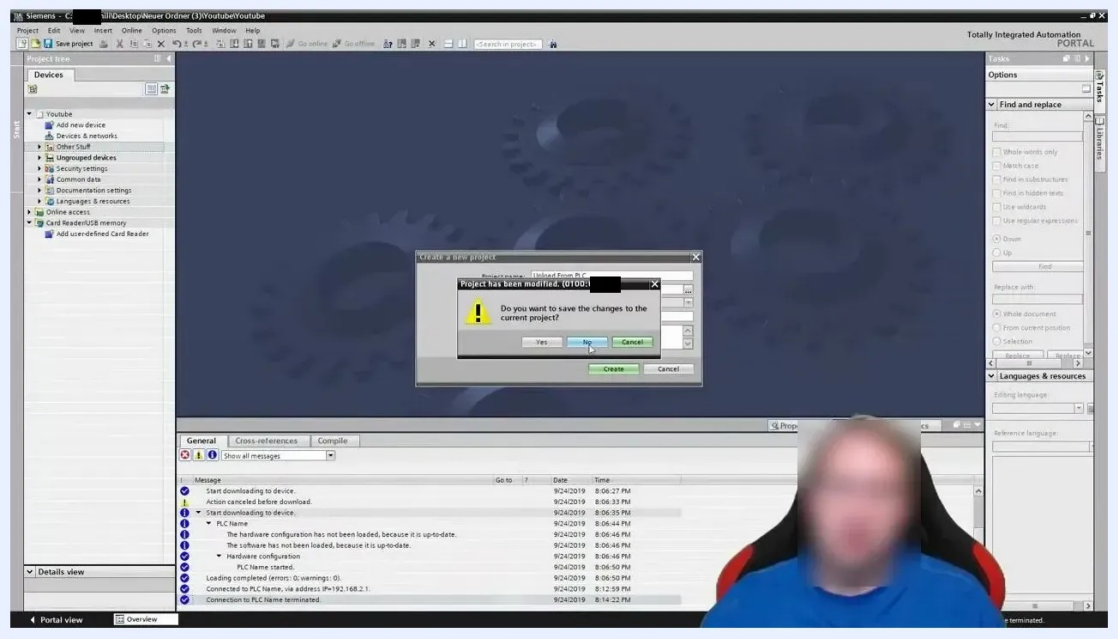


TIA Portal with the Create a new project dialog open, showing fields for project name, path, version, author, and comment

2. Make sure the new, empty project is open

The project tree should show only the new project name (for example, "Upload From PLC") and the default folders.

If TIA Portal asks "Project has been modified. Do you want to save the changes to the current project?", select **No** if you do not want to save changes to the previous project.



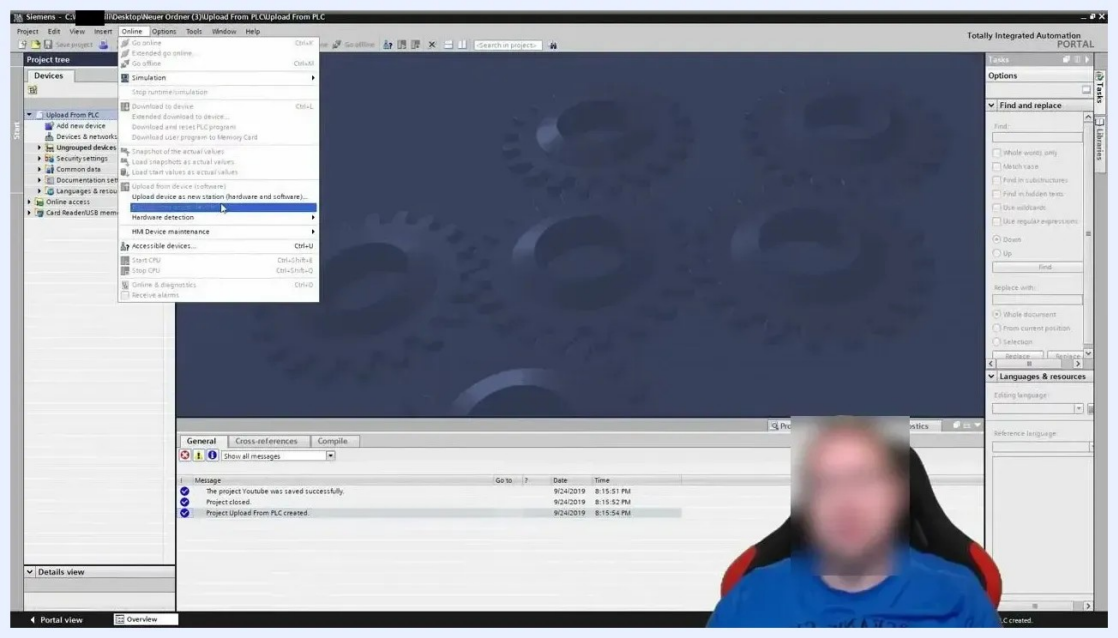
TIA Portal showing the Project has been modified dialog that asks whether to save changes to the current project

