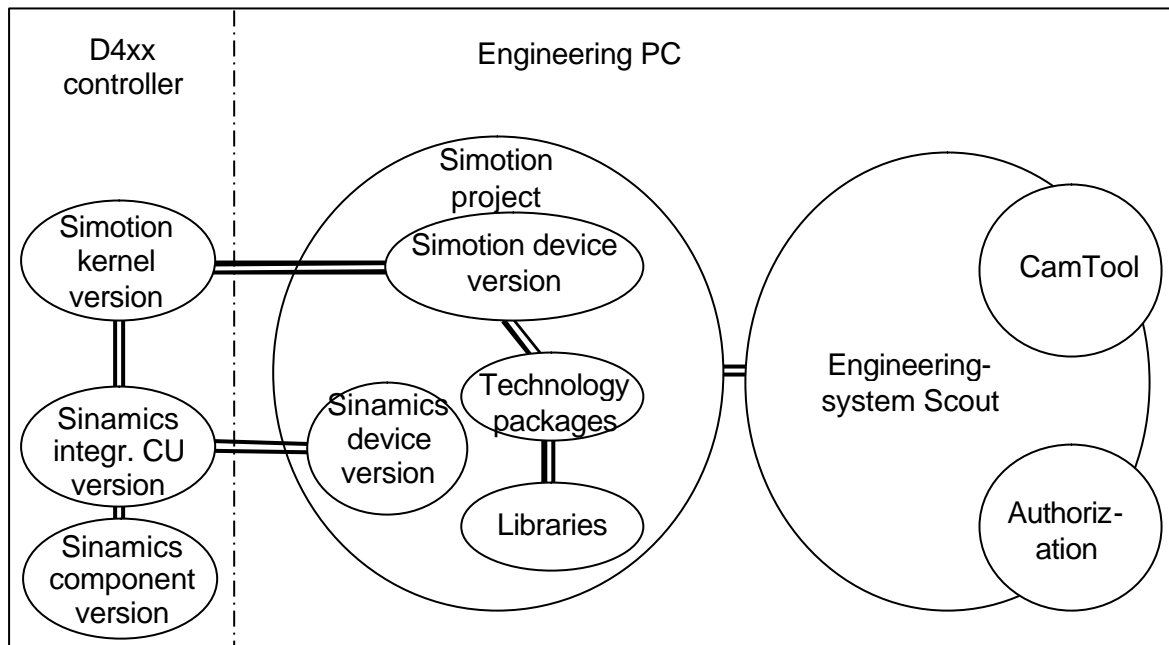


Description of the Simotion D4xx Firmware update

Simotion D consists of several individual software components that can be updated separately. The following figure shows the individual software components and the mutual dependencies:



In general:

- The kernel version of Simotion D4xx must agree with the version of the controller in the Simotion project.
- The version of the associated technology packages (e.g. TP-Cam) in the Simotion project must match the controller version.
- The library modules must match the used technology packages.
- The Simotion project must match the version of Simotion Scout. The update of the project to a more recent Scout version will be performed automatically (after an appropriate prompt) when an older project is opened. A more recent Simotion project cannot be processed with an older Scout version.
- The version of the integrated Sinamics Control Unit (CU) must match the kernel version of the Simotion.
- The Sinamics components (e.g. motor modules, SMCs, etc.) must match the version of the integrated Sinamics Control Unit.

Note: The compatibility list shows the version dependencies to hardware and software components.

Execution sequence of the software update (also serves as the table of contents)

1	Updating the Engineering System	3
1.1	Updating SIMOTION SCOUT	3
1.2	Updating SIMOTION CamTool	5
1.3	Performing the authorization update.	6
2	Updating the project (offline)	8
2.1	Updating the user project.....	8
2.2	Replacing the Simotion device in the project	10
2.3	Updating Technology Packages (TP).....	12
2.4	Updating the library.....	16
2.5	Selecting the Sinamics device version	18
2.6	Compiling the project and checking the consistency	20
3	Updating the D4xx device	21
3.1	Updating the control unit	21
3.2	Updating SINAMICS components firmware.....	22
3.3	Additional tasks for DRIVE-CLiQ motors.....	23
4	Restrictions for updating the software to version V3.2	25
4.1	Adjusting the Protocol project.....	25
4.2	Error message: Error 1912: PROFIBUS: isochronous operation life sign failure	27
4.3	Independent conversion of standard telegrams for the Sinamics update	28
4.4	Placement of the telegrams in the control unit	28
4.5	Updating the Sinamics firmware in the offline project causes error messages.....	28

Notes:

A generally valid procedure for the software update is described here. The Readme file for the associated software version must always be observed!

Further information for the software handling, such as a new installation, a platform change, etc., is contained in the general documentation for Simotion.

Further restrictions are contained on the Simotion SCOUT CD at:

\1_Important\German\Randbedingungen\SIMOTION_Randbedingungen_V32.pdf

The STARTER commissioning tool is integrated in SIMOTION SCOUT.

The restrictions relevant for STARTER are contained on the CD at:

\1_Important\German\Randbedingungen\STARTER_Liesmich.wri.

The restrictions that affect the configuring of the drives must also be observed.

1 Updating the Engineering System

1.1 Updating SIMOTION SCOUT

A complete installation of the SIMOTION SCOUT consists of the following programs:

- SIMOTION SCOUT
- AuthorsW

SIMOTION SCOUT uses as language setting the default language set in the SIMATIC Manager. You make changes to this in the SIMATIC Manager in the **Options > Settings... > Language** menu.

Currently the German, English and Italian languages are available in SCOUT. If other languages are set in the SIMATIC Manager, English is used as SCOUT setting.

The AuthorsW program will be automatically updated to the more recent version during the installation.

Prerequisites

The exact prerequisites for the associated version are contained in the Readme.txt on the installation CD.

Examples of the most important prerequisites for the version V3.2 are listed here:

- You must be logged on to the operating system with administrator rights
- Computer with Windows 2000 (Service Pack 3) or XP (Service Pack 1)
- Microsoft Internet Explorer (Version 5.0.1)
- SIMATIC STEP 7 Version 5.3 SP1 (not for SCOUT Standalone)
- One of the following cards must be used as software access point
 - an integrated PROFIBUS card for PG
 - a PROFIBUS card, e.g. CP5611 for standard PC
 - a PCMCIA PROFIBUS adapter, e.g. CP5512 for notebook
 - an Ethernet card

Note: The Starter tool for commissioning individual drives, e.g. SINAMICS or MICROMASTER 410/420/440 as self-contained PC application cannot be installed with SIMOTION SCOUT on a computer, because Starter is already contained in SIMOTION SCOUT.

Procedure

1. Insert the CD with SIMOTION SCOUT in the CD-ROM drive.
2. Start Windows Explorer and change to the CD-ROM drive.
3. Open the **SCOUT_Vx.x/Disk1** directory.
4. Double-click **Setup.exe**.
5. Follow the instructions of the installation program.

Easy Help Simotion

Recommendation:

Install the authorization as part of this setup. The installation program requests you to insert the authorization diskette in the diskette drive.

6. If a reboot is required during the installation: logon again after the start of the operating system with your user name and administrator rights.
7. After the end of the installation: restart the PC and logon again with your user name and administrator rights. Now every user logged on as main user can start and operate SIMOTION SCOUT.

1.2 Updating SIMOTION CamTool

Prerequisites

The exact prerequisites for the associated version are contained in the Readme.txt on the installation CD.

