## BECKHOFF New Automation Technology

# TwinSAFE Tutorial 4 | EN FW Update Wizard

## Implementation of a FW update



## 1 Introduction

TwinSAFE includes several innovations that bring more functionality and performance to your safety controller. A major innovation is that the functionality of the safety controller is integrated in each TwinSAFE component. This means that you can, for example, use a TwinSAFE input component both as an input component and the safety control integrated on it to use application-specific pre-processing.

This is tutorial 4 of a tutorial series.

The aim of this tutorial series is to familiarize you with the TwinSAFE innovations using individual examples.

This tutorial is about the implementation of a FW update.

#### 1.1 Issue statuses

Version	Comment
1.0.0	<ul> <li>First released version</li> </ul>
0.0.1	First draft

### 1.2 Starting point

At the starting point of the tutorial

• a standard PLC solution with an EL6910 project exists.

#### 1.3 Demo system

#### 1.3.1 Hardware

The demo system of this tutorial consists of the following hardware:

- · CX for EtherCAT communication and the standard PLC controller
- EL6910 as master TwinSAFE Logic
- · EL1918 with safe inputs for reading light barrier signals
- · Light barrier
- AX8000-x2xx

2	Demonstration
4	Device 1 (EtherCAT)
	📑 Image
	📑 Image-Info
	SyncUnits
	Inputs
	Outputs
	InfoData
	<ul> <li>Term 1 (EK1200)</li> </ul>
	Term 2 (EL1918)
	Term 3 (EL6910)
	<ul> <li>Term 4 (EK1122)</li> </ul>
	InfoData
	Term 5 (AX8620-0000-0103)
	PSM Controlword for axis
	WcState
	👂 🖏 InfoData
	Drive 6 (AX8206-0210-0104)
	Device
	DeviceMain Outputs
	Device (Safety)

1. Open Safe Motion component in I/O configuration

	Upda	te List	Auto Upda	te 🔽	Single Update Show Offline	Data
	Advar	nced				
A	Add to S	Startup_	Online Data		Module OD (AoE Port):	0
Index		Name		Flags	Value	Unit
+ F98	8A:0	FB 511-512 Inputs	5	RO	> 255 <	
+ F98	8C:0	FB 1-255 Outputs		RO	> 255 <	
+ F98	8D:0	FB 256-510 Output	uts	RO	> 255 <	
+ F98	8E 0	FB 511-512 Output	uts	RO	> 255 <	
- F95	90	FB Analog Inputs	L	RO	00 00 00 00 00 00 00 00 00	
F99	91	FB Analog Outputs		RO	00 00 00 00 00 00 00 00 00	
+ F9/	A8:0	Local Process Im	nage Area Si	RO	> 32 <	
+ F9/	A9-0	Local Process Image Area Ad		RO	> 32 <	
- F90	CO 0	Safety Device Inf	lo	RO	>6<	
	F9C	Device name		RO	AX89112 Axis	
	F9C	Software version		RO	01 (V01.09)	
	F9C	Bootloader version		RO	09	
	F9C	Software checksum		RO	0x02F71A9D (49748637)	
F9F	FF	LengthOfAppParameter		RO	0x0003 (3)	
FB	40:0	Memory interface		RO	>3<	
+ FE	30:0	FS Restore Mode		RO	>2<	

2. Open the "CoE online" tab

The CoE data provides information about your Safe Motion component, such as the software version. Proceed as follows to perform a FW update:

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4. Click on "Start FW Update Wizard..." in the wizard field

Update safety logic FW	X
Steps	FW update
FW update	The firmware of following safety devices can be updated:
	W UPDATE AX8000
Settings & Warnings	To: 03 (V01.39) SetterCAT Addr: 1005
	Line, period (fendines), seuri (fendea), seuri (fendea), seuri (fendea), seuri (fendines anno (
	Back Next Cancel

The "FW update" window opens and shows you all components whose firmware you can update.

- 5. Select Safe Motion component
- 6. Confirm the selection with "Next"

Update Drive 6 (AX8206-0210-0104) FW				×
Steps	Drive 6 (AX820	6-0210-0104	) Login	
FW update	licernamer	Administrator		
Drive 6 (AX8206-0210-0104) Logi	oschanc.			
Settings & Warnings	Serial Number:	2287874		
Download	Password:	•••••		
>				
		Back	Next	Cancel

In the "Drive 6 (AX8206-0210-0104) Login" window, log in so that a FW update can be performed. The user name and serial number of the affected component will be found and displayed automatically.

