

FIRMWARE UPDATE AXL F BK EC / IL EC BK-PAC

Firmware update on the
AXL F BK EC or IL EC BK-PAC bus coupler
with TwinCAT®



Application note
105601_en_02

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This document describes how to use the TwinCAT® software to carry out a firmware update on an bus coupler for EtherCAT®.

The description applies to the following products:

Description	Type	Order No.
Axioline F, Bus coupler, EtherCAT®, RJ45 socket, transmission speed in the local bus 100 Mbps, degree of protection IP20, including bus base module and Axioline connector	AXL F BK EC	2688899
Inline, Bus coupler, EtherCAT®, RJ45 socket, transmission speed in the local bus 500 kbps / 2 Mbps, degree of protection IP20, including Inline connector and labeling field	IL EC BK-PAC	2702507



Detailed information for starting up the Axioline F bus coupler for EtherCAT® on TwinCAT® can be found in the UM QS EN AXL F BK EC quick start guide.



Make sure you always use the latest documentation. It can be downloaded at phoenixcontact.net/products.

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FIRMWARE UPDATE AXL F BK EC / IL EC BK-PAC

1 Requirement

It is assumed that you have generated a project in TwinCAT® System Manager with the device and that a connection has been established.

If the project has been newly created, TwinCAT® switches the device to “free run mode” by default and to the “operational” state.



The AXL F BK EC Axioline F bus coupler was used for the screenshots.
All statements apply equally to the IL EC BK-PAC bus coupler.

1.1 Switching the bus coupler to the ERR_SAFEOP state

No firmware updates can be carried out in the OP state.

- Terminate the “free run mode”.

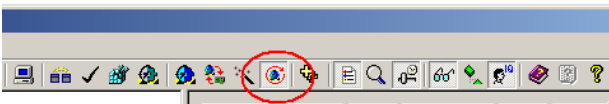


Bild 1 Terminate “free run mode”

The bus coupler changes to the ERR_SAFEOP state.



A firmware update is also possible in Bootstrap, Pre-Op and Safe-Op states.

The bus coupler status can be tested as follows:

- In the bus view, select the nodal point.
 - „Box x (AXL F BK EC)“ or
 - „Box x (IL EC BK-PAC)“
- Switch to the “Online” tab.

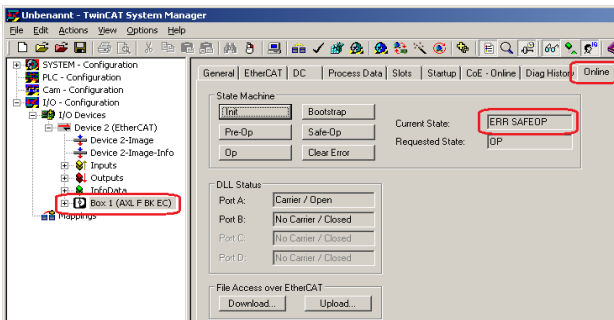


Bild 2 Bus coupler status

1.2 Testing the current firmware version

The current firmware version of the bus coupler can be tested as follows:

- In the bus view, select the nodal point.
 - „Box x (AXL F BK EC)“ or
 - „Box x (IL EC BK-PAC)“
- Switch to the “CoE-Online” tab.

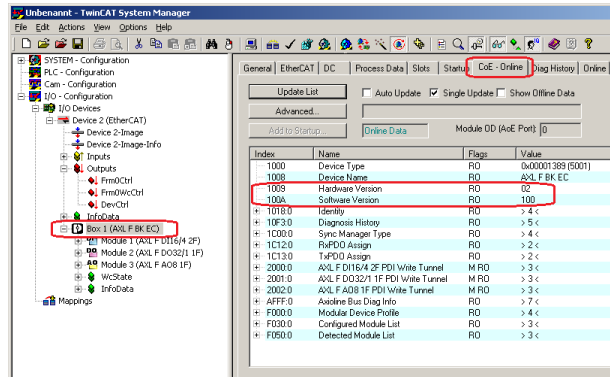


Bild 3 Testing the current firmware version

1.3 File for the firmware update

If necessary, you receive a zip file with the new firmware from Phoenix Contact. Unzip the file on your computer.

2 Firmware update

You can start the firmware update on one of the two nodal points indicated in Bild 4.

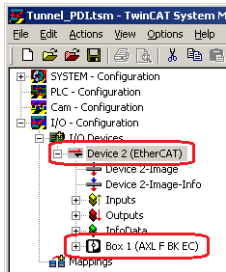


Bild 4 Nodal points for firmware update

2.1 Option 1: update to device x (EtherCAT)

- In the bus view, select the “Device x (EtherCAT)” nodal point.
- Switch to the “Online” tab.