3. Confirm the PLC connection

Confirm that your physical PLC is connected to your PC via PROFINET or Industrial Ethernet and is ready for the upload.

4. Select the project in the project tree

In the project tree, click the top-level project node (for example, "Upload From PLC"). This selects the project for the upload operation.

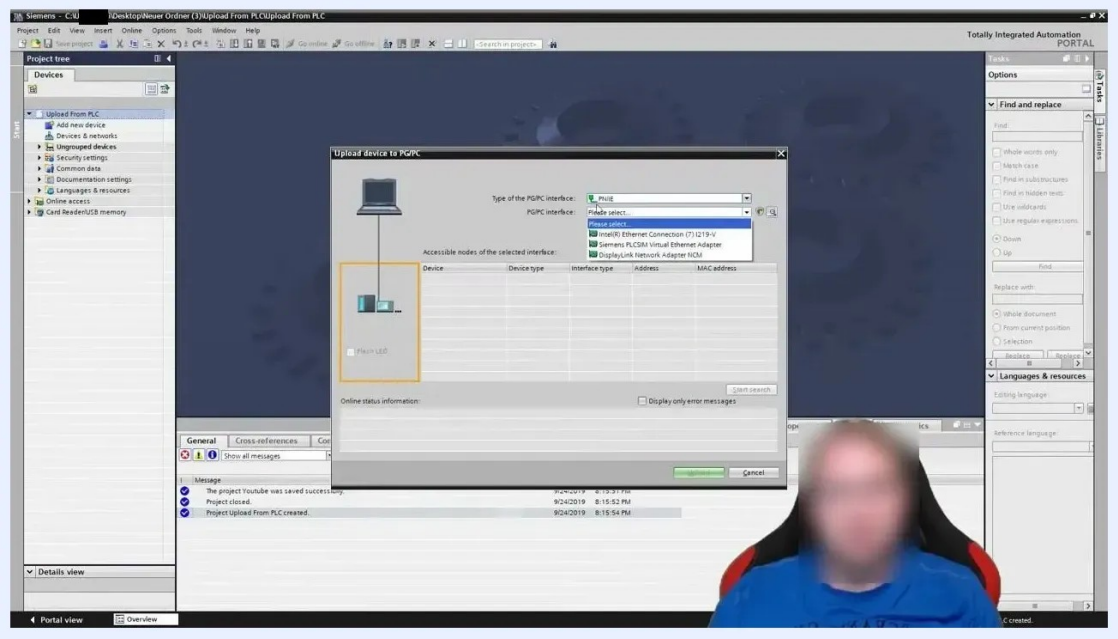


TIA Portal project tree with the Upload From PLC project node selected

5. Open the Online menu and start the upload

Select **Online** in the top menu bar. Do not use the orange "Go online" button, because it is unavailable when no PLC is configured in the project.

In the **Online** menu, select **Upload device as new station (hardware and software)**. This option uploads both the hardware configuration and the software from the connected PLC into your empty project.