The most important prerequisites are listed here:

- SIMOTION SCOUT must have already been installed on the system on which you want to install SIMOTION CamTool
- You must be logged on with administrator rights for the operating system. After the installation, every user (even those without administrator rights) can work with SIMOTION CamTool
- All other prerequisites correspond to the prerequisites for the SIMOTION SCOUT and are thus already available on the PC

Procedure

a) Deinstall SIMOTION CamTool:

1. Click in the Windows taskbar on Start > Settings > System Control. The System Control window will open.
2. Double-click Software. The Properties window for the software will open.
3. Mark the "SIMOTION SCOUT CamTool" entry in the Install/Deinstall register.
4. Click on Add/Delete. The deinstallation program will be started.
5. Perform the deinstallation program. SIMOTION CamTool will be deinstalled.

b) Install SIMOTION CamTool

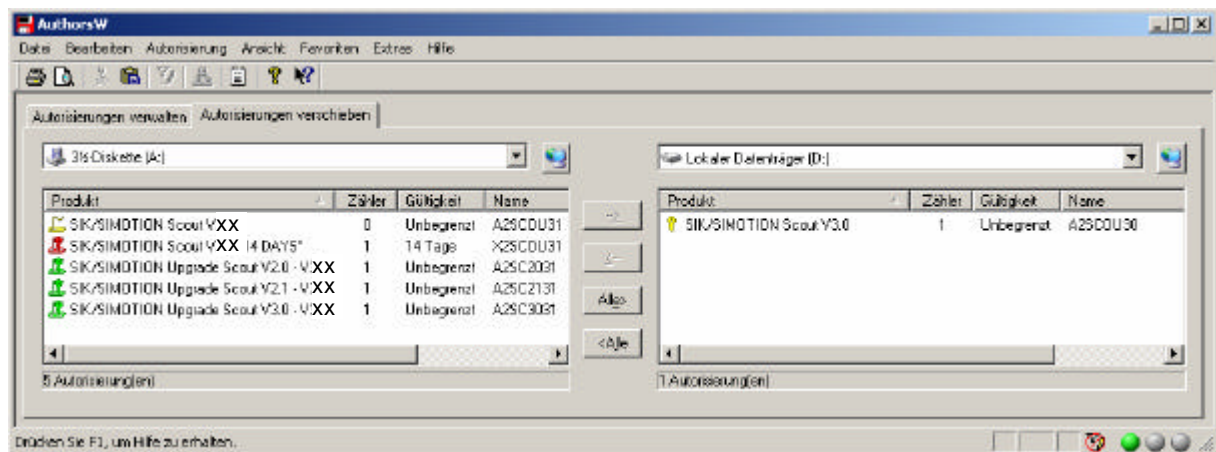
1. Insert the CD with the installation software in the CD-ROM drive.
2. Start the Windows-Explorer and switch to the CD-ROM drive.
3. Open the CamTool\Disk1 directory.
4. Double-click setup.exe. The installation program will be started.
5. Perform the installation program. SIMOTION CamTool will be installed.

1.3 Performing the authorization update.

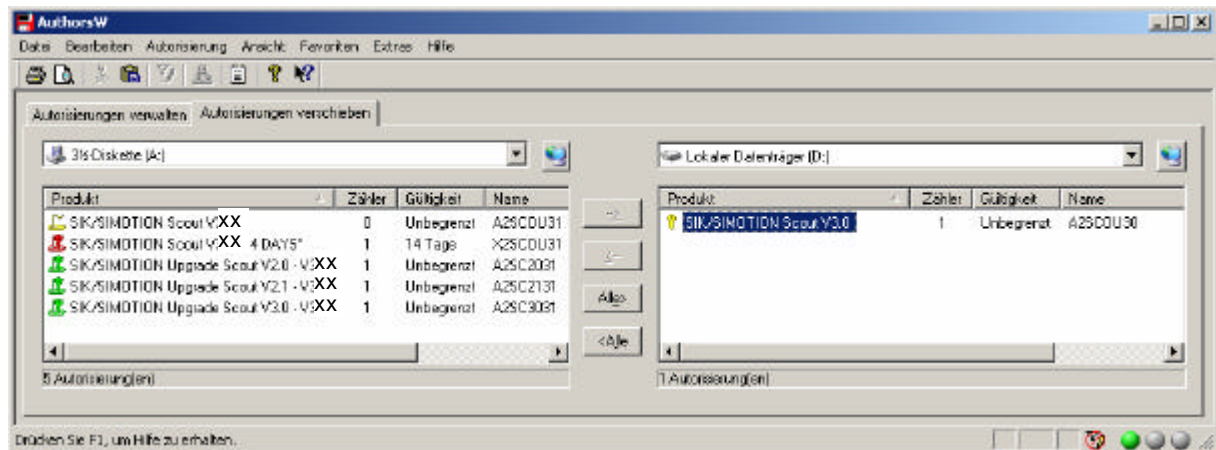
To allow the use of SIMOTION SCOUT or CamTool, an appropriate authorization diskette will be provided with the delivered product CD. This diskette contains the authorization for the SIMOTION SCOUT engineering system.

Procedure

1. Insert the authorization diskette in the diskette drive.
2. Start the AuthorsW authorization program in the **SIMATIC > AuthorsW > AuthorsW** start menu. A new window will open.