7. Enter default password

#### Default password: TwinSAFE

8. Confirm the login with "Next"

pdate Drive 6 (AX8206-0210-	0104) FW
Steps	Settings & Warnings
W update	During the FW update the project download history is deleted and cannot be restored on the logic device, but you can save it into a text file:
	Save history:
<b>ttings &amp; Warnings</b>	Select file for log:
	During the FW update the user list and the safety project are deleted. Afterwards the user list will be restore if the FW update has been completed. If the safety project has been customized, the project cannot be restored. In this case the project can be downloaded manually after the FW update. Try to restore project after FW update. If not possible, the FW update will not start. I am aware that the correct functionality of the restored project must be tested manually after the FW update.
	The EtherCAT state of the logic device is changed during the FW update multiple times. If the state is changed by another source (e.g. PLC), the FW update may break and harm the device. Do not switch off power or disconnect during FW update. It is not guaranteed, that the FW update can be continued after such a failure.
	I am aware that external impacts may break the FW update and harm my device.
	Back Next Cancel

In the "Settings & Warnings" window you must select a storage location for the history and the log.9. Click on the " ... " button for the history file

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Speichern unter				×
← → · · ↑ 🚺 > Dieser PC > Windo	ows (C:) > LOG-FILES		✓ ບໍ ,ິ "LOG-FILES" duro	:hsuchen
Organisieren • Neuer Ordner			l:	• 0
Name	^ Ănderungsdatum	Тур Größe		
Desktop 🖈	Es	wurden keine Suchergebnisse gefunden.		
- Downloads				
Dokumente 🖈				
🖬 Bilder 🛛 🖈				
NewBootloader				
OldBootloader				
PassivationTests				
Systemtestplan				
S Dieser PC				
3D-Objekte				
📰 Bilder				
Desktop				
Dokumente				
Downloads				
Musik				
Videos				
Uindows (C:)				
🛫 dfs (\\beckhoff.com				
Netzwerk				
Dateiname: History_2287874_Drive	e 6 (AX8206-0210-0104).txt			~
Dateityp: Text File (*.bxt)				~
∧ Ordner ausblenden			Speichern	bbrechen

- 10. Select a file location
- 11. Confirm the selection with "Save"
- 12. Repeat steps 7 9 for the log file

Update Drive 6 (AX8206-0210-0104	) FW X
Steps	Settings & Warnings
FW update	During the FW update the project download history is deleted and cannot be restored on the logic device, but you can save it into a text file:
	Save history: C:\LOG-FILES\History_2287874_Drive 6 (AX8206-0210-0104).txt
Settings & Warnings Download	Select file for log: Save log: C:\LOG-FILES\Log_2287874_Drive 6 (AX8206-0210-0104).txt
	During the FW update the user list and the safety project are deleted. Afterwards the user list will be restored if the FW update has been completed. If the safety project has been customized, the project cannot be restored. In this case the project can be downloaded manually after the FW update. Try to restore project after FW update. If not possible, the FW update will not start. an aware that the correct functionality of the restored project must be tested manually after the FW update.
	The EtherCAT state of the logic device is changed during the FW update multiple times. If the state is changed by another source (e.g. PLC), the FW update may break and harm the device. Do not switch off power or disconnect during FW update. It is not guaranteed, that the FW update can be continued after such a failure.
	Back Next Cancel

13. Check the following boxes in the "Settings & Warnings" window

- "I am aware that the correct functionality of the restored project must be tested manually after the FW update."
- "I am aware that external impacts may break the FW update and harm my device."

Steps	Download
PW update	Downloading the firmware update takes several minutes, do not switch off or disconnect the device.
	Preparation: Preparations finished successfully. 1009
ettings & Warnings	FW Update:
Download	Final steps: 0%
	available for 'Drive 6 (AX8206-0210-0104)' (5.53.213.218.2.1:1005). [14.07.2021 13:49:55] INFO: Found AX691x FW update from '01 (V01.09)' to '03 (V01.13)' for slave (5.53.213.218.2.1:1005). [14.07.2021 13:49:55] INFO: 'Drive 6 (AX8206-0210-0104)' (5.53.213.218.2.1:1005) has serial number 2287874. [14.07.2021 13:50:39] INFO: Started getting project history from slave (5.53.213.218.2.1:1005). [14.07.2021 13:50:39] INFO: Finished getting project history from slave (5.53.213.218.2.1:1005).

The download starts. The information you see in the window below the loading bars is transferred to the log file.

Update Drive 6 (AX8206-0210-	0104) FW
Steps	Download
FW update	Downloading the firmware update takes several minutes, do not switch off or disconnect the device.
	Preparation: Preparations finished successfully. 100%
Settings & Warnings	FW Update:
Download	Final steps: Final steps finished successfully. Final steps finished successfully. FW is updated successfully. (14.07.2021 13:50:39] INFO: Started getting project history from slave (5.53.213.216.2.1:1005). (14.07.2021 13:50:39] INFO: Finished getting project history from slave (5.53.213.216.2.1:1005). (14.07.2021 13:50:40] INFO: Started creating backup of current project of slave (5.53.213.218.2.1:1005) with serial number 2207074. (14.07.2021 13:50:40] INFO: Started reating backup of current project of slave (5.53.213.218.2.1:1005). (14.07.2021 13:50:40] INFO: Started FW update of slave (5.53.213.218.2.1:1005) with serial number 2207074. (14.07.2021 13:50:44] INFO: Downloading bootloader update (1/2) (14.07.2021 13:51:51] INFO: Downloading bootloader update (2/2)
	[14.07.2021 13:55:44] INFO: Finished FW update of slave (5.53.213.218.2.1:1005). [14.07.2021 13:55:46] INFO: Started restoring backup. [14.07.2021 13:55:56] INFO: Finished restoring backup on slave (5.53.213.218.2.1:1005). V Log File: CALOG-FILES\Log 2287874 Drive 6 (AX8206-0210-0104).txt

14. As soon as the message "FW is updated successfully." appears, close the window with "Finish"

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