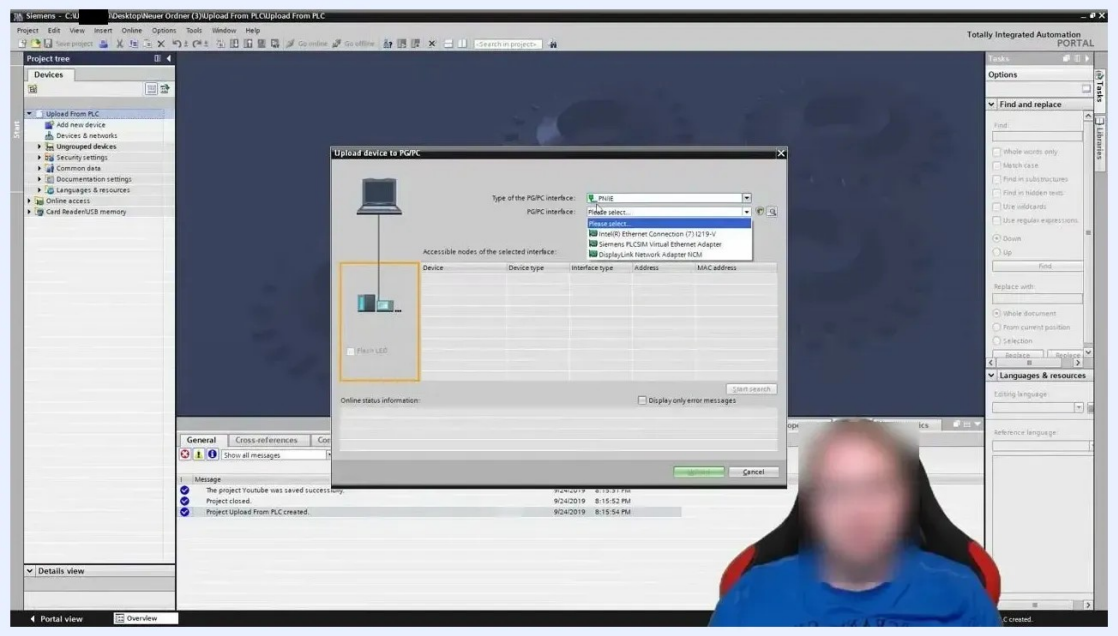


TIA Portal Online menu open with Upload device as new station (hardware and software) highlighted

6. Select the PG/PC interface

In the **Upload device to PG/PC** dialog, open the PG/PC interface dropdown menu. It lists the available network adapters.

Choose the interface that matches your physical connection, for example PN/IE for PROFINET or the specific Ethernet adapter.



Upload device to PG/PC dialog with the PG/PC interface dropdown expanded to show network adapters