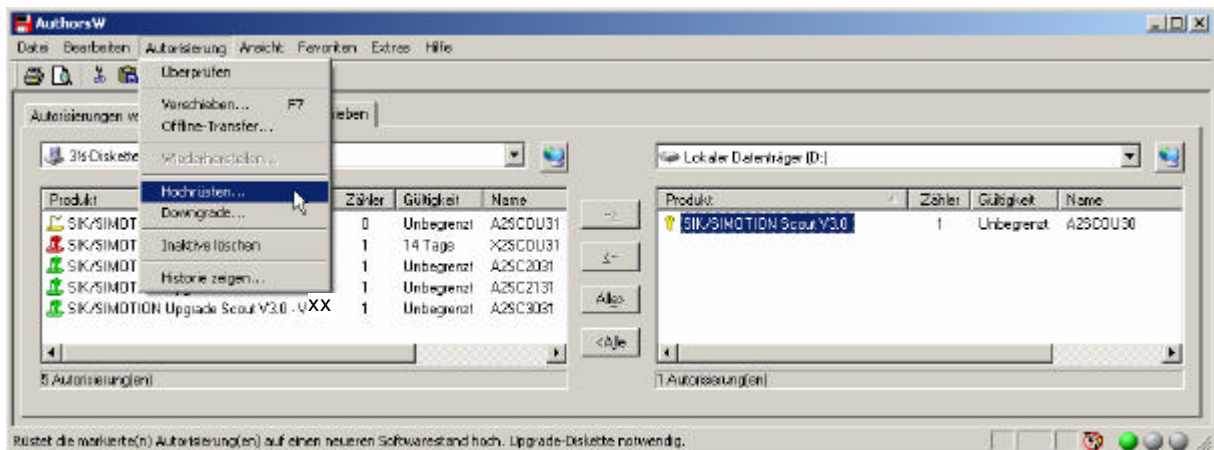


3. Select in the **Manage authorization** register the version of the SIMOTION SCOUT to be updated.

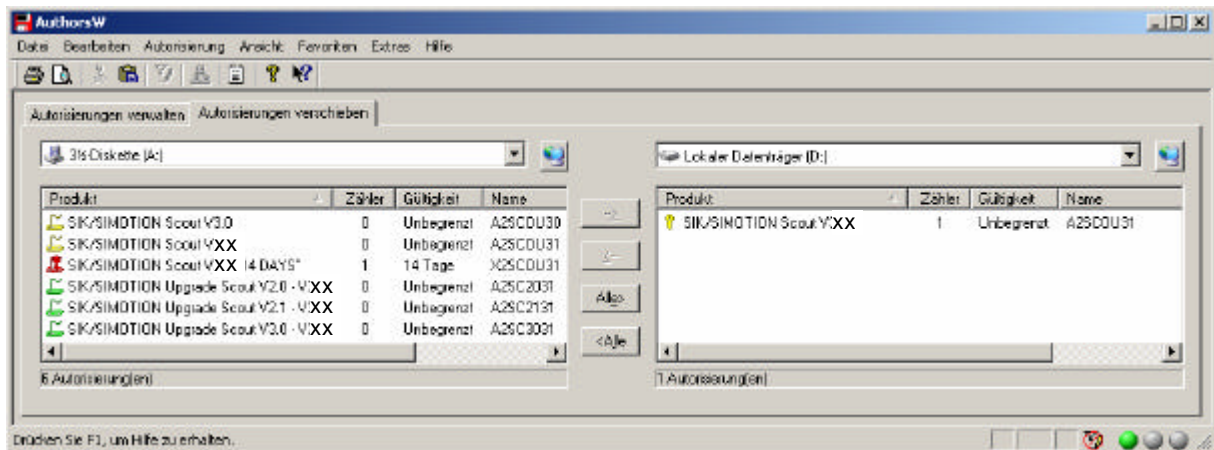


Easy Help Simotion

4. Select Scout in the **Authorization > Update** menu. The data will be transferred.



5. Once the update has completed, the AuthorsW reports as follows:



6. Close the AuthorsW program.
7. Remove the diskette from the diskette drive.

2 Updating the project (offline)

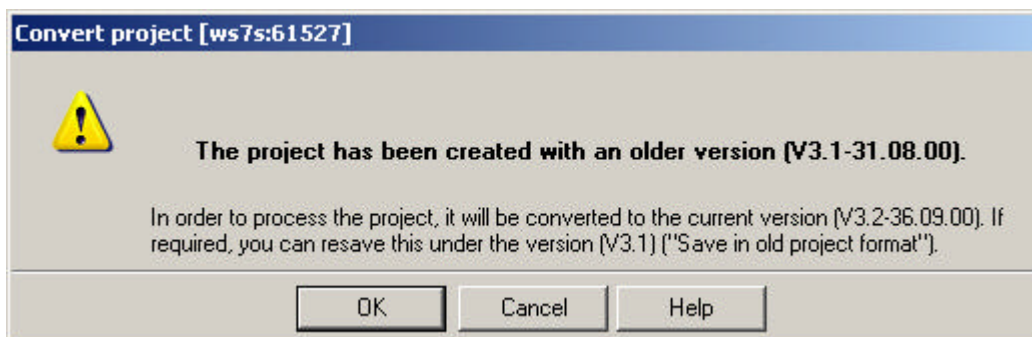
2.1 Updating the user project

If the project is opened with a more recent Scout version, the project will be updated automatically (after confirmation).

Note: Prior to the update, a backup copy of the original project will be created, because the data storage of the project will also be updated for the update. This ensures that in the event of a failure (mains interruptions, unexpected malfunctions, incorrect operation,...), it will be possible to return to the original project.

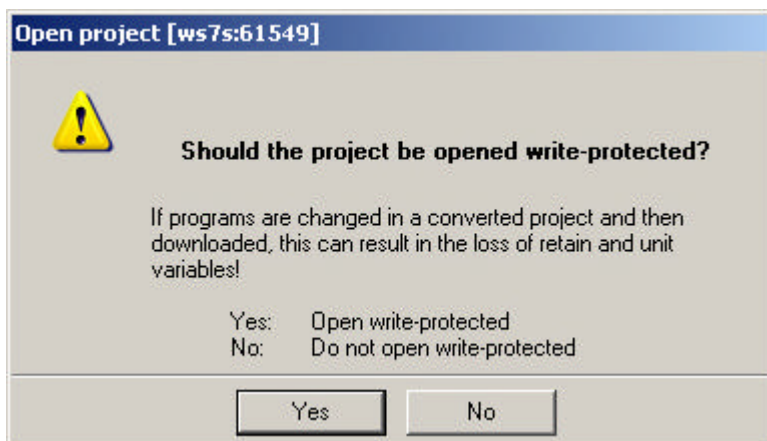
Procedure

1. When the project opens, a window appears with the notification that the project to be opened was created with a different Scout version and a query will be issued whether the update is to be performed.



→ This prompt must be confirmed with “OK”.

2. After the conversion, a prompt appears whether the project is to be opened write-protected.



→ This prompt must be confirmed with “No” (Do not open write-protected) for a firmware update.

Do not open write-protected: The project can be edited. The data between the controller and the project is not consistent. Diagnostic functions cannot be performed directly. The project must be loaded into the controller beforehand.

Easy Help Simotion

Open write-protected: The project remains consistent. The data in the controller and in the project is identical. Diagnostic functions (status, trace, etc.) can be performed directly. The project does not need to be loaded into the controller beforehand.

Note: A project that was last edited with a more recent Scout version cannot be opened from a Scout with a lower version. However, the project can be converted with the more current Scout version to the required software version beforehand (operation: project → save in old project format). Opening with the older Scout version is then possible.

2.2 Replacing the Simotion device in the project

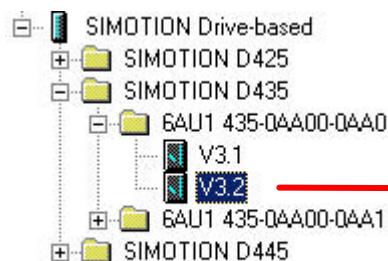
You perform this replacement in the hardware configuration.

Procedure

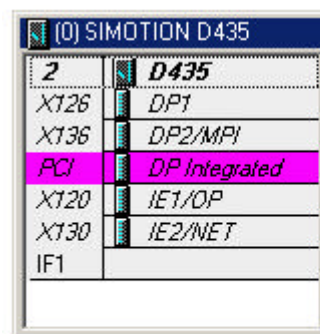
1. Double-click in the project navigator in SIMOTION SCOUT on the SIMOTION device to be replaced. The hardware configuration will open.
2. Open the appropriate folder structure in the hardware catalog. Drag the entry with **drag&drop** to the previously assigned module rack.

Note

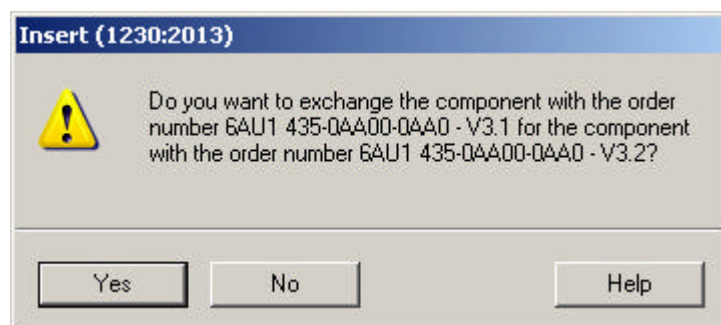
Ensure that you **do not delete** the controller to be replaced beforehand!



With pressed left mouse button, move the appropriate controller over the controller to be replaced and release the mouse button as shown. Click "Yes" to confirm the replacement of the controller.



3. Confirm the displayed dialog box with **Yes** if you want to replace the SIMOTION device.



Easy Help Simotion

4. Accept the changes of the hardware configuration with **Station > Save and compile** in the hardware configuration.
5. Close the hardware configuration.

Note

The data of the SIMOTION device will be transferred immediately to the SIMOTION SCOUT project and the **complete project** saved. This causes all changes made in the project (e.g. axis configuration, etc.) to be also transferred to the project!

2.3 Updating Technology Packages (TP)

The replacement of the modules or the import of the project data does not cause the versions of the technology packages (TP) assigned to the individual technology objects (TO) to be automatically transferred to a version valid for the SIMOTION device. This update will be performed in another work step.