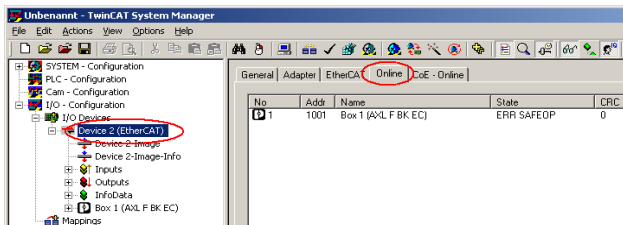


Bild 5 Device 2 (EtherCAT) selected

- Select the bus coupler that is to receive a firmware update under “Online”.
- Right-click the bus coupler to open the context menu and select the “Firmware Update ...” menu item.

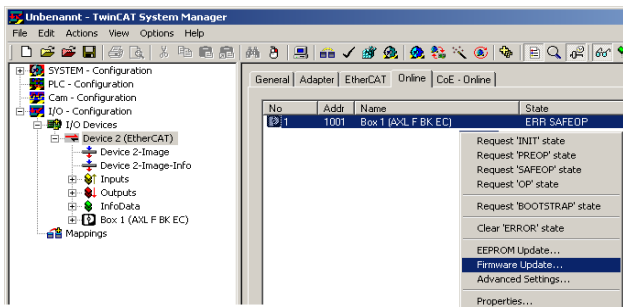


Bild 6 Select the “Firmware Update ...” menu item

- Proceed as described in 2.3 “Selecting the firmware file”.

2.2 Option 2: update to box x (AXL F BK EC)

- In the bus view, select the nodal point.
 - „Box x (AXL F BK EC)“ or
 - „Box x (IL EC BK-PAC)“
- Switch to the “Online” tab.
- Now press the “Download” button in the “File Access over EtherCAT” area.

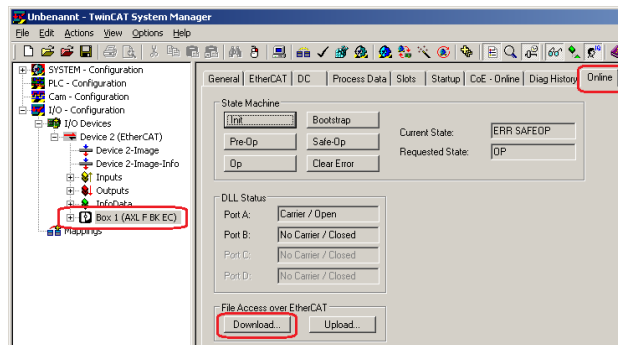


Bild 7 Box 1(AXL F BK EC) selected

- Proceed as described in 2.3 “Selecting the firmware file”.

2.3 Selecting the firmware file

Regardless of which nodal point was used to start the firmware update, carry out the following steps:

- In the window that opens, select the “All Files” file type.
- Afterwards, select the firmware file that is to be uploaded to the bus coupler.

Bus coupler	Firmware file
AXL F BK EC	c2688899.fw
IL EC BK-PAC	c2702507.fw

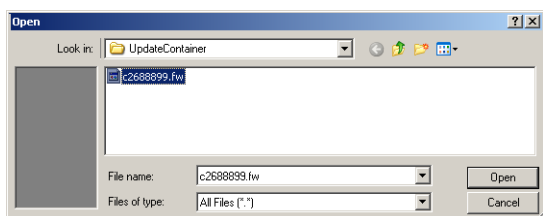


Bild 8 Selecting the firmware file



The ".fw" extension is not required for the Axioline F bus coupler.

The file name must have the extension ".fw" for inline bus couplers with a firmware version <1.10. If a bus coupler with a firmware version 1.10 or higher is updated, the ".fw" extension is not required.

- Confirm your selection with “Open”.
- Confirm the window for password entry that opens without any changes by clicking OK.

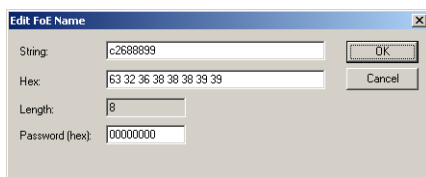


Bild 9 Confirming the password

During the update the progress is shown in the status line. The following message appears once the update has been executed successfully and the RDY LED flashes yellow on the bus coupler.

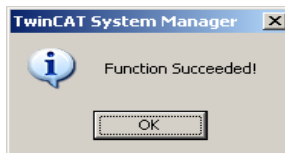


Bild 10 Firmware update successful

- Confirm the message with OK.
- Carry out a voltage reset on the bus coupler or confirm the reset button on the bus coupler.

2.4 Testing the current firmware version

Proceed as follows to check which firmware version is stored on the bus coupler:

- Change to “free run mode”.
- Select the “Box x (...)” entry.
 - „Box x (AXL F BK EC)” oder
 - „Box x (IL EC BK-PAC)”
- Switch to the “CoE-Online” tab.

The current firmware version will be shown in the “Software Version” ($100A_{hex}$) object.