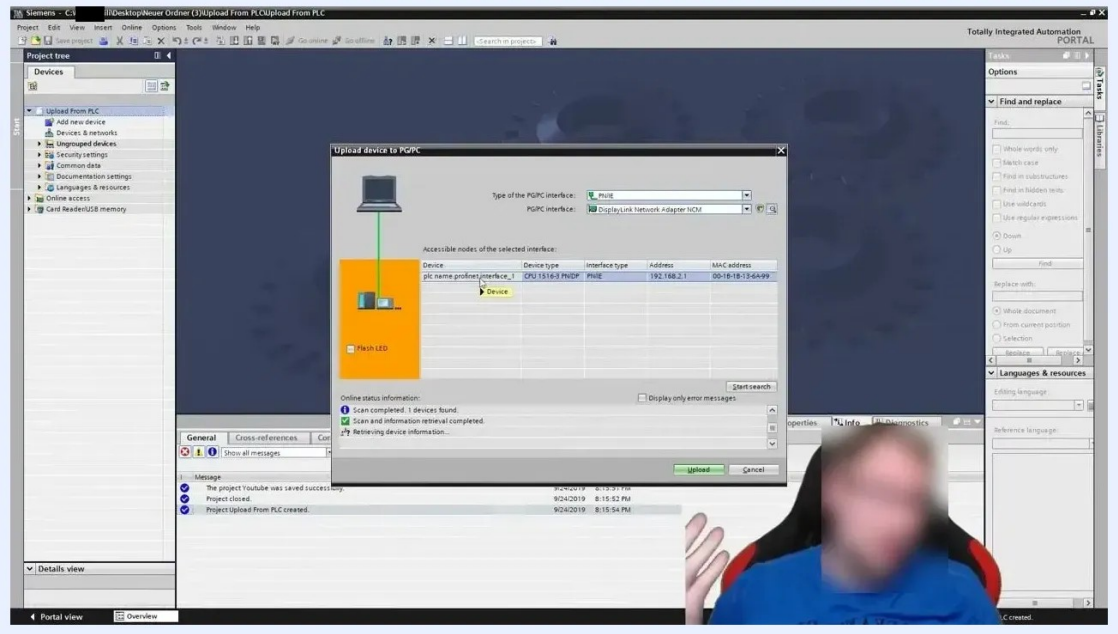
7. Search for the PLC

Click **Start search**. The system searches for accessible nodes on the selected interface.

When the PLC is found, it appears in the list with details such as:

- Device type (for example, CPU 1516-3 PN/DP)
- Interface type (PN/IE)
- IP address (for example, 192.168.2.1)
- MAC address

The status area shows "Scan completed. 1 devices found."



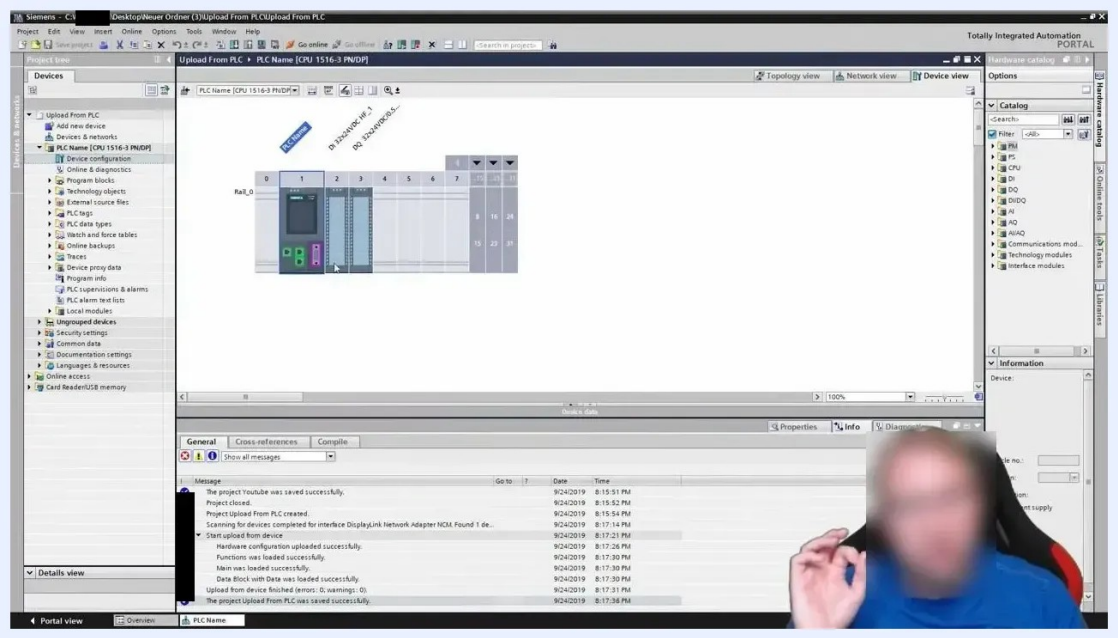
Upload device to PG/PC dialog showing the found PLC device after the scan completed, ready to upload

8. Select the device and upload

Select the detected PLC device from the list. Then click **Upload** to start uploading the hardware configuration and software from the PLC into your TIA Portal project.

9. Wait for the upload to finish

TIA Portal displays an **Upload from device** dialog with the message "Loading configuration from device. This will take some time." Do not interrupt the process until it finishes.