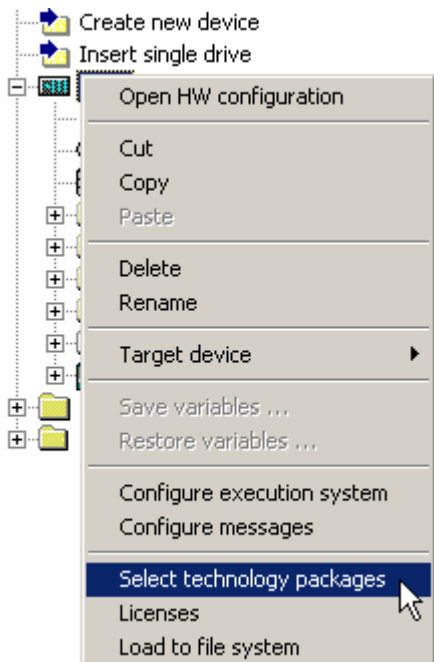
Prerequisites

An update is necessary if you want to replace the version of the SIMOTION device in your existing project.

- Project
- Scout with the appropriate software version

Procedure

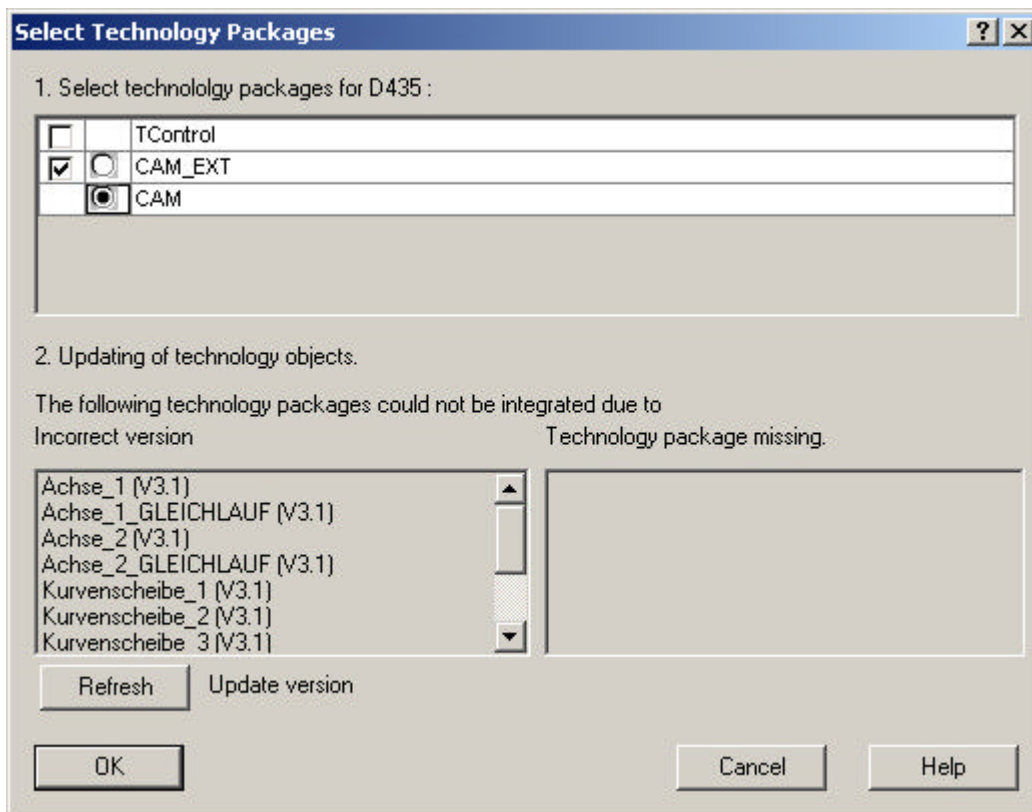
1. Mark in the project navigator the required **SIMOTION device**.
2. Select the **Select technology packages** item in the context menu.



3. If, as last work step, you have replaced the SIMOTION device, the **Technology packages from another version** dialog window opens. Confirm with **OK** to release the existing links to the TPs and to assign new TPs.



4. The **Select technology packages** dialog window then opens. The **Select technology packages** window opens.



Activate the technology packages checkbox. Because the technology packages must have the same version as the kernel, the same version as the kernel is automatically assigned to each technology package in the SIMOTION SCOUT as of V3.0.

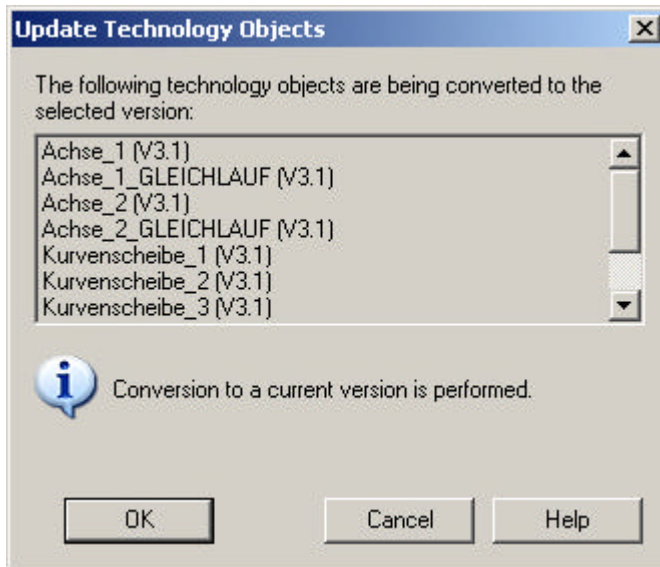
Note:

The CAM_EXT technology package is available as of version V3.2. Consequently, the TP **CAM** is **always adequate** for the update of a project with version < V3.2.

If you want to extend your project with TP CAM_EXT functions, you must select the TP CAM_EXT. Observe the documentation with regard to TP CAM_EXT (required hardware version and memory size for the used target device).

5. If TOs that indicate an incorrect version are displayed as **incorrect version** for your project, then click **update**. If this is not the case, continue with the handling instruction 8.

6. The **Update technology objects** dialog window opens. Confirm with **OK**.



7. The successful update will be displayed. Confirm with **OK**.
8. Confirm the **Select technology objects** dialog window with **OK**. The update of the TPs has completed.

Note

If you use libraries in the project, they must also be updated.

2.4 Updating the library

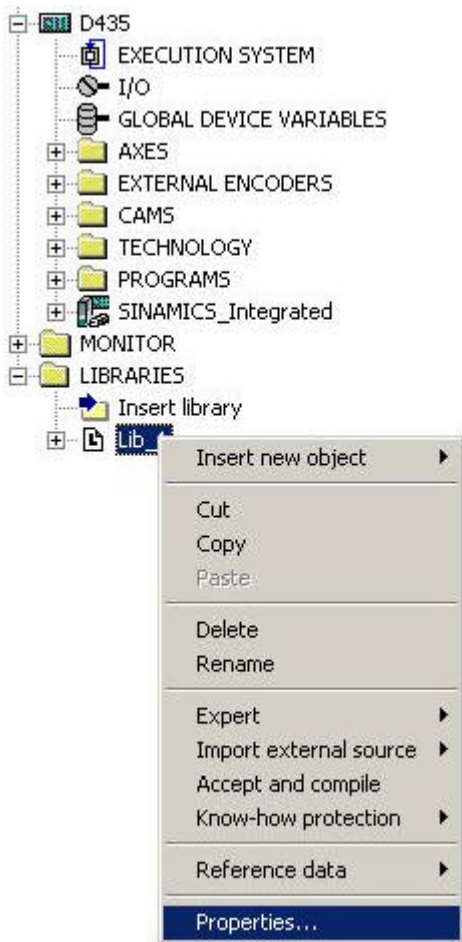
An update of the associated libraries is required when the version of the SIMOTION device or of the technology objects (TO) has changed in your existing project.