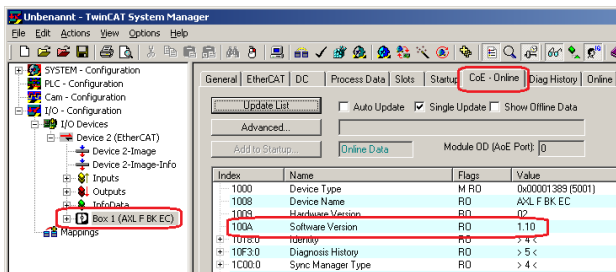


Bild 11 Firmware version in the “CoE-Online” tab

The firmware update has now been completed successfully.

2.5 If necessary:

Adapt an existing project

In the event that the bus coupler is to be used in an existing project with the amended firmware, check the “Change Notes” available for the update file. In some circumstances it may be necessary to adjust the project.

For example, in the firmware update from 1.00 to 1.10, the Axioline Bus Coupler Diag Info is extended by four words of input data. Adjust the input data to an existing project correspondingly.

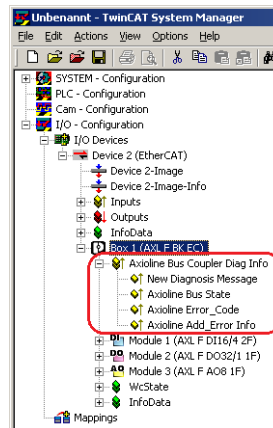


Bild 12 For example: change to the bus topology after the firmware update

3 EEPROM update

If a new device description file (ESI file) is also available, update this too. To do this, proceed as follows:

3.1 Importing the ESI file into the TwinCAT® System Manager

- Close the TwinCAT® System Manager.
 - Copy the current ESI file to the C:\TwinCAT\Io\EtherCAT directory.
- If applicable, overwrite the existing file.

Examples of an ESI file:

- ECAT_AXL_BK.xml, AXL_F_BK_EC_xxx.xml
 - IL_EC_BK_xxx.xml
- xxx = version of the ESI file

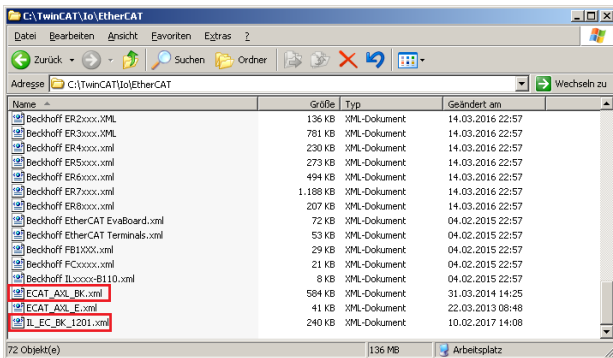


Bild 13 Copying the ESI file

- Open the TwinCAT® System Manager.

The ESI device description file is automatically imported into the TwinCAT® device catalog.

The import is shown in the message window.

3.2 Transferring the ESI file to the bus coupler

- Create a new project with the device.
- In the bus view, select the “Device x (EtherCAT)” node.
- Switch to the “Online” tab.
- Select the bus coupler that is to receive an EEPROM update under “Online”.
- Right-click the bus coupler to open the context menu and select the “EEPROM Update ...” menu item.

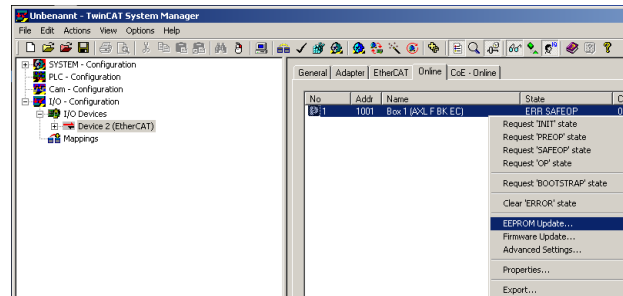


Bild 14 Selecting the “EEPROM Update ...” menu item

- Select the bus coupler in the window that opens. Confirm your selection with OK.

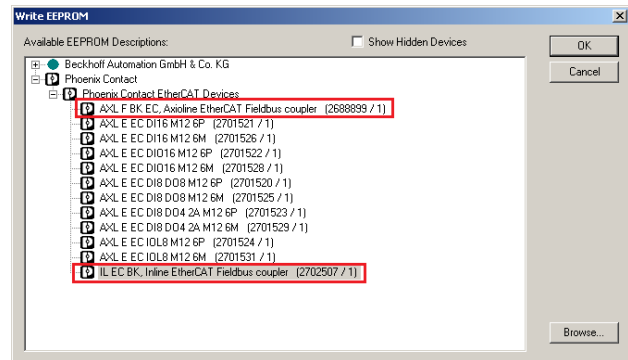


Bild 15 Selecting the bus coupler

Writing the device description file on EEPROM is shown in the message window.

Once it has been written, the file is checked automatically. Once this process has concluded without error messages, the EEPROM update is complete.



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