TIA Portal showing the Upload from device dialog with the Loading configuration from device message

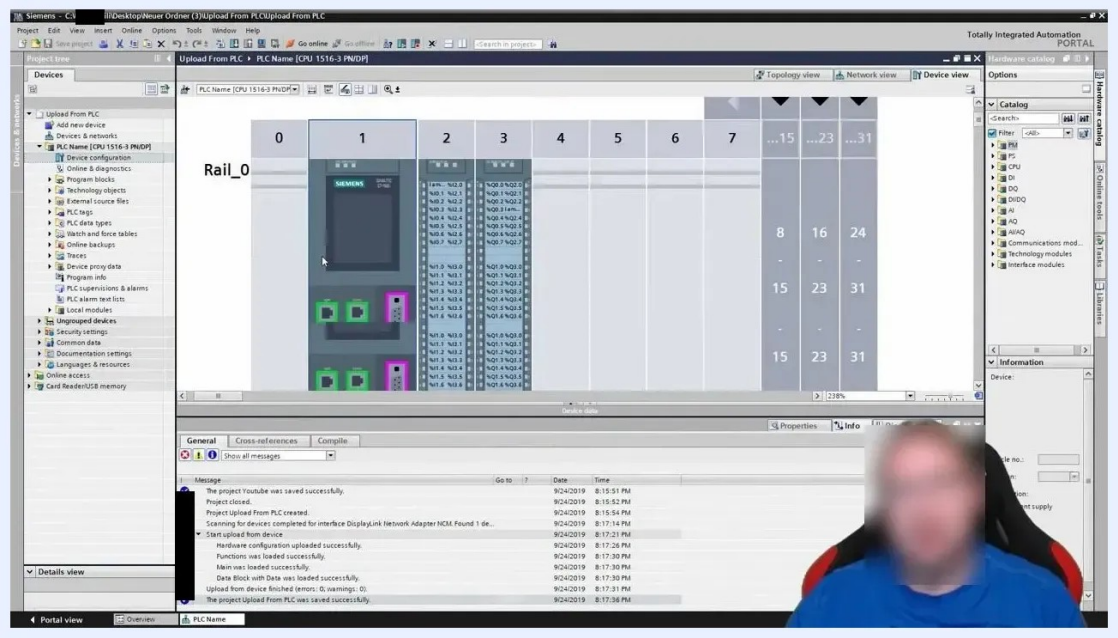
10. Save the project

Save the project immediately after the upload completes. Click the **Save project** icon in the toolbar, or use the menu to save. This gives you a backup of the complete project as uploaded from the PLC.

Verify the uploaded backup

11. Confirm the PLC in the project tree

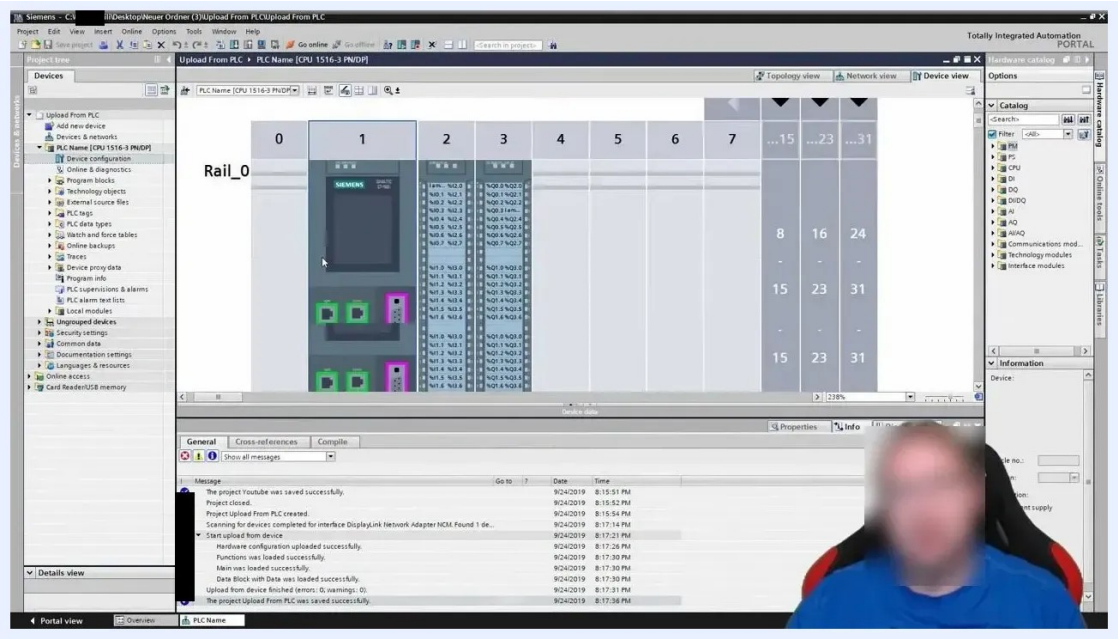
In the project tree, check that the PLC appears with its original name (for example, "PLC Name [CPU 1516-3 PN/DP]"). The device configuration, including all modules and parameters, should be visible under the PLC node.