Prerequisites

- Project
- Scout with the appropriate software version

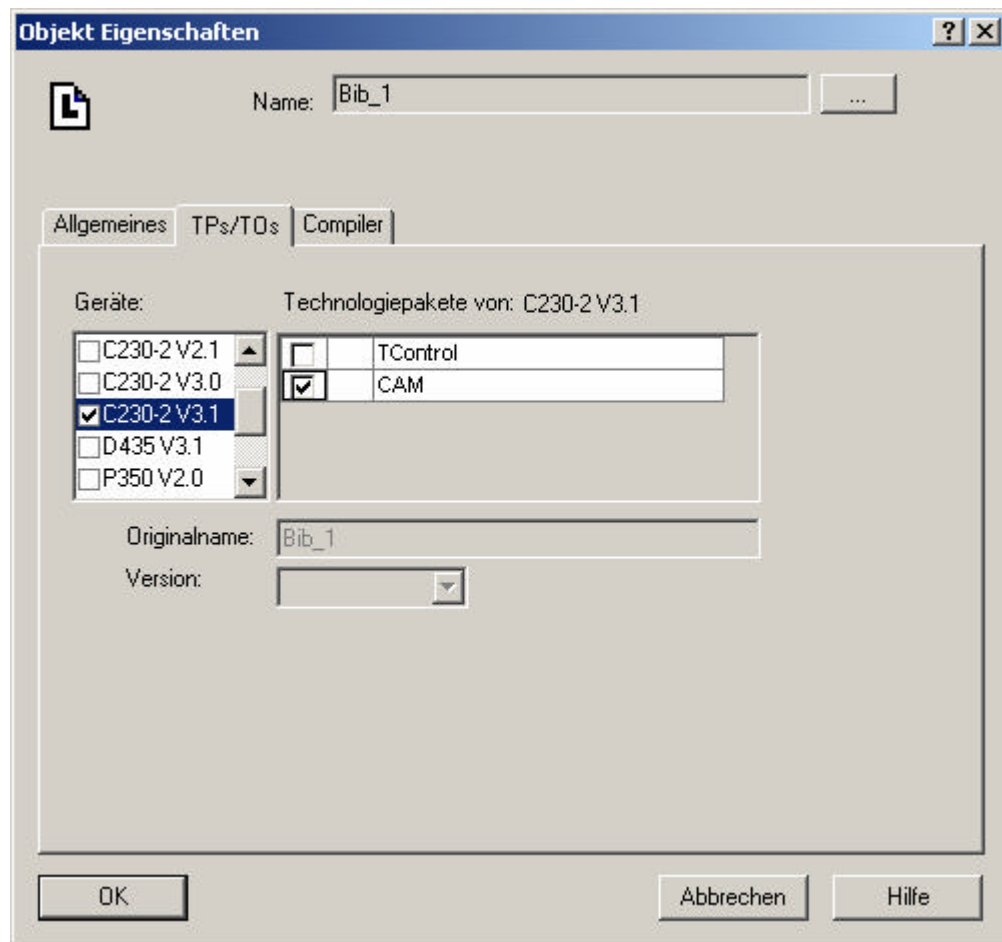
Procedure

1. Open the **LIBRARIES** menu tree in the project navigator.
2. Select a library, open the context menu with the right mouse button and select **Properties....**



Easy Help Simulation

3. Open the **TPs/TOs** menu in the Properties window. Select the Simotion device here (“C230-2 V3.1” in the example figure) and the technology packages (“CAM” in the example figure) for which the library is to be valid.



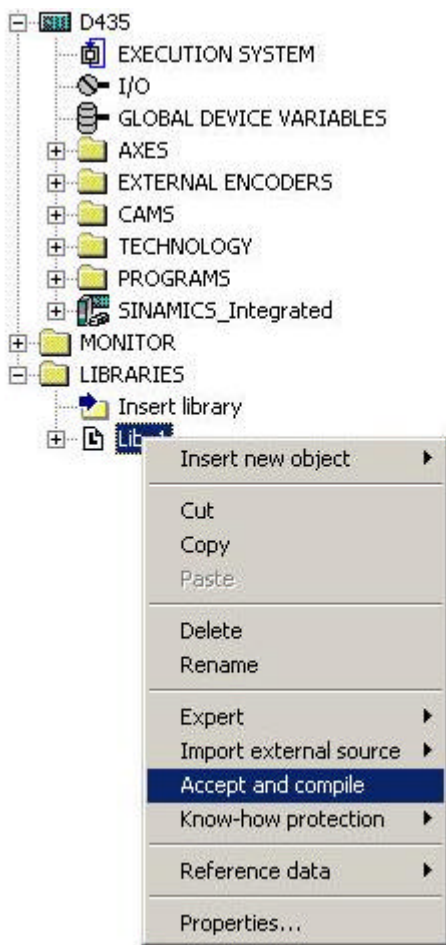
Note:

Observe the device dependencies shown in the **Help** (Scout online help)

4. Close the dialog with **OK**.

Easy Help Simotion

5. Reselect the library in the project navigator, open the context menu with the right mouse button and start **Accept and compile**.



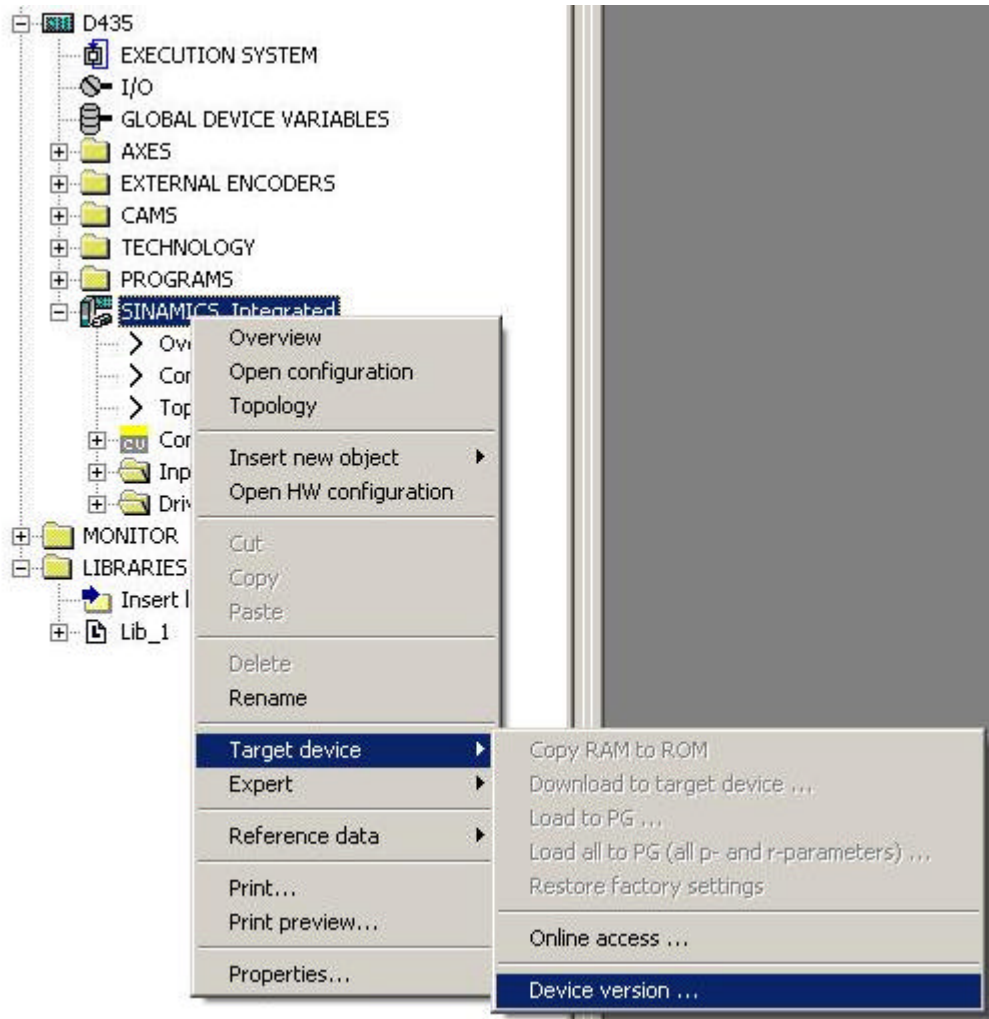
6. The update has completed when **Accept and compile** has been performed without error.
7. Repeat steps 1 to 6 for each additional library in the project.

2.5 Selecting the Sinamics device version

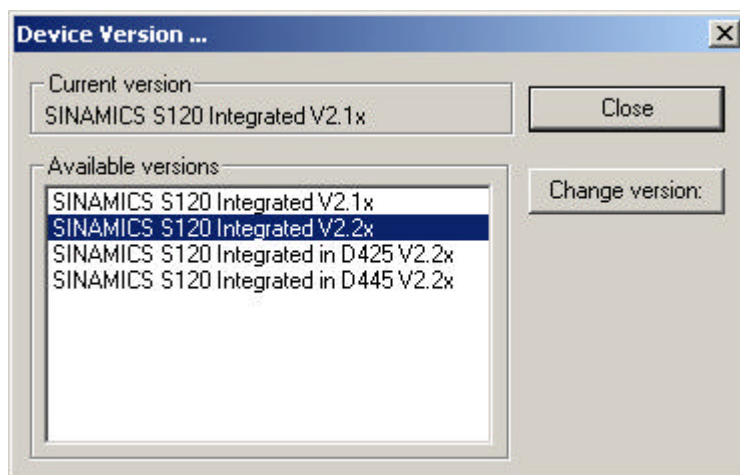
Procedure for updating the Sinamics device version

1. Click with the right mouse button on the appropriate device, e.g. SINAMICS Integrated. A context menu will be displayed.

2. Select **Target device > Device version**.



3. The Device version dialog window will open. It lists all devices with the appropriate firmware versions. Select the required firmware version and close the dialog window.



Note:
You must use the first two entries in the list (SINAMICS S120 Integrated V2.1x or V2.2x) when you use a Simotion D435.

2.6 Compiling the project and checking the consistency

1. Save the project.
2. Perform the consistency test. No further error messages may appear here.
3. Once you have updated the Simotion device (→ see Chapter 3), you can load the project into the controller.

3 Updating the D4xx device

3.1 Updating the control unit

Each SIMOTION D4xx always contains the most current version when delivered. The user can use update to install a newer or older versions. You can obtain the update for the SIMOTION D from your Siemens contact.

Prerequisites

- Windows PC
- Card reader for CompactFlash Card
- **d435_fw.zip** update file
Note: This file must be used for all Simotion D devices (also D425 and D445).

Procedure

Warning: The update action will delete all project data and parameters on the CompactFlash Card!

Important: The CompactFlash Card may be removed or inserted only when the controller is switched off.

1. Switch off the power supply for the D4xx.
2. Remove the CompactFlash Card from the controller.
3. Insert the CompactFlash Card in the module slot of the card reader.
4. Open the Windows Explorer. The CompactFlash Card must be visible in the Windows Explorer as a replacement data medium under some arbitrary drive.
5. Save the KEYS folder on the CompactFlash Card using the Windows Explorer on the PC/PG. This folder may contain license keys for licensed software options.
6. Delete all files and folders on the CompactFlash Card.
7. Unpack the complete **d435_fw.zip** file with a ZIP unpacker, e.g. "WINZIP", on the CompactFlash Card. Ensure that the settings of the unpacker retain the file structure.
8. Use Windows Explorer to transfer the KEYS folder from the PC/PG to the CompactFlash Card.
9. Remove the CompactFlash Card from the PG/PC.
10. Insert the prepared CompactFlash Card in the D4xx.
11. Switch on the power supply for the D4xx. The new firmware will be loaded from the SIMOTION CF into the D4xx.
12. The project must be reloaded after the controller has been updated.

13. **Do not forget:** The individual SINAMICS components must then be updated separately. (→ see Section 3.2)

3.2 Updating SINAMICS components firmware

After updating the firmware of the D4xx control unit, you must update online the firmware of the individual SINAMICS components.

Prerequisites

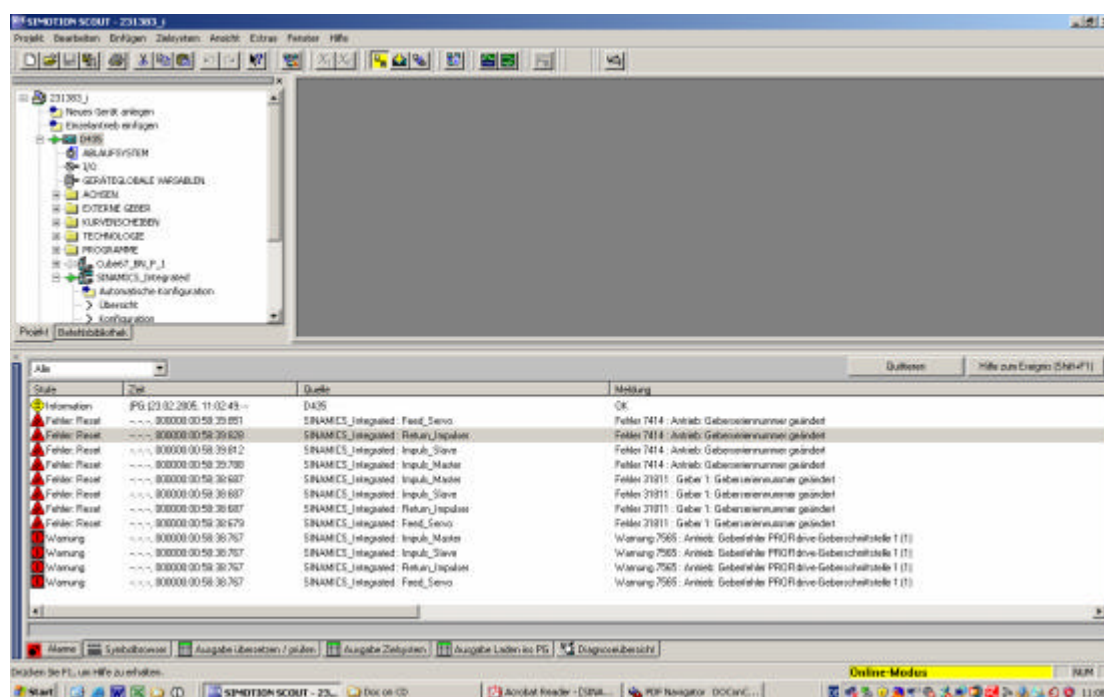
The current firmware version must be stored on the CompactFlash Card in the D4xx control unit. (→ See Section 3.1)

Procedure

1. Go online with the SCOUT on the SINAMICS.
2. Load the Sinamics project data (updated project) into the D4xx and perform "Copy RAM to ROM".
3. Use the "**Configuration → Versions overview → Firmware update**" dialog box in the SCOUT to select all SINAMICS components and then start the firmware update.
4. **After the firmware update, switch the 24V DC power supply off and on.**
5. The drive device is operational once again.