TIA Portal project tree showing the uploaded PLC with its correct name and configuration

12. Review the device configuration

Open the **Device configuration** view to see a graphical representation of the PLC and its modules. Check that all modules, slots, and hardware details match the physical PLC. Also confirm that parameters such as clock memory and IP addresses are present and correct.



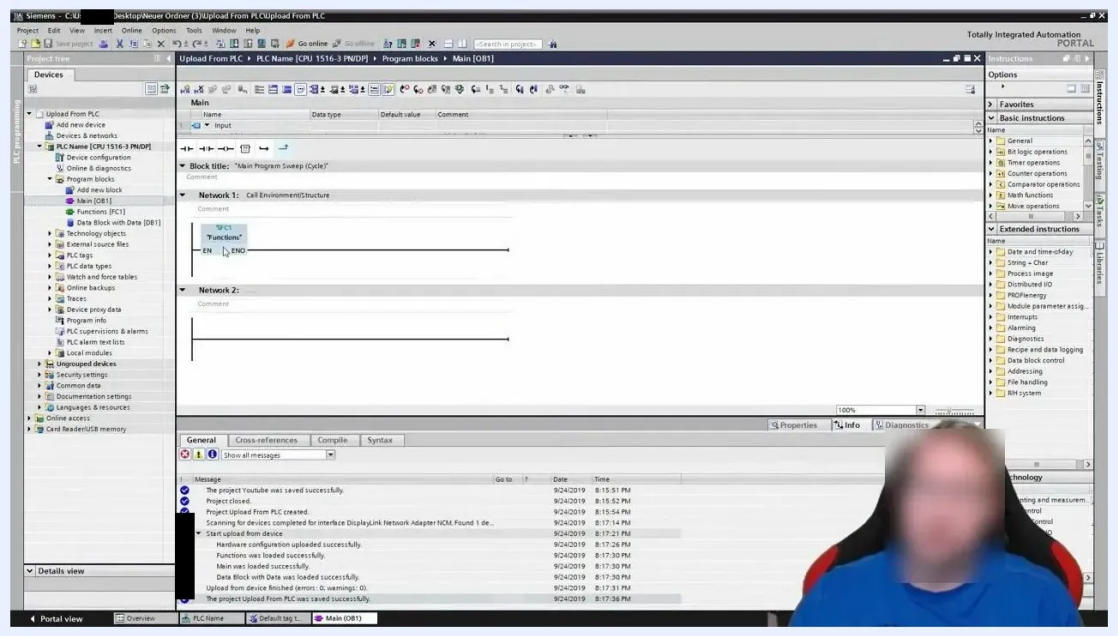
TIA Portal device configuration view showing the PLC rack and modules

13. Verify the PLC tags

In the project tree, expand **PLC tags** and open the **Default tag table**. Confirm that all variables are present with the correct names, addresses, data types, and comments. For example:

- Name "I am an Input", address %I0.0, data type Bool, comment "I am a Comment"

- Name "I am an Output", address %Q2.3, data type Bool, comment "I am another Comment"



TIA Portal Default tag table showing variable names, addresses, data types, and comments

14. Check the program blocks

Expand **Program blocks** in the project tree. Open the **Main [OB1]** block to verify the main function and call structure. Confirm that the network titles, comments, and call structure are intact.