3.3 Additional tasks for DRIVE-CLiQ motors

1. After performing all items, the following errors and warnings for all axes will be displayed in the alarm window.



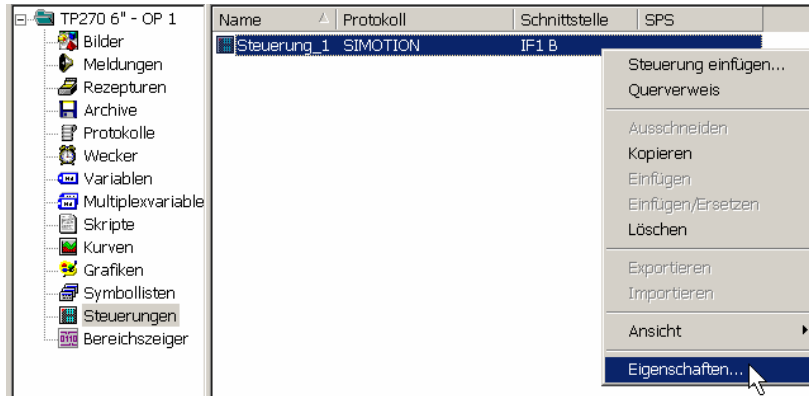
2. To correct the errors, the expert list of each drive must be opened.
3. With a right-click in the parameter list, select the "Access level" menu item
4. The access level must be set to "Service (4)". This access level requires a password. Enter the password 37483 and confirm.
5. The following steps 6 to 8 must be performed successively and separately for each Sinamics drive!
6. Set parameter 10 to the "Encoder commissioning (4)" value.
7. Set parameter 440 to the "Accept serial number (1)" value. This automatically resets itself to the value 0.
8. Set parameter 10 to the "Ready (0)" value.
Note:
If you forget to perform this step, the axis will not be enabled. The Simotion program remains without an error message at the _EnableAxis command.
9. All error messages must now be confirmed in the alarm window.
10. Copy Sinamics_Integrated: RAM → ROM
11. Sinamics_Integrated: Load into the PG
12. Go offline
13. Power Off → Power On

14. If an online connection exists, no further error with regard to the encoder serial number should be present.

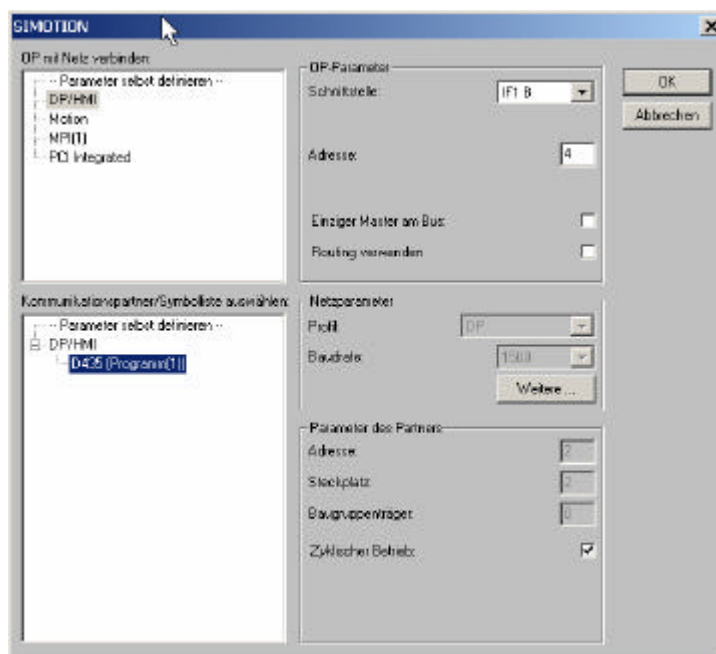
4 Restrictions for updating the software to version V3.2

4.1 Adjusting the Protocol project

1. Open ProTool configuring.
2. Open the properties of the controller and select "Parameters...".

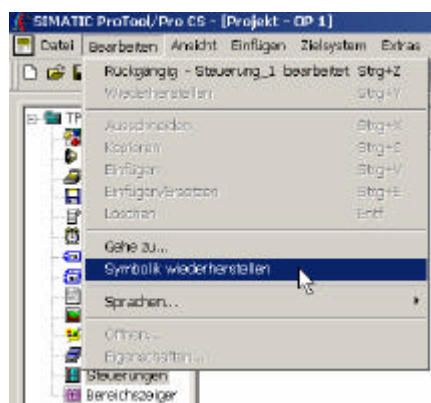


3. Reconnect the controller with the Simotion program and click "OK" twice to confirm.



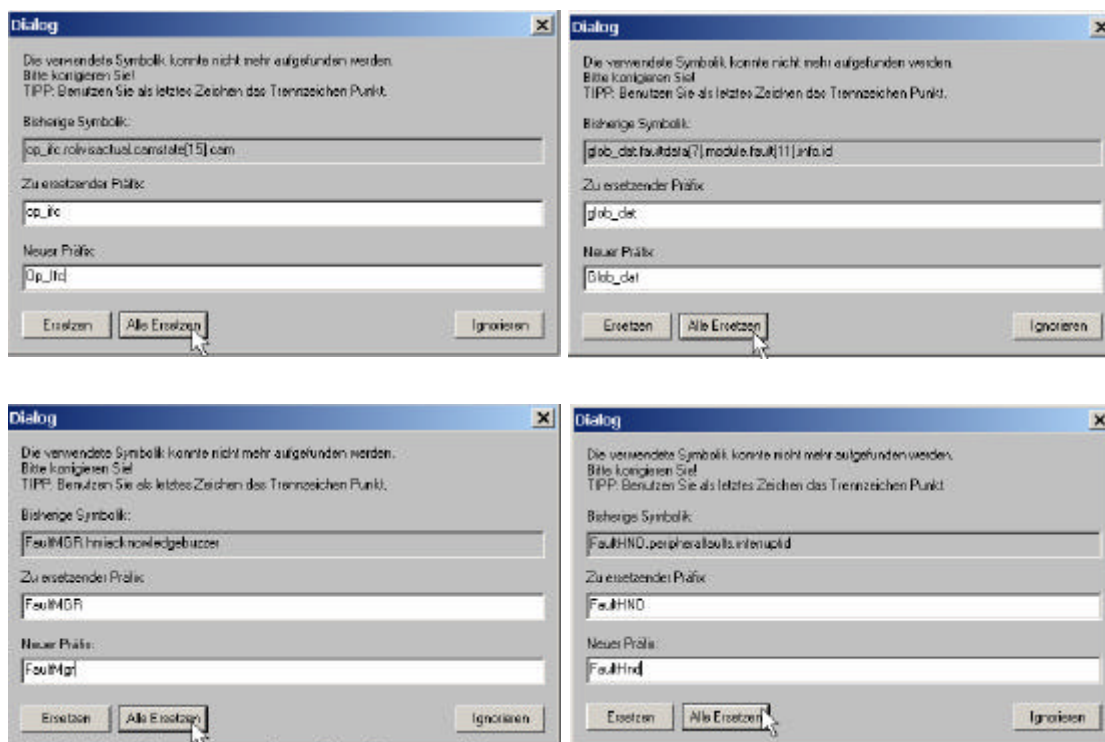
4. Close the controller properties.

- In the "Edit" menu, select "Restore symbolics" and then save the project.



- When opening the "The associated symbolics could not be found" dialog (as shown in the examples below), the source names must be replaced. The correct notation for the names must be taken from the user project. The cause for this procedure is a subsequent change of the unit name syntax (uppercase/lowercase) in the Simotion project by the user. If this window does not open, all variables have been found and reconnected.

Examples:

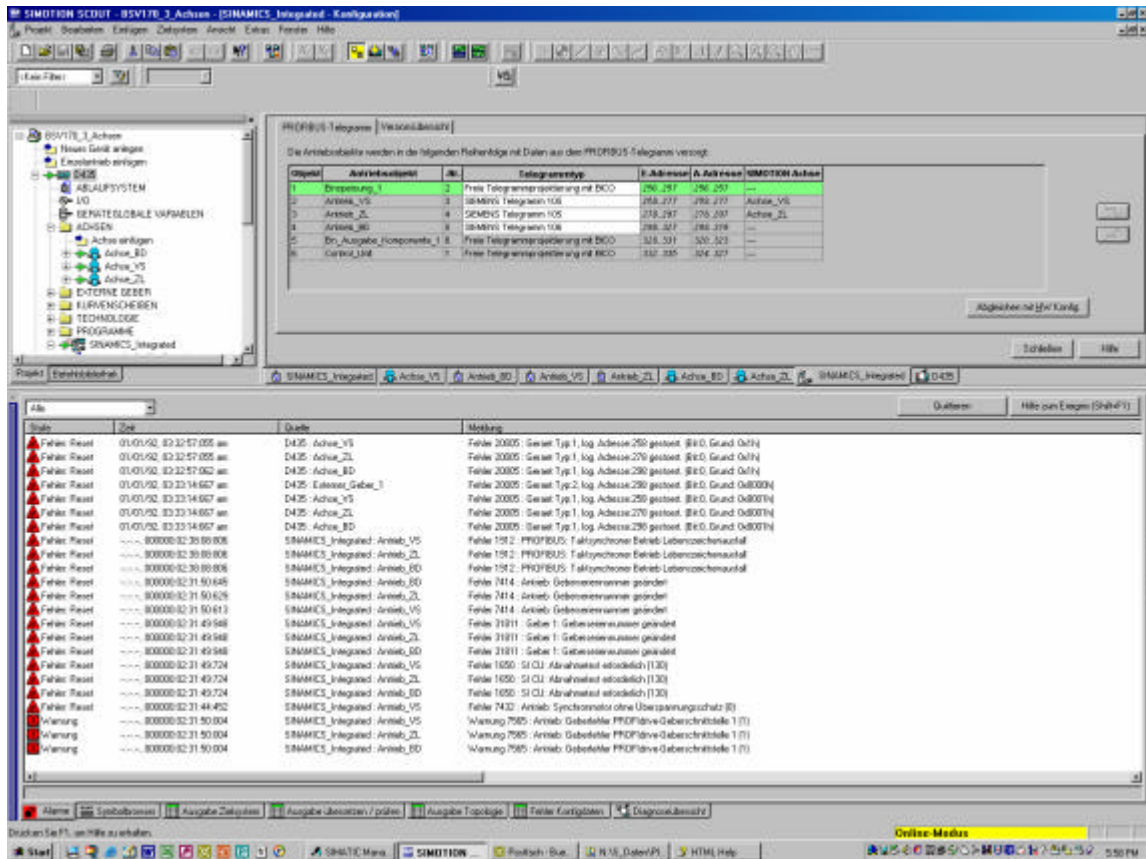


- After a successful restore: transfer the ProTool configuring to the operator panel.

4.2 Error message: Error 1912: PROFIBUS: isochronous operation life sign failure

Problem description:

Life sign failure between [Simotion D V3.2](#) and [Sinamics Integrated](#) in the **RUN** operating state. The **problem** occurs only at the **D4x5** controller when neither of the **DP** lines was configured **equidistant** and makes itself apparent with the following **alarms**:



Alarms occur cyclically again after the confirmation.

Work-around:

One of the two external DP lines must be set equidistant in the hardware configuration, preferably a DP line not previously used in the project (less effect on the project). **No** DP Slave needs to be configured on this line.

The hardware configuration must be compiled without error and loaded into the controller after the change. It is possible to determine, for example, using the number of DP nodes and/or cyclical I/O data, whether the selected DP cycle time cannot be maintained; if necessary, configured nodes (e.g. PG, HMI) must be moved to a different line.

Note: This problem will be corrected in version V3.2.0.2 (Hotfix 2).

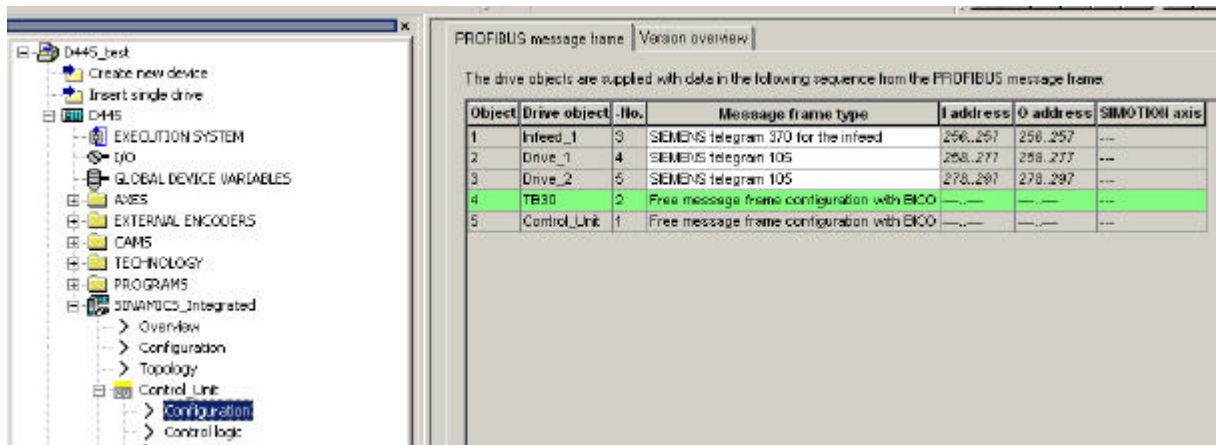
4.3 Independent conversion of standard telegrams for the Sinamics update

During the update of the Sinamics device version, sometimes the standard telegrams selected for the drive (e.g. 105 or 106) are changed to "Free telegram configuring with BICO".

Work-around: Perform the drive configuration once again and reselect the original telegram.

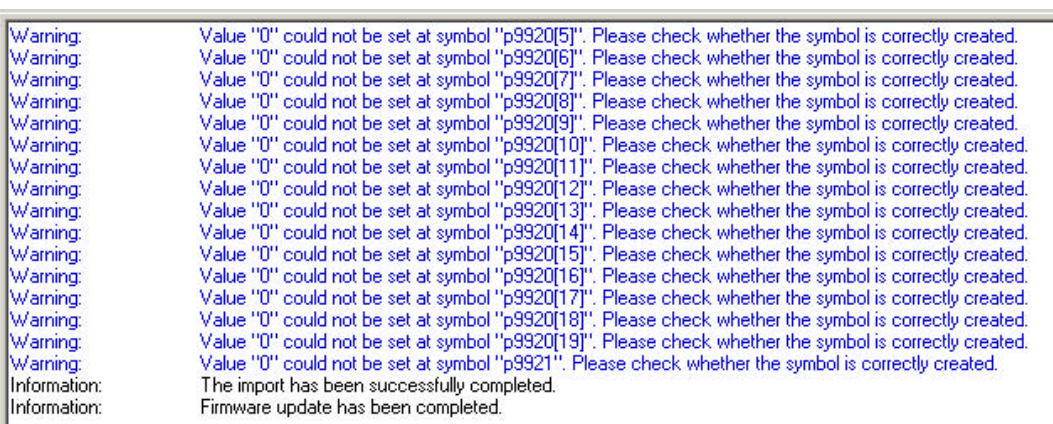
4.4 Placement of the telegrams in the control unit

In Sinamics_Integrated – Configuration, the objects (Dos) without PZDs must be placed at the end of the list. No objects (Dos) with PZDs may be placed behind empty modules. After this placement, the comparison with the hardware configuration can be performed.



4.5 Updating the Sinamics firmware in the offline project causes error messages.

Various warnings are issued after performing **Sinamics_Integrated** → **"Experts" context menu** → **Device version**:



The "Change device version" function supports only the update of an older drive device version to a newer one.

Easy Help Simotion

During the update from SINAMICS V2.1 to SINAMICS V2.2, warnings will be displayed, which, however, can be ignored.