15. Inspect additional blocks

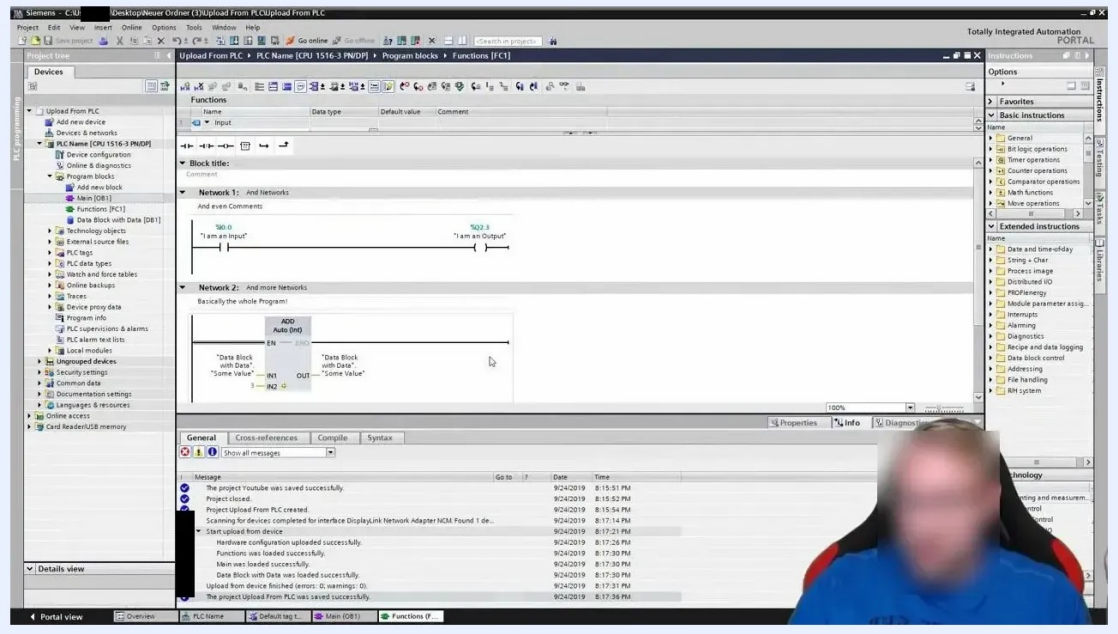
Open the other blocks, such as **Functions [FC1]**, to make sure all logic, comments, and network structures are present. Review the ladder logic or code to confirm it is complete.

16. Check the message log and understand overwrite behavior

Check the message log at the bottom of the TIA Portal window to confirm the upload and save succeeded. Example messages include:

- "The project Youtube was saved successfully."
- "Project Upload from PLC created."

- "Upload finished successfully."



TIA Portal message log area at the bottom of the window after the upload

Keep these points about program state in mind:

- The PLC can store only one program state at a time.
- When you upload a new project to the PLC, it overwrites the previous program stored on the device.
- If the program is deleted or replaced, the previous state is permanently lost from the PLC.
- Always save a backup of your project on your PC after uploading or downloading to the PLC.

17. Review the data block values

Open the **Data Block with Data [DB1]** tab to verify the snapshot values. In this example, the data block contains a single variable:

- Name: "Some Value"
- Data type: int
- Start value: 35

The block also shows checkboxes for properties such as Retain, Accessible, Writable, Visible in, Setpoint, Supervise, and Comment of the Value.

If calculations have produced intermediate results in the PLC's working memory, those results are not uploaded. Make sure your backup includes all the data you need.

Summary

To take a backup in TIA Portal, create a new, empty project and select **Online** > **Upload device as new station (hardware and software)**. Choose the PG/PC interface, search for the PLC, select it, and click **Upload**. Save the project when the upload finishes. Then verify the PLC name, device configuration, PLC tags, program blocks, and data blocks, and check the message log for success messages.

What's next

- Save a backup of your project on your PC every time you upload to or download from the PLC.
- Review your program blocks and data blocks for completeness after each